



THE TRADE IN
LIVE REEF FOOD FISH

GOING GOING GONE

VOLUME 1
MAIN REPORT



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GLOSSARY

ACCS	Air Cargo Clearance System
ACE	Advisory Council on the Environment
ADB	Asian Development Bank
AFCD	Agriculture, Fisheries and Conservation Department
AIS	Automatic Identification System
AO	Administrative Order
APEC	Asia-Pacific Economic Cooperation
APFIC	The Asia-Pacific Fishery Commission
APT	ASEAN Plus Three
ASC	Aquaculture Stewardship Council
ASEAN	Association of Southeast Asian Nations
AWB	Air Waybill
BSAP	Biodiversity Strategy and Action Plan
C&ED	Customs and Excise Department
C&SD	Census and Statistics Department
CACC	Court of Appeal Criminal Appeal
CBA	Capture-based Aquaculture
CBD	Convention on Biological Diversity
CCAMLR	Convention on Conservation of Antarctic Marine Living Resources
CITES	Convention on International Trade in Endangered Species
COFI	FAO Committee on Fisheries
CoP	CITES Conference of Parties
CPUE	Catch Per Unit Effort
CTI	Coral Triangle Initiative
CTI-CFF	Coral Triangle Initiative for Coral Reefs, Fisheries, and Food security
DAF	Department for Agriculture and Fisheries (Queensland)
DCCC	District Court Criminal Case
DFEH	Director of Food and Environment Hygiene
EAFM	Ecosystem Approach to Fisheries Management
EC	European Commission
EFSA	The European Food Safety Authority
EMAN	Electronic System for Cargo Manifests
EU	European Union
FAK	Freight of All Kinds
FAO	Food and Agriculture Organization of the United Nations
FEHD	Food and Environmental Health Department
FEHD	Food and Environmental Hygiene Department
FIFO	Fish-In-Fish-Out' Ratios
FMO	Fish Marketing Organization
FoC	Flags of Convenience'
FSO	Food Safety Ordinance
FSQC	Flag State Quality Control
GATT	General Agreement on Tarrifs and Trade

GLOSSARY

GT	Gross Tonnage
HBA	Hatchery-based Aquaculture
HCMA	High Court Magistracy Appeal
HKCSM	Hong Kong Chamber of Seafood Merchants Ltd.
HKHS	Hong Kong Harmonized Commodity Description Codes
HKLFC	Hong Kong Licenced Fish Carriers
HKLFV	Hong Kong Licenced Fishing Vessels
HKLRD	Hong Kong Law Reports and Digest
HKSARG	Hong Kong Special Administrative Region Government
HKSARG	Hong Kong Special Administrative Region
HKSR	Hong Kong Shipping Register
HKU	Hong Kong University
HS	Hormonized System
IMO	International Maritime Organization
IPOA-IUU	International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
ISPS	International Ship and Port Facility Code
ITQ	Individual Transferable Quotas
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unreported, and Unregulated
LegCo	Legislative Council
LN	Legal Notice
LRFF	Live Reef Food Fish
LRFFT	Live Reef Food Fish Trade
MarDep	Hong Kong Marine Department
MF(M)O	Marine Fish (Marketing) Ordinance
MFN	Most Favoured Nation
MMSI	Maritime Mobile Service Industry
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSRA	Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
MT	Metric Tonne
NDF	Non-detriment Findings (from CITES)
NESOI	Not Elsewhere Specified or Indicated/Included
NGO	Non-Governmental Organization
NMFS	US National Marine Fisheries Service
NOAA	US's National Oceanic and Atmospheric Administration
NPOA	National Plan of Action
OFWG	Ocean Fisheries Working Group
OIE	World Organisation for Animal Health
OSCO	Organized and Serious Crimes Ordinance
PCSD	Palawan Council for Sustainable Development
PNG	Papua New Guinea

GLOSSARY

PPMs	Process and Production Methods
PRC	People's Republic of China
PRQC	Pre-Registration Quality Control
PSC	Port State Control
PSMA	Port State Measures Agreement
RFMO	Regional Fisheries Management Organisation
SDG	Sustainable Development Goals
SEAFDEC	Southeast Asian Fisheries Development Centre
SOLAS	International Convention for the Safety of Life at Sea
SPS	Sanitary and Phytosanitary Measures Agreement
STC	Said To Contain
TAC	Total Allowable Catch
TBT	Technical Barriers to Trade Agreement
TID	Trade and Industry Department
UK	United Kingdom
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNEP-WCMC	United Nations Environment World Conservation Monitoring Centre
UNODC	United Nations Office on Drugs and Crime
US	United States
USAID	United States Agency for International Development
US-CTI	US Coral Triangle Initiative support group
VAT	Value-Added Tax
VMPR	Versatile Maritime Policing Response
VSL	Vessel Monitoring System
WTO	World Trade Organisation
WWF	World Wildlife Fund

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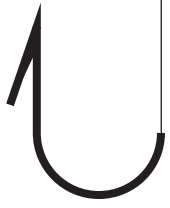
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EXECUTIVE SUMMARY

Since the late nineties, intergovernmental agencies, NGOs, academics and extensive literature have highlighted the unsustainability of the South East Asian Live Reef Food Fish Trade (LRFFT). Despite the economic benefits for many involved, there is undeniably a dark side to this lucrative trade in colourful fishes which involves a wealth of issues. Collectively, these represent a major challenge to ensuring the LRFFT's long-term sustainability. A disturbing pattern has emerged of overfishing, illegal trade, tariff avoidance, of conservation threats to several species, destructive and damaging fishing methods and even corruption. This darker side is particularly relevant to the wild capture aspect of the trade.

While many of these issues were recognised more than two decades ago, concerns continue to be expressed. Despite various interventions having been launched and completed, the overall result has not reversed the worrying trajectory these fisheries are on and, today, continued overfishing and unregulated and unsustainable practices persist. If not addressed, the future of the trade looks bleak, potentially impacting thousands of livelihoods in the region, not to mention the viability of populations of several particularly favoured LRFF species.

This report aims to reflect upon why so little progress has been made to date towards achieving a sustainable LRFFT, by examining the trade's many components and characteristics. It thus provides a comprehensive profile of the LRFFT over two decades, based on the best available information from both major exporting and importing countries, as well as from independent surveys and studies. It is hoped that it will serve as an important reminder of the inertia that has plagued efforts to reform the LRFFT, and also as a catalyst for a reinvigorated pursuit of options that could direct the LRFFT towards a sustainable path. It explores:

- the nature of the product (i.e. live fish) in relation to the rising influence of ‘conspicuous consumption’ in key demand countries;
- the nature of the biological resources and their vulnerability to overexploitation from a range of impacts and drivers;
- trends in mariculture, including the realities of substitution and environmental impacts;
- trends in international trade of LRFF by species, country of origin and transport mode and the reliability of available data in determining these trends;
- supply chain characteristics and trade dynamics;
- the ‘economics’ of the LRFF value chain including scarcity, pricing, value distribution and power structures;
- the regulatory landscape in Hong Kong including transport, monitoring and inspection of LRFF imports;
- past and ongoing interventions and their successes or otherwise in improving the trade; and
- action that is needed for moving forwards to safeguard the value of the LRFFT while containing and reducing those elements that are undermining its potential.

The report thus identifies where the possible solutions and next steps may lie, to:

i) increase incentives for management in source countries; and ii) to ensure better oversight and control of the international trade in general. More radical, effective and innovative approaches are urgently needed.

Relatively and Absolutely, the LRFFT is a High Value and Regionally Important Trade

For almost three decades, an international trade in live reef fishes has grown and flourished in the Indo-Pacific region in response to demand for ultra-fresh seafood, which is part of the culinary tradition of southern China. The trade is not large by global fishery standards, estimated to hover between 20,000 and 30,000 Metric Tonnes (MT) annually, but it is disproportionately valuable because it supplies a luxury seafood market with high value fishes. Its annual retail value is estimated to substantially exceed US\$1 billion, with some species fetching in excess of US\$600 per kg at retail. To place this in a global context, the annual trade value is roughly four times the global value of the marine aquarium trade and about one third of the valuable Western and Central Pacific tuna fisheries. In the context of Hong Kong, the global trade hub for the live fish trade was worth almost six times the total production of the city’s own fishing fleet in 2016.

Importantly, the LRFFT is capable of providing income and good profits along the trade chain, from fishers and their communities to exporters, transporters, importers and retailers. Given the high values involved, it should also generate substantial export and import tariffs and income tax returns for trading countries. However the clandestine nature of the trade, a culture of deliberate tax avoidance, poor governance, and lack of transparency in transport of live fish collectively result in significant erosion of these potential revenues.

Unrelenting Overexploitation Persists

Since the late 1990s the relentless overexploitation of LRFF has been repeatedly documented, and brought to the attention of both exporting (source) and importing countries, and the trade is growing. Hong Kong's trade data, which serve as a proxy for trends in the LRFFT, indicate that in 2016 imports were some 32% higher than in 1999.

The extent of overexploitation is clearly evidenced by the serial depletions of LRFF fisheries, whereby the trade takes advantage of once easy and voluminous catches when initiating a fishing and export operation in one area, then moving on to new fishing grounds when catch rates decline, oftentimes leaving behind severely degraded fisheries and dislocated communities. The result is the shifting of fishing grounds, from the now depleted northern sector of the South China Sea to the increasingly depleted waters further south. In many places, catch levels continue to outstrip the naturally sustainable supply rates of target populations by between two-and-a-half and six times.

Popular Species Traded are Inherently Vulnerable to Over Exploitation

A major contributing factor to LRFF overexploitation is the biological vulnerability of the popular species in this trade. The LRFFT involves the sourcing of approximately 15-20 species of reef fishes, the great majority being groupers, which come predominantly from developing countries in Southeast Asia. A notable exception is the Leopard Coral grouper, *Plectropomus leopardus*, which is also sourced from Australia. The biology of many of these species, which includes late sexual maturation, long life and aspects of their reproduction (e.g. sex change and spawning aggregations), makes them particularly vulnerable to fishing pressure and more susceptible to overfishing than many other exploited species in the coral reef ecosystem.

The fishes included in the LRFFT come from both wild populations and from mariculture/farmed sources with the major source countries, currently, being Indonesia and the Philippines; several Pacific Island nations commenced and then stopped exporting their live fish due to concerns over trade operations and fishery sustainability. Several grouper species that make up the trade have been overexploited to the extent that they are considered 'Threatened' or 'Near Threatened', according to the IUCN Red List. The Napoleon, or Humphead, Wrasse, *Cheilinus undulatus*, albeit a relatively low volume species, was listed on CITES Appendix II in 2004 as a direct consequence of declines due to exploitation pressures from the trade. It lives longer than three decades and is naturally uncommon. The targeting of spawning aggregations (especially those of the Camouflage, *Epinephelus polyphekadion*, Squaretailed, *P. areolatus*, and Tiger, *E. fuscoguttatus*, Groupers) can quickly lead to population declines, while the blatant and illegal taking of threatened species plague parts of an industry that is poorly monitored and virtually unmanaged.

An Extended Regional Trade Chain, Supplied by Many and Controlled by a Few

Wild fishes typically pass along an extended trade chain, caught in small numbers by tens of thousands of small-scale fishers, then consolidated by a small number of traders, and exported in large fish carrier vessels or by air, mainly to Hong Kong.

While Hong Kong is also a consumption centre for live fishes a substantial amount of live seafood imported into the city is re-exported to mainland China. Initially these fishes were destined for Guangzhou and Shenzhen, southern China, but interest in the colourful reef fish has grown and they are now also shipped to high end restaurants in Shanghai, Beijing, tier 2 cities like Qingdao and beyond. A handful of traders, therefore, control a trade that is supplied by tens of thousands of fishers to supply millions of consumers. In reality, wholesalers in Hong Kong appear to control the market both up and down the supply chain and often maintain control over the fishers, and middlemen who buy from them, through 'patronage systems'. This indebtedness, along with limited alternative livelihood options that can match LRFFT incomes, repeatedly forces fishermen to continue fishing to meet debt obligations even as fish become scarce. Small and strong trade networks limit newcomers from entering the centre of the trade chain.

Conspicuous consumption is a hallmark of the LRFFT and continues to drive overexploitation. The trade satisfies a major consumer interest; extremely fresh and highly desirable reef fishes that are attractive to look at and diverse in character. This is a major draw for seafood tourism especially for Chinese diners. Live reef fish are amongst the most desired dishes in high end restaurants, including major hotels and resorts, and a regular central feature of banquets, weddings and seasonal celebrations such as Chinese New Year and Mother's Day. This rise of conspicuous consumption is a hallmark of the LRFFT, associated with rising incomes and motivated by the desire for social status, for engendering personal and business relationships and for cultural reasons (i.e. health and well-being). Paradoxically, it is the high prices paid by consumers that enable the trade's ongoing viability, despite high transport costs and ongoing overexploitation of target species, leading to population declines. The trade has also stimulated the grouper mariculture industry, which helps to meet demand and supplies several lower priced species.

Economic Characteristics Mean that Perverse Incentives Lead to Overfishing

From an economic standpoint, the LRFFT is a high-value, low-volume, fishery that can deliver large profits and sustain a highly lucrative business, even at relatively low volumes of trade, despite high transportation and transaction costs and high levels of risk around transport mortality. The profitability of the trade acts as a considerable incentive to persistently overfish areas that are poorly or entirely unmanaged, and drives the 'boom and bust' nature of the fishery. As stocks become depleted, in some cases locally extirpated, traders turn their attention to seek ever new fishing grounds.

There is a perception that the value arising from trading in live fish is being inequitably distributed along the supply chain, with downstream traders unduly benefiting, to the detriment of the many fishers and middlemen in the chain. While there are pragmatic reasons for some agents in the supply chain extracting more value, many families engaged in the LRFFT still earn above average incomes thus providing considerable incentives, in the face of limited or no regulation, to continue fishing beyond sustainable limits.

In conventional markets, price is an indicator of supply relative to demand. In the LRFFT, however, increasing scarcity and/or supply can have the perverse impact of further increasing prices of this 'luxury good' providing yet greater incentive to continue fishing unsustainably even as populations decline to very low levels. While scarcity can be a factor, consistent with its status as a luxury good, an underlying element sustaining the trade has also been the steady rise in incomes in both Hong Kong and China and, in the case of China, a burgeoning middle-class.

Hong Kong's Dataset Allows Monitoring, but Volumes are Underestimated

Hong Kong has a good monitoring system in place through its Customs and Excise Department (C&ED), which has enabled and sanctioned the regular collection of trade statistics through the government's Census and Statistics (C&SD) and Agriculture, Fisheries and Conservation Departments (AFCD). Monthly reports by these agencies on live fish imports, both by air and sea, have provided an extensive dataset of imports, down to the species level, for ten of the more prominent traded species, by volume, country of export and mode of transport. This has undoubtedly facilitated better understanding of the trade.

There are indications, however, that LRFF volumes imported into Hong Kong are being considerably underestimated, perhaps by as much as 50%, due to a combination of inadequacies in the monitoring protocols, particularly of imports by sea, and because of deliberate misreporting. Nevertheless, while there are well-founded concerns over the comprehensiveness of the government data, they have nonetheless enabled detailed analysis of trends in this trade over almost two decades, ranging from fluctuations in trade volumes for certain species to preferred modes of transport in terms of economic and quality considerations. This information is especially useful for pinpointing legal and regulatory shortcomings in managing the trade in both source and demand countries and for highlighting the policy interventions needed to close these loopholes.

Relying on Mariculture is Not the Solution

Although much of the volume of the trade, and most of the species, are taken from wild populations, an increasing proportion of live fish traded over the last decade has been generated by mariculture operations, which include hatchery production. Of the roughly 15-20 species commonly traded, a handful are regularly hatchery-produced. Despite the small number of these cultured species, at least half of all live groupers (by weight) on sale are now likely to

have been farmed. This ‘farming’ or ‘grow-out’ of juveniles, however, depends not only on hatchery-produced young but also, for many species, on unknown numbers of wild-caught juveniles. Importantly, there is little evidence to support the oft-held contention that cultured product will substitute for wild-caught fish and thereby relieve fishing pressure. Rather, evidence indicates fishers continue to target and trade wild-caught species, regardless of increased availability of cultured product, leading to differentiated markets and higher overall volumes being traded. For a variety of reasons, including consumer preference and the suite of species that are suitable for culturing, the reliance on wild-caught species is expected to remain high.

The mariculture industry is evolving, both in terms of moving to meet and address the market and because of increased consumer acceptance of cultured fish. It is unclear at this stage what its future holds. For example, recently there has been growth in the production and demand for hybrid fish, the Sabah grouper in particular, bred for their desirable combination of taste and growth characteristics. The aquaculture industry in Asia has a history of rushing to exploit new opportunities, like Sabah grouper, inevitably resulting in oversupply that depresses market prices. As a result, for Sabah grouper, as with other species, this can sometimes lead to prices below break-even. The market for Sabah grouper, however, is now stabilizing and maturing.

Several of the more highly valued species that are overwhelmingly wild-caught, such as the Leopard Coralgrouper and Humphead Wrasse, are captured not only as adults but also heavily taken as juveniles and grown out to market size for months or sometimes even for years. Such ‘ranching’ or grow-out, in captivity of these high value species has significant implications for the productivity of targeted fish stocks and the implications need to be better understood; this practice calls for greater management attention and has recently been designated as capture-based aquaculture, in need of both mariculture and fishery management good practices.

As a high trophic level species, the farming or grow-out of grouper and other species raise several environmental concerns. Historically, the most notable of these was the high demand for wild, or so-called ‘trash’ fish, which are used for feed. The heavy demand for ‘trash’ fish (which, of course are not trash, can fetch good prices and include juveniles of commercial species) has implications for its impacts on fisheries and marine biodiversity and is receiving growing scrutiny in relation to its long-term sustainability. More recently, the increase in the use of pellet feeds is lowering the input of wild fish into the diets of these species, in some cases by more than half, although a heavy dependence on ‘trash’ fish continues. Coastal grow-out operations, whereby fish are held in floating net cages in the sea, also create impacts on the marine environment from chemicals, discharges and wastes emitted into surrounding waters.

As a Leading Importer, Hong Kong Needs to take Responsibility and has an Obligation to Act

Hong Kong's role in the LRFFT and the trade's poor record in sustainability and transparency must not be underestimated. Traders, transport and logistics carriers are allowed to exploit a vacuum created by inadequate and outdated regulation, loopholes in the law and lax enforcement of live seafood trade into, within and through Hong Kong. The rationale underlying Hong Kong's current LRFFT-related legislation and enforcement mechanisms is influenced by: the city's free port status; customs regulations; food health concerns; environmental conservation; relevant legislation; historical factors and its international obligations and responsibilities. In practice, little consideration is given to environmental conservation and biological diversity, natural resource sustainability, commodity traceability, illegal wildlife trade, food safety or international obligations. The outcome is a trade in live seafood that is largely unregulated and substantially unmonitored, even for the CITES-listed Humphead Wrasse, and with potential health risks to consumers. Indeed, fishes brought in from hotspots of ciguatoxins regularly cause fish poisoning among diners in Hong Kong. The fact that many of the relevant laws and regulations are outdated or no longer fit-for-purpose to control and address this trade is also a major factor in lack of oversight.

Limited Progress has Been Made, but is Not Enough

To temper and control this trade and move it towards more responsible practices, there has been some, albeit limited, progress. For example, assessments of Leopard Coralgrouper fishery status in the Palawan province of the Philippines are supporting local efforts to control export levels. In Indonesia, NGOs and researchers are working with the country's largest trader to support efforts to source more responsibly via input and output controls, all while demonstrating economic viability in the long-term. The CITES-listed Napoleon Wrasse, while still traded, is subjected to scientifically determined export quotas for wild fish implemented in the major source country, Indonesia. Other countries, such as the Maldives, Fiji and Seychelles, opted to stop exporting the species due to concerns about the trade.

Recent efforts by the Hong Kong government to better control trade in Humphead Wrasse has resulted in prosecutions and lower numbers on sale, although the number of this species on sale are still at least double the legal limit. In China, the government's crackdown on use of public funds to buy luxury food at official banquets has had the effect of reducing demand for LRFF in some northern Chinese cities, although persistent rising incomes continue to fuel demand for luxury goods like LRFF. Nonetheless, the provenance of the Humphead Wrasse on sale in the mainland is unknown and entirely unmonitored and unreported (to CITES).

Elsewhere, the Maldives is exploring the protection of its grouper spawning aggregations sometimes targeted for live fish and several western Pacific countries have already protected some of theirs, including the Solomon Islands, Palau and Papua New Guinea. Both Fiji and Pohnpei are about to protect their grouper spawning aggregations. To better control live fish carrier vessels, Indonesia has moved to bring foreign cargo vessels, including those that collect live fish, under greater control and scrutiny, while Hong Kong recently reminded its own live fish carrier vessels of their legal reporting requirements when importing live fish cargo.

The LRFFT is Currently Steering Towards a Perfect Storm

The many characteristics of the LRFFT, as currently practiced, collectively and synergistically, make the trade extremely difficult to control and monitor and have created a scenario analogous to a 'Perfect Storm'. In reality, the LRFFT, particularly the component of it that relies on wild fish capture, is an industrial-scale fishery with a demand for fish going well beyond the biological levels that can be sustained within a small-scale fishery context that is without management or controls. A clear example is the increasingly large numbers of juvenile fishes retained for grow-out to market size in many locations which is evidence of fisheries that have removed most of the larger specimens and is now entering a phase of recruitment overfishing.

The following factors, in combination with the following prevailing issues, make the trade exceptionally difficult to manage:

- lack of sufficient oversight of trade by both exporting and importing countries;
- illegal trade;
- heavy focus on species naturally susceptible to overfishing;
- a complex and opaque trade chain;
- poor data on natural resources;
- shortcomings with trade monitoring;
- outdated or inappropriate legislation; and
- a general lack of political will to manage either the trade or coastal fisheries in the region.

In the long-term, if the trade in wild fish continues as is currently practiced, with few controls, virtually no natural resource management and little traceability or accountability by businesses, the benefits to fishers, as well as others along the trade chain, will be increasingly compromised. Taking a broader view, reputational risks to companies selling live reef fish will increase as trade practices come under greater scrutiny by a public which is growing more mindful of sustainable consumption and the need for responsible practices. International calls for greater traceability of seafood and accountability, especially by vessels involved in fishing and seafood carriage, are growing louder, while Hong Kong has international obligations to ensure it does not contribute to the plight of threatened species beyond its borders. Despite multiple efforts by NGOs over many years, very little progress has been made to divert the trade towards a more biologically sustainable and transparent pathway. Clearly it is time for a new and tougher approach to reduce the threats to wild fish populations and ensure ongoing benefits.

The Time for Action, is Now

Projecting into the future, this report identifies areas where effective action could help to move the trade into calmer waters and highlights emerging issues that call for immediate attention. It provides a series of recommendations categorized by four major sectors and/or actors:

- source countries
- traders and retailers, including the transport sector;
- destination countries; and
- non- and intergovernmental organizations and sectors, including consumers.

For **source countries**, the key issues identified are poor monitoring and stock assessment, limited institutional capacities to assess and control the trade and the impact of hatchery based mariculture (the important issue here is in relation to wild fish populations).

For **traders and retailers** these issues boil down to the urgent need for responsible trade practices, the role of retailers in demanding responsibly sourced products, in enabling or facilitating better consumer choices as well targeting consumers directly through outreach, and the need for stronger engagement with the transport sector.

The **transport sector** needs to know what it carries, and particularly for sea vessels to report more completely and consistently.

For **key destination country** governments, mainly Hong Kong and China (although live fish does go to Taiwan, Singapore and Malaysia), improved regulation (which may require revisions of some laws) and monitoring of international trade is needed. In particular, much better oversight of live fish cargo vessels is needed, an issue raised as a priority almost 20 years ago. The role and obligation of these governments to provide better information to consumers through improved labelling and to promote sustainable use of biological resources ('green sourcing') needs to be realised, as does the importance of traceability. There are also responsibilities to meet the growing number of internationally agreed and ratified sustainability obligations.

Lastly, it is beholden on the **intergovernmental organizations and non-governmental sectors** to play a greater role in facilitating and implementing region-wide initiatives to: improve data collection and resource utilization; promote the harmonized uptake of better practices; and facilitate public-private partnership to implement and support LRFFT specific initiatives, such as stock assessment, education and outreach. This sector can also play a larger role in educating consumers so that they understand the need for more sustainable choices in seafood, and, if such options are available to them, opt to make them.

Finally, several emerging issues need to be understood and monitored, these include:

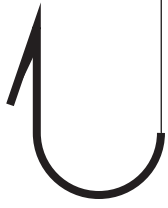
- increasing use and value of frozen and chilled fish, particularly groupers, in the Chinese seafood market;
- new species entering the live fish trade in quantity, such as several *Plectropomus* species and the Tomato Hind not previously heavily targeted;
- the growing interest in 'green' marketing in Hong Kong; and
- China's premise of eco-civilization in it's 13th 5-year plan, which has both national and international implications.

It is important to note that an increasing focus on food security, ecosystem (especially coral reef) health and threatened marine species, and the need to address these have direct implications for making progress with the LRFFT. It may be argued that, historically, interventions have not adequately considered the economic livelihood and food security

benefits nor implications of the trade in source countries, and have tended to focus more on conservation outcomes. Thus governments have not implemented approaches that can incentivise effective change.

In all, this report contains just over 50 recommendations under the four major categories, 23 of which are seen as priorities. While a number of these have been raised in numerous earlier reports, and remain worthy of reiterating, many are new and reflect both changing trends and new opportunities. It is hoped that they can provide a workable and practical framework for the way forwards and for smoother sailing. The key emphases of the major recommendation areas are:

- I. much greater attention to coastal fishery management and assessment in source countries for food security including monitoring and assessment, especially for threatened species and through vulnerable life history phases (like spawning aggregations), and also to ensure that economic benefits from exports to source countries are maximized through better trade controls, tax collection and value-adding;
- II. better control over the trade chain which calls for effective oversight of live fish carrier vessels and their activities, in both exporting and importing countries, updated and enforced regulation and more effective monitoring of the international live seafood trade. This is closely linked to a growing call for better traceability and calls for greatly improved compliance by air and sea traders regarding reporting and legal carriage of threatened species;
- III. major destination countries need to mainstream and actualize environmental thinking and actions into laws, policies, regulations and planning and outreach to its citizenry. These countries are already demonstrating their appreciation of global expectation, ranging from biodiversity planning in Hong Kong and reducing the city's footprint beyond its borders to China's touted Eco-Civilization vision and meeting international environmental obligations; and
- IV. a better informed consumer-base leading to an elevated awareness of and interest in sustainable consumption will be a critical driver of change back down the trade chain; this requires considerable media engagement and direct outreach and is a major role for the consumer-facing retail sector and non-government organisations and interests. Consumers must be encouraged to select responsibly or sustainably sourced seafood, to understand why this is important, and to ask for this when they have the opportunity to do so. ■



PREFACE

Hong Kong's free trade policy and extensive trade history and networks have enabled the city to become one of the world's largest trading economies serving the Asia-Pacific region and mainland China.¹ As such, it is home to the busiest cargo airport,² third-largest passenger airport and the fourth-largest deep-water port in the world. There are no barriers on free trade and no tariffs on imports or exports/re-exports. China's *One Belt One Road Initiative*³ further ensures that Hong Kong will continue to play an important role in international trade with China and other parts of the world.

In part facilitated by these dynamics, and in part due to its own consumption, considerable quantities of wildlife are regularly traded across Hong Kong's borders, through its port and airport facilities.⁴ As affluence continues to rise in the region, consumer demand for an increasing number of wildlife products, coupled with a trade that is often biologically unsustainable, is pushing local and regional ecosystems to their limits and increasing the risk of extinction for numerous marine and terrestrial species. One such example is the Live Reef Food Fish Trade (LRFFT). Hong Kong's ports and airport serve as the Asia region's LRFFT hub, including its role as a redistribution centre for these fishes, particularly into mainland China, by air and sea.

This report – *The Trade in Live Reef Food Fish – Going, Going, Gone* – provides an overview of the LRFFT in Asia primarily as it relates to Hong Kong as the major global trading hub for LRFF. While there is considerable literature highlighting the unsustainable nature of the LRFFT, as well as attempts at numerous interventions over the last two decades, little has changed regarding management of the trade. As a result, the outlook for the region's LRFFT based on wild-sourced resources looks grim, despite the increasing contribution by mariculture (fish farming) to supply live groupers and snappers.

In light of continued overfishing and the unregulated and unsustainable practices that persist today, this three-part report addresses the clear need to review and update existing information and gather new empirical data, in order to:

- Highlight the unsustainable nature of the wild fisheries that supply the trade;
- Demonstrate the high economic value of the trade despite its relatively low trade volumes;
- Underscore the challenge of managing threatened/endangered species in the trade, given the high value and low productivity of many of the species involved;
- Outline the special needs associated with, and implications of, a trade that selectively focuses on 'plate-sized' fish, some of which involve the grow-out of wild-caught juveniles (and hence fisheries focused on juveniles) to market (plate) sizes and, for larger species, specifically targets immature fish as these attain market size before becoming sexually mature;
- Clarify the role and implications of mariculture in supplying live reef fish;
- Emphasise the need for greatly improved monitoring and transparency of the international trade, and for reducing Illegal, Unregulated and Unreported (IUU) products, especially in relation to live fish carriers, including transportation by sea and air;
- Identify persistent information gaps and loopholes, and explore how these might be closed;
- Review the roles and power of different players along the length of the trade chain and those of countries/territories involved in the trade;
- Understand the economics and financial aspects with a focus on the unique nature of the LRFFT's value chain that contributes to the trade's current market characteristics;
- Analyse the legal framework in Hong Kong and identify the enforcement challenges that both contribute to illegality and facilitate the biologically unsustainable nature of the trade;
- Assess compliance/alignment of the trade with international controls or agreements (such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora [CITES], Convention on Biological Diversity [CBD], Sustainable Development Goals [SDGs], etc.) in relation to their contribution to sustainable practices in the LRFFT; and
- Explore the role of conspicuous consumption in the trade dynamics of particularly highly valued species and the implications of increasing rarity as populations decline from overfishing.

Ultimately, this report aims to answer the question as to why there has been so little progress in moving towards a more sustainable trade in LRFF over two decades and why it remains relatively poorly understood and inadequately managed or regulated. In doing so, the report identifies where the possible solutions and next steps may lie to increase incentives for management in source countries and with trade partners, and to ensure better oversight and control of the international trade in general. Clearly, more radical effective and innovative approaches are needed than have been applied to date to bring about the necessary changes.

The report is structured in three parts:

PART I: SWIMMING AGAINST THE TIDE provides a comprehensive overview of the trade since 1999 as it relates to Hong Kong, covering its nature, extent and composition, transport routes, and the requisite logistics, all of which have contributed to the sustainability challenges faced today. It further highlights possible and sometimes radical solutions throughout the supply chain, the need to modernise relevant legislation and greatly strengthen enforcement.

1	Prologue – Setting the Scene sets the scene by providing a brief overview of the LRFFT, its history and its standing today.
2	Approach and Methods describes the data collection methods and trader interviews used as a basis for the analyses and subsequent discussions.
3	Storm Clouds Gathering presents an up-to-date review and analysis of key issues including the nature of the resource and its demand, source countries and fishery status, and the value chain and economic drivers, which, collectively, contribute to the LRFFT being among the most unsustainable and opaque fish trades, of considerable value, globally. It examines trade volumes, values, patterns, routes and the nature of the supply chain, followed by Hong Kong’s role, the persistent criminality and prevalence of IUU within and across Hong Kong’s borders. The role of mariculture is explored as well as the history of interventions since 2000, which have evidently done little to resolve the problems.

PART II: SLIPPING THROUGH THE NET – POLICY AND REGULATIONS IN HONG KONG

describes Hong Kong laws, regulations and their enforcement, examines relevant international and comparative law and, through legal analysis, identifies gaps and regulatory loopholes and shortcomings.

1	Background provides the context to the legal framework governing the LRFFT.
2	Ordinance to Regulation to Policy describes and analyses Hong Kong’s regulatory framework. It covers the following regimes relevant to the LRFFT: customs, fish marketing, food safety, vessel licensing and conservation.
3	Issues Arising from Vessel Registration, Licensing and the Flag State System
4	Enforcement examines the nature of prosecutions, highlighting the responsible agencies and problems in enforcement.
5	International Law and Agreements introduces the numerous internal laws and agreements as they relate to the LRFFT and Hong Kong’s status as a signatory, participating entity.
6	Comparative Law takes a broader look at other jurisdictions and how they tackle some of the issues as regards regulation of the LRFFT.
7	Case Study – the Humphead Wrasse discusses the challenges in enforcing the regulatory regime in Hong Kong as it relates to the CITES-listed Humphead Wrasse.
8	Conclusion
9	Recommendations

PART III: NAVIGATING TOWARDS CALMER WATERS candidly discusses the factors and unique challenges facing the LRFFT highlighted in the preceding sections and suggests recommendations for the trade, the government and inter and non-governmental organisations, to move the trade towards biological and economic sustainability.

- 1 The Perfect Storm** synthesizes the findings of Parts I and II of the report and describes how the multiple elements contributing to the unsustainability of the trade have come together to create an untenable situation, analogous to a 'perfect storm'.
- 2 All Hands on Deck** sets out targeted recommendations for source countries, traders, retailers, the transport sector, the hospitality industry, importing and destination countries, and inter- and non-governmental organisations. It gives particular attention to improving the relevant regulatory framework in Hong Kong to enable and ensure a better-regulated and more transparent, accountable, biologically sustainable trade, as well as better compliance with international commitments and obligations.

The appendices to this report are presented in a separate volume: *The Trade in Live Reef Food Fish – Going, Going, Gone. Volume 2 Appendices*. ■

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PART I

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PROLOGUE

SETTING THE SCENE

Despite its importance as a food source, only 10% of global fish stocks can withstand increased fishing pressure

Overfishing is particularly acute in developing countries, where many coastal fisheries have experienced declines in health and productivity

1.1 Global Fish Stocks, Overexploited

Marine ecosystems support more than 660 million jobs globally and are a significant source of protein for over three billion people, providing at least 15% of their average animal protein intake,¹ particularly in developing countries. However, it is estimated that only 10% of global fish stocks for which we have information can withstand increased fishing pressure; the rest are either fully exploited (additional fish cannot be extracted without affecting the natural productivity of the fishery) or overexploited (need management and reduced fishing activity to avoid fish and shellfish populations declining further).²

The problem of overfishing is particularly acute in developing countries that rely on access to healthy coastal fisheries, and where fishery management is poorly developed or applied. While historically many coastal communities' catches were for local consumption (i.e. subsistence) and barter only, the growing transboundary trade in fish has transformed traditional economic systems in these developing countries.³ As a result, many coastal fisheries have experienced declines in health and productivity in recent decades, due to rising demand for these resources. This has resulted in threats to local communities and economies through loss of income and reduced food security.⁴ Increasingly, coastal fisheries are being used for commerce rather than subsistence due to the development of cash economies, which have increasingly replaced bartering and the exchange of goods.⁵ A major problem is with exporting these limited productivity resources without managing the resource.⁶ Since reef fishes continue to be extremely important for such communities for food security and livelihoods, access to and persistence of viable fish populations is essential.

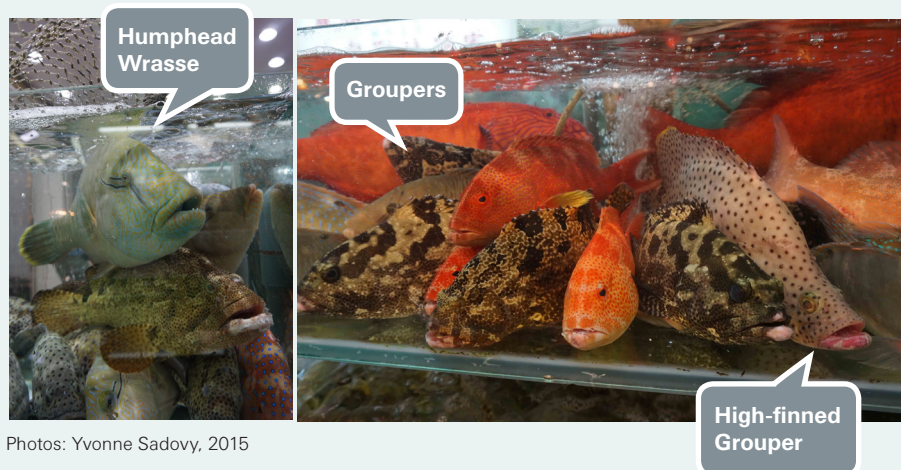
The LRRFT emerged to meet culturally driven and growing consumer demand for fresh seafood

The LRFFT depends on a range of reef fish species including groupers (the most valuable overall), wrasses, parrotfishes, snappers, pompanos, moray eels, emperors, stonefishes and sweetlips, which are traded alive and, for the most part, internationally. Most species from most countries that participate in this trade are wild-caught, although an increasing proportion by weight, albeit from a small number of medium and lower value species (mainly *E. fuscoguttatus* [Tiger Grouper], *E. coioides* [Green Grouper], *E. lanceolatus* [Giant Grouper] and the high-value *Cromileptes altivelis* [High-finned Grouper]), as well as several hybrids, is being supplied through mariculture (Section 3.5).

The trade in live reef fish emerged to meet culturally driven and growing consumer demand for seafood served as soon as possible after being killed. This practice is mainly associated with southern Chinese cuisine with groupers, a large component of the trade, the most highly regarded and popular species. Live groupers are at the luxury end of seafood consumption, and are often eaten at banquets or in high-end restaurants, sometimes associated with seafood tourism and frequently associated with the demonstration of social and economic status (Section 3.3). Although mariculture is helping to fill the growing demand-supply gap in terms of overall trade volume, many species, even if cultured, are still taken from the wild. Consumers often prefer wild-sourced fish, for which they are willing to pay a premium (Section 3.5.2). Additionally, many of the more highly preferred species cannot be commercially hatchery-produced at present.

FIGURE 1-1

LIVE HUMPHHEAD WRASSE AND LIVE GROUPERS, INCLUDING A HIGH-FINNED GROUPER, AWAITING SELECTION AT SEAFOOD RESTAURANTS IN HONG KONG



Photos: Yvonne Sadovy, 2015

Relentless demand for luxury seafood drives the overexploitation of several LRFF species

With the continued rapid economic development of mainland China, certain LRFF species, such as the Humphead (Napoleon) Wrasse, High-finned Grouper (Figure 1-1) and Leopard Coral grouper (Figure 1-2), continue to play an important role in China's consumption demands and demonstration of social status.⁷ The relentless

demand for luxury seafood continues to drive the overexploitation of several LRFF target species. In many places, appropriation (i.e. catch levels) is outstripping the naturally sustainable supply rates of target populations by between 2.5 to six times.^{8,9,10,11}

1.2 Largely Unregulated and Unquantified

The LRFFT represents a largely unregulated and unquantified fishery that operates broadly in the Indo-Pacific region, particularly in Southeast Asia.¹² With the exception of the live reef fish fishery in Queensland, Australia,¹³ and some localised research projects,^{14,15} there is a paucity of data overall on exploitation rates and actual or potentially sustainable catch levels of LRFF species. This is exacerbated by a lack of controls on, or effective management of, catch limits or fishing effort in most countries or fisheries where these species are targeted for this trade.

There is generally poor appreciation of the economic value and hence importance of the trade to source countries

Difficulties in data collection and management are, in part, consequences of a lack of scientific and management capacity or political will to manage. They also reflect poor appreciation of the economic value and hence importance of the trade to source countries, as well as low attention paid to coastal resources and small-scale fisheries (in comparison to offshore tuna fisheries, for instance).

Funding and manpower limitations, in addition to disparities and weaknesses in regulatory and enforcement regimes at federal (national), state (provincial) and local (municipal) levels of government, make management and tracking of the trade extremely difficult in exporting countries. Moreover, the combination of high profits downstream in the trade and aspirations for cash income in source countries creates a series of perverse incentives to continue fishing even if this leads to overfishing.

Despite the volumes and values traded, the fisheries that supply the LRFFT are poorly documented and catches are largely unreported

On the import side, while Hong Kong is the main trade hub for LRFF, only some of the trade data are collected down to species level. Much of the overall volume imported is not tracked at all, and some of the trade data are of doubtful quality (Section 3.8). Despite the volumes and values traded, the fisheries that supply the LRFFT are poorly documented and catches are largely unreported. Furthermore, some of the data are questionable, an example being records of Leopard Coralgroupers arriving from Austria and Switzerland (where the species does not naturally occur). Discrepancies have also been noted regarding export and import data reported by trading partners (Section 3.8.2).

In parts of the Philippines and Indonesia, stocks of the Leopard Coralgroupers are depleted to the extent that the trade is no longer considered economically viable

Making effective and informed management decisions is particularly challenging because estimates of stock conditions rely heavily on anecdotal information, inference, experience with production levels of target taxa elsewhere, sporadic and sparse fishery-dependent or underwater visual survey data, and the occasional modelling. However, regardless of the source, most of the available information

paints a similar picture: highly overexploited localised fisheries. For example, in parts of the Philippines and Indonesia, stocks of the Leopard Coralgrouper are depleted to the extent that the trade is no longer considered economically viable. In many areas, loss of adults has resulted in a fishery that relies largely on capture and grow-out of juveniles (Section 3.5). This practice has led to considerable concerns over the long-term viability of stocks in many places (e.g. Palawan).^{16,17}

Illegal, Unreported and Unregulated (IUU) fishing is a significant problem worldwide and a major driver of overexploitation. It generally arises from an absence of, or weaknesses in, governance and enforcement. This is compounded by considerable financial incentives to continue exploiting the stocks. IUU can have detrimental effects on seafood trade through its association with overfishing and by undermining market prices for legally caught fish.¹⁸

Illegal, Unreported and Unregulated fishing is commonplace in the LRFFT

In the case of the LRFFT, lack of oversight means that fish caught using illegal and/or destructive practices, such as fishing with cyanide, or species for which international trade should be controlled (such as species listed on CITES) can easily enter the market and quickly become difficult to trace or differentiate from legitimately traded fish. Destructive fishing methods, are not only damaging to the marine ecosystem but are also highly efficient and can help drive overfishing for species such as the Leopard Coralgrouper and Humphead Wrasse.¹⁹ Illicit catches in excess of quotas (such as those associated with exports of CITES-listed species) or those taken below the local 'legal' size limit are unlikely to be detected by authorities. Such fish may be caught and then grown-out in cages to sizes demanded by markets before export, or the fish may be smuggled over borders, both of which affect the accuracy and completeness of trade data.²⁰

FIGURE 1-2

LEOPARD CORALGROUPE FOR SALE IN ZHUHAI (2015);
GROUPE AND OTHER REEF FISHES FOR SALE IN HONG KONG (2014)



Photos: Yvonne Sadovy

1.3 Serial Depletions Mean Expanding to Ever Newer Fishing Grounds

The term '*roving bandits*' has been applied to LRFF (and other) businesses that take advantage of easy and voluminous catches when initiating a fishing and export operation in one area, but then move on when catch rates decline. It illustrates the little interest traders have in the long-term condition of resources in any one place.^{21,22} In some cases, they leave behind severely degraded fisheries and dislocated communities.^{23,24,25} For some communities, corruption and bribery have also accompanied the setup and operation of live fish trade enterprises, leaving behind bad legacies.^{26,27}

Serial depletions of, and growing demand for live reef fishes have led to the continual shifting of fishing grounds

Serial depletions of and growing demand for live reef fishes have led to the shifting of fishing grounds, from early source areas in the north of the South China Sea to waters ever further away from the trade centre, Hong Kong.^{28,29}

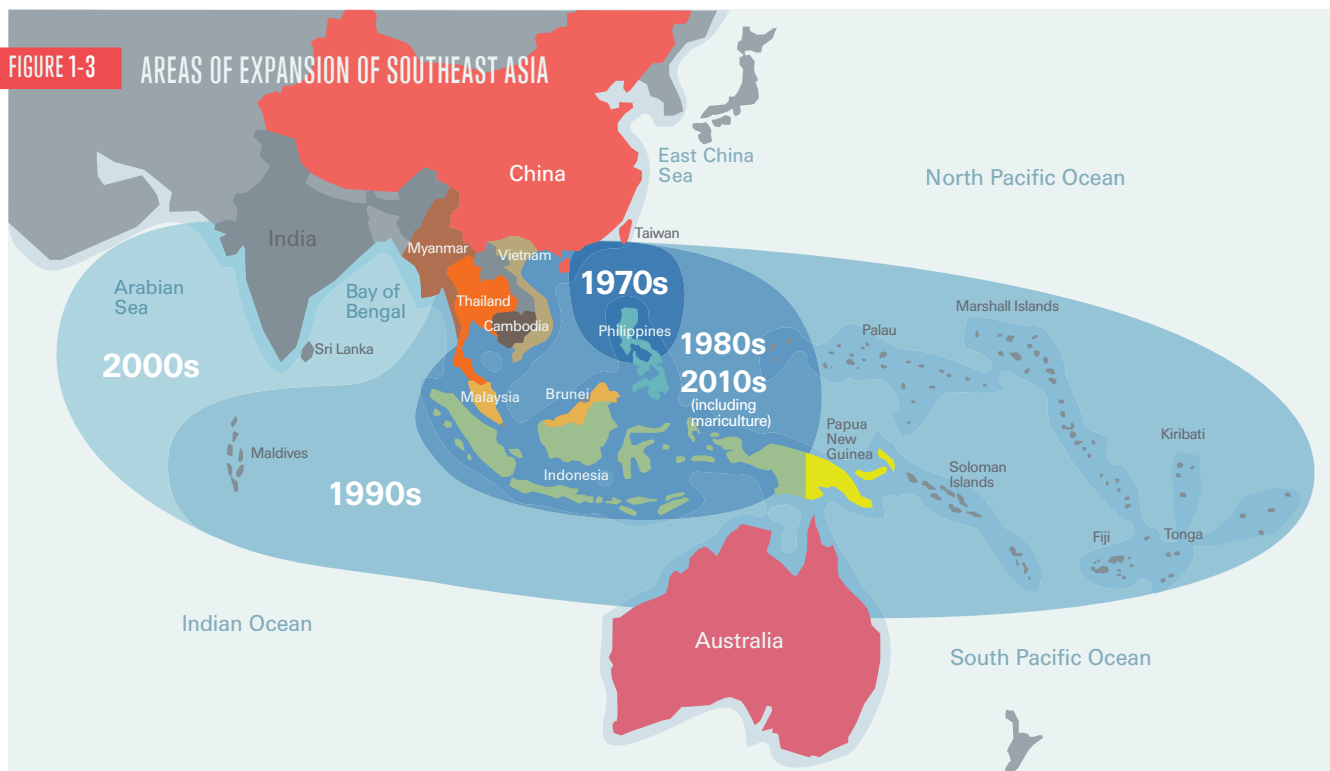
In the 1980s and 1990s, this expansion involved the sourcing of fish from countries in the Indo-west Pacific Ocean (Figure 1-3). While there is still occasional or sporadic sourcing from Pacific and Indian Ocean islands, a number of Pacific Island countries had opted out of the trade by the early 2000s (Box 1-1). In the 2000s, as former grounds became depleted, the focus shifted back to fish sources in Southeast Asia, with traders moving from west to east Indonesia, and from northern Palawan to the south of the Philippines, in order to seek newer, more productive fishing grounds.

BOX 1-1

LEOPARD CORALGROUPER, NEW FISHING GROUNDS

A good example of changing dynamics is the case of the Leopard Coralgroupers. This species was imported from numerous countries including Australia, Indonesia, Fiji, Palau, the Solomon Islands, the Maldives and the Philippines in the past, but now most imports only come from Indonesia, the Philippines and Australia (Section 3.6.2).

This species is highly favoured by consumers, and Hong Kong imports particularly from both Indonesia and the Philippines have continued to trend upward, partly due to ongoing sourcing into previously unfished or lightly fished waters within these countries. In addition, the loss of market-sized fish from Palawan waters has been followed by the capture and grow-out of juveniles, a practice known as 'capture-based aquaculture' (CBA) (Section 3.5). This example highlights the changes in practices and fishing grounds due to overfishing, and illustrates how such changing practices can obscure overfishing.



In Indonesia, for both the Leopard Coralgroup and Humphead Wrasse, species that are particularly valued in the trade, there has been movement of fishing effort eastwards into Sulawesi, Nusa Tenggara Timur, Maluku and West Papua from central Indonesia (formerly the main international export centre), due to areas becoming successively overfished.^{30,31}

In the Philippines, fishing efforts to supply the LRFFT have long focused on the highly productive Palawan Province. As the more northerly areas in Palawan became depleted, effort moved southward from Coron and Busuanga in the Calamianes Islands into the northern Palawan areas of Taytay and Roxas. The fishery in Palawan has continued to move south into Quezon, Aborlan and possibly beyond. Notably, the earlier fishing grounds in the Calamianes have been locally extirpated; almost all buying stations in the town of Coron on Busuanga have closed down. There is also illegal cross-border movement of fish from the southern Philippines (e.g. Balabac) into Malaysia in response to high demand, a desire for social development in the region and weak governance.^{32,33}

Elsewhere, operators who started businesses in western Pacific countries such as Palau, Fiji, Tonga, Kiribati, the Solomon Islands, etc., stayed in these countries for a few years before pulling out or being forced to cease operations. Such withdrawals were variously attributable to cost constraints, transport challenges, social problems, overfishing, illegal trade and insufficient resource bases.

While the trade no longer operates in many Pacific countries, there are ongoing reports of efforts to open up new operations for the Chinese market, most recently in French Polynesia where a Chinese-funded operation has been launched, allegedly to produce cultured fish, although intended species are unclear.^{34,35} In Chuuk, Federated States of Micronesia, there are concerns about the uncontrolled exploitation of grouper spawning aggregations for the LRFFT and the illegal take of Humphead Wrasses involving Asian fish carrier vessels.³⁶ Fishes are also being sourced sporadically from Tonga and potentially from other Pacific Islands in Polynesia.³⁷

Strong measures are needed to protect the remaining and less exploited fisheries

Given the scale, patterns and progression of these fisheries and trade movements, and notwithstanding the increasing contribution of aquaculture to the live trade for a few species, wild populations of certain species are clearly being overfished. Strong measures must be taken to protect the remaining and less exploited fisheries through better regulation, stronger enforcement, spatial management and measures such as minimum capture sizes, spawning season protection, catch quotas or moratoria. For those fisheries that have been highly overexploited, measures are needed to initiate the recovery of depleted stocks. Among the most important of these is a significant reduction in fishing effort (i.e. fewer fishermen/boats/lower catches), which is essential for arresting declines and enabling the start of a recovery. Reproduction must also be ensured by protecting more juveniles and allowing adults to spawn by applying appropriate spatial and temporal measures.

1.4 Roles of Mainland China and Hong Kong in the LRFFT

Mainland China and Hong Kong have a dominant role in the LRFFT

Mainland China and Hong Kong dominate the global trade in live groupers, the major species group in the LRFFT. China is also the world's biggest producer of groupers from aquaculture, and Hong Kong is the major import and transit hub for both farmed and wild-caught groupers. Both Hong Kong and mainland China are also prodigious consumers of groupers.

While both are prodigious consumers, China is the world's biggest producer of groupers from aquaculture and Hong Kong is the main trade hub

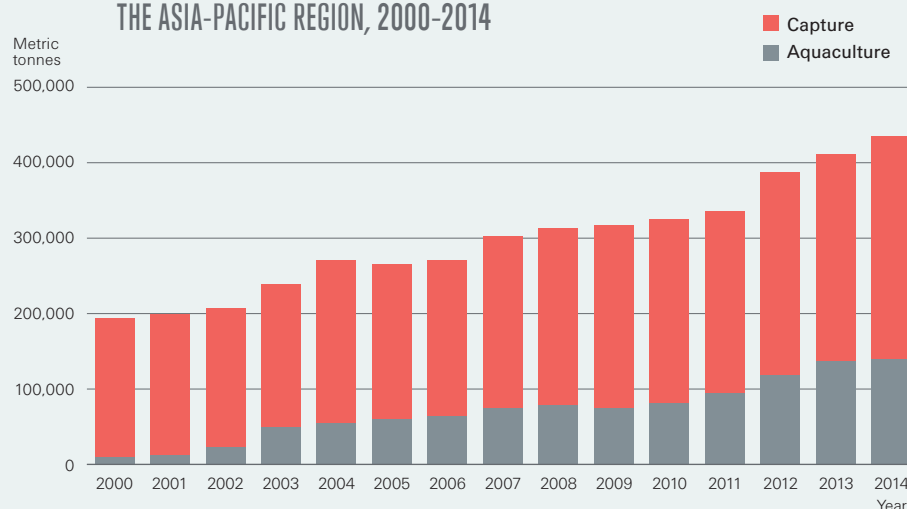
The proportion of the grouper trade that comprises cultured (i.e. farmed) groupers has increased substantially over the last decade (Figure 1-4), with farmed groupers being produced in large quantities in Taiwan, Indonesia, Malaysia and Thailand, and to a lesser extent in the Philippines and Australia. Wild groupers are mainly sourced from Indonesia, the Philippines, Malaysia and Australia.

According to the United Nations Food and Agriculture Organization (FAO), capture fisheries and mariculture of groupers from the Asia-Pacific reached almost 440,000 metric tonnes (MT) in 2014,³⁸ with 296,000 MT (68%) wild-caught and nearly 140,000 MT (32%) coming from aquaculture (Figure 1-4).³⁹ It is clear in this context that the 'live' aspect of grouper production and trade is small with most grouper production being for local/regional consumption. FAO figures indicate that between 2000 and 2014, capture and aquaculture production increased by 60% and 1,354% respectively, with the contribution of cultured fish to total grouper production rising from 5% to 32%, mainly due to significant production increases

in mainland China.⁴⁰ However, the grouper capture data must be treated with caution for two reasons. One, the high capture production reported by mainland China in recent years is likely to be an overestimate given that grouper stocks in China's domestic waters are in poor condition. Two, many developing countries do not report their capture fisheries, and most live captures are evidently not reported to the FAO.⁴¹

FIGURE 1-4

AQUACULTURE AND CAPTURE GROUPER PRODUCTION IN THE ASIA-PACIFIC REGION, 2000-2014



Note: Capture groupers recorded in this database are chilled/fresh/frozen and unlikely to include live groupers, which do not appear to be typically reported to the FAO. Also, the data from mainland China is problematic since wild grouper resources are unlikely to be as voluminous as reported (see text for citation).

Data source: FAO, 2016 <<http://www.fao.org/fishery/statistics/global-aquaculture-production/en>>

Nonetheless, despite large increases in the volume of farmed groupers, the capture component of the live grouper trade is clearly important for several reasons:

- i) Farmed groupers are not sufficient to meet overall demand and represent only a small proportion of grouper species that can be produced by hatcheries, hence most species are wild-caught.
- ii) The higher value (and hence more profitable) species continue to be those that are wild-caught.
- iii) Consumers continue to prefer wild-caught fish.
- iv) Fishers in source countries benefit from selling their wild-caught market-sized fish, or, in some places, from the grow-out of wild-caught juveniles.

Consumption of farmed LRFF products by volume is increasing, but the number of species that are exclusively wild-caught is much greater than those that are farmed

Despite lacking information and the over- and under-reporting of different components of the LRFFT, several trends are evident. Consumption of farmed LRFF products is clearly increasing in terms of volume (i.e. weight). These farmed species may account for as much as 80% in volume of the total LRFFT,⁴² but they comprise relatively few species (Section 3.5). Less than a third (i.e. 28%) of the top 25 grouper species in the trade are, or can be, regularly hatchery-

produced on a commercial scale.⁴³ Farmed species are mainly of lower-valued *Epinephelus* species (e.g. Green and Tiger Groupers and hybrid Sabah Grouper [Figure 1-5]). However, some of those species that are cultured (grown-out) are initially captured in the wild, rather than hatchery-produced (Section 3.5.2). In addition, the number of species that are exclusively wild-caught is much greater than those that are farmed.

FIGURE 1-5

HYBRID SABAH GROUPEr PRODUCED BY AQUACULTURE:
A DOMINANT SPECIES IN THE TRADE



Photo: Irwin Wong, Malaysia, 2013

By weight and value, the LRRFT of Southeast Asia is estimated at 20-25,000 MT annually

The LRRFT is highly lucrative with its wholesale value in excess of US\$1 billion

Overall, by weight and value, the LRRFT of Southeast Asia is estimated (according to non-FAO data) to be between 20,000 and 25,000 MT annually with a retail value in excess of US\$1 billion.⁴⁴ From our study, indications are that, due to under-reporting, levels may well exceed these values. This assertion is made in light of trends in imports to Hong Kong, suspected levels of under-reporting, growth in grouper aquaculture production, imports of live fish to Singapore and Taiwan, and the handling of live fish by Asian countries for the Chinese seafood sector. ■

APPROACH AND METHODS

The trade analysis focuses on the most popular LRFF consumed in Hong Kong and mainland China – groupers wrasses and parrotfishes

2.1 Data Sources and Approach

This analysis of the trade focuses primarily on live groupers and, to a lesser extent, on wrasses and parrotfishes, which in combination are the most popular LRFF consumed in Hong Kong and mainland China.⁴⁵ Groupers represent the great majority of the Hong Kong-centred LRFFT, while the highly valued Humphead Wrasse is important despite its low volumes because it is the only internationally protected species. In addition to a desktop literature review, three sources of trade data, on-site interviews and independent studies provided the basis for the analysis. Data were examined for anomalies, discrepancies and shortcomings prior to analyses to assess and improve their reliability. Sources of data included:

- i) C&SD Trade Data (1999–2016): official trade data compiled by the Hong Kong Special Administrative Region Government (HKSARG) Census and Statistics Department (C&SD);
- ii) AFCD Interview Data (1999–2016): import volumes estimated from information provided voluntarily by traders shipping live marine fish into Hong Kong aboard ships licensed as Hong Kong fishing vessels and Hong Kong fish carrier vessels (used to transport fish internationally); however, according to AFCD, most interviews were likely to be with Hong Kong fishing vessels (Class III (c)) (see Part II),⁴⁶
- iii) CITES Data (AFCD) (2006–2016): import and re-export data maintained by AFCD and submitted to the CITES Secretariat;

- iv) Interviews conducted *in situ* with traders in Hong Kong and selected countries within the 'Coral Triangle' region, where most of the LRFF are sourced and where suitable interviewees could be identified; and
- v) Personal communications with traders, government officials, biologists and others knowledgeable about the trade, and independent studies.

2.2 Census and Statistics Department (C&SD) Trade Data

In accordance with Hong Kong's Import and Export (Registration) Regulations (Cap 60E), importers/exporters of commodities into/out of Hong Kong must provide the Customs and Excise Department (C&ED) with an import/re-export declaration (Table 2-1, see also Part II). The data that can be extracted from such declarations include both volume and value figures for the commodity codes listed in Table 2-2 (see also Section 3.6 and Part II). Due to known uncertainties in the composition of the financial value data, however, these were not used for any analyses in this report.

C&SD maintains its statistical database, including trade statistics, to facilitate research, discussion, planning and decision-making within the government and the community.⁴⁷ According to the law, C&SD should be provided with information on all live fish entering and leaving Hong Kong by air as well as from those 'fishing' vessels not licensed in Hong Kong, through customs declaration forms. Locally licensed (Hong Kong) fishing vessels (HKL FV) have been exempted from submitting customs declarations since 1984 (Section 3.8). However, this exemption is also believed to have been applied to Hong Kong licensed fish carriers (HKL FC) at least until 2007,⁴⁸ even though they are not fishing vessels, resulting in underestimation of the LRFF by an unknown amount (Section 3.8).

The C&SD dataset used contains:

- Reported imports and re-exports of the LRFF volume (kg);
- Country of origin (source);
- Country of consignment (terminal prior to import from/re-export to Hong Kong); and
- Transportation mode of the import, export and re-exports being transported by air, land and sea, excluding HKL FV and an unknown portion of HKL FC (Section 3.7).

In 2015, there were 373 (foreign) Fish/Fish Processing Vessel arrivals in Hong Kong (Table 2-1).⁴⁹ While it is not known how many of these vessels carried LRFF, they will likely represent the majority of reported live fish imports in customs data.⁵⁰

The C&SD uses a commodity code system (the Hong Kong Harmonized System⁵¹) to specify species or species groups, including live seafood, to collate monthly import data on imports, exports and re-exports. The Harmonized System is adopted globally in providing import/export trade statistics. The data are publicly accessible and data used in this study cover the period 1999 to 2016.

TABLE 2-1 DEFINITION OF TRANSPORT MODES AND REPORTING REQUIREMENTS FOR VESSELS CARRYING LRFF INTO HONG KONG

Transport Mode	Definition	Reporting Requirements
Air	Transportation via aircraft. Also cargo forwarded by aircraft through on-board courier or courier companies.	Import/re-export declaration must be provided to C&SD.
Land	Transportation via vehicle with the registration number of the vehicle transporting goods into/out of Hong Kong.	Import/re-export declaration must be provided to C&SD.
Sea	Sea transport with all other countries/territories excluding water transport within the river trade:	
	Transport via HKLFC: Class III (a)* Fish Carriers (category in effect as of 2007 – there were 31 such vessels in 2016)	Import/re-export declaration must be provided to C&SD**.
	Transport via HKLFV: Class III (c)* Fishing Vessels (1,997 in 2016)	Legally exempted from reporting to Customs and must land their dead catches at the Fish Marketing Organization facilities, but this exemption does not apply in the case of live fish.
	Transport via vessels not licensed/registered in Hong Kong (foreign): Fishing/Fish Processing Vessels (373 ocean vessel arrivals in 2015)	Import/re-export declaration must be provided to C&SD.
Others	Customs control point where personal baggage is cleared. Also assigned by the China Travel Service (Cargo) Hong Kong Limited to hand carriers. River transport which includes transport by vessels in waters in the vicinity of Hong Kong, the Pearl River and other inland waterways in Guangdong Province and Guangxi Autonomous Region which are accessible from waters in the vicinity of Hong Kong.	

Note:

*Classification according to Cap 548D MERCHANT SHIPPING (LOCAL VESSELS) (CERTIFICATION AND LICENSING) REGULATION: Schedule 1. Class III Vessels are defined as :

- (a) Fish Carriers
- (b) Fishing Sampan
- (c) Fishing Vessel
- (d) Outboard Open Sampan

** It is assumed that most HKLFC do not report their LRFF cargoes to C&SD (Section 3.8).

Source: Census and Statistics Department and Marine Department,⁵² Hong Kong Government and Clarke, 2004⁵³

The HS codes used in Hong Kong to record imports and exports are one of the most detailed among comparable countries

The HS codes used in Hong Kong for the types of fish in the concerned trade is one of the most detailed among comparable countries. There are shortcomings to this dataset, however. The code relating to '**Other Groupers**' (0301 9929), for example, includes a range of species, the composition of which has varied over time (Table 2-2). Hence, any information on landings related to this code does not extend to the species level.

TABLE 2-2 SPECIES AND HONG KONG COMMODITY CODES MENTIONED IN THIS REPORT

HKHS / Commodity Code	Commodity Description (Shown by Common Product Name)
0301 9914	Green Grouper fry (<i>Epinephelus coioides</i>), live
0301 9920	Hybrid Groupers (e.g. Sabah Grouper), live
0301 9921	Giant Grouper (<i>Epinephelus lanceolatus</i>), live
0301 9922	High-finned Grouper (<i>Cromileptes altivelis</i>), live
0301 9924	Green Grouper (<i>Epinephelus coioides</i>), live
0301 9925	Tiger Grouper (<i>Epinephelus fuscoguttatus</i>), live
0301 9926	Flowery Grouper (<i>Epinephelus polyphekadion</i>), live
0301 9927	Leopard Coralgrouper (<i>Plectropomus leopardus</i>), live
0301 9928	Squaretail Coralgrouper (<i>Plectropomus areolatus</i>), live
0301 9929	Groupers, NESOI , live (denoted as ' Other Groupers ' in this report) The 'Other Groupers' most regularly reported in the footnotes to this category are the Speckled Blue Grouper (<i>Epinephelus cyanopodus</i>), Brown-spotted Grouper (<i>Epinephelus bleekeri</i>), Roving Spotted Grouper (<i>Plectropomus pessuliferus</i>) and Bar-cheeked (or Barred-cheek) Spotted Grouper (<i>Plectropomus maculatus</i>). The Sabah Grouper was part of the list from 2014 until the introduction of its own category in 2016.
0301 9931	Humphead Wrasse (<i>Cheilinus undulatus</i>), live
0301 9939	Wrasses and parrotfishes , other than the Humphead Wrasse, live Since 1999, AFCD has included the 'Green Wrasse or Blackspot Tuskfish, (<i>Choerodon schoenleinii</i>) and Blue Barred Parrotfish (<i>Scarus ghobban</i>), etc.' Note the implication that an unknown number of other wrasse and parrotfish species may also have been included.
0301 9999	Marine fish, NESOI , (not elsewhere specified or included) live This includes the Big eye, Russell's snapper, Rabbit fish, Lizard fish, Fish, live - other marine, Catfish, excluding fry, live, Golden thread, live, Horse head, live, Flagfish, live, Snappers - excluding fry, other, live, Monkfish, live, Breams, fishes - live, sea, Sea bass - excluding fry, live. For the purposes of this report, the Mangrove Red Snapper (<i>Lutjanus argentimaculatus</i>), live (0301 9951) has also been included as part of Marine fish NESOI, as have Snooks and Basses (0301 9941).

Note: HKHS – Hong Kong Harmonized Commodity Description and Coding System

Source: C&ED, 2016⁵⁴

The code for ‘**Marine fish, NESOI, live**’ (0301 9999) is also considered to denote reef fishes since these are the only type of marine fish shipped live for food into Hong Kong. However, as the full composition of species included in this code is not known, this category is only included in the report to illustrate the total volume of reported LRFF and is not included in the subsequent species and country analyses, which focus only on the groupers, wrasses and parrotfishes identified in Table 2-2. The ‘Marine fish, NESOI, live’ species includes red and two-spot red snapper, crescent sweetlips, pompano and seabream, amongst other species.

2.3 Agriculture, Fisheries and Conservation Department (AFCD) Trade Data

As noted above, import data for HKLFV are not available in the C&SD database, and there are concerns as to the volume of imports from HKLFC that has been and is being reported in customs data. It is believed that when the exemption was introduced, fish carriers were treated as fishing vessels and thus were exempted from providing import/re-export declarations to C&SD. In 2007, however, carrier vessels [Class III (a)] were separated from fishing vessels [Class III (c)] according to Marine Department vessel classification. The carriers, Class III (a) vessels, are not exempted from providing customs data although the extent to which these are reported to the C&SD is unknown (Section 3.8).

AFCD has collected information on imports from live fish traders via voluntary telephone interviews and faxed responses since 1999

Due to the exemption and subsequent concerns about data collection from HKLFV,⁵⁵ AFCD has collected information on imports from an unspecified subset of live fish traders via voluntary telephone interviews and faxed responses since 1999. These provide some statistics on species and the volume of LRFF traded by these vessels. In practice, AFCD collects this data for the same list of live groupers, wrasses and parrotfishes as the C&SD dataset, and provides some additional details on species groupings (Table 2-2). However, unlike the C&SD data, details of country of origin by species were not available until 2006.

There are major issues associated with AFCD’s HKLFV dataset, and hence shortcomings of data analysis based on this data collection. These are detailed in Section 3.8.2, and in short include:

- i) **Lack of knowledge of the total number of HKLFV or businesses transporting live fish into Hong Kong.** According to the Marine Department, in 2016, there were 31 fish carriers (whose cargo should be reported to C&SD) and 1,997 fishing vessels licensed in Hong Kong.⁵⁶ It is unknown how many of these reported live fish imports to either AFCD or to CS&D.
- ii) **The percent coverage of HKLFV imports by AFCD’s trader interviews is unknown.**
- iii) **Compatibility of AFCD and C&SD datasets.** While the AFCD dataset is compatible with C&SD’s data in terms of species categories over the study period (1999–2016), information on the countries of origin by species imported by HKLFV has only been collected by the AFCD since 2006. It also only includes six countries with the remainder categorised under ‘Other’.

2.4 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Data

A second dataset maintained by AFCD and used in this report is the CITES-listed fauna data

A second dataset maintained by AFCD and used in this report is the CITES-listed data, which include import and re-export statistics for the Humphead Wrasse from 2006.

For any species listed under CITES,⁵⁷ additional import procedures and documentation/records are required by law to ensure that trade volumes are regulated and tracked. Under CITES, importers of live Humphead Wrasses (which was added to CITES Appendix II in 2004 and came into force in Hong Kong in 2006) must request an import licence from AFCD for each shipment, based on the export permit obtained from exporting countries.⁵⁸ For restaurants and other outlets selling live Humphead Wrasses, Hong Kong also requires a possession licence, which specifies the total number of Humphead Wrasses that can be kept and sold by the outlet within the duration of the permit (five years). As a condition of the permit it must be publicly visible,⁵⁹ and all sales should be available in transaction records for inspection by AFCD. Lastly, if the live Humphead Wrasse is to be re-exported from Hong Kong, a re-export permit is required.⁶⁰ All of the import/export data should be submitted to the CITES trade database, which is publicly available.⁶¹

Every import permit issued by AFCD should accompany the cargo of live Humphead Wrasses into Hong Kong. For each declared import, AFCD personnel are summoned by C&ED to inspect the cargo at the declared landing port/terminal,^{62,63} a process during which import information is recorded by AFCD. C&ED does not generally carry out random checks for undeclared fish, and cases of confiscations in the past are largely based on received '*intelligence*' and the use of risk criteria (Section 3.12.4). There have, however, been confiscations of Humphead Wrasses on import, e.g. nine Humphead Wrasses were confiscated between 2006 and 2008.⁶⁴ However, there has been no public release of this information. Recently, seizures have been occurring post-importation. From December 2015 to September 2016, AFCD made eight seizures involving 21 Humphead Wrasses at local restaurants/live seafood stalls. Though half of these are still under investigation, four have resulted in conviction and fines ranging from HK\$4,000 to 20,000.⁶⁵

The import and re-export volumes of the Humphead Wrasse used for this study were derived from a combination of C&SD data, AFCD data and from CITES records collected by AFCD since 2006. Due to the inconsistency in data metrics (C&SD data are recorded in metric tonnes [MT] while AFCD's CITES data are recorded in 'tails' or number of individuals), the following analysis is based on comparisons between:

- C&SD (customs data) and AFCD (HKLFV data) from 1999 to 2016; and
- CITES records reported by AFCD from 2006 to 2016.

The incompatibilities in data metrics present a challenge when comparisons are made across the two datasets. However, data available on the typical retail size of the species in Hong Kong can be used to make the required conversions.⁶⁶

2.5 Data Accuracy and Caveat

Despite the shortcomings identified, C&SD and AFCD datasets combined present the best available datasets for analyses of the regional LRFFT in terms of imports into Hong Kong from all exporting countries (Table 2-3), albeit an underestimation because AFCD only collects a sample of the trade data. Despite data issues, the considerable length of the data series means that trends are generally considered indicative of historical trade patterns, assuming there are no major changes in the main suppliers to the trade (the Philippines, Indonesia, Malaysia and Australia) or in the collection of import data.^{67,68} Anomalies and discrepancies with data from other countries (i.e. comparing export data with Hong Kong's import data) (Section 3.8.2) are apparent, however, and checks on data from these countries (i.e. between import and export records) were undertaken when possible to identify any inconsistencies prior to detailed analysis.

Accounting for Anomalies

As previously mentioned, several countries were incorrectly reported as sources of live groupers in the datasets. Examples include Leopard Coralgrouper from Canada and Puerto Rico, Flowery Grouper from France, and Green Grouper from the United Kingdom. Assumed incorrect provenance was indicated for countries/territories:

- i) that fall outside the natural ranges of these species;
- ii) that were, to our knowledge, not involved in the trade over the period being considered; and
- iii) that have no record of farming or transshipping these species.

Anomalous data represent a small proportion (just over 0.4%) of total volumes of species in the dataset

The anomalous data represent a small proportion (just over 0.4%) of total volumes of species in the dataset, and have been included in the analyses in relation to volumes, discounting incorrect provenance. In terms of possible erroneous labelling of grouper species, the basic assumption is that the commonly traded groupers are generally distinctive, so it is unlikely that traders misidentify them as a non-grouper. Further, given that Hong Kong does not levy import tariffs, there appear to be no incentives for deliberate misreporting, with the possible exemption of the Humphead Wrasse because of its protected status and additional paperwork requirements (Section 3.6.11, see also Part II).

TABLE 2-3 SUMMARY OF DATA USED IN THIS STUDY (C&SD AND AFCD [HKLFV], 2017)

Data Description	Source	Year							
		99	00	01	02	03	04	05	06-16
Total volume (import and re-export), by species and country of origin	C&SD	●	●	●	●	●	●	●	●
Breakdown of volume by mode of transportation (excl. HKLFV), by species	C&SD	Not collected in this study			●	●	●	●	●
Breakdown of volume by country of origin by species, (HKLFV)	AFCD	Not available – source country data only collected by AFCD from 2006							
Breakdown of volume by species, by AFCD (HK fishing vessel)	AFCD	●	●	●	●	●	●	●	●
CITES import and re-export record of live Humphead Wrasse (tails)	AFCD	Not available – Humphead Wrasse only listed under CITES in December 2006							

Caveat

In light of the above data shortcomings, we attach the following caveat to our analyses:

As the descriptive analysis, figures and tables presented rely solely on the data sourced from AFCD and C&SD, there are recognised errors. This is especially so for AFCD data on LRFF carried by HKLFC and HKLFV, where underestimation of volumes is known to be occurring and could be considerable. Regardless of the accuracy of the data, our assumption is that if there are errors in the data as presented, then these errors are likely to be systematic and pertain mainly to volumes, without masking general trends or bias for certain species (other than the Humphead Wrasse).

Overall, the dataset used in the following analyses will represent the minimum quantities of live fish traded since all indications point to import data being an underestimate of the actual trade volumes. Expert knowledge, judgment and independent studies were also used, when available or necessary, to clarify information, and such use is indicated.

Finally, it should be noted that a primary interest of this analysis is with the unsustainable use of wild reef fishes. This has two implications for the focus of our study. First, despite a range of reef fishes being included in the trade, we ultimately focus on groupers, wrasses and parrotfishes including those most threatened by wild capture as can be determined by trade trends (note that information is typically not available on fish population trends in the wild). Second, due to the lack of available data we can say little about the growing trade in chilled/fresh/frozen fishes of the same species as those traded live. This trading in dead fishes, which is now attracting high prices in the Chinese seafood market, will also affect the status of the capture fisheries in question and clearly needs to be considered in future natural resource analyses and data collection efforts.

On-site interviews with 29 traders were conducted

2.6 Trader Interviews

In 2014, in-depth, on-site interviews with 29 traders were conducted as part of the current study, including LRFF-related exporters from two of the major source countries for LRFF, i.e. the Philippines and Malaysia. Interviewees in Hong Kong were identified based on discussions with the Hong Kong Chamber of Seafood Merchants Ltd. (HKCSM). In the Philippines and Malaysia, they were identified based upon the government's recommendation regarding registered traders.

The interviews were standardised using a tailored questionnaire (Appendix A-V). However, Indonesia, a major LRFF source country, was not included in the on-site surveys due to a lack of trader contacts and government assistance to locate traders.^{69,70}

More than 88% of the interviewees had at least seven years of experience in the LRFF-related trade, and more than 50% had at least 18 years of experience. They included:

- Four local LRFF traders in Palawan, Philippines, transferring LRFF to Manila for international trade;
- Four LRFF exporters in Manila, Philippines, packaging and exporting fish to international markets;
- Five LRFF importers in Hong Kong, including fish farmers and wholesalers, i.e. Chairman and Vice-Chairman from the HKCSM; and
- Sixteen LRFF-related traders, including fish-farmers, exporters and cargo- and fish-packaging agents in Sabah State, Malaysia.

FIGURE 2-1 LRFF READY FOR PACKING AND SHIPPING IN THE PHILIPPINES



Photos: Stan Shea, 2014

The interviews were conducted in English, Mandarin or Cantonese between April and July 2014 according to the ethnicity or preference of LRFF traders. All interviews conducted were one-on-one, each lasting one to two hours. During the interviews, questions deviated minimally from the original questionnaire. After the interview, transportation means, holding facilities, packing/loading procedures, etc. were visited and photographed where possible (Figures 2-1 & 2-2).

FIGURE 2-2

BOXED LRFF AT ROXAS DOMESTIC AIRPORT, READY TO BE LOADED ONTO A SMALL PLANE DESTINED FOR MANILA



Photo: Stan Shea, Philippines, 2014

STORM CLOUDS GATHERING

There have been concerns about the sustainability of the LRFFT for more than two decades

3.1 Introduction

Concerns about the sustainability of the LRFFT were first raised over twenty years ago and continue to be raised today, despite multiple interventions.⁷¹ The following section presents the findings of extensive literature reviews and data analyses spanning almost two decades. It highlights key issues that contribute to the unsustainable nature of the LRFFT as practised today, which broadly fall into the following categories:

- The nature of the resource
- The nature of the product and its consumption
- Levels of exploitation and impacts
- The role of mariculture
- Source countries and species
- Transport modes
- Reporting, monitoring and enforcement
- Trade dynamics, emerging and future trends
- The supply chains
- The value chain
- Hong Kong's role and reluctance to act
- Interventions to date

A number of key factors collectively contribute to what is now an untenable situation for the LRFFT

While many of the specific issues or individual characteristics associated with the LRFFT may, on their own, put pressure on a resource that is naturally susceptible to overfishing, collectively they have contributed to what appears to be an untenable situation, hence the analogy of 'swimming against the tide' and ultimately, a

‘perfect storm’. This section, supplemented by detailed Appendices, provides a profile of the trade and sets the stage for identifying possible solutions, practical changes and opportunities for better practices.

3.2 The Nature of the Resource: Vulnerable to Overexploitation

3.2.1 Several Species in the Trade are Threatened or Near-Threatened

As noted, the groupers (family *Epinephelidae*, formerly *Serranidae*) make up the majority of volume of fish traded, with a few other species from the snapper (*Lutjanidae*) and wrasse (*Labridae*) families as well as other reef fishes comprising a much smaller proportion.

BOX 3-1

FISH SPECIES COMMONLY OBSERVED IN THE RETAIL TRADE IN HONG KONG

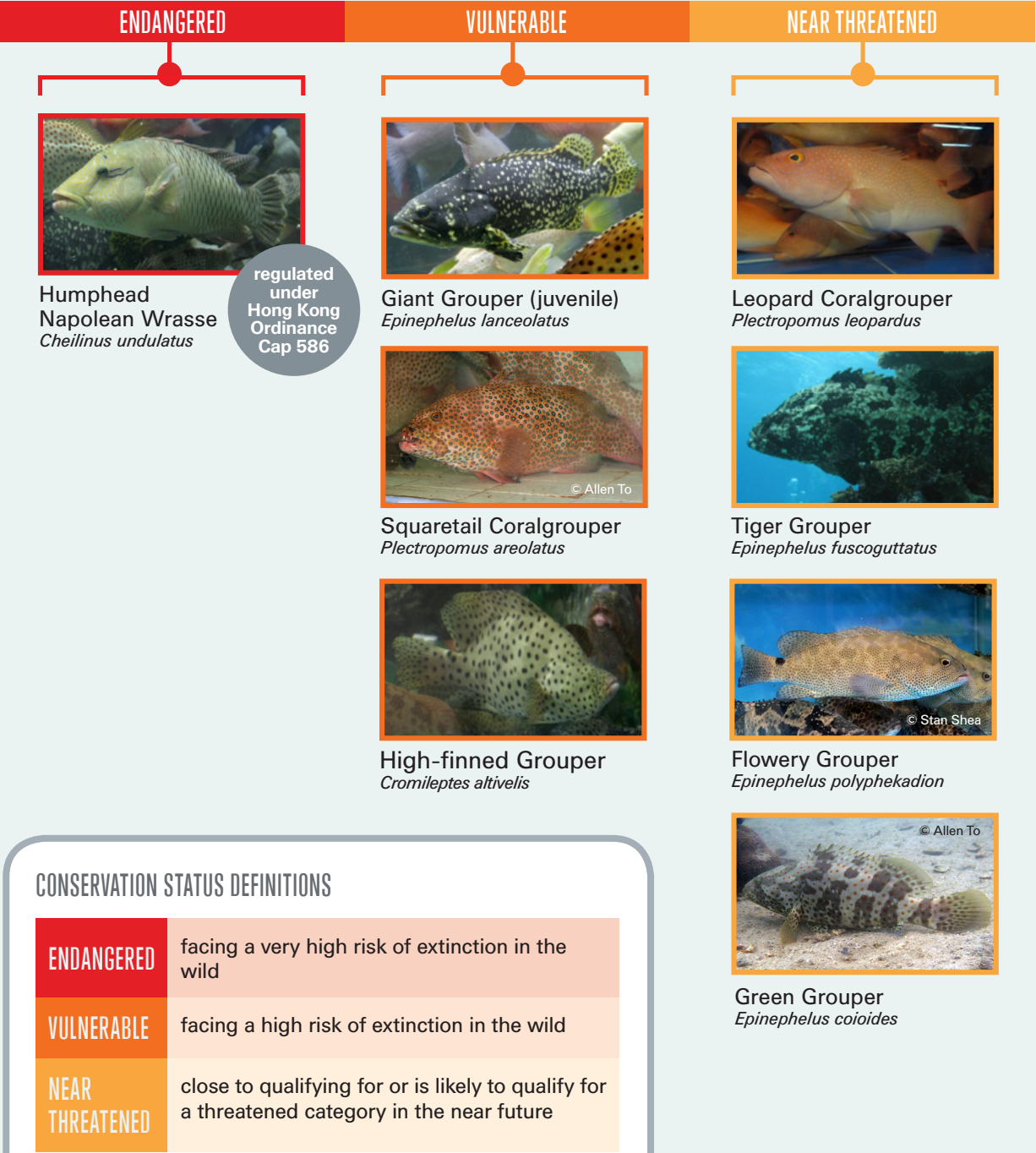
<i>Epinephelus corallicola</i>	Coral Grouper
<i>Epinephelus polyphkadion</i>	Flowery Grouper
<i>Epinephelus coioides</i>	Green Grouper
<i>Epinephelus merra</i>	Honeycomb Grouper
<i>Epinephelus fuscoguttatus</i>	Tiger Grouper
<i>Epinephelus fuscoguttatus</i> x <i>E. lanceolatus</i>	Sabah Hybrid
<i>Plectropomus leopardus</i>	Leopard Coralgrouper
<i>Plectropomus maculatus</i>	Spotted Coralgrouper
<i>Plectropomus areolatus</i>	Squaretail Coralgrouper
<i>Cephalopholis boenak</i>	Chocolate Hind
<i>Cephalopholis sonnerati</i>	Tomato Hind
<i>Cheilinus undulatus</i>	Humphead Wrasse

Source: Lam, 2013; Felix Chan, ongoing study, University of Hong Kong

Surveys conducted in 2012/3 and 2017 noted that about 12 species, including one hybrid species, comprised >75% of all groupers on sale in the wet markets and restaurants of Hong Kong’s retail seafood sector (Box 3-1).

In the late 1990s, overexploitation became a concern with particular attention paid to the use of damaging fishing practices, especially cyanide which was first heeded in the mid-to-late 1990s.^{72,73} Since then overfishing has intensified, concurrently drawing attention to worsening situations in other areas. Traded volumes, consumer preferences, fishing practices, as well as threats to wild populations posed by fishing pressure vary greatly among species and locations.^{74,75}

FIGURE 3-1 CONSERVATION STATUS OF KEY LIVE REEF FISH SPECIES IN THE LRFTT ACCORDING TO THE IUCN RED LIST



CONSERVATION STATUS DEFINITIONS

ENDANGERED	facing a very high risk of extinction in the wild
VULNERABLE	facing a high risk of extinction in the wild
NEAR THREATENED	close to qualifying for or is likely to qualify for a threatened category in the near future

Source: The IUCN Red List of Threatened Species. Version 3.1, <http://www.iucnredlist.org>

Conservation status according to IUCN
All photos from IUCN Red List except specifically marked

Source: The IUCN Red List of Threatened Species. Version 3.1, <http://www.iucnredlist.org>

By 2016, 16% of groupers (identifiable to species level) imported into Hong Kong were categorised as Vulnerable and 84% as Near Threatened

The Humphead Wrasse is of particular concern because of its biology, value and demand

Many species targeted for the LRFFT are long-lived, require many years to reach sexual maturity, change sex as adults and spawn in aggregations making them biologically vulnerable to over-exploitation

Overexploitation is exacerbated by the market preference for smaller fish, driving the capture of juveniles before reproduction has occurred

Today, several grouper species predominant in the trade are considered Threatened or Near Threatened according to the IUCN Red List (Figure 3-1).⁷⁶ As of 2016, among those groupers identifiable to species level imported into Hong Kong, 16% were in the Vulnerable category and 84% in the Near Threatened category. Although low in volume, the trade in Humphead Wrasse is of particular concern. Already categorised as Endangered, this species is not only particularly susceptible to overfishing due to its biology, but is also one of the most highly valued of all species in the trade. The Humphead Wrasse is the only commercial reef food fish species listed on CITES and hence the only species afforded some degree of protection in relation to its international trade.

Overall, it is clear that most of these species cannot withstand sustained heavy fishing pressure without better management, but few species listed here are managed. According to an ongoing reassessment of the conservation status of all groupers (these must be done at least once every decade), the situation has worsened, especially for the Flowery Grouper, Tiger Grouper and Squaretail Coralgrouper.^{77,78}

3.2.2 Species Biologically Vulnerable to Overexploitation

Many species targeted for the LRFFT are long-lived and require many years to reach sexual maturity (e.g. four years for the Flowery Grouper, more than five years for the Humphead Wrasse, six years for the Tiger Grouper). This means that they need to survive long enough to reach reproductive age and have the opportunity to breed before being caught if they are to contribute to the next generation and sustain their populations.^{79,80,81}

A major challenge facing the LRFFT is the 'market' preference for a certain size of fish, leading to many fish being taken before reaching sexual maturation. This size-selectivity typically targets fish in the size range of 500-1,000g ('plate-sized') because such size is convenient for serving whole to families or in banquet settings. This also means that larger species that typically mature at larger sizes, such as the Tiger Grouper and Humphead Wrasse, are often targeted while still juveniles, and are therefore deprived of an opportunity to reproduce.⁸² Such practice makes these species particularly vulnerable to 'recruitment' overfishing, whereby reproduction rates become too low to sustain the population.

Other challenges to sustainable management stem from specific biological characteristics of the species, particularly regarding their modes of reproduction. For example, several fishes change their sex as adults, with juveniles maturing first as females⁸³ and then subsequently switching to become male (e.g. the Leopard Coralgrouper, Tiger Grouper, etc.).^{84,85,86} Such species can be particularly susceptible to the above-mentioned size-selective fishing whereby, depending on the maximum size of the species concerned and the typical male and female sizes, fishers could focus more on a single sex, i.e. predominantly males or predominantly females depending on growth rates and maturation schedules (Box 3-2), with the resultant sex skew compromising future reproduction.

BOX 3-2**HUMPHEAD WRASSE POPULATIONS THREATENED BY HIGH DEMAND FOR 'PLATE-SIZE' FISH**

Large wherever fished, adult male Humphead Wrasses (>80 cm) are now very uncommon in the wild, since most catches for the live seafood trade are juveniles. This has raised concerns about the future of wild populations because there are so few fish (males) of sizes above 80 cm. The species matures at about 35–45 cm in total length, at the larger end of its preferred 'market size', i.e. 'plate-size' (see above) (Figure 3-4). At this size all fishes are females. These females must grow larger to become males through a process of sex change.

Some LRFF species, notably the Flowery Grouper, Tiger Grouper and Squaretail Coralgroup, also reproduce in large spawning aggregations (Figure 3-2), some of which only form briefly each year at highly predictable locations and times.

FIGURE 3-2**FLOWERY GROUPER AT A PROTECTED SPAWNING AGGREGATION SITE OFF A CENTRAL PACIFIC ATOLL**

Photo: Yvonne Sadovy, 2014

In extreme cases, localised reef fish populations have been extirpated as fishers have targeted spawning aggregations

These aggregations are often targeted by local fishers familiar with aggregation patterns at these sites. While this may be highly efficient in terms of catch, it can be very easy to decimate these essential breeding opportunities. If uncontrolled, such practices can remove too many reproductively active fish, disrupt spawning⁸⁷ and severely undermine the ability of targeted fish populations to reproduce and regenerate numbers lost to fishing. In extreme cases, localised reef fish populations have been extirpated because of targeted aggregation fishing.⁸⁸

Such species require especial attention because if particularly vulnerable aspects of life history are not taken into account in the management of the fishery, it can lead to population declines.⁸⁹

3.3 The Nature of the Product: the Rise of Conspicuous Consumption

LRFF appeals to consumers because there is a greater guarantee of freshness

LRFF appeals to consumers because there is a greater guarantee of freshness than with chilled/fresh/frozen fishes, although in the Chinese seafood sector, chilled/fresh/frozen fishes are increasingly consumed and garnering higher prices (Section 3.10.3). Surveys indicate that freshness, taste and texture are factors that add value and most affect consumers' choice of food.^{90,91} Wild fishes are also considered to be healthier,⁹² a matter of much concern in mainland China today where food safety and distrust in food supply systems is a constant issue.⁹³ In addition to texture, taste and quality, a consumer survey conducted in 2000 indicated that 40% of the general public in Hong Kong preferred wild-caught to cultured LRFF, while 23% held the opposite view, mainly due to cheaper prices and lower risks of ciguatera poisoning (see Part II, Section 2.4.3) in cultured fish.⁹⁴ With the passage of time, however, anecdotal evidence points to a softening of this stance and a greater acceptance of cultured live fish species among consumers.^{95,96}

LRFF is considered a luxury with some species costing hundreds of US dollars per kilogram

With prices for some LRFF species in the hundreds of US dollars per kilogram (Box 3-3, Section 3.11), LRFF is considered a luxury seafood commodity, along with items such as shark fin, sea cucumber and increasingly, fish maw.⁹⁷ It is clearly a form of conspicuous consumption, a socially recognised notion that links consumption with status and display of wealth.⁹⁸

BOX 3-3 HIGH PRICES FOR LRFF

High-value species include the Humphead Wrasse, High-finned Grouper and Leopard Coralgrouper, with consumers in mainland China often paying significantly higher prices than in Hong Kong.

Top retail prices recorded to date are for the High-finned Grouper (*Cromileptes altivelis*) and Humphead Wrasse at up to US\$600/kg on occasion (mainland prices), with the commonly consumed wild-caught Leopard Coralgrouper sometimes exceeding US\$300 at retail. Hatchery-raised Leopard Coralgrouper do not get such a high price because they do not develop the desired red colour (Figure 3-3).

Source: Fabinyi, M. and Liu, N. (2014). 'Social trust and luxury seafood banquets in contemporary Beijing', *Asian Anthropology*, vol. 13, no. 2, pp.92-105.

China's rapid economic growth and increasing affluence have driven demand for LRFF to new heights

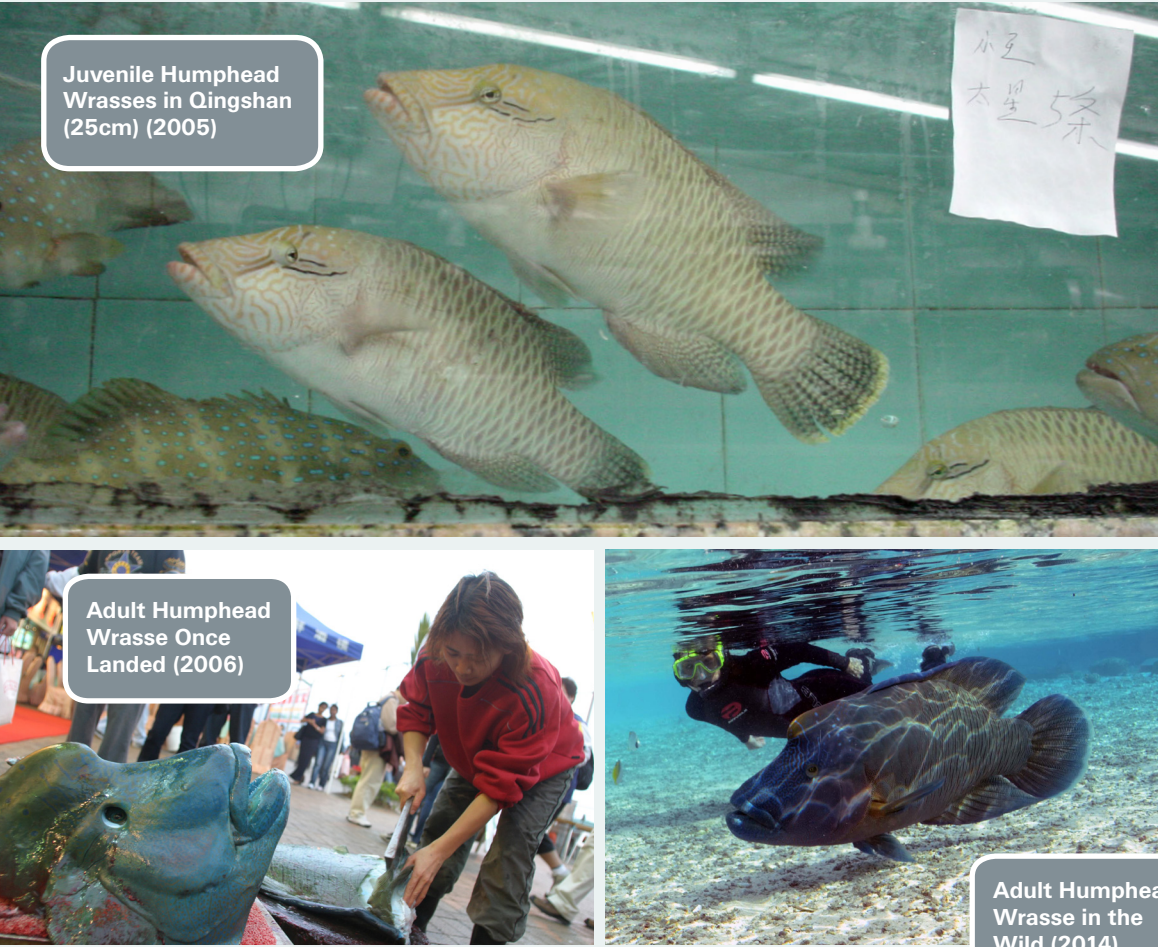
Indeed, mainland China's rapid economic growth and increasing affluence have driven demand for luxury commodities such as LRFF to new heights. Its presence is now considered an important element of corporate events, special occasion banquets such as weddings, and seasonal celebrations such as Christmas, Chinese New Year and Mother's Day. The motivation for consuming LRFF ranges from honouring relationships with government officials and business leaders, where luxury seafood consumption is seen as a way of engendering business and personal relationships, to displays of material wealth and social differentiation, and to honouring guests and families.⁹⁹ Consumption is also culturally driven, since health, general well-being, virility and status are connected.¹⁰⁰

FIGURE 3-3 THE DESIRED RED COLOUR OF WILD-CAUGHT LEOPARD CORALGROUPER COMPARED WITH THE LESS-DESIRED COLOUR OF CULTURED LEOPARD CORALGROUPER



Photos: Yvonne Sadovy, 2014

FIGURE 3-4 'MARKET (PLATE) SIZE' FISH



Photos: Liu Min (top), Alex Hofford (bottom left) and George Mitcheson (bottom right)

The ongoing overexploitation and increasing scarcity of LRFF species can have the perverse impact of increasing prices, incentivising further overfishing

To some extent, the high prices paid by consumers enable the trade's viability (by covering expensive transport costs, for example), since they create lucrative business for fishers in source countries and for various agents along the supply chain. Moreover, the ongoing overexploitation and increasing scarcity of LRFF species can have the perverse impact of further increasing prices in this luxury market, thereby providing yet greater incentives to continue fishing unsustainably (Section 3.11.2).

Interestingly, because of its luxury status and association with wealth, anti-corruption measures in mainland China have reportedly had some effect on luxury seafood consumption (as well as other high-end products).¹⁰¹ The government-led backlash, which effectively banned the consumption of luxury seafood at official functions, has reportedly caused traded volumes of shark fin, for example, to decline.^{102,103,104} Lack of data on consumption and shortcomings in the quality of the trade data, however, make the outcomes of such government measures difficult to assess,¹⁰⁵ although some anecdotal evidence suggests similar downturns for LRFF consumption.¹⁰⁶

3.4 Overexploitation and Impact on Wild Fish Populations

3.4.1 Catch Rates Exceed Sustainable Supply Rates

Reliable data on exploitation rates of LRFF species and the level of sustainability of such rates are limited with very few stock assessments conducted. However, the literature clearly and consistently indicates that catches of some species, most notably the Flowery Grouper, Leopard Coralgrouper and Humphead Wrasse, are exceeding sustainable levels in some locations.^{107,108}

Over the past decade, removal rates of groupers appeared to have increased to four times the level likely to be sustainable

A report published by the Asian Development Bank over a decade ago estimated potential yields of grouper species from reefs that were judged to be moderately healthy to be approximately 0.4 MT per km².¹⁰⁹ Using an estimate of the total reef area of the Indo-Pacific region, which supplies the LRFFT, overall sustainable grouper yields were estimated to be roughly 0.5 MT per km² over a decade ago.¹¹⁰ However, the removal of groupers appeared to be closer to an average of 2 MT per km², *four times* the level likely to be typically sustainable at the time these estimates were made.¹¹¹ It must be noted that fishing has since intensified in many areas.

Increasing reliance on the capture of juveniles, which are grown-out until they reach market size, is a clear sign of severe overexploitation

Such levels are consistent with the '*boom and bust*' nature of businesses that set up new fishing operations, conduct intensive fishing efforts that lead to significant declines in the catch of market-sized fish, then move to new fishing grounds within a decade.^{112,113,114,115} One of the few stock assessments associated with this trade focuses on the Leopard Coralgrouper in Palawan, the Philippines, where a programme to safeguard reproductive capacity and prevent fishery collapse was identified but not effected.¹¹⁶ The initial focus on adult fishes has shifted to a reliance on the capture of juveniles which are then grown-out in captivity until they reach market size (Section 3-5). This shift is a clear sign of severe overexploitation (recruitment overfishing) and an alarm signal that urgent management measures are needed to encourage recovery of stocks.

In contrast to most LRFF fisheries in Southeast Asia, the commercial fishery for Leopard Coralgroupers on the Great Barrier Reef is generally considered to be sustainable

LRFF imports into Hong Kong in 2016 were some 32% higher than in 1999

Studies by NGOs on the condition of the local fisheries¹¹⁷ have inspired the Palawan Council for Sustainable Development (PCSD) to take action. The PCSD issued Administrative Order AO-05 (Oct. 28, 2014)¹¹⁸ to determine the open and closed season for reef food fishes, as well as size limits (minimum and maximum), after three province-wide consultations and a series of Technical Working Group meetings. The Administrative Order covers all reef fishes and not just LRFF, as a precaution against fishers and traders killing the fish and then taking them to market.¹¹⁹ It is also consistent with the export of chilled groupers which has become a bigger part of the high-value reef fish trade, including outside Palawan.¹²⁰ However, the fact that these initiatives have yet to be effected highlights some of the challenges of managing these fisheries.

By way of contrast, the managed commercial fishery for Leopard Coralgroupers on the Great Barrier Reef, Australia, is generally considered to be sustainable. Strictly enforced size limits, individually allocated fishing quotas and spatial and seasonal closures, including no-take areas and lunar spawning closures, collectively help ensure effective management.¹²¹ As a result of these measures, the majority of Leopard Coralgroupers enter the LRFFT as mature adults ranging in size from 600g to >1kg.¹²² These measures have also increased the resilience of Leopard Coralgroupers to sustained fishing pressure.¹²³ This example shows that managed fisheries are viable and competent in the regional market in this trade, setting an important precedent for a more sustainable approach.

3.4.2 Seventeen Years of Growing Trade

Despite concerns about negative biological, social and economic implications of the LRFFT, the trade has generally grown since records were first taken in 1999. According to Hong Kong import data, volumes peaked in 2014 and 2015 at just over 22,000 MT (groupers, wrasses and parrotfishes, marine fish NESOI) and, excluding marine fish NESOI, at just over 15,000 MT in 2015. These numbers do not include any factors that account for underestimation of imports (Section 3.8.1), and quantities are likely to be considerably higher than indicated here. These figures dropped by 20% in 2016, the largest year-on-year decline in the available dataset (Figures 3-5 & 3-6). Still, imports in 2016 were some 32% higher than those in 1999. This apparent upward trend has important implications for source countries and sustainability because interest in wild fish persists from both consumers and traders.

The estimated total trade volume includes the category 'Marine Fish NESOI live', since most of these are likely to be reef fishes (Section 2.2). However, only groupers, wrasses and parrotfishes are recorded at the taxonomic rank of family, or at the species level. These include many species that continue to be wild-caught. Given that the focus of this report is on biological sustainability, it is necessary to base examinations at the species level. Thus the species and country analyses that follow are confined to live groupers, wrasses and parrotfishes, as identified in Table 2-2, Section 2.

Grouper are the most heavily traded LRFF species and, in 2016, the Leopard Coralgrouper was the most traded species by weight

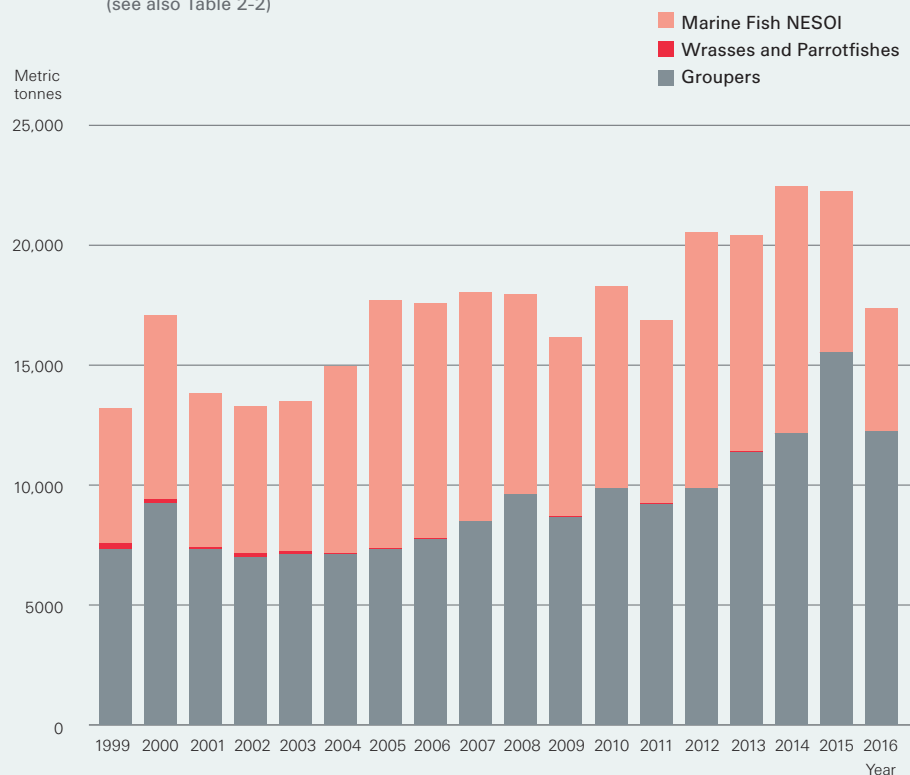
The most heavily traded LRFF species group (by volume) is the grouper, in particular the Leopard Coralgrouper, Green Grouper, Tiger Grouper and, until 2016, the 'Other Groupers' category (Figure 3-6(b)). The introduction in 2016 of a new customs code (Section 2) that distinguished Hybrid Groupers from 'Other Groupers' (which likely included the hybrids) highlighted the emerging importance of hybrids not only within the 'Other Groupers' category, but in the trade overall. As Figure 3-6(c) shows, in 2016, 1,500 MT of Hybrid Groupers represented 12.5% of the LRFF imported by volume. This largely offsets the 60% reduction observed in 'Other Groupers' (3000 MT) for the same year, supporting the assumption that hybrids were being lumped in with 'Other Groupers' prior to 2016.

In 2016, as in previous years, the Leopard Coralgrouper was the most traded species as measured by weight, followed by the Green Grouper and 'Other Groupers' (Figure 3-6(a)).

FIGURE 3-5

TOTAL IMPORT VOLUMES OF LIVE GROUPERS, WRASSES AND PARROTFISHES, AND MARINE FISH NESOI LIVE, 1999-2016

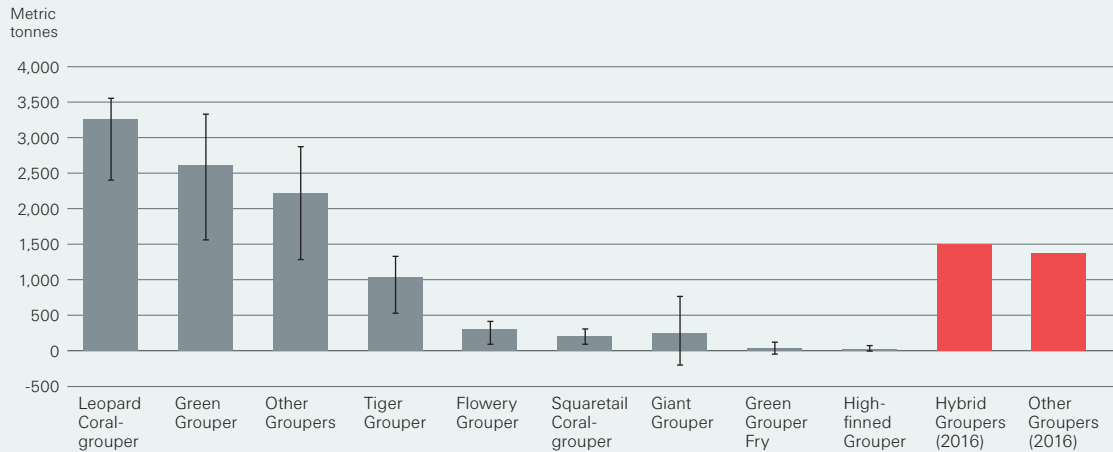
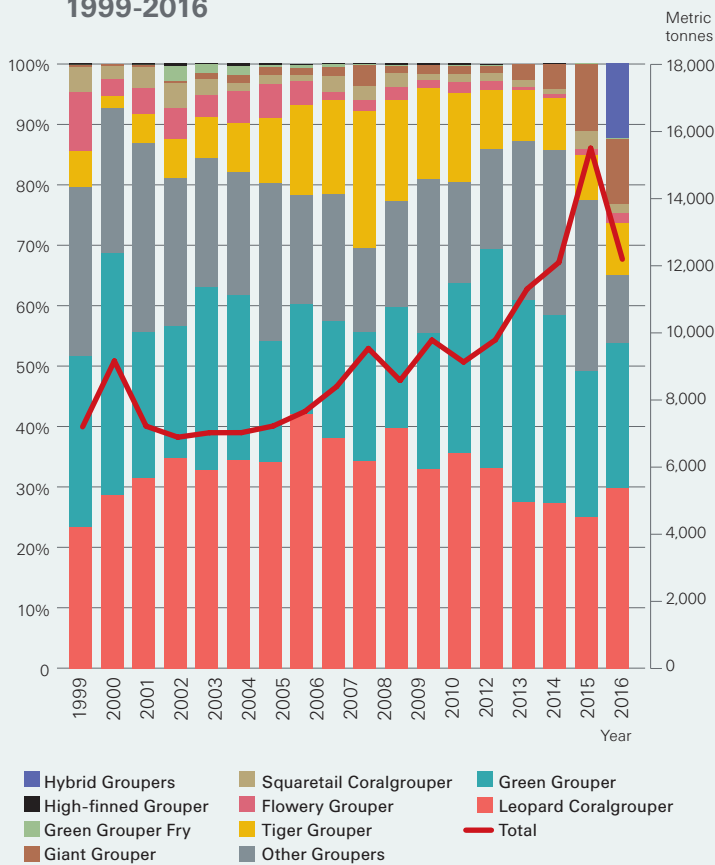
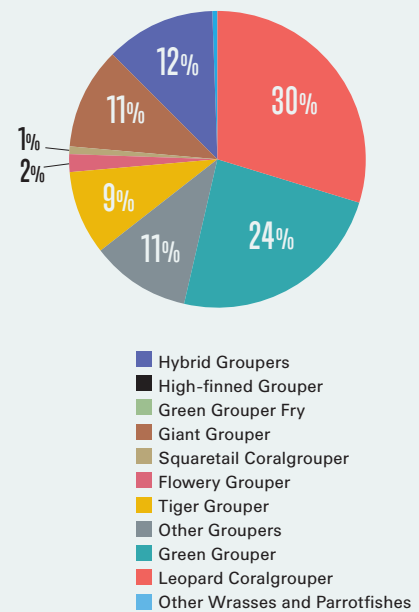
(see also Table 2-2)



Data source: C&SD & AFCD (HKLFV), 2017

FIGURE 3-6 VOLUMES AND COMPOSITION OF LIVE GROUPER IMPORTS BY YEAR**A. Mean (and Standard Deviations) Annual Import Volume of Live Groupers in Hong Kong's LRFFT, 1999–2016**

Including Hybrid and Other Groupers in 2016

**B. Composition of the Live Grouper Trade, 1999-2016****C. Composition of the Trade in 2016**

Data source: C&SD & AFCD (HKLFV), 2017

Damaging fishing methods include cyanide, targeting of spawning aggregations and blast fishing

Use of cyanide in fishing can kill reefs and raises the question of food contamination

A global overview of reef fish aggregations that are exploited indicates at least 60% have declined, while others have ceased to form altogether

3.4.3 Use of Destructive and Unsustainable Fishing Methods

To capture or culture certain LRFF species (such as the Humphead Wrasse, Leopard Coralgroup and Flowery Grouper) and to supply fish feed for mariculture operations, damaging fishing methods or approaches are employed in some locations. These include cyanide, targeting of spawning aggregations and blast fishing.

Cyanide: Spraying cyanide in solution form directly into the target fishes' habitat (Figure 3-7) is a method employed to harvest certain high-value live fish such as the Humphead Wrasse and Leopard Coralgroup, which may be difficult to catch efficiently using other gears in some areas. Cyanide can be a more effective fishing method to take live fish than the relatively 'passive' hook and line approach for these species. However, such practice contributes to overfishing.¹²⁴

This method can kill living corals with repeated exposure.^{125,126} The use of cyanide as a fishing method also raises the question of possible contamination of the fishes that ingest the chemical, although nothing is known of the risk to humans of consuming large quantities of fish caught in this way. Certainly cyanide-caught fish tend to suffer higher mortality rates post-capture than fish caught using other methods.¹²⁷

FIGURE 3-7 CYANIDE EQUIPMENT



Note: The water bottle would contain cyanide solution, diluted from cyanide tablets in the jerrycan. The stone is used to throw the apparatus overboard if police approach. This was retrieved during a dive in the Komodo area, Indonesia.

Photo: Yvonne Sadovy, 2003

Targeting spawning aggregations: The practice of fishing on spawning aggregations can quickly compromise the reproductive capability of targeted populations, and many known aggregations have declined due to heavy fishing pressure over time.^{128,129} A global overview of reef fish aggregations that are exploited (all fisheries combined) indicates that at least 60% have declined (as determined by catches or fish counts), while others have ceased to form altogether.^{130,131} Spawning aggregations are attractive to fishers since fish are often easy to catch quickly and in large numbers. This can satisfy economies of scale preferred by traders (gathering as many fish in as little time as possible,

since shipments of live fish must be assembled quickly and large quantities are needed to fill many fish carriers) but can lead to oversupply and reduced prices being paid to fishers (Section 3.11). In association with these short-term 'gluts' is a significantly higher wastage due to deaths of females, which are more susceptible to mortality in captures when gravid (i.e. full of eggs ready for spawning).¹³² On the other hand, there is growing evidence that protected or controlled fishing on grouper aggregations can be sustainable and can encourage recoveries.^{133,134,135,136}

Blast fishing: The industry is also associated with the use of blast fishing in areas such as Sabah, Malaysia.¹³⁷ This method is employed to source fish used as feed for both culturing of full-cycle species (Section 3.5) as well as the grow-out of large volumes of wild-sourced juvenile LRFF species,¹³⁸ such as groupers and the Humphead Wrasse, species that require large amounts of feed. Even short-term feeding periods can demand large fish feed volumes, as market-sized fish may be held for up to a month while being consolidated into volumes large enough for export.¹³⁹

Long-term use of blast fishing has severely degraded many coral reefs on which millions of people depend for food and livelihoods

The long-term use of explosives to catch fish has severely degraded many coral reefs on which millions of people rely economically and for food.¹⁴⁰ Widespread occurrence of this practice also has severe impacts on other marine life, given the physical damage it inflicts on vitally important habitats.¹⁴¹ The intensity of the sound generated by explosions can have an adverse effect on species such as cetaceans, which are extremely sensitive to noise.¹⁴² Blast fishing is also potentially lethal for the fishers themselves. Some fishers accept this risk because fish bombs are relatively cheap, easy to dispose of (when avoiding prosecution) and easy to replace.^{143,144}

3.4.4 Trading Places – A Trend in High-Value Chilled/Fresh/Frozen Reef Fish

Chilled/fresh/frozen reef fishes are becoming more prevalent in international trade

There is an emerging commodity trend whereby chilled/fresh/frozen reef fishes (Figure 3-8) are becoming more prevalent in the international trade of medium-to high-value reef fishes imported into Hong Kong and mainland China and are fetching higher prices than previously (e.g. the Humphead Wrasse in Malaysia). Major drivers include a high demand for fish, greater acceptance of dead fish in

FIGURE 3-8 FROZEN REEF FISH SOLD IN MARKETS

Leopard Coralgrouper Being Sold in China



Photos: Yvonne Sadovy (left), Allen To (middle and right), 2014



Humphead Wrasse on Sale in Kota Kinabalu, Malaysia



Leopard Coralgrouper on Sale in Kota Kinabalu, Malaysia

Asian markets and the premium placed on certain species regardless of product form. Improvements in preservation technology are possibly facilitating this trend, while greater exposure to international markets makes dead fish forms more acceptable to Chinese consumers.¹⁴⁵

The latest data from the Maldives shed some light on the export of chilled/fresh groupers to seven countries including Hong Kong (Table 3-1). This is in comparison to the 130,368.5kg of live groupers the Maldives exported to Hong Kong in 2016.

TABLE 3-1 FRESH OR CHILLED GROUPER VOLUMES (IN KG) EXPORTED FROM THE MALDIVES IN 2016
(custom code 302890010)

Czech Republic	145.33
Germany	351.77
Hong Kong	220,641.80
Ireland	32.87
New Taiwan	478,675.70
Saudi Arabia	50.64
Singapore	1,018.00

Data source: Evans, V. & Hashim, S. (2017, pers. comm.)

Two of the four traders surveyed in Palawan were found to export chilled/fresh/frozen reef fishes to Manila,¹⁴⁶ whilst half of the Palawan traders stated that reef fish initially destined for live markets would be exported frozen in the case of mortalities. In relation to international trade from Manila, all interviewed traders were found to export chilled/fresh/frozen reef fishes, which comprised between 10% and 100% of their annual total international reef fish trade by volume, including exports to Hong Kong, Taiwan and Macau.

One trader exclusively dealt in dead reef fish and claimed to have exported around 70 MT to Hong Kong in 2013, consisting mainly of Leopard and Squaretail Coralgrouper. Fiji, which once exported live groupers and Humphead Wrasse to Hong Kong, halted live exports in the early 2000s but in recent years has begun exporting chilled groupers at volumes of >20 MT per year.¹⁴⁷ Taiwan is a large importer of chilled/fresh/frozen grouper according to government import figures. From 2012–2016, Taiwan imported 7,820 MT of dead groupers, mainly from Indonesia.¹⁴⁸ Just 6 MT of live grouper were imported during the same time period.

There is no data to quantify the extent chilled/fresh/frozen reef fishes in trade in Hong Kong

There are no data to quantify the extent of this trade in Hong Kong, since chilled/fresh/frozen reef fishes are not distinguished to species or even at a higher taxon level in the current commodity coding system. Instead, they are included in with general marine fishes, which could include a broad range of non-reef fishes.

There are general commodity codes for chilled/fresh/frozen fish that encompass a wide range of species. These reef fishes are likely to be reported under the following codes, if they are not fillets:

- 0303 8999: Marine fish, frozen, NESOI, excluding fillets, livers and roes
- 0302 8999: Other marine fish, fresh or chilled, excluding fillets, livers and roes, NESOI

However, the total impact of trade on LRFF species can only be determined by understanding the sum of all species in trade both lived and chilled sectors

The total impact of international trade on LRFF, especially on groupers, can only be determined by understanding the sum of all trade in such species, live plus chilled/fresh/frozen fish. A revision of the commodity codes to include different product forms at species or other meaningful taxonomic levels, for all product forms, would provide much better insight into the real volumes and possible impacts of the LRFFT on the sustainability of wild reef fish stocks overall (see Box 3-4 for an example). This is especially so for the most commonly traded, and biologically vulnerable, wild-caught species of fish, such as the grouper species included in this analysis. A request has been made to Customs for such a change.

BOX 3-4 CUSTOM CODES IN TAIWAN ILLUSTRATING BOTH LIVE AND DEAD GROUPERS

0301.99.10.40-8 Grouper fry
0301.99.29.41-6 Grouper, live
0302.89.89.41-4 Grouper, fresh or chilled
0303.89.89.60-9 Grouper, frozen
0304.49.90.50-6 Grouper, fillets (whether or not minced), fresh or chilled
0304.59.90.50-3 Grouper, meat (whether or not minced), fresh or chilled
0304.89.90.60-5 Grouper, fillets or steaks, frozen

3.5 The Mariculture Myth

3.5.1 Increase in Mariculture/Farming

Today, at least half of all live groupers by weight on retail in Hong Kong are likely to have been farmed

The last decade has seen a gradual shift in the balance between farmed and wild-caught fish supplying the LRFFT (Box 3-5). Today, at least half of all live groupers by weight on retail sale in Hong Kong are likely to have been farmed.¹⁴⁹ This consists of animals produced by one or both forms of mariculture:

- i) Hatchery-based aquaculture (HBA):¹⁵⁰ the Philippines, mainland China, Indonesia, Taiwan and Thailand are major suppliers of juvenile groupers from HBA; and
- ii) Capture-based aquaculture (CBA):¹⁵¹ primarily in Indonesia, the Philippines, Malaysia and Thailand with some in mainland China and Taiwan.

HBA is commercially viable for only a few of the grouper species in the trade, and the majority of species traded continue to come from the wild, either as adults or taken as juveniles for grow-out to market size in culture operations—a practice relevant to considerations of biological sustainability.

BOX 3-5 DEMAND FOR WILD-CAUGHT FISH PERSISTS DESPITE RISE IN CULTURED FISH

Two-thirds of traders interviewed stated that, overall, wild catches are no longer sufficient to supply the current demand for LRFF, while one trader believed that farmed fish will play an increasingly important role in supplying the region's growing demand for live food fish.

This is consistent with data provided by the Hong Kong Fish Marketing Organization at Aberdeen (the biggest live fish wholesale centre in Hong Kong), which found that about 60% of the live fish passing through the market were from cultured sources in 2016, up from 50% in 2015, with that trend expected to continue. However, wild-caught fish are still favoured by many consumers, and only a few of the more moderately priced species can be commercially cultured. This means that there will continue to be attempts to source fish from the wild for most species, in particular for several of the more valuable species such as the Leopard Coral grouper, even though these can now be hatchery-produced.

According to the FAO's definition of 'mariculture', CBA was previously not distinguished from a more general definition of 'mariculture' that treated CBA and HBA together. The original definition considered maricultured fish as those that were maintained in captivity at some stage in their lives, irrespective of the origin of the fish (i.e. hatchery-produced or wild-caught).¹⁵² However, as the practice of CBA expanded and impacts on wild populations became more apparent, such as in the case of ranching, or grow-out, of wild-caught tuna juveniles to adult sizes, the importance of accounting for juvenile capture for CBA in fishery management became evident.¹⁵³

Today, CBA is considered distinct from HBA and specifically acknowledges the significant contribution of wild juveniles and broodstock¹⁵⁴ to culture operations and the need to manage these for sustainability. The need for good mariculture practices for both HBA and CBA is also recognised.¹⁵⁵

Reduced fishing pressure on wild populations, due to cultured fishes substituting for wild-caught species, has yet to be demonstrated

Despite the possibility that cultured LRFF would come to substitute for wild-caught species and in some way reduce fishing pressure on wild populations, nowhere has this been demonstrably done, and analysis indicates market adjustments that accommodate both activities. For carnivorous species (like groupers), farming actually adds pressure to wild fish populations due to damaging practices and the need for high volumes of wild fish feed.¹⁵⁶

A study examining whether substitution from HBA (i.e. full-cycle) could significantly improve the biological sustainability of the LRFFT concluded that this would not occur for the following reasons:¹⁵⁷

- i) Increasing the supply of farmed fish does not reduce the demand for wild LRFF, as the two products are not substitutes for each other and are treated differently.
- ii) Fishing is not reduced as mariculture increases. Both activities continue concurrently. Also fishing supports many coastal communities.

- iii) The prestige status associated with wild reef fish as a luxury item, and its association with better quality, means that demand remains relatively price inelastic (see Section 3.11 on the economics of captured/cultured fish).
- iv) The overarching dynamic with a growing demand and shrinking supply will be reinforced in future, with prices for wild-caught products likely to rise despite upward trajectories of farmed fish (Section 3.11).
- v) Any escalation in prices will likely not translate to a substantial reduction in fishing effort for wild fish. Cases from shrimp and salmon farming illustrate that although more than half of these species come from farming, pricing has adjusted and fishing effort for wild animals has not declined.
- vi) Plans to increase grouper culture production have been impeded by high prices and the declining availability of fish feed. At the same time, prices for some cultured products are declining due to increasing success in production and greater availability in the market.
- vii) Farming could negatively affect wild populations through transmission of disease or parasites from farmed to nearby wild populations, as has occurred with wild salmon.

Moreover, there is a possibility that a higher availability of LRFF might even open up or stimulate new interest in this sector. This could potentially increase consumer demand for LRFF.

The last decade has seen a rapid increase in the development and supply of 'hybrid' groupers, which combine faster growth with high flesh quality

The emergence of 'hybrid' species: The last decade has seen a rapid increase in the development and supply of 'hybrid' groupers, which combine faster growth with high flesh quality. The most noteworthy of these is the Sabah Grouper, which is a cross between the Giant Grouper and Tiger Grouper (Figure 1-5, Section 1.4). A recent survey (2012/3) of the retail sector in Hong Kong noted that the majority of groupers observed on sale were Sabah Grouper.¹⁵⁸ Cross-genus crosses have also gained success with the Giant Grouper and High-finned Grouper (Figure 3-9). Attempts at other hybrid crosses (the Tiger Grouper or Giant Grouper are usually crossed with other species) are also increasing.

FIGURE 3-9 HYBRIDS OF HIGH-FINNED AND GIANT GROUPERS BEING SOLD IN HONG KONG

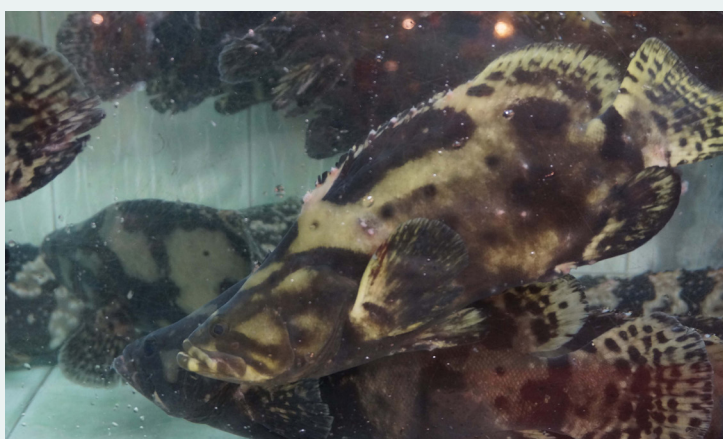
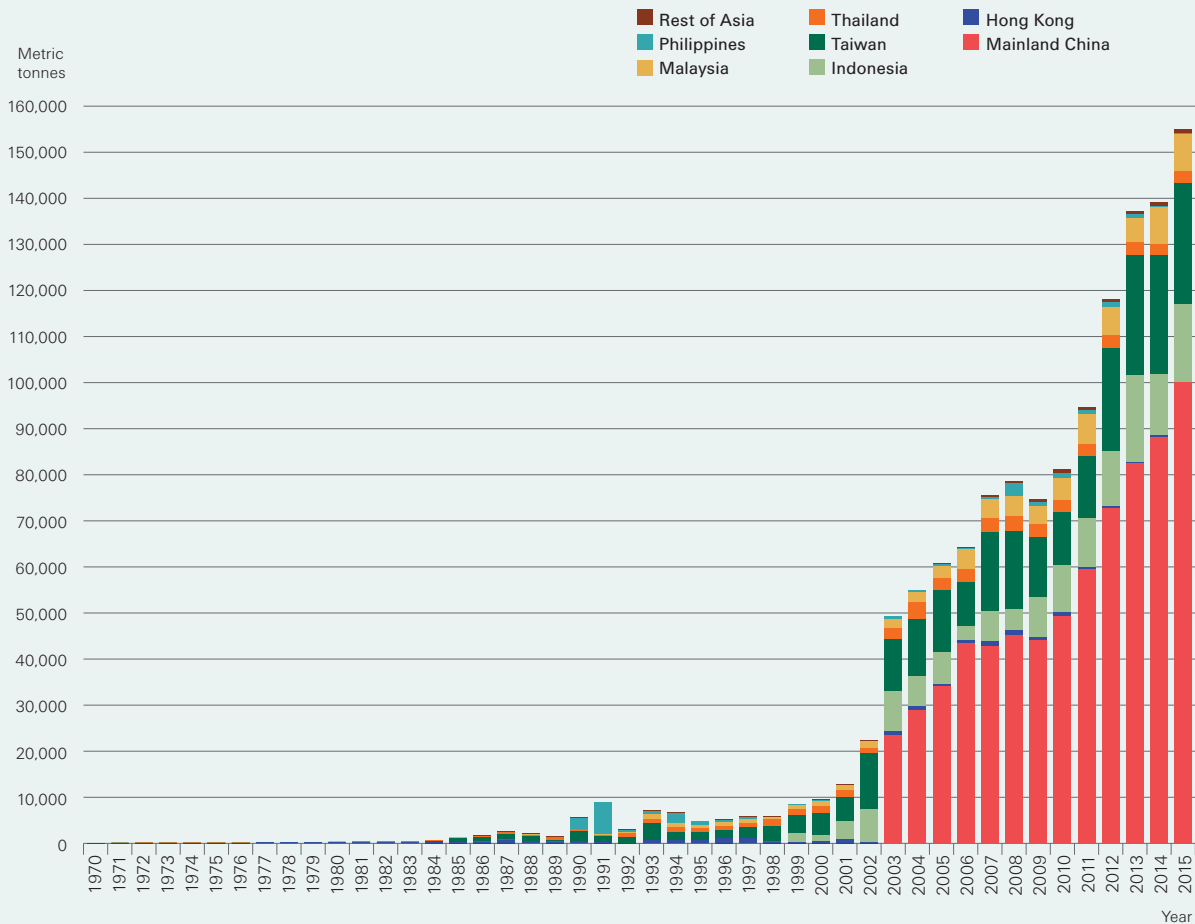


Photo: Yvonne Sadovy, 2015

Mariculture growth in mainland China: In mainland China, there has been considerable expansion of mariculture production of groupers. In 2015, China reported production of about 100,000 MT of cultured groupers to the FAO (Figure 3-10), while Hong Kong maintains a small industry that produces only about 1,000 MT annually (2016 figure) in coastal cages.¹⁵⁹ Some fishes cultured in mainland China are exported to Hong Kong, although the Hong Kong government does not record quantities. The proportion of live fish (mainly groupers) reported to pass through the Aberdeen Fish Marketing Organization (FMO), which handles most of the live seafood in Hong Kong, is reported to be about 60% cultured to 40% wild-caught, up from about 50:50 in 2016.¹⁶⁰

FIGURE 3-10 PRODUCTION OF GROUPERS IN MARICULTURE (CBA & HBA), 1970-2015



Note: Mainland China started reporting data in 2003. Data source: FAO, 2017

3.5.2 Continued Reliance on Wild-Captured Fishes

Both Hong Kong and mainland China continue to import wild-sourced fish despite their own and other countries' mariculture operations (Section 3.5.1). This is attributable to a number of reasons, including:

- consumer demand is high and wild grouper populations in Chinese waters are low;
- high profit margins for some wild-caught fishes and benefits to fishers;
- an ongoing consumer preference for wild-caught seafood; and
- only a few species seem biologically well-suited to mariculture because of their hardiness and fast growth. Hence, most species in the LRFFT continue to be wild-caught.¹⁶¹

Some species, such as the Humphead Wrasse, cannot be hatchery-produced at commercial scales due to problems with feeding and high larval mortality

In the case of the Humphead Wrasse, which cannot currently be hatchery-produced at commercial scales due to problems with feeding and high larval mortality, grow-out of wild-caught juveniles remains the major source of the trade because larger, plate-sized (35–45 cm total length) fish are:

- no longer common in most countries that supply this species to the LRFFT;
- hard to catch in large numbers; or
- no longer permitted to be exported from many countries.

As a result, animals are most commonly captured before sexual maturation (which occurs at ≥ 35 cm) and grown out to market size in captivity (Figure 3-11). The most extreme case is the capture of tiny post-larvae (post-settling fish that have just left the plankton to settle onto the substrate), which require 4–5 years of grow-out to market size. Usually such long grow-out periods would be considered too high-risk or expensive due to food requirements and mortality in captivity. However, where it occurs, in the Anambas and Natuna Islands of Indonesia, it is clearly economically viable since these fish have been supplying the LRFFT for many years and large areas are dedicated to grow-out on these islands.^{162,163} The impoverished communities here have little other form of high-value livelihood.

FIGURE 3-11

STATIONARY NET CAGES FOR HUMPHEAD WRASSE GROW-OUT AT ANAMBAS ISLANDS, WESTERN INDONESIA



Note: The painted and fancier houses are owned by Humphead Wrasse culturists who benefit well economically compared to others in their community, despite grow-out periods of 4–5 years at times.

Photos: Yvonne Sadovy, 2013

There remain numerous challenges for increasing the role of HBA in supplying the LRFFT

Grow-out conditions and seed availability here seem to be particularly favourable for this species in this area.¹⁶⁴

Overall, several challenges remain for increasing the role of HBA in supplying the LRFFT. These include:

- i) Most species cannot be hatchery-produced yet, or are not able to be hatchery-produced at commercial scale, e.g. the Flowery Grouper, Squaretail Coralgrouper and Humphead Wrasse;
- ii) Species that can be hatchery-produced may have poor body colour, most notably the Leopard Coralgrouper for which the favoured red colour does not develop in HBA-produced fish, hence their value is lower than for wild-caught fish (Figure 3-3);¹⁶⁵
- iii) Species may exhibit naturally slow growth, such as for the Humphead Wrasse. Thus the long periods required to attain market size carry higher risks of death from disease or other causes and necessitate large volumes of feed for grow-out. While the Humphead Wrasse has been hatchery-produced experimentally in mainland China, Singapore and Indonesia, high larval mortality means that production of this species is not commercially viable.¹⁶⁶ The unusual exception of post-settlement larvae capture¹⁶⁷ and extensive grow-out periods is only known from one location, in western Indonesia (as noted above), where the opportunity costs (job alternatives) are very low;¹⁶⁸ and
- iv) Fish feed is an increasing expense and a growing sustainability concern in general for the mariculture industry due to decreasing supplies and overfishing in fisheries that focus on 'trash' or low-value fish destined for feed, e.g. from shrimp trawls in Southeast Asia.¹⁶⁹ This is an important issue for groupers because, being carnivorous, their demand for wild-sourced fish feed is particularly high (Section 3.5.3).

3.5.3 Environmental Implications

Grouper culture operations (both CBA and HBA) have environmental implications concerning overall biological sustainability. Aside from impacts on their surrounding environment and biodiversity (such as pollution from chemicals, food waste, disturbance to benthic habitats in coastal cage culture operations, potential escapes, disease/parasite transfer and releases of hybrid or exotic groupers), they can have an indirect impact on wild fish populations sourced for fish feed.

The high demand for wild fish to serve as fish feed for farmed carnivorous groupers puts pressure on wild populations

Fish feed is a notable environmental issue for grouper culture because groupers are carnivorous, high trophic level, species that require high quality fish protein (in the form of pellet feed or wild fish) to develop and grow. This leads to a high demand for wild fish to serve as fish feed because high trophic level species in culture typically have high feed conversion ratios or 'fish-in-fish-out' (FIFO) ratios, the measure commonly used in the culture of fish.¹⁷⁰

Groupers are fed either with pellet feed (which contains varying percentages of wild fish meal/oil and other ingredients) or with low value, mixed fish (commonly referred to, albeit inappropriately, as 'trash' fish).^{171,172} Both feed types are widely

used in Southeast Asia, with the use of trash fish more common among operations that are smaller, located more remotely, or faced with challenges of cost and storage of pellet feeds.¹⁷³ Sometimes a combination of feed types is used, such as in cases where pellets are used¹⁷⁴ for the majority of the grow-out period, with diets being supplemented with trash fish for several months prior to the fish being readied for market. Farmers advise that this can help overcome taste issues associated with only pellet-fed species.

FIFOs are lower, and hence less environmentally damaging, for pellet feed (which is only partially fish-based) than for a diet that relies solely on wild fish. The ratios range from of 2.5–3.5 (for pellets) to 8–10 or higher.^{175,176} Based on the FAO's figures on grouper culture in the Asia-Pacific region for 2014 (139,304 MT) and considering a range of possible FIFOs (from 2.5 to 10), approximately 350,000 and 1,400,000 MT of fish feed (mostly wild-caught fish in the case of grouper feed) was used for live grouper production in 2014. This feed demand alone equated to 2–10 times the production of Hong Kong's entire fishing fleet in 2015, which was 145,193 MT.¹⁷⁷

The high and increasing demand for fish feed, has serious implications for overfishing and ecosystem health

The high and increasing demand for fish feed, for groupers as well as for other carnivorous cultured species, will have implications for overfishing and ecosystem health, the extent to which is still unknown.¹⁷⁸ For example, much of the fish feed consists of juveniles of commercially important species of food fish (for human consumption),^{179,180} and the large volumes involved have potentially substantial ecosystem implications.^{181,182} Despite improved technology and the increasingly efficient use of fish inputs that are reducing fish meal and oil contents in feeds,¹⁸³ concerns remain from social, economic and environmental perspectives regarding the volumes of fish needed to supply fish feed for carnivorous species generally. Indeed, analyses of current and near-future scenarios in relation to fish feed and fish production from farming have proposed reducing fish feed demand by culturing fish with lower feed requirements (i.e. fish at lower trophic levels) for sustainability.¹⁸⁴

3.6 Source Countries, Species and Sustainability Concerns

3.6.1 Overview

Since 1999, trade records indicate that approximately 45 countries/territories have exported live fish to Hong Kong, although only 15 have been consistently involved. Of those listed, however, several countries were likely erroneously included as they are clearly not in the range of indicated species or transshipment points (Section 2.5). Of those countries identified, almost all involved very small or sporadic shipments over the time period. For analytical purposes, only the volume shipped will be included, not the countries themselves.

The 'Coral Triangle' region (Figure 3-12) has been the major supplier, with Indonesia, Malaysia and the Philippines collectively contributing around 63% ($\pm 6\%$) of total LRFF imports into Hong Kong over the 17-year period from 1999 to 2016 (Appendix A-III). Other important source countries include Thailand,

FIGURE 3-12 THE CORAL TRIANGLE REGION



Australia and Taiwan, with Taiwan increasing supply in recent years. In 2016, Taiwan's share of Hong Kong's LRFF imports increased to 20% (Appendix A-III). Characteristics of the trade, including major source countries, species and production, are summarised in Table 3-2.

The underlying drivers of overexploiting LRFF fisheries are their open-access nature, high economic value, poor governance/ law enforcement, low opportunity costs and lack of transparency

The underlying drivers of overexploitation for fisheries supplying the LRFFT are their open-access nature, high economic value, poor governance or law enforcement in most exporting and importing countries associated with IUU, low opportunity costs in source (mainly developing) countries, and lack of trade transparency.

For example, the Philippines government has a National Plan of Action (NPOA) calling for a 20% increase in cash income of local governments and fishers from the live reef fish trade, a goal seemingly at odds with what is known about the poor state of the resources in Palawan as well as other parts of the Philippines, and not based on any assessment of resource condition to sustain an increase in fishing effort. Furthermore, it deliberately flouts the Provincial Ordinance No. 1993-02, which prohibits the export of LRFF from Palawan.¹⁸⁵ However, the PCSD is seeking to protect the reproductive capacity of the Leopard Coralgrouper in Palawan through its local management planning (Section 3.4).¹⁸⁶

Likewise, Indonesia, Thailand and Malaysia manage their small-scale inshore fisheries not for the purpose of improving sustainability, but for compliance with marine protected areas (MPAs), most of which are not well-administered in practice. In Indonesia, while top-level directives encourage an increase in fishery production, the Minister of Fisheries recently initiated moves (Section 3.13.5) to reduce the illegal activities of foreign vessels in Indonesian waters with a view to better protect fisheries. Indonesia and Malaysia also introduced export quotas for the Humphead Wrasse in response to its CITES Appendix II listing (Section 3.6.11) and based on field assessment of population abundance.¹⁸⁷

Overall, the capture fisheries that supply the trade continue to be, with the exception of Australia, poorly managed or unmanaged, with ongoing concerns about their sustainability. Trends over time differ among species, which are discussed in more detail below. Further details are also presented in the appendices.

TABLE 3-2 SUMMARY OF LRFF IMPORT CHARACTERISTICS

Species	Latin Name	IUCN Status as of 2007 ^b	Wild-Captured or Cultured	Import Volume Trend	% of LRFF Trade in 2016	Country Most Imports Have Been from since 2008 (excluding Australia)	Other Common Names	Main Mode of Transport Since 2002
Humphead Wrasse	<i>Cheilinus undulatus</i>	Endangered ^b	Wild ^c	Decreasing to none (but see CITES data; Section 3.6.11)	0	Malaysia	Napoleon Fish/Wrasse, Maori Wrasse	Air
High-finned Grouper	<i>Cromileptes altivelis</i>	Vulnerable	Both	Variable/stable	0.1	Philippines	Humpback Grouper, Mouse Grouper, Grace Kelly Grouper	HKLFV
Giant Grouper	<i>Epinephelus lanceolatus</i>	Vulnerable	Both	Increasing ^a	11	Taiwan	None	HKLFV
Squairetail Coralgrouper	<i>Plectropomus areolatus</i>	Vulnerable	Wild	Variable	1.4	Philippines	Spotted Coral Trout, See Section 3.6.8	HKLFV
Leopard Coralgrouper	<i>Plectropomus leopardus</i>	Near Threatened ^b	Mostly wild ^c	Increasing ^a	30	Indonesia	Leopard Coralgrouper, Leopard Coral Trout	Air
Tiger Grouper	<i>Epinephelus fuscoguttatus</i>	Near Threatened ^b	Both ^c	Variable	9	Thailand	Brown-marbled Grouper	Air
Flowery Grouper	<i>Epinephelus polyphkadion</i>	Near Threatened ^b	Wild	Decreasing	2	Indonesia	Camouflage Grouper	HKLFV
Green Grouper	<i>Epinephelus coioides</i>	Near Threatened ^b	Both ^c	Decreasing	24	Thailand	Orange-spotted Grouper	Air
Green Grouper Fry		Near Threatened ^b	Both	Decreasing	0.005	Thailand	Orange-spotted Grouper Fry	Air
Hybrid Groupers	<i>Epinephelus fuscoguttatus x lanceolatus</i>	N/A	Farmed	N/A	12	Malaysia	Sabah Grouper	HKLFV
Other Groupers	N/A	N/A	Both ^c (some species)	Variable ^a	11	Malaysia	Refer to Table 2-2	Air
Other Wrasses & Parrotfishes	N/A	N/A	Likely all wild	Increasing	0.4	Others	Refer to Table 2-2	HKLFV

^a Decreased in 2016

^b IUCN reassessments of all groupers will be available in 2018

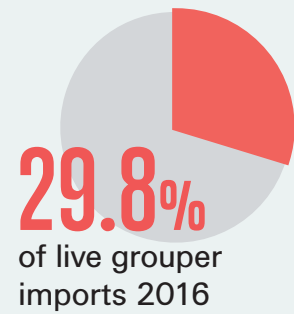
^c Juvenile capture grow-out

Source: AFCD and C&SD data

3.6.2 Leopard Coralgrouper — Representing a Third of All Grouper Imports

Since 1999, imports of the Leopard Coralgrouper into Hong Kong have been gradually increasing, doubling in volume and exceeding 3,500 MT in 2015 and 2016.

LEOPARD CORALGROUPE

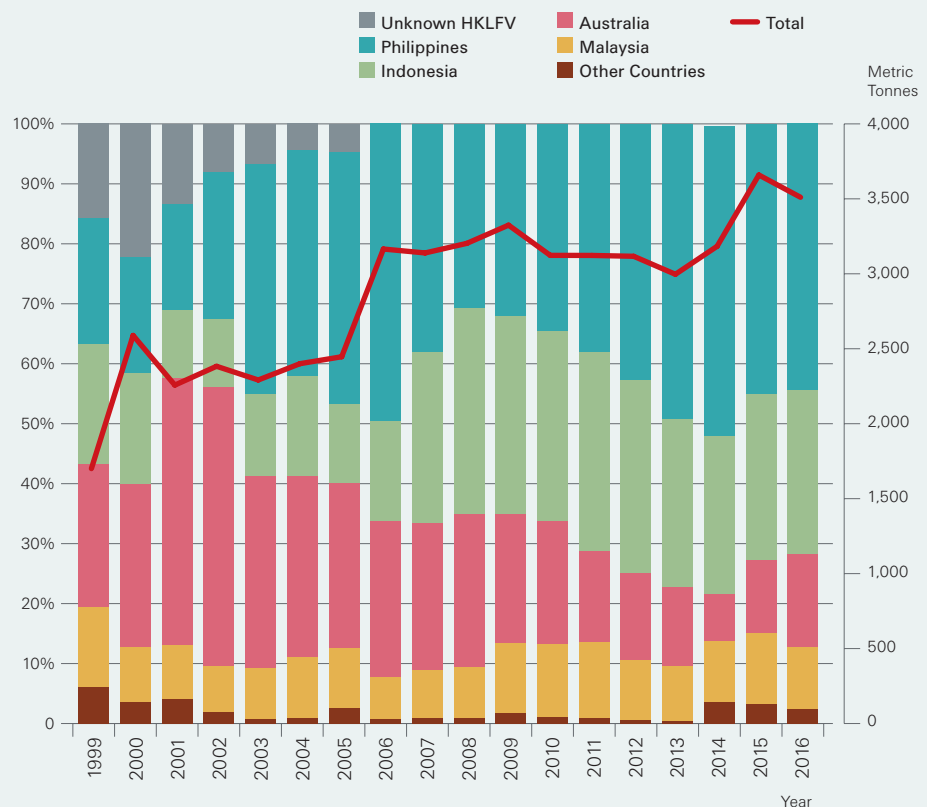


Since 1999, imports of
Leopard Coralgrouper into
Hong Kong have doubled in
volume

In the early 2000s, the largest proportion of Leopard Coralgrouper imports were from Australia, but its prominence has declined over the last decade as a consequence of an overall increase in trade in this species (Figure 3-13). While the decline in the importance of Australia as a source country stems from rapid production increases in countries like the Philippines and Indonesia, this may also be partly explained by steadily increasing discrepancies between exports recorded by Australian government agencies and much lower imports reported by Hong Kong C&SD (Section 3.8.2). However, given all imports from Australia are by air, as such there seems to be no reason for misreporting this species.

FIGURE 3-13

SOURCE COUNTRIES OF LEOPARD CORALGROUPE IMPORTS, 1999-2016



Data source: C&SD & AFCD (HKLFV), 2017

Illegally exported Leopard Coralgrouper continue to be imported into Hong Kong from Indonesia and the Philippines

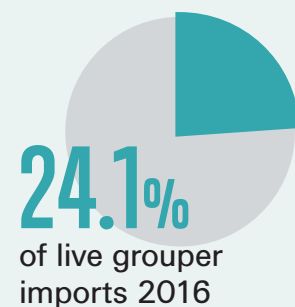
Indonesia and the Philippines have been Hong Kong's major suppliers of the Leopard Coralgrouper since the mid-2000s. Traded fish are all wild-caught and used to be taken at around marketable size. However, as larger, adult-sized fish have declined, juveniles are increasingly taken and grown out in cages (i.e. CBA), particularly in the Philippines. Exports from Malaysia are probably smuggled into the country from the Philippines.¹⁸⁸ In Indonesia, grow-out of juveniles occurs to a more limited extent as declines in available fish to the west of the country have resulted in a shift in fishing areas eastwards. (i.e. Nusa Tenggara Timur and West Papua). Several countries, including mainland China, claim to have been able to raise this species by HBA, but the extent of such commercial culture is not clear.^{189,190,191}

Since live fish of any species cannot be legally exported from the Philippines (a regulation that is largely ignored), and illegal exports continue to arrive from Indonesia on Hong Kong vessels, some of the Leopard Coralgrouper entering Hong Kong are clearly not legally sourced. Fishery regulations in the Philippines are circumvented in Palawan, the major source area for this species, by transporting the fish domestically to Manila before exporting to Hong Kong by air.¹⁹² In Indonesia, the government is attempting to reduce exports of wild-caught fish by only allowing foreign vessels to collect cultured fish from aquaculture zones.

3.6.3 Green Grouper – the Second Most Commonly Traded Grouper

Green Grouper imports have fluctuated considerably since 1999, reaching a peak of almost 4,000 MT between 2013 and 2015. Over the study period, the species consistently ranked first or second in trade volumes (by weight). A 20% reduction in Green Grouper imports was noted from 2015 to 2016.

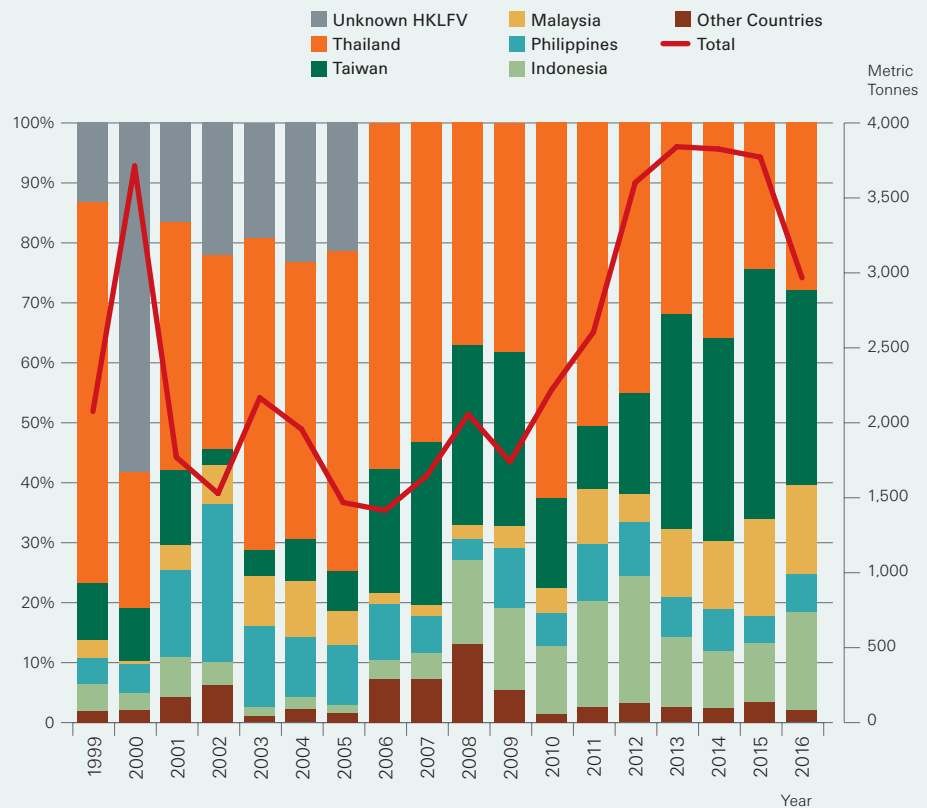
GREEN GROUPER



The major source countries are Taiwan, Thailand and Indonesia, with Malaysia becoming a more significant source in recent years (Figure 3-14). Taiwan overtook Thailand as the primary source country in 2014.

Traded Green Grouper are usually adults caught from the wild, or are ranched from wild-caught juvenile fish

Traded Green Grouper are usually adults caught from the wild, or are ranched from wild-caught juvenile fish ('seeds'). They are also produced by HBA.¹⁹³ Taiwan and Thailand are major sources of hatchery-produced Green Grouper, but juveniles are still caught for their cheaper prices, and then grown out to market size.^{194,195,196}

FIGURE 3-14 SOURCE COUNTRIES OF GREEN GROUPER IMPORTS, 1999-2016

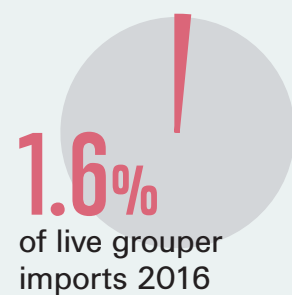
Data source: C&SD & AFCD (HKLFV), 2017

All Flowery Groupers come from the wild, and the species is often harvested by the targeting of spawning aggregations

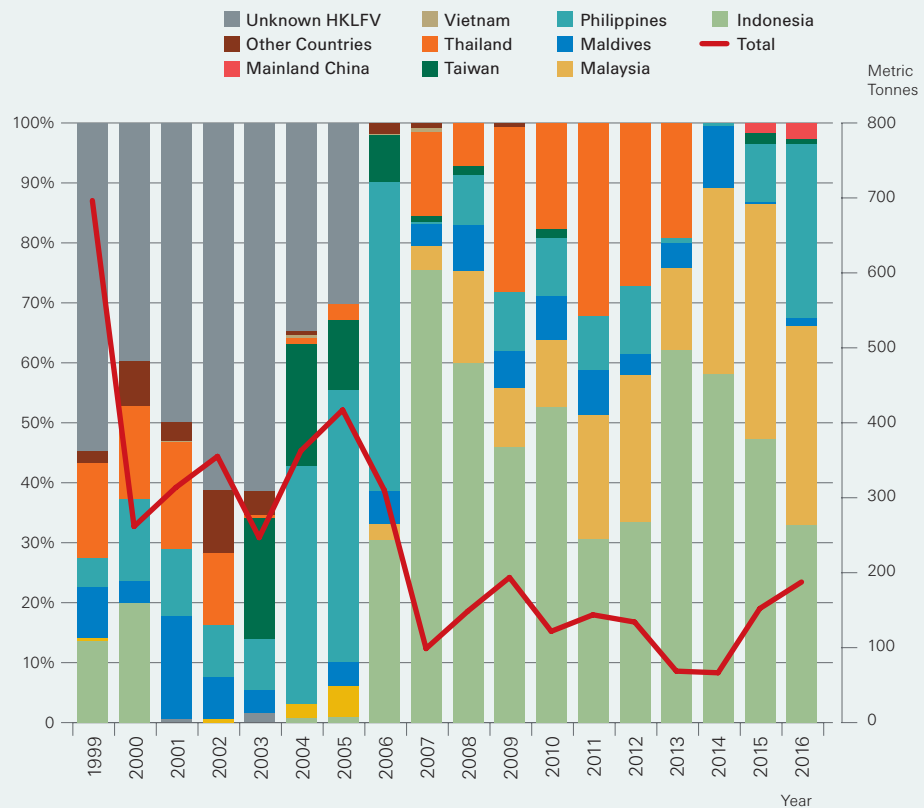
3.6.4 Flowery Grouper – Decreasing Volumes and Reliance on Wild Capture

Trade in the Flowery Grouper is low in volume, and since 1999, imports have dropped from 700 MT to around 200 MT (Figure 3-15). Declines in the trade of this species are the most visible among all recorded groupers and appear to reflect a real decline in wild populations, according to independent data, since this species cannot be hatchery-produced at commercial levels.¹⁹⁷

FLOWERY GROUPER



All fish come from the wild, and the species is often harvested by the targeting of spawning aggregations, a practice employed by fishers to take in large numbers. Predictable aggregation patterns make them easy to overfish.¹⁹⁸ This species is difficult to hatchery-produce due to slow growth rates, and low availability of seeds means that it is not commonly grown-out. For this reason, almost all individuals imported are caught at market size in the wild.^{199,200}

FIGURE 3-15 SOURCE COUNTRIES OF FLOWERY GROUPER IMPORTS, 1999-2016

Data source: C&SD & AFCD (HKLFV), 2017

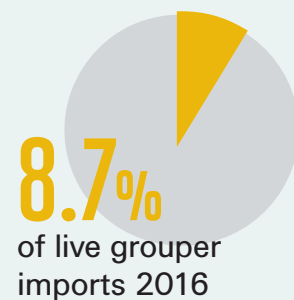
There appear to be few healthy populations of Flowery Grouper remaining in Indonesia

There appear to be few healthy populations remaining in Indonesia,²⁰¹ and the recent increase in imports of over 500% since 2013 from Malaysia may in fact be due to extensive cross-border smuggling of reef fishes from the Philippines.²⁰² These three countries currently account for the majority of the trade in this species.

3.6.5 Tiger Grouper – the Rise and Fall

From 1999 to 2007, imports of this species increased then fluctuated between 1,000 and 1,400 MT. In recent years, this species has been sourced predominantly from the Philippines, Thailand, Malaysia and Indonesia.²⁰³ Imports from Indonesia, however, have declined notably since 2007 (Figure 3-16) while those from Taiwan increased substantially in 2016.

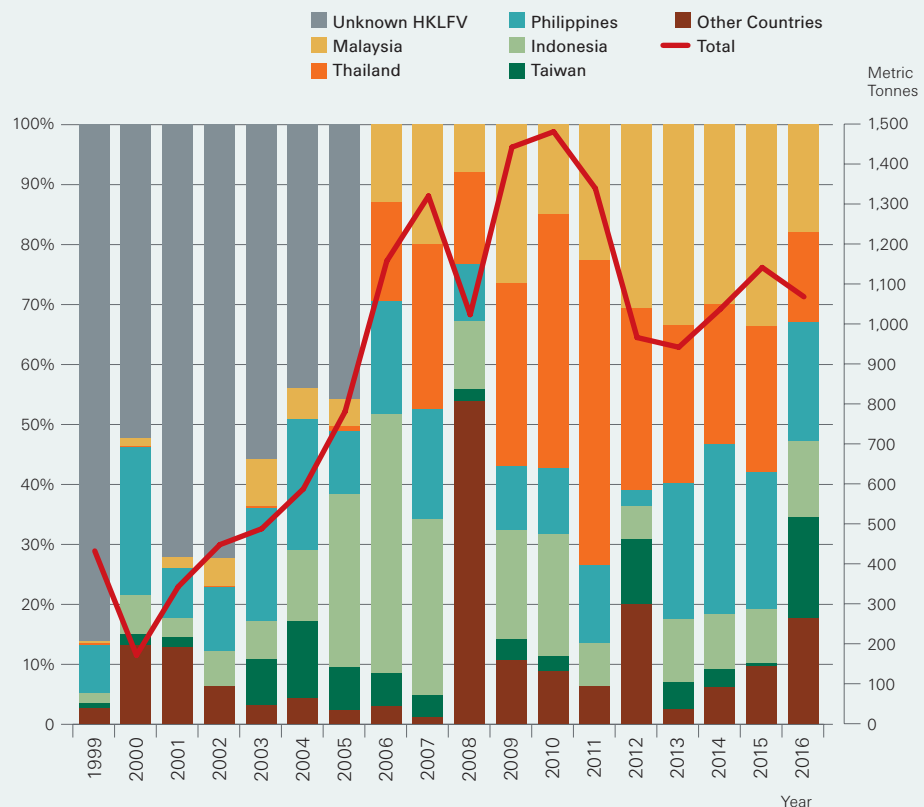
TIGER GROUPER



The drop in imports in 2012 may be due, in part, to the emergence of the Sabah Grouper (Section 3.6.9), which began entering the trade in large numbers around this time and was not given its own code in 2016. It is speculated that between 2012 and 2016 producers in Malaysia switched

their focus to Sabah Grouper which was garnering a much higher price than Tiger Grouper leading to a decline on the export of that species. At the same time the trade data shows an increase in 'Other Groupers', the likely reporting code for Sabah Grouper. The recent addition of a code for Hybrid Groupers will help clarify the situation in the coming years.

FIGURE 3-16 SOURCE COUNTRIES OF TIGER GROUPE IMPORTS, 1999-2016



Data source: C&SD & AFCD (HKLFV), 2017

Giant Grouper is successfully hatchery-produced in Taiwan, Indonesia and Malaysia, with some production in mainland China

Import volumes increased markedly after 2012

3.6.6 Giant Grouper – Going Up

Giant grouper imports increased markedly after 2012 to current peak levels (Figure 3-17). This species is successfully hatchery-produced in Taiwan (where it was first hatchery-raised), Indonesia and Malaysia with some production in mainland China. New land-based facilities have been developed in the New Territories in Hong Kong, which deliver HBA-produced Giant Grouper to high-end restaurants and hotels in Hong Kong. Some large individuals are reportedly still taken from the wild,²⁰⁴ but very little is known of the fishery of these individuals and it is likely that most individuals now on sale are hatchery-produced.

GIANT GROUPE

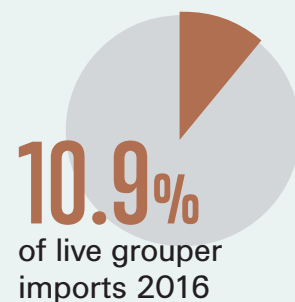
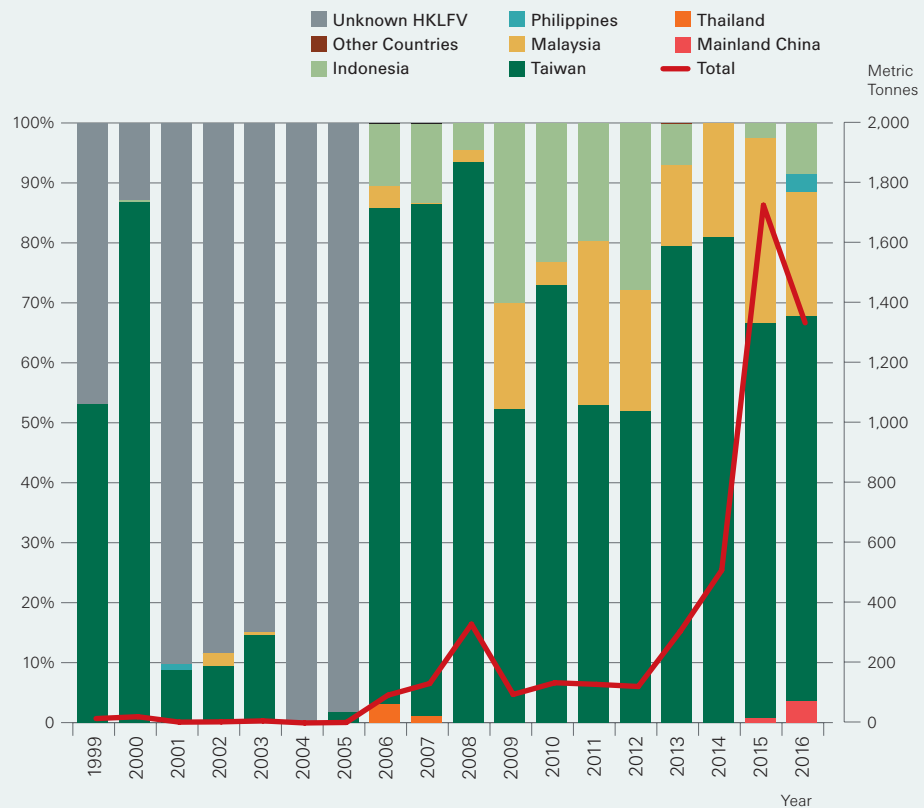


FIGURE 3-17 SOURCE COUNTRIES OF GIANT GROUPEUR IMPORTS, 1999-2016

Data source: C&SD & AFCD (HKLFV), 2017

High-finned Grouper is one of the most expensive species in the LRFFT and is traded in low volumes

3.6.7 High-finned Grouper – Low Volumes but Highly Variable

Hong Kong reportedly imports very low volumes of the High-finned Grouper (a few tens of tonnes annually), which is one of the most expensive species in the LRFFT. Indonesia and the Philippines are the main source countries, with Malaysia recently re-entering the trade (Figure 3-18). Although this species can be hatchery-produced, its growth rate in captivity is very slow, thus wild-caught fish still supply some of the trade.²⁰⁵ The low volumes reflect that this is a naturally uncommon species in the wild and/or that mariculture production levels are low. Small juveniles of this species are popular in the marine ornamental trade.²⁰⁶

HIGH-FINNED GROUPEUR

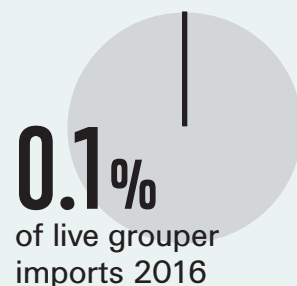
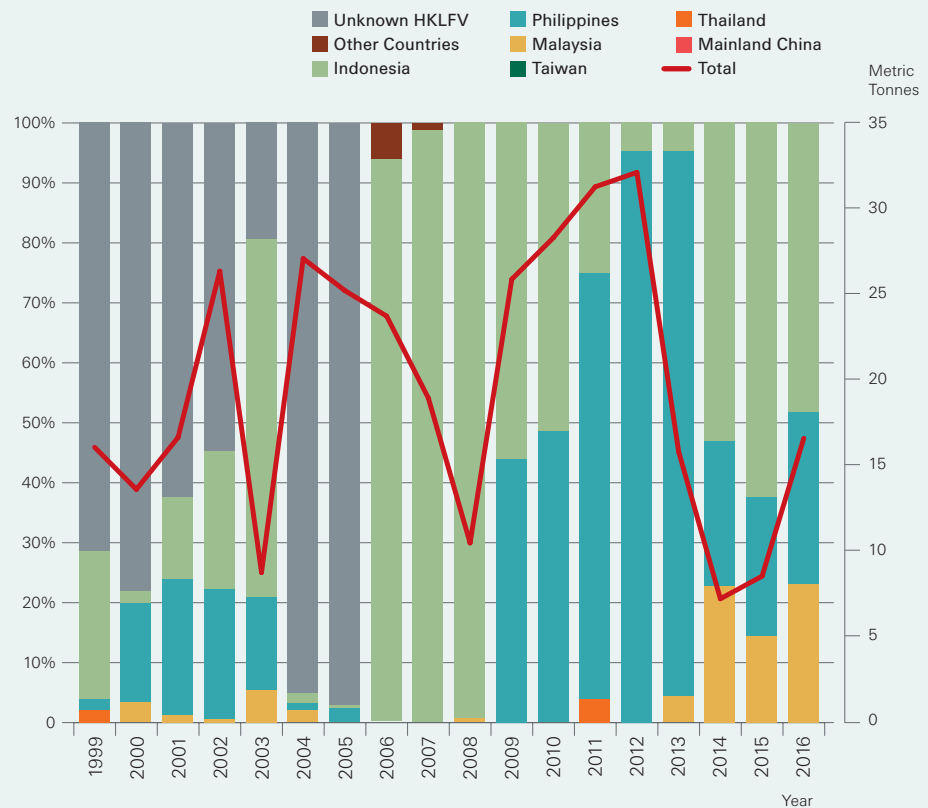


FIGURE 3-18

SOURCE COUNTRIES OF HIGH-FINNED GROUPER IMPORTS, 1999-2016



Data source: C&SD & AFCD (HKLFV), 2017

Squairetail Coralgrouper is often harvested from spawning aggregations and is very easy to overfish

3.6.8 Squairetail Coralgrouper – Low Volumes and All Wild-Caught

The Squairetail Coralgrouper is a medium-valued low-volume fish with annual reported imports in the hundreds of tonnes only. Sources are mainly Indonesia, the Philippines and Malaysia, all caught in the wild. It is often harvested from spawning aggregations and, like the Flowery Grouper with which it often aggregates, is very easy to overfish if the aggregations are targeted (Figure 3-19).²⁰⁷ The Squairetail

Coralgrouper is also referred to in AFCD and C&SD databases as the Spotted Coralgrouper/Trout. AFCD confirmed that these common names refer to *P. areolatus* in both databases.²⁰⁸

SQUARETAIL CORALGROUPE

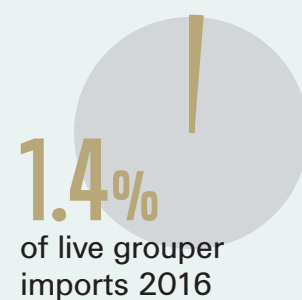
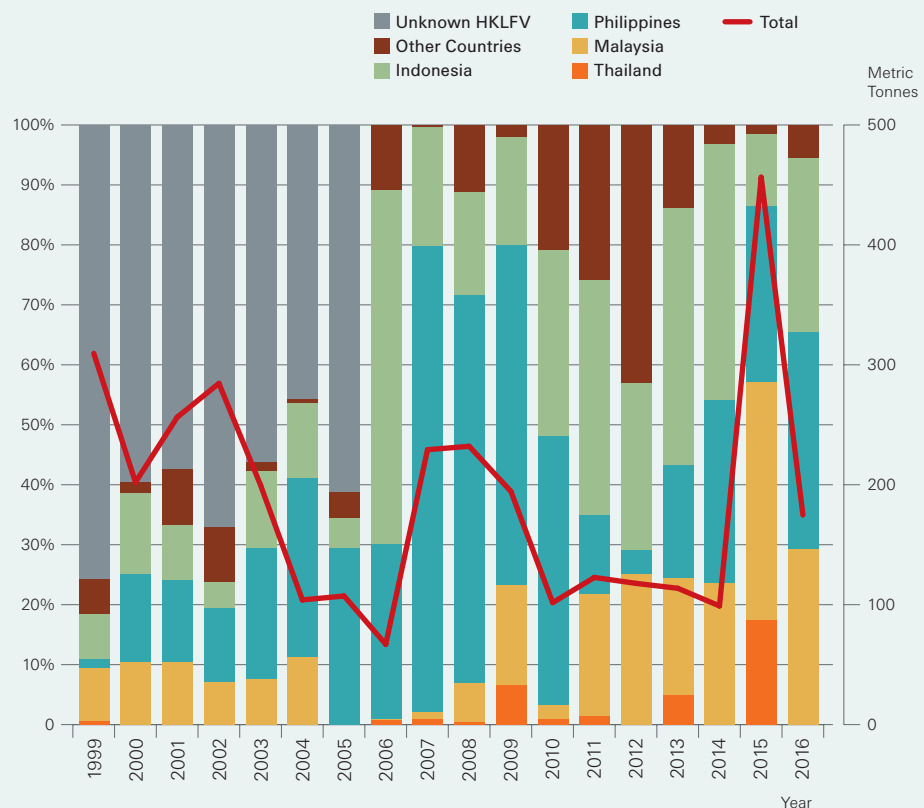


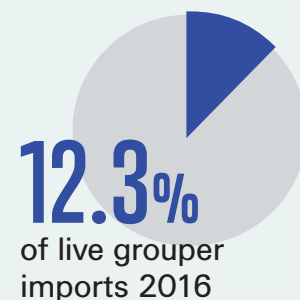
FIGURE 3-19 SOURCE COUNTRIES OF SQUARETAIL CORALGROUPER IMPORTS, 1999-2016

Data source: C&SD & AFCD (HKLFV), 2017

3.6.9 'Other Groupers' and Sabah Grouper – the New Fish on the Block?

The main sources of 'Other Groupers' have been Malaysia, the Philippines and Indonesia, with a recent increase in imports from Taiwan. As discussed above, this category probably included some Hybrid Groupers between 2012 and 2016, which likely accounted for the increase, peak and drop from 2012 to 2016 in the 'Other Groupers' category. Aside from these dynamics, volumes of 'Other Groupers' have remained fairly steady overall at between 1,500 and 2,500 MT annually since 1999. This 'Other Groupers' category comprises up to 40 different species (Table 2-2).

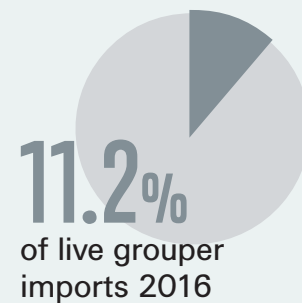
HYBRID GROUPERS



Since 2012, the hybrid Sabah Grouper has been readily available at retail outlets in Hong Kong

The Sabah Grouper hybrid was first produced by the University of Malaysia in Sabah in 2007, by fertilising the eggs of the Tiger Grouper (*Epinephelus fuscoguttatus*) with the sperm of the Giant Grouper (*Epinephelus lanceolatus*) through in-vitro fertilisation.²⁰⁹ Commercial production followed shortly after, and since 2012 the hybrid has been made available at retail outlets in Hong Kong. It is currently sourced from a number of countries (Figure 3-20).²¹⁰

OTHER GROUPERS



Until 2015, the species was included in the category 'Other Groupers'. In 2016, a separate commodity code for Hybrid Groupers, which includes the Sabah Grouper, was introduced into Hong Kong's commodity codes, explaining the shape of Figure 3-21.²¹¹

Recent market surveys of species retailed in Hong Kong have noted the following groupers commonly on sale that are not recorded at species level and probably comprise a significant proportion of the 'Other Groupers' category: *C. sonnerati*, *E. bruneus*, *C. boenak*, *P. maculatus* and *E. corallicola*.^{212,213,214} According to footnotes in the AFCD database, 'Other Groupers' include *P. pessuliferus*, *P. maculatus*, *E. cyanopodus* and *E. bleekeri*. Species such as the Red Grouper are also likely included in this category.

FIGURE 3-20 SOURCE COUNTRIES OF HYBRID (MOSTLY SABAH) GROUPERS IMPORTS, 2016

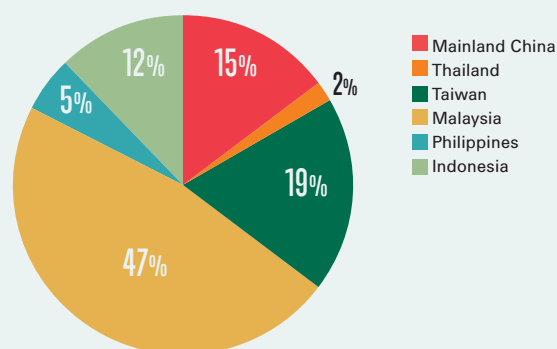
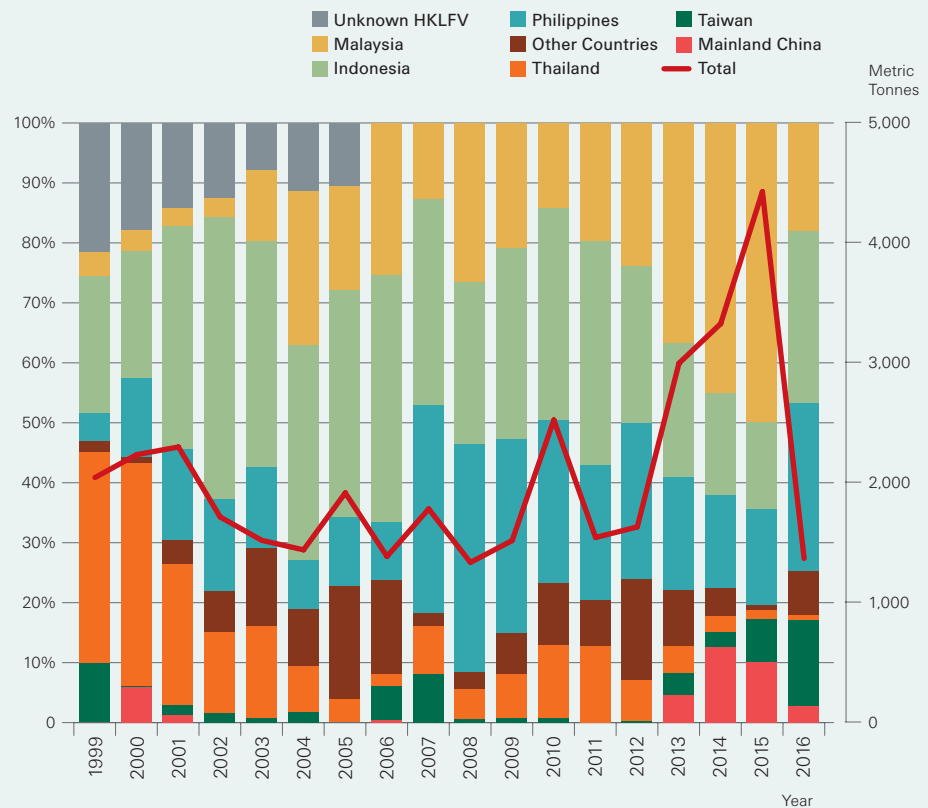


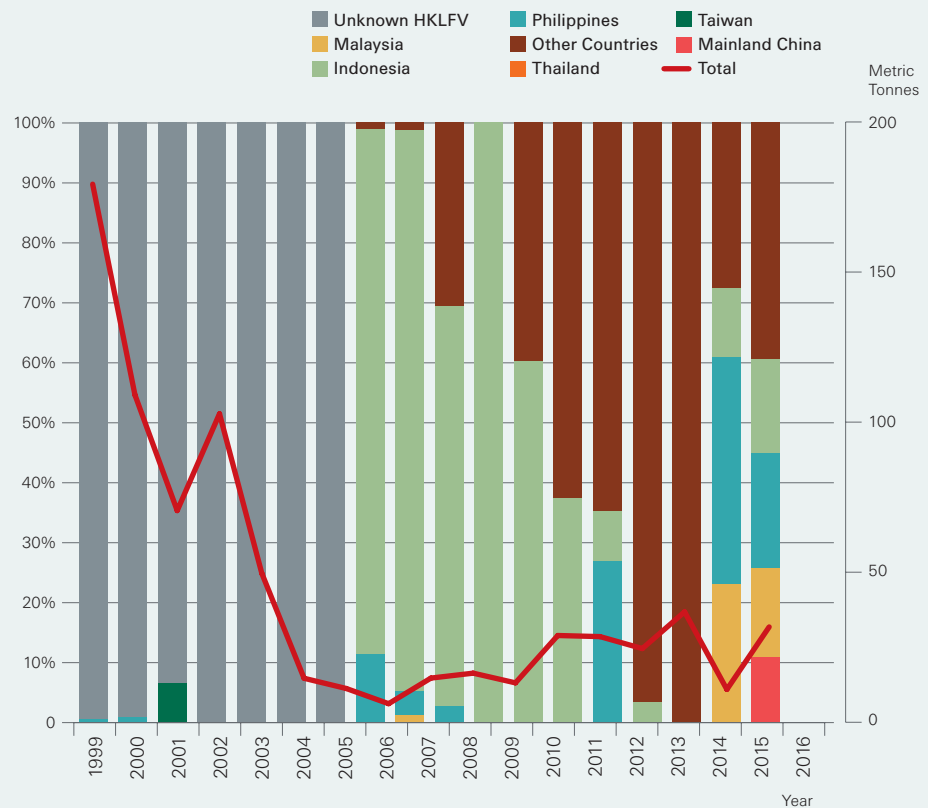
FIGURE 3-21 SOURCE COUNTRIES OF 'OTHER GROUPERS' IMPORTS, 1999-2016

Data source: C&SD & AFCD (HKLFV), 2017

3.6.10 Wrasses and Parrotfishes – a Small Component of the Trade

Reported imports of Wrasses (not including the Humphead Wrasse, which is documented separately) and Parrotfishes dropped from about 180 MT in 1999 to 15–45 MT over the last decade, and represented a very small proportion of the LRFFT (<0.5%) in 2016 (Figure 3-22). These fishes are largely transported via HKLFV, so little country-of-origin data are available before 2006, and species composition is not recorded. This category includes the Green Wrasse or Blackspot Tuskfish (*Choerodon schoenleinii*) and Blue Barred Parrotfish (*Scarus ghobban*), among other wrasse and parrotfish species (Table 2-2).

The limited data available indicate that until 2010, the species in this category were mainly imported from Indonesia, after which 'other' countries (unspecified in AFCD data) extended their roles. 2015 saw an increase in imports from the Philippines, as well as the entry of Malaysia into the trade with these species (Figure 3-22).

FIGURE 3-22 SOURCE COUNTRIES OF LIVE WRASSES AND PARROTFISHES IMPORTS, 1999-2016

Data source: C&SD & AFCD (HKLFV), 2017

3.6.11 Humphead Wrasse – Threatened by the LRFFT

Import data on the Humphead Wrasse are considered to be underestimated, the extent to which is not known. There are reports that this species, which must be accompanied by import permits when traded internationally, are sometimes mixed in with, and deliberately traded as, groupers in exports from Indonesia to hide the identity of this valuable and regulated species.²¹⁵

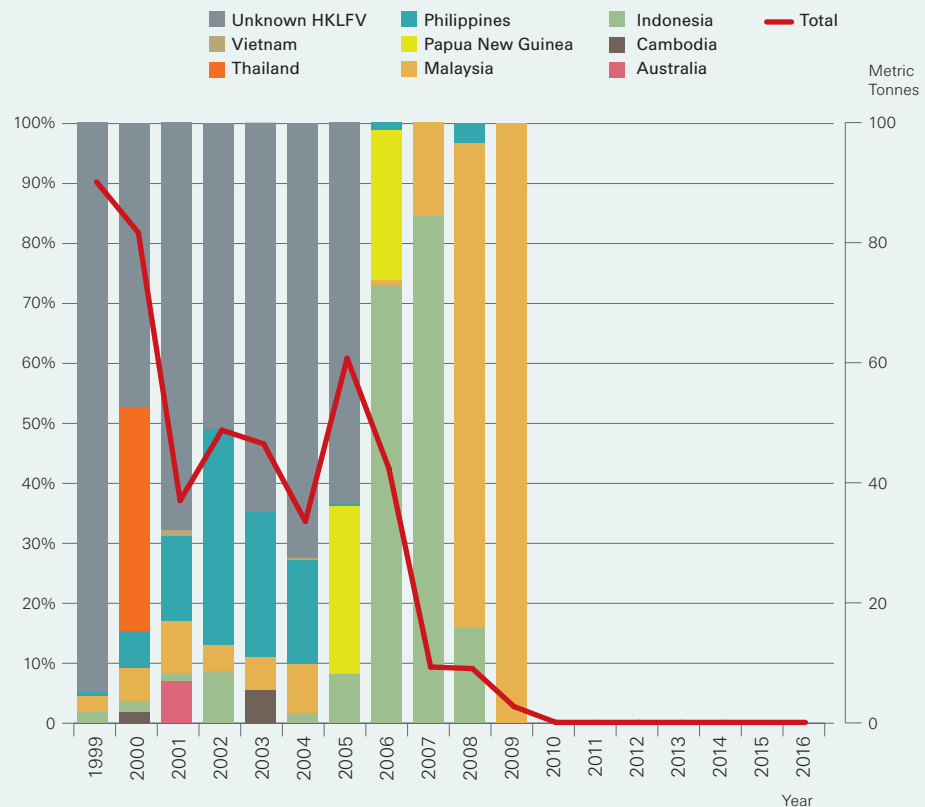
Official data suggest that imports dropped from approximately 90 MT to zero as of 2010. Even before this reduction in numbers, the species comprised only a small proportion of the LRFFT by volume (Figure 3-23). The decline coincided with the listing of the Humphead Wrasse on CITES Appendix II and the subsequent introduction of regulation in Hong Kong in 2006 (Section 3.12 & Part II). The Humphead Wrasse is particularly profitable for traders, as it is one of the two most highly valued species. Nonetheless, ongoing surveys with Hong Kong's retail sector, coupled with official CITES data, show that trade in this species continues today, despite no apparent imports recorded by either C&SD or AFCD.²¹⁶

Following the CITES listing, Indonesia implemented export quotas of several thousand Humphead Wrasse a year (currently under 2000), while Malaysia implemented a zero-export quota in 2010

Following the CITES listing, Indonesia implemented export quotas of several thousand animals a year (currently under 2000), while Malaysia implemented a zero-export quota in 2010. However, it is evident that the Humphead Wrasse continues to be exported from Malaysia, although some of these fish likely originate in the Philippines.^{217,218,219,220} Chinese boats are also known to enter the Philippines to poach this species.²²¹ Other countries, including the Maldives, Palau, Fiji and Australia have banned exports of the species for seafood.²²²

FIGURE 3-23

SOURCE COUNTRIES OF HUMPHHEAD WRASSE IMPORTS, 1999-2016



Data source: C&SD & AFCD (HKLFV), 2017

3.7 Transport Modes

3.7.1 Overview

The import into and re-export from Hong Kong of live groupers, Humphead Wrasse and other Wrasses and Parrotfishes (as well as other live seafood in general) take place primarily via the following transport modes:

- air;
- sea, aboard HKLFV [Class III (c)];
- sea, aboard HKLFC [Class III (a)]; and
- * sea, aboard foreign vessels.

Due to unknown levels of under-reporting of imports from HKLFV and HKLFC (Section 3.8.1), it is not possible to accurately evaluate the relative importance of air versus sea shipments over time.

According to available Hong Kong government data, air has been the predominant transport mode for groupers, comprising about 72% of all trade in these species across the time period for which data are available. It is very likely that sea transport is more important than indicated given that sea transport has generally been under-reported (Section 3.8).

Air carriage accounts for 72% of transport for live groupers, but volumes by sea are increasing

Despite shortcomings in the data on sea transport, it is suggested that volumes entering by sea have increased on Hong Kong-registered and foreign vessels since 2013 (Figure 3-24). The apparent increase could be due to shifts away from air transport resulting from airlines passing on higher fuel prices, and the increasing trade in Sabah and Giant grouper, from not-so-distant, China and Taiwan and which are predominantly imported by sea. As well is the increase in numbers of Hong Kong fish carrier vessels in recent years (i.e. Class III (a)), although it is not clear if these are new vessels to the LRFFT or vessels that have shifted their licence from Class III (c) (fishing vessels) to III (a) (fish carrier vessels) (Figures 3-25).²²³

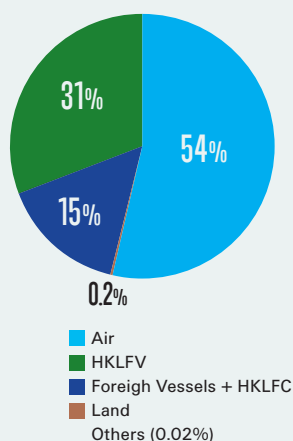
3.7.2 Considerations in Selecting Transport Mode

Key determinants of transport mode include speed and cost to market, risks of mortality, and market price

When selecting the most appropriate transport mode, traders consider many factors, including reliability, speed and cost of transport, risks of fish mortality, market price of the species and access to market.²²⁴ Existing transport infrastructure and availability of regular transportation means (i.e. flight schedules) also play an important role (see Appendix A-IV).

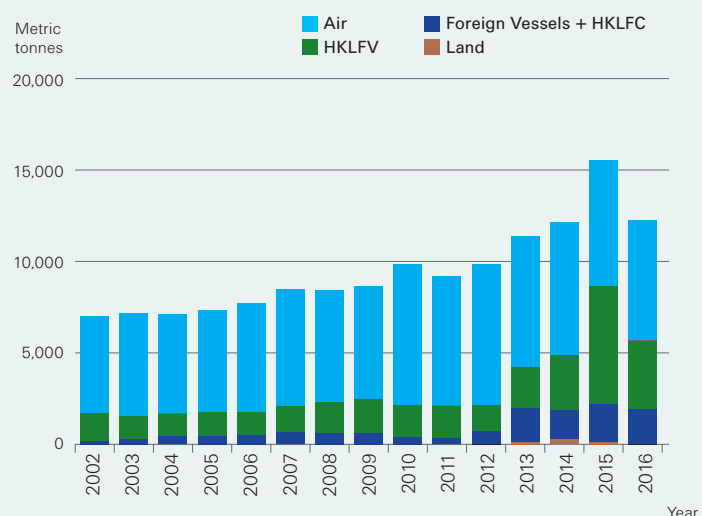
FIGURE 3-24 LRFFT TRANSPORT MODES BY YEAR

A. Percentage Volume of LRFF Imports by Transport Mode, 2016



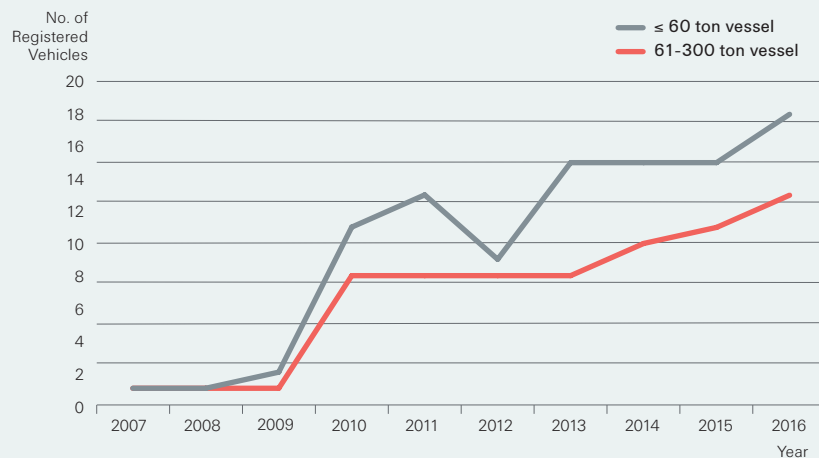
Data source: C&SD & AFCD (HKLFV), 2017

B. Composition of LRFFT by Transport Mode, 2002–2016



There has been a notable increase of fish carriers licensed in Hong Kong in recent years

FIGURE 3-25 REGISTRATION OF CLASS III (A) FISH CARRIERS, 2007-2016



Note:

Local fish carriers were only differentiated from actively fishing vessels in 2007 for registration purposes.

There are two vessel size classes: a) up to 60 net tonnage and; b) 61–300 net tonnage.

At least eleven Hong Kong-based live fish carriers were active in 2016 in Indonesia, and these ranged from 219 to 397 Gross Tonnage (GT) (Anon, April

2017). Whether Hong Kong vessels are operating elsewhere is unknown.

GT does not include the cargo. It only includes the volume of the vessel's closed-in spaces with one vessel ton equating 100 cubic feet. Net Tonnage is gross tonnage discounting space occupied by accommodation or other functional spaces, such as engine, fuel etc. It represents the space available for the accommodation of passengers and the stowage of cargo.

Data source: Marine Department Port of Hong Kong Statistical Tables, 2007–2017

Air transport is preferred for the relatively higher-value LRFF species, such as the Leopard Coralgrouper

For the relatively higher-value LRFF species, such as the Leopard Coralgrouper, risks of mortality and decline in quality during shipment are important considerations. Indeed, preference for air transport is linked to considerations for the quality of the fish on arrival, which is significantly influenced by transportation times. Landing a quality product in optimum condition is crucial to attaining the best possible price. For this reason, flights are the preferred mode of transport for the LRFFT, particularly for the more valuable species.

In terms of fish tonnage carried by different vessel sizes (GT - gross tonnage):

- 28 GT vessel can carry about 1.3 MT fish;
- 85 GT vessel can carry about 3.5 MT fish; and
- 150 GT vessel can carry about 5 MT fish. For 300 GT vessels, they can carry between 15 to 45 MT of fish depending on the vessel design, with deeper hulled vessels capable of carrying a bigger payload/cargo.

In some cases, access by boat may be the only practical transport means. For example, the Humphead Wrasse is transported out of the Anambas and Natuna Islands and exported from western Indonesia by boat, as there are no commercial air transport options available in the area.

The high frequency of flights from major export hubs is critical to the LRFFT, providing transshipment flexibility and stability to the traders as well as reducing risk. Though sea transport is comparatively cheaper, it is subject to seasonal monsoons and typhoons (July to December), and transshipment times to Hong Kong can be considerable — up to 10–14 days within Southeast Asia (e.g. eastern Indonesia). Indeed, transshipment times from the Pacific (20–25 days) compounded by inadequate technology to ship fish by air from these islands was a key factor in the demise of the LRFFT in the Pacific Islands in the early 2000s. In addition to transshipment times, occurrences such as algal red tides and changing water conditions, especially in temperature, must be taken into consideration as these can influence the condition of the LRFF, due to regular seawater exchange during the sea journey.²²⁵

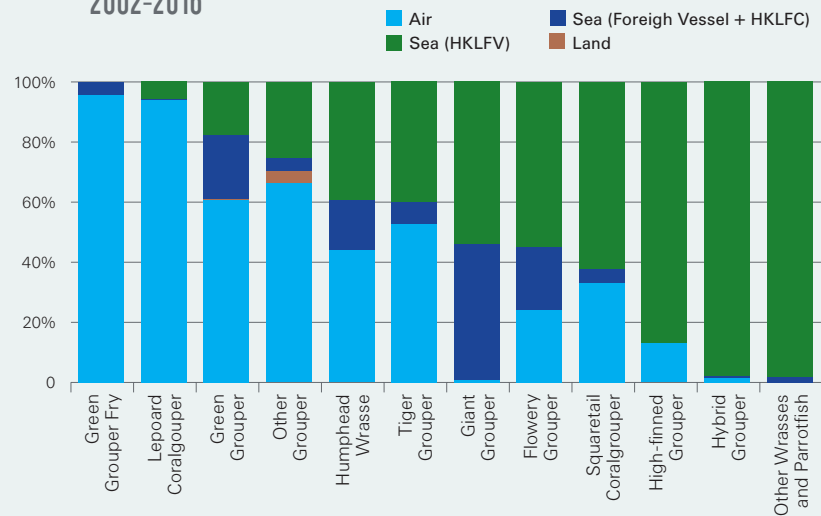
Another factor affecting choice of transport mode is the relatively large quantity of LRFF needed to cover costs when transporting by vessel. The fish capacity of a HKLFV is approximately 20–40 MT, depending on vessel type (wooden/metal), design and size. A large shipment usually requires collection of the LRFF from cage farms (CBA and HBA) or fish consolidation areas, where live fish may be held for up to a month to allow consolidation for large bulk shipments prior to collection. By comparison, commercial flights only carry around 4 MT per shipment.

3.7.3 Transport Mode and Species

Analysis of species by transport mode from 2002 to 2016 shows that lower-value species, such as Hybrid Groupers and the Giant Grouper, are typically transported by sea, with higher-value species mainly transported by air, minimising mortality of the more valuable products during transit.^{226,227}

Hybrid Groupers and Giant Grouper are typically transported by sea

However, fish value is not always associated with transport modes. For example, about 60% of Green Grouper imports from 2002 to 2012 were transported by air, despite the lower unit value of this species (Figure 3-26). This is likely due to a combination of cheaper air transportation from Thailand,²²⁸ a major exporter that accounted for about 44% ($\pm 12\%$) of total Green Grouper imports into Hong Kong between 2006 and 2015 (Section 3.6.3, Appendix A-III), expediency and cost-effectiveness associated with transporting the hundreds of thousands of fragile fry faced with high mortality risk at one time. While High-finned and Flowery Groupers are not low-value species, both are very low-volume species and included in large sea shipments from some locations. It is interesting to note that certain volumes of the Squaretail Coralgrouper are shipped by sea even though the species is highly priced and usually caught concurrently with the Leopard Coralgrouper.

FIGURE 3-26**AVERAGE PERCENTAGE TRANSPORT MODE (EXCEPT FOR HYBRID GROUPERS), 2002-2016**

Data source: C&SD & AFCD (HKLFV), 2017

Species Transported by Air: Air transport is used to ship all grouper species, with the regular exception of the Giant and Hybrid Groupers (Figure 3-26). Four species or species groups — the Leopard Coralgrouper, Green Grouper, ‘Other Groupers’ and Tiger Grouper — account for the vast majority of LRFF imports into Hong Kong by air.

Species Transported by Sea — Foreign Vessels and HKLFV: In the early 2000s, foreign vessels were mainly responsible for transporting a range of species into Hong Kong by sea (Appendix A-II). In recent years, the Giant Grouper has taken up an increasing proportion of all LRFF carried by this transport mode (Appendix A-II). This is reflected in the increasing volumes of this predominantly farmed species being imported into Hong Kong (Figure 3-17).

Species Transported by Sea — HKLFV: Records for 2002–2016 indicate that HKLFV carry a wide range of species and are the main mode of transport (see Appendix A-II) for the High-finned Grouper, Giant Grouper, Flowery Grouper and Squaretail Coralgrouper, as well as for Hybrid Groupers and Wrasse and Parrotfishes (accounting for an average of 99% of total import volume).

3.7.4 Transport Modes and Countries

Among the four major LRFF exporting countries, three (Indonesia, the Philippines and Thailand) currently export predominantly by air (both live and chilled/fresh/frozen reef fishes), according to C&SD and AFCD data. Malaysia, on the other hand, exports two-thirds of its LRFF by sea. The greater use of sea transport may be attributable to the proximity of Malaysia to Hong Kong, which requires a sea journey of around 4–5 days, and also to the high proportion of cultured Sabah Grouper being produced in Sabah, Malaysia. However, since sea trade is poorly documented, this represents only a partial understanding.

3.8 Underestimation of Volumes, Under-reporting and Inaccurate/Inadequate Monitoring

3.8.1 A History of Under-reporting Requires Clarification

There are several indications that LRFF volumes imported into Hong Kong are being considerably underestimated:

- i) Customs and fish marketing exemptions: Since 1984, Hong Kong's Import and Export Ordinance (Cap 60) has exempted Hong Kong fishing vessels from reporting their catch to Customs, whether live or dead. This was in accordance with international practice that treats fish caught on fishing vessels as part of fishery 'production' rather than imports (see also Part II, Section 2). The assumption in this case is that these fishing vessels are going to fishing grounds and not importing fish from other countries. Thus the exemption applies to: *'marine fish, including edible crustaceans, molluscs and other similar edible products derived from the sea, arriving in Hong Kong direct from fishing grounds on fishing craft registered or licensed in Hong Kong'* (L.N. 256 of 1984).

Fish and invertebrates entering Hong Kong on local fishing vessels are required by law to be landed at one of the seven designated fish markets of the FMO, and it is through these landings that Hong Kong fisheries production can be determined. However, live fishes are notably excluded from this requirement because they are not part of the FMO's definition of 'marine fish'. Cap 291 distinguishes between live and non-live fish and invertebrates: *"marine fish" (海魚) means any fish or part thereof, whether fresh or processed, in any manner indigenous in sea water or partly in fresh water and partly in sea water, including any product derived therefrom, but excluding all crustaceans or molluscs and fish alive and in water'*. [emphasis added]

Due to the lack of clarity in customs regulations, live fishes and invertebrates on Hong Kong vessels have not been officially documented by either Customs or FMO for several decades

Since 1984, however, fish stocks have declined in local waters,²²⁹ and the import of both live and dead fish from outside Hong Kong's fishing grounds by local carriers and locally licensed fishing vessels has increased. Due to the lack of clarity in the exemption, i.e. whether Hong Kong 'fishing vessels' included carriers, live fish and invertebrates entering by sea on all Hong Kong vessels were not officially documented by either Customs or by FMO for several decades (until 2007 – see below).

This is further supported by interviews with live fish traders, who indicated that they often do not report their import cargo to Customs (both manifests and declarations) partly because they think it is too time-consuming, and partly because they have not previously been obliged to do so. In practice, these vessels are certain to have records of what they have on board because detailed records are kept of cargo, hence there should be no excuse based on practical or operational considerations for not reporting. The HKCSM appears to recognise this, but it cannot compel its members to make reports.

In acknowledgement of the shortcomings of live seafood records on Hong Kong vessels, and in response to growing concerns expressed by academics and NGOs in the late 1990s, AFCD began to *informally* collect data on live fish by conducting interviews with fishing vessel owners. A list of traders was provided by Hong Kong Chamber of Seafood Merchants Ltd (HKCSM),²³⁰ which is formed by the major seafood merchants in Hong Kong, to AFCD. The listed traders are willing to provide their trade information on a voluntary basis and are claimed to be representative in the trade (in trade volume), although not all members of the Chamber participate. According to HKCSM, their trade volume represents the majority of the whole trade volume of live marine fish in Hong Kong. However, the data collected from this subset of active vessels whose operators were willing to cooperate, are not verified or cross-checked with actual shipments and it is not clear if they are consistent over time (Section 2). Hence, the AFCD programme did not fully address the data gap. In 1999, TRAFFIC-East Asia and WWF-Hong Kong released research results that raised concerns about the potential under-reporting of the LRFF imported into Hong Kong.^{231,232} This concern was brought to the HKSAR Government's attention and was recognised by its Advisory Council on the Environment in 2000.²³³

Hong Kong fish carriers import live fish into Hong Kong and are therefore required by law to submit import declarations to Customs, but not all do so

In 2007, the Marine Department introduced a classification for locally licensed fishing vessels (Class III), such that fish carriers were identified as Class III (a) and for the first time were clearly distinguished from fishing vessels (Class III (c)). This provided clarity as to the designation of fishing vessels, and stipulated that fish carriers should only transport fish and not carry out any fishing activities.²³⁴ Since Class III (a) fish carriers are involved in the transport of fish from overseas fishing grounds, they are effectively importing live fish cargo into Hong Kong and are therefore required by law to submit import declarations to Customs, with a high penalty imposed for unmanifested cargo.

Following the introduction of the new classification in 2007 distinguishing fish carrier vessels (Class III (a)) from fishing vessels (Class III (c)), to the knowledge of the researchers of this report, no advisories were sent by the government to the fish carriers to enforce the requirement of reporting fish cargo. This was inferred from multiple communications with AFCD,^{235,236,237} which suggested that it was not made fully aware of the status of the exemption, i.e. that these Class III (a) vessels that had previously not been reporting should actually be doing so. Only in late 2016 did AFCD draw the attention of the carriers (Class III (a)) to the reporting requirements, after the issue was again brought to the government's attention.²³⁸ On the other hand, Class III (c) vessels are still not required to report 'live fish' to the FMO, even though most are landed at FMO facilities (traders pay rental fees to the government to use the space).

- ii) Not reporting, despite clarification: There is strong indication that fish carriers (Class III (a)) are still not adequately reporting their imports to the Hong Kong Government. Despite a notable increase in the number of fish carriers in the last decade (Figure 3-25), there has been no corresponding increase in recorded imports via sea to reflect the rise in vessel numbers (Figure 3-24).

This strongly suggests that few, if any, of the fish carriers have been (fully) reporting their imported fish cargo to C&SD.

Following the advisory in late 2016 that these locally licensed carrier vessels should declare imports to customs, a decrease in AFCD volumes reported and concomitant increase in C&SD volumes reported to mark the loss of exemption was expected as of early 2017. This was based on the assumption that vessels would not be simultaneously reporting to both departments (information on this point could not be clarified by AFCD). Reports of cargo entering Hong Kong on these Class III (a) vessels were expected to result in increased import data for Customs from January 2017 onwards. As of December 2016 there were 31 such vessels, 13 of which were large vessels (of 200-400 GT (Figure 3-25)) carrying large volumes of fish.

Examination of recent C&SD records, revealed a paucity of data on species that typically come in by sea

However, examination of C&SD data from January to August 2017 (Table 3-3) revealed a paucity of data (considering the eight-month time period) on species that typically come in by sea (likely by fish carriers), e.g. Hybrid Groupers and the Giant Grouper, which are among the most dominant species on sale currently, and much of which enters Hong Kong from abroad (particularly Malaysia and Taiwan). This clearly points to under- or non-reporting by some Class III (a) vessels during this time period. No records of Mangrove (Red) Snapper (0301 9951) or Wrasses and Parrotfishes (0301-9939) were in the C&SD data despite their monthly presence in retail outlets in the city.

TABLE 3-3

C&SD LRFFT DATA SHOWING IMPORTS FROM JANUARY TO AUGUST 2017; ALL TRANSPORT MODES INCLUDED

Code/Common name (0301)	Totals
9927 Leopard Coralgrouper	2,209,227
9999 Marine fish, NESOI	1,238,555
9924 Green Grouper	1,669,329
9929 Other Groupers	963,938
9925 Tiger Grouper	742,662
9921 Giant Grouper	384,994
9920 Hybrid Groupers	18,900
9926 Flowery Grouper	16,805
9928 Squaretail Coralgrouper	10,304
9914 Green Grouper Fry	1,793
9922 High-finned Grouper	1,304
9931 Humphead Wrasse	399
GRAND TOTAL	7,258,210

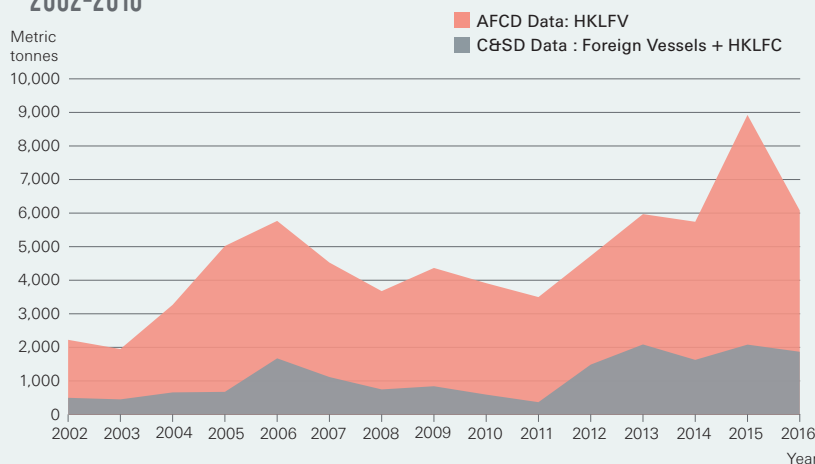
N.B. No data for this period are recorded for:
0301 9951 – Mangrove (Red) Snapper
0901 9939 – Wrasses and Parrotfishes

Despite recent clarifications, Hong Kong-licensed carrier vessels are still not adequately reporting their imports to C&ED

In summary, given the change in classification of many Hong Kong vessels to Class III (a) fish carriers, and the rise in number of vessels in this category, an increase in LRFF data in Customs records, particularly after 2009 (Figure 3-25) and over the last few years should have been observed. While no such increase in C&SD data was noted, there were also no obvious indications of a decrease in AFCD data over the same time frame (Figure 3-27). Such dynamics demonstrate that Hong Kong-licensed carrier vessels are still not adequately reporting their imports to C&ED.

FIGURE 3-27

IMPORTS BY SEA: AFCD DATA COMPARED WITH C&SD CUSTOMS RECORDS, 2002-2016



Data source: C&SD & AFCD (HKLFV), 2017

- iii) The case of the Humphead Wrasse: The Humphead Wrasse continued to be sold after the CITES listing with legal animals entering the city every year, according to CITES records (Section 3.12.6). However, the species is not being adequately reported to AFCD/Customs (Figure 3-51). Since observations reveal that at least one Hong Kong fish carrier vessel is regularly importing this fish,^{239,240} it is evident that Humphead Wrasse are entering Hong Kong without being registered with C&SD (or AFCD/CITES).²⁴¹
- iv) Anomalies in data: It has been noted that some species recorded in HKLFV data by AFCD are not documented in C&SD data. The Mangrove Snapper, for instance, was recorded in C&SD data only until 2013, while AFCD recorded imports of this species for the whole of this period (to end 2016).
- v) Hong Kong-licensed fish carriers exempted from reporting entry/exit: It is not possible for Customs to determine whether fish carrier vessels have reported cargo because vessel classification is not indicated on cargo data submitted to Customs (see also Part II, Section 2). Since these vessels are not required to register their entries and exits to/from Hong Kong with the

Marine Department (which deals mainly with safety issues), their movements and activities are difficult to track. Consequently, Customs cannot follow up to ensure that manifests and declarations have been filed appropriately (Part II, Section 3).^{242,243} There is no valid justification for such entry/exit exemption,²⁴⁴ and it is believed that its removal would enhance the Custom Department's ability to ensure reporting by these vessels.

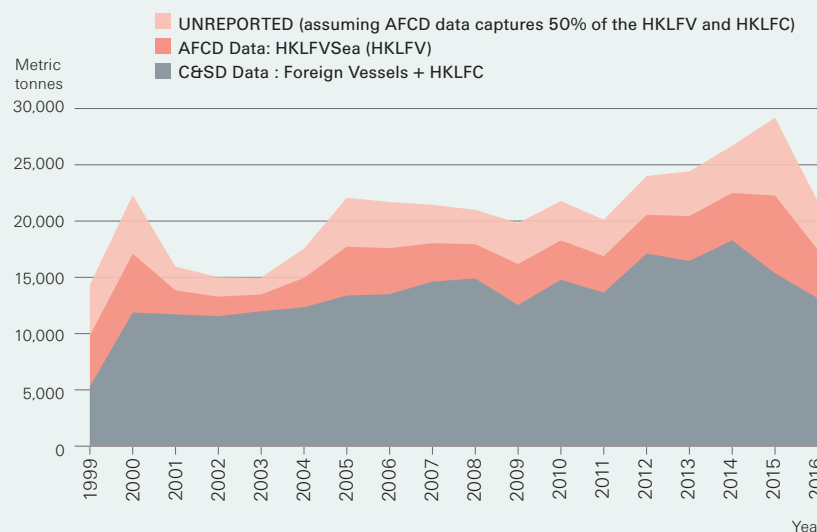
In summary, it is likely that a considerable volume of LRFF goes unreported (Figure 3-28). AFCD's claim that it covers 'most' of the LRFFT (traders) in its monthly interviews is unsubstantiated, and without a meaningful estimate of the total live fish trade volumes arriving in Hong Kong by all local vessels, the data are of limited value. Until 2003, AFCD had indicated that the data covered about 50% of the live marine fish import volumes.²⁴⁵ Recently, the Department stated that it accounted for the imports of eight traders. However, it is not known to what percentage of the total volume this covers as the number of importers is unknown.

AFCD does not appear to know the current total number of traders in this specific category (HKLFV). The HKCSM states that it has 80 members, but the number of members that are LRFF traders is unclear because they are not distinguished from retailers or those who trade in other seafood-related products. Moreover, Chamber membership is not required in order to trade in LRFF, thus the proportion of live seafood traders represented by the Chamber is not known.²⁴⁶

As a considerable volume of LRFF is likely unreported, import volumes are considerably under-estimated

Based on AFCD's estimate (50%), the total volume of LRFF (including Marine Fish, NESOI, live) brought into Hong Kong in 2016 could be as high as 21,745 MT. It is noted that this figure is 4,000 MT higher than that shown by C&SD and AFCD's combined data for the same year (Section 3.4.2).

FIGURE 3-28 ESTIMATE OF UNDER-REPORTING BASED ON AFCD VOLUNTARY DATA COLLECTION, 1999-2016



Data source: C&SD & AFCD (HKLFV), 2017

3.8.2 Country Exports Inconsistent with Hong Kong Imports

Most studies on the LRFFT have focused on volume, country of origin and sustainability issues in source countries. Few analyses have compared the quality of trade data among key trading partners, such as Hong Kong, the Philippines, Malaysia, Indonesia and Australia. The few analyses that have been done indicate discrepancies suggestive of under-reporting by either source or destination countries and/or by traders. One such example is between Hong Kong and Australia.

Australia: Hong Kong Imports < Australia Exports

The Coral Reef Fin Fish Fishery that operates on the Great Barrier Reef is the only Australian fishery exporting live groupers to Hong Kong, the predominant retained species being the Leopard Coralgrouper. This is a limited-licence fishery with a Total Allowable Catch (TAC) made up of Individual Transferable Quotas (ITQ).²⁴⁷ Compulsory logbooks are used to record landings of the Leopard Coralgrouper and other retained species, for which there are commercial catch limits and minimum legal size limits.

Routine portside inspections are carried out by fisheries enforcement officers to verify logbooks and quota compliance. The vast majority (90–95%) of Leopard Coralgrouper caught enter the LRFFT and are exported from Australia entirely by air (transport vessels are prohibited to operate within the fishery) to Hong Kong. The fishes are flown out of Cairns or Brisbane, and all are shipped in oxygenated fiberglass bins that can hold up to 350 kg of fish. At the time of data collection, no flights from Cairns, Australia (where the fishes are exported from) fly directly to mainland China, so our understanding is that all air shipments will be unloaded in Hong Kong.²⁴⁸

Sizeable and persistent discrepancies can be observed between Australia's export of Leopard Coralgrouper and Hong Kong's imports, which are on average 50% lower, than export data

Import export discrepancies raise the question of how much under-reporting is actually occurring

When comparing reported '*exports*' of live Leopard Coralgrouper from Australia (as recorded by the State agency) with reported '*imports*' of Leopard Coralgrouper from Hong Kong C&SD data, sizeable and persistent discrepancies can be observed. Figure 3-29 illustrates the extent of these: C&SD data indicated imports were on average 50% lower than the comparative and highly reliable Australian export data over the period 2006–2016.

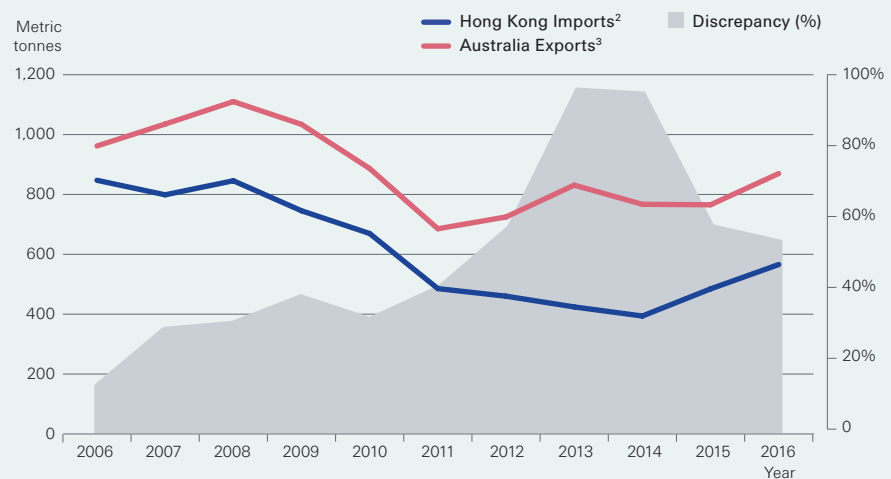
There is no explanation as to why these figures differ, but the data give cause for concern. C&SD figures on air imports have always been viewed as reliable data, and numerous peer-reviewed articles and reports have over years relied upon the information to report on industry trends and to theorise on the extent of overfishing, relative to the productivity of reef fisheries (Section 3.4.1). The extent of these discrepancies between Australian export data, considered highly reliable, and reported Hong Kong data begs the question of how much under-reporting is actually occurring, including for air transport estimates. This considerably undermines the supposed veracity of estimates of trade volumes, and has significant implications in terms of the magnitude of overfishing that may be occurring in source country fisheries.

Discrepancies that account for over- or under-reporting between export and import data may be attributable to one or multiple factors, including:

- Inaccuracies or omissions in the data collected by C&SD due to the way that shipments are reported on customs declarations by traders;²⁴⁹
- Under- or non-reporting of imports by the HKLFV and HKLFC, as a result of these vessels not providing customs declarations (Section 3.8.1);
- Exaggeration or under-reporting of export figures by source countries;²⁵⁰
- Under-reported trade volumes declared to C&SD by traders responsible for exporting fish out of source countries or importing fish to Hong Kong. It is possible that some live reef fishes that have existing commodity categories are only reported as 'other marine fish' rather than assigned to a more representative existing category;
- Non-reporting of re-exports to reduce duties in mainland China – there is significant smuggling of live seafood from Hong Kong into mainland China; and
- Trade bypassing mainland ports with live fish directly offloaded from vessels before or after entering Hong Kong and going straight to the border.

FIGURE 3-29

HONG KONG IMPORT DATA COMPARED WITH AUSTRALIA¹ EXPORT DATA, CONCERNING PRIMARILY THE LEOPARD CORALGROUPER, 2006-2016



¹ The data is from Queensland, noting that Queensland has the only major commercial fishery targeting species desired by the live trade

² Import data from Hong Kong C&SD

³ Export data from estimated from catch data provided by the Department of Agriculture and Fisheries (DAF) in Queensland

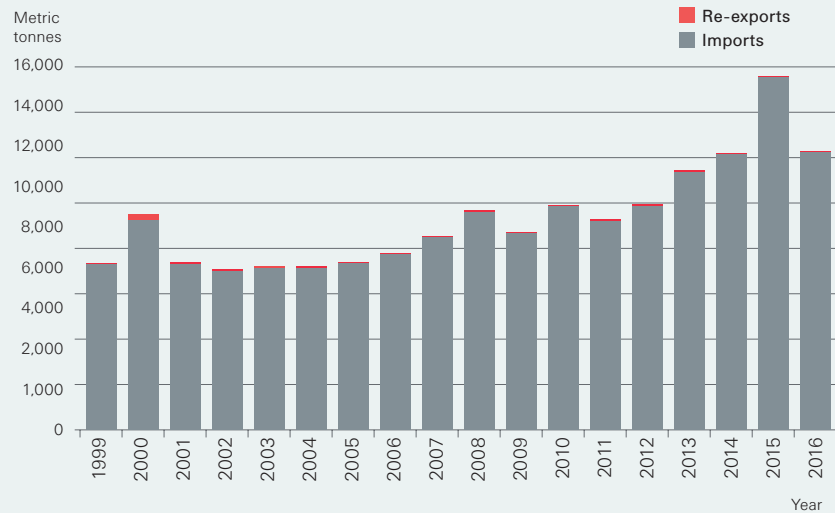
Documented re-exports from Hong Kong remain at low levels: 0.8% of imports on average. This is despite ongoing re-exports between Hong Kong and mainland China

3.8.3 Inaccurate Re-export Data

While imports into Hong Kong have exhibited an overall upward trend over the last two decades, re-exports are indicated at very low levels (0.8% of imports on average (Figures 3-30 & 3-31)), despite ongoing re-exports between Hong Kong and mainland China by both sea and air (Section 3.12). In 2016, a mere 46 MT of live grouper re-exports were recorded in the trade data, representing less than 0.5% by volume of all live grouper imports for that year (Figure 3-30). The official data would imply that the vast majority of LRFFT stays in Hong Kong. It is, however, extremely unlikely that Hong Kong consumes 99% of LRFF imported. Rather, the prevailing situation is likely due to unreported re-exports, i.e. smuggling, rather

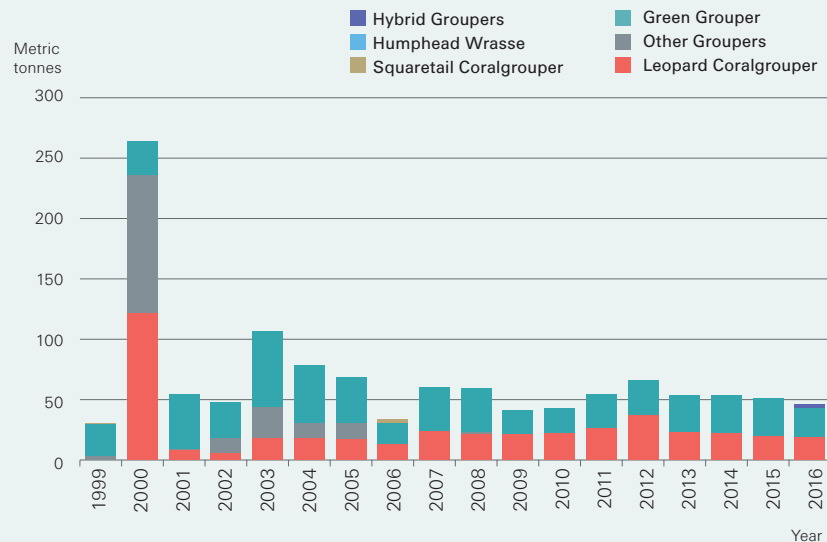
than a decrease in demand or in fish available for re-export (Section 3.12.3). There is a long history of seafood (and other commodity) trading and trade networks over the border with mainland China from Hong Kong, largely to avoid taxes and tariffs of produce moving into the mainland.

FIGURE 3-30 LIVE GROUPEL IMPORTS AND RE-EXPORTS TO AND FROM HONG KONG, 1999-2016



Data source: C&SD & AFCD (HKLFV), 2017

FIGURE 3-31 LIVE GROUPEL RE-EXPORTS FROM HONG KONG, 1999-2016



Data source: C&SD & AFCD (HKLFV), 2017

The available re-export live grouper (and Humphead Wrasse) data (Appendix A-I) are also inconsistent with the outcomes of trader interviews in the Philippines and Hong Kong and with several studies conducted in mainland China.

Collectively, these studies indicate that much of the LRFF imported into mainland China is via Hong Kong:

- The majority of interviewed traders in Manila commented that up to 70% of their total LRFF trade was destined for mainland China, via Hong Kong;^{251,252}
- Interviews with LRFF traders based in Hong Kong involved in the cross-border trade (with Shenzhen) also confirmed that a considerable volume of the LRFF entering Hong Kong is re-exported to mainland China;
- Again, according to one trader, the level of re-exports to mainland China was said to account for up to 70% of his total trade;²⁵³
- A large Indonesian exporter confirmed that much of his grouper trade is destined for mainland China, via Hong Kong;²⁵⁴ and
- Exporter interviews corroborate those with LRFF traders in China conducted by WWF-Hong Kong in 2012,²⁵⁵ which indicate that a considerable volume of live groupers is regularly landed in border areas such as Yantian, Shenzhen, direct from Hong Kong. These exports have also been observed to include the CITES-listed Humphead Wrasse (Section 3.12.6).²⁵⁶

It is thus apparent from these interviews that considerable volumes of live fish enter Hong Kong by air and sea and are being transported by sea across the border into mainland China by small speedboats/sampans (Section 3.12).^{257,258} Re-exports also occur by air.

Since re-exports are clearly being under-recorded, the consumption of live groupers within Hong Kong (i.e. total imports minus re-exports) cannot be accurately determined. Moreover, the importance of Hong Kong as a trade hub for China for live seafood is seriously under-monitored and not widely acknowledged. This further creates a substantial opening for IUU fishes entering the market, avoidance of income taxes by traders, and associations with organised crime with this high-value industry.

3.8.4 Data from Countries Unlikely to be Involved in the Trade Persistently Reported

While not significant in terms of volumes recorded, clearly erroneous records concerning imports into Hong Kong by certain 'source countries' raise further questions as to the robustness of the data. In addition to those countries highlighted in Section 2, there are sporadic records in the 'Marine fish, NESOI, live' category associated with live reef fishes that are clearly not supplying LRFF to Hong Kong. Such countries include Haiti, Portugal, Norway, Greece, Austria, Switzerland, Netherlands, Slovakia and Ireland.

Anomalies in trade data persist

These data anomalies could have occurred due to genuine nomenclature confusion, carelessness, and errors or constraints perceived by traders/exporters in the selection of appropriate commodity codes when filling out trade documentation (note that it is the responsibility of the trader/exporter to select appropriate coding), such as that caused by species that have similar names. An example would be 'trout' and 'coral trout' (i.e. Coralgrouper) species, with the former noted to exist in several of these countries.

3.9 A Fragmented, Complex and Clandestine Supply Chain

3.9.1 Fragmentation and Lack of Transparency

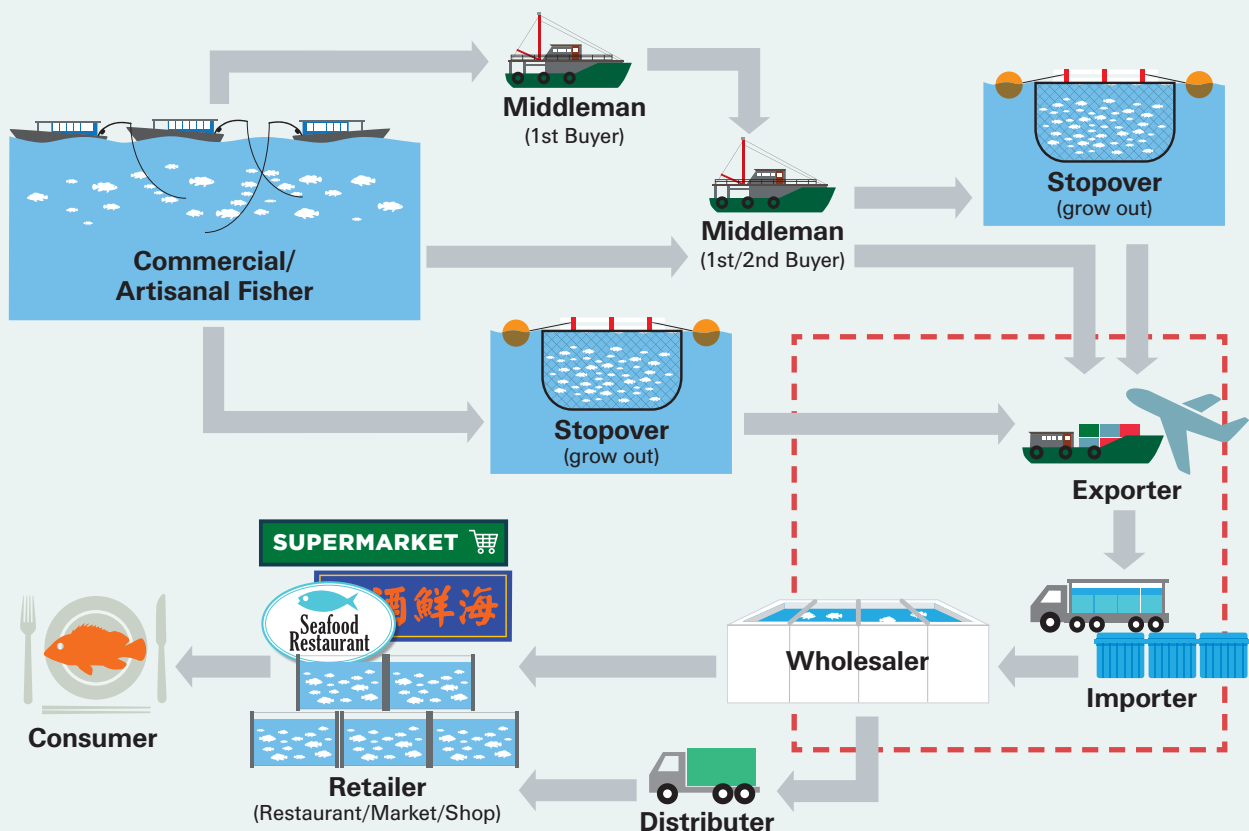
Numerous parameters contribute to an intricate and opaque LRFFT supply chain that is poorly understood

The LRFFT market (or supply) chain is complex, involving multiple parties and transfers, from capture, through consolidation, to export, wholesale, retail, and ultimately consumption (Figure 3-32). The trade's international scope, relatively simple storage and transport infrastructure, low-gear technology and distance between fishing grounds and markets together create an intricate and opaque chain that is poorly understood (Appendix A-IV). Of particular note is that the numerous suppliers (fishers) and consumers at the two ends of the chain are linked by a relatively small group of people made up of exporters, importers, wholesalers and distributors. It is this characteristic of the LRFFT that calls for intervention and improvement (Figure 3-33).

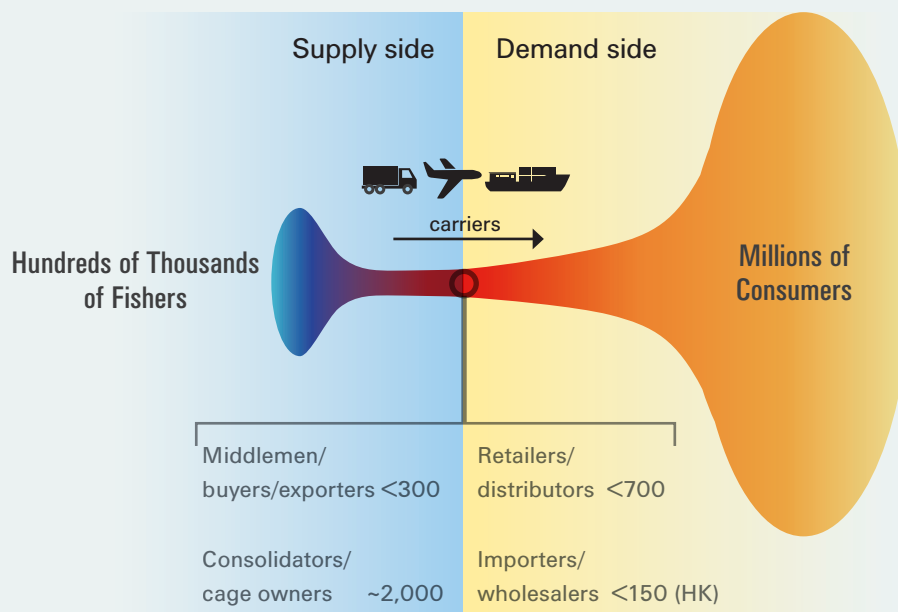
Despite its importance, there has been little meaningful engagement with exporters, importers, wholesalers etc.

Despite concerted efforts in both source and demand countries, engagement has focused mainly on source country governments and the ends of the supply chain (i.e. fishers and consolidators, retailers and consumers), with little meaningful engagement of the middle section (red square) (Figure 3-32).

FIGURE 3-32 GRAPHIC DEPICTING THE JOURNEY OF LRFF FROM THE SEA TO THE TABLE



Source: ADM Capital Foundation. (2015). *Mostly Legal, But Not Sustainable. How Airlines can Support Sustainable Trade in Live Reef Food Fish*. ADMCF, Hong Kong.

FIGURE 3-33 GRAPHIC DEPICTING THE BOTTLENECK IN THE LRFFT

Source: ADM Capital Foundation. (2015). *Mostly Legal, But Not Sustainable. How Airlines can Support Sustainable Trade in Live Reef Food Fish*. ADMCF, Hong Kong.

It has proven difficult to derive sustainability commitments from these agents (traders/transporters) as they tend to prioritise short-term gains over the long-term future of their business and ultimately the resources.²⁵⁹ Their success is not tied to the well-being of natural resources in any one area as they are able to source fish from multiple sources, move between sources and may also have multiple business interests beyond live fish (Section 1.3). Moreover, anecdotal evidence suggests that close and somewhat secretive business connections and relationships exist among a relatively small number of operators who control a large part of the trade.

Poor monitoring by source countries and under-reporting by major import centres present major challenges to traceability

The majority of LRFF exported within the region is bound for Hong Kong, but traceability is a challenge due to the fragmented nature of the supply chain and a lack of transparency in the reporting of catches, exports and imports. With the exception of Australia, poor monitoring by source countries and under-reporting by major import centres (most notably Hong Kong and mainland China) present major challenges to a better understanding of the overall trade (Section 3.8).

Often, fishers do not even know the final destination of their fish, which are initially sold to primary traders (consolidators) who consolidate catches from a large number of artisanal fishers in source countries and then transport these catches in large volumes to a major city or airport hub, where secondary traders buy and forward them on (Appendix A-IV, Section 1.2). Alternatively, fish carrier

The international nature of the trade and the need to ship live fish in water mean that the transport sector gains economically

vessels come to collect fish from the multiple consolidation points and export them directly, mainly to Hong Kong. For both air and sea transport, there are differing logistical requirements between countries, contingent upon location of fishing grounds, requirement for land and/or sea transport in-country, access to export hubs, and business networks to facilitate trade flow. These are laid out in Appendix A-II and A-IV.

There are four major modes of international trade, three by sea (foreign vessels, HKLFC and HKLFV) and by air (Section 3.7). LRFF shipped to Hong Kong by air are packed in polystyrene boxes or purpose-built aerated or oxygenated fibreglass transport bins (Box 3-6). In the case of the latter, the fish are prepared for shipment by lowering their metabolism in cold water (i.e. around 18°C). Fishes shipped in polystyrene boxes are placed in plastic bags that are super-saturated with oxygen, and the fishes themselves are often sedated with chemicals. Note that information on these chemicals is not currently available. Fish shipped by sea are held for days to weeks in carrier vessels, the hull of which is subdivided into compartments. Depending on the size of the vessel, between about 15 and 45 MT of fish can be transported long distance in a single ship. The international nature of the trade and the need to ship live fish in water mean that the transport sector also gains economically from the trade.

BOX 3-6 CONTAINERS USED TO TRANSPORT LRFF BY AIR

Both Styrofoam and purpose-built aerated or oxygenated transport bins (Figure 3-34) are sealed before reaching airport or port cargo areas, making it impossible for the contents to be inspected without opening the container, with potential for compromising the cargo.

Styrofoam boxes remain the predominant means to transport live fish. In terms of fish health, minimising mortality and reducing waste, strong arguments can be made for using transport bins where LRFF are in transit for more than eight hours. Note that Styrofoam boxes are also used for short-distance transport within Hong Kong and between Hong Kong and mainland China.

For most major exporting countries (the Philippines, Indonesia and Malaysia), transit times from packing in source areas to unpacking in Hong Kong range from four to six hours. For this reason, Styrofoam is generally preferred, with cost and convenience seen as the main factors. On the other hand, despite their higher initial costs, transport bins are much more durable and can likely minimise mortality. They can be economically returned empty to exporters by sea for re-use.

As Hong Kong is a free port, tariffs/duties are not imposed on import/export/re-export commodities upon arrival, and formalities and associated payment schedules are limited to cargo-handling charges, satisfaction of customs documentation to C&ED and, in the case of CITES species, AFCD documentation (see Part II). As noted in Section 2, fish carrier vessels and airline carriers are required to report their cargo to Customs.

FIGURE 3-34 OXYGENATED TRANSPORT BIN

Photo: Geoffrey Muldoon (2007)

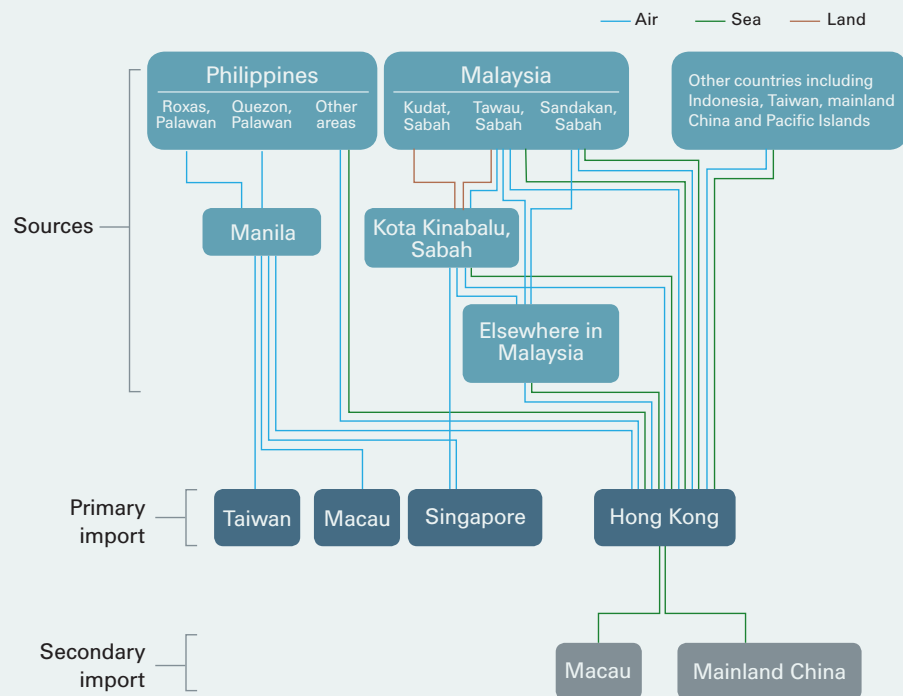
Transportation companies will then take the cargo to the next destination, generally Macau or mainland China. For all transport modes, an import declaration and manifest disclosing information about the live reef fish cargo that is being carried should be produced within 14 days of import. In practice, however, this is not being fully complied by many HKLFV (Section 3.9 and Part II). A summary of the major transport routes is presented in Figure 3-3.5.

3.9.2 Muddying the Waters, the Issue of Tax Evasion

A major attraction of transporting LRFF via Hong Kong is the evasion of import tariffs imposed on luxury seafood going into mainland China

As stated above, a major attraction of transporting LRFF via Hong Kong is the evasion of import tariffs imposed on luxury seafood going into mainland China, which are at least 17% VAT.²⁶⁰ This is possible due to long-established trade connections and minimal border checks, which enable significant smuggling to take place across the border.

In addition to tariff evasion, taxes are largely avoided when exporting live fish by sea or by air due to under-declaration of the shipment value. For example, in Indonesia, some agents that ship out boxes of fish from Indonesian airports report much lower values than the cargo is actually worth, which translates to lower taxes paid to the Indonesian government.²⁶¹ This is partly achieved by claiming cultured fish prices for wild-capture fish, which are much higher in value. Protected species are also shipped out undetected due to lack of or insufficient oversight by government officers.²⁶²

FIGURE 3-35**SUMMARY OF TRANSPORT ROUTES AND MODES FOR LRFF REPORTED BY TRADERS IN THE PHILIPPINES*, MALAYSIA AND HONG KONG**

* Note: There is overland transport between fishing grounds and collection areas such as Roxas, Puerto Princesa and Quezon. For example, from Araceli and Taytay to Roxas, and from Narra to Quezon etc.

Source: Stan Shea, based on interviews with traders in Hong Kong, the Philippines and Malaysia, April 2014

3.10 Trade Dynamics: Summary of Current, Emerging and Future Trends

3.10.1 Introduction

As highlighted in preceding sections (e.g. Sections 3.3 & 3.5.2), the trade in groupers into Hong Kong and mainland China from Southeast Asia and the Pacific has historically been in live (as opposed to chilled/frozen/fresh) form, due to the significantly higher prices fetched by live animals and a consumer preference, especially in southern China, for extremely fresh produce. In terms of LRFF consumption, Hong Kong has long been a major consumer and the hub through which live fish transit into mainland China. However, these trade dynamics are not static, and there are emerging trends to watch.

3.10.2 Increasing Proportion of Cultured Fish in Trade

Although trade data do not distinguish between wild-capture and farmed products, all indications are that cultured LRFF are increasing in the trade relative to wild-caught fish. This is supported by interviews with traders in Hong Kong and

Hong Kong has long been a major consumer of LRFF and the hub through which live fish transit into mainland China

Cultured LRFF are increasing in the trade relative to wild-caught fish

observations by the staff at the Fish Marketing Organization (FMO), who claimed that about 50–60% of the live fish passing through the market are now cultured (Section 3.5). Considering the parallel increased production of cultured species (such as Hybrid Groupers, especially in mainland China), it is expected that, based on a growing population and rising disposable incomes alongside relatively static wild-catch volumes (Figures 3-38 & 3-39, Section 3.11.2), this trend will continue.

However, the trade in wild-caught fishes will continue as long as wild fishes are available because of:

- Constraints and costs of fish feed needed for cultured fish;
- A preference for and higher unit value of wild-caught fish (which help to offset high transaction costs of trade, particularly in transport operations; also, rarer species fetch higher prices); and
- Greater species diversity.

Frozen fish are increasingly accepted in Asian markets and are fetching higher prices

3.10.3 Emergence of Chilled/Fresh/Frozen Reef Food Fish

Frozen fish appear to be increasingly accepted in Asian markets and are fetching higher prices than they did previously, which means that there is a higher incentive to trade in them. Indeed, recent years have seen an increase in the trade of such fishes in Asia. Examples range from growing exports from Fiji (a country that halted live grouper exports over a decade ago, but recently resumed dead grouper exports to Hong Kong), considerable volumes imported into Taiwan (see below), and burgeoning chilled grouper volumes being exported from Palawan.

While little is known about which species dominate this sector, Leopard Coralgrouper, Humphead Wrasse and Giant Grouper have all been reported or observed on sale in Hong Kong and mainland China recently. In Malaysia, the Humphead Wrasse has been on sale in frozen packed form for several years (see Figure 3-8, Section 3.4.4).²⁶³ While data on trade in dead groupers are sparse, the trade is clearly substantial. From 2012 to 2016, Taiwan imported about 7,800 MT of chilled/fresh/frozen grouper, mostly from Indonesia.²⁶⁴ The same database reported almost six MT of live grouper (not including fry) over the same five-year period.

Traders believe Hong Kong will continue to be the core LRFF trading hub in the region for at least the next five years

3.10.4 Hong Kong to Continue as the Key Trade Hub

In response to questions about how LRFF will be handled logistically in the future, 40% of traders in Hong Kong indicated that seafood products would likely enter mainland China via a combination of routes, including arriving directly at the Chinese ports of Zhuhai and Shekou, imported to and re-exported from Vietnam, or exchanged by transshipment on the high seas.²⁶⁵ The remaining 60% of traders, however, believed that due to Hong Kong's tax-free port status, the frequency of flights and the ease of access from source countries into Hong Kong, the city will likely continue to be the core LRFF trading hub in the region for at least the next five years, i.e. up to 2019/2020.²⁶⁶

3.10.5 Boom or Bust, a Grim Outlook for All Groupers in the South China Sea

Looking forward, recent research using predictive modelling illustrates the unsustainable nature of the trade in groupers, whether live or dead. If business continues as usual in grouper fisheries, adult grouper biomass in specific geographies is likely to fall by around 75% over the next 30 years.²⁶⁷ This is assuming that the total number of fishing vessels and fishing effort increase at a global average of 2% per year (accounting for technological improvement but lack of effective management). As a result, catches would fall by as much as 57%, and landed values would drop by between 16% and 30%. Prices for consumers would rise by more than 8.5 times in real terms. These results indicate that without improvement in fisheries management, there will be decreases in revenues and impacts on livelihoods. In addition, due to the 'conspicuous' nature of consumption and the market economics of the LRFFT, wealthy consumers are likely to be able to accommodate increasing prices (Section 3.11).

On the other hand, if grouper fisheries could be sustainably managed through a change in fishing effort (while still meeting demand), grouper biomass would increase by more than 30%, while catches and landed values would increase by 16–30%.²⁶⁸

Whilst this research is based on a number of assumptions and figures are predictive and, at times, inferential, the results serve to highlight the situation the LRFFT will face if nothing is done to address impending sustainability issues.

3.11 A Value Chain Like No Other, an Artisanally Sourced Luxury Commodity

3.11.1 A High-Value, Low-Volume Trade

LRFFT is more valuable than the trade in shark products

The estimated volume of the international LRFFT does not appear substantial when compared to many other commercially significant marine fisheries (e.g. Tuna). However, in terms of its economic importance and impacts, volume estimates can be misleading. For example, the global annual value of the legal trade in shark products (including fin) is almost US\$1 billion,²⁶⁹ which is slightly less than the value of the LRFF trade. The LRFFT is characterised by three important factors:

Even a relatively low volumes of trade, LRFF fisheries are under stress

- i) The high per unit value, which can deliver large profits and sustain a highly lucrative business with high transport costs at relatively low volumes;
- ii) The fact that target capture fisheries are not very biologically productive means that even at relatively low volumes of trade, fisheries are under stress; indeed, several threatened species are also among the most valuable (Section 3.2.1); and
- iii) The relatively secretive and poorly understood nature of the trade in wild-caught fish and extensive associated IUU mean that the true volume of the trade and its value are much higher than estimated here.

High prices and profits from wild-capture LRFF ensure ongoing economic viability of the trade

The trade in LRFF incurs high transportation and transaction costs (Section 3.11.3) as well as high levels of risk, especially for species with high mortality rates (Section 3.11.3). As a result, high prices and profits from wild-capture LRFF (some species retail for hundreds of US\$ per kg) ensure ongoing economic viability of the trade, even with declining stocks (Box 3-7). Despite substantial increases in farmed fish production over the last five years, wild fish continue to be an integral part of the trade with ongoing implications for the status of this natural resource (Section 3.10).

BOX 3-7 LRFF PRICES

RETAIL*	WHOLESALE**
Retail prices for several commonly-traded groupers typically range from US\$25 to US\$150 (HK\$194 to HK\$1,164) per kg in Hong Kong, with consumers in mainland China often paying much higher prices. Top prices recorded to date in mainland China are for High-finned Grouper and Humphead Wrasse, with up to US\$600 per kg (HK\$4,656 per kg). The more abundant and highly valued Leopard Coralgrouper fetches as much as US\$300 per kg (HK\$2,328 per kg). Traders are particularly interested in the higher value species (retail) because they deliver higher profit margins than lower value species.	Wholesale prices of live wild-caught and cultured marine fishes are available in Hong Kong markets, as recorded by the Fish Marketing Organization (FMO). The Leopard Coralgrouper fetches the highest price at US\$580 per kg (HK\$4,535 per kg), with the Green Grouper fetching the lowest prices at US\$24.8 (HK\$194) per kg on average. By way of comparison, the lower valued snapper ranged from US\$7.2–19.44 (HK\$57–152) per kg over the same period in January of 2016.

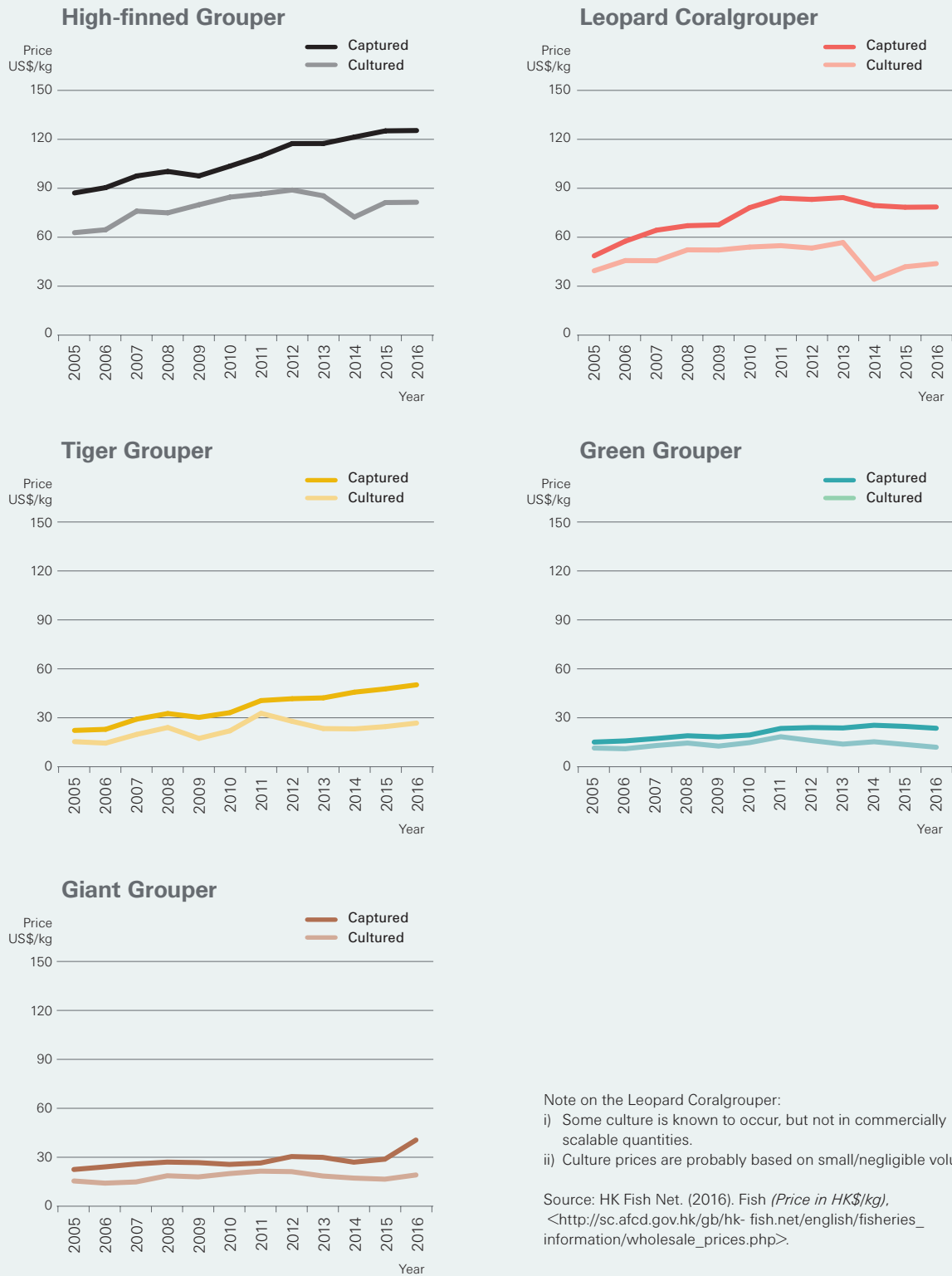
Sources:
* Fabinyi, M., & Lui, N. (2014). 'Seafood banquets in Beijing: Consumer perspectives and implications for environmental sustainability', *Conservation and Society*, vol. 12, no. 2, pp.218-228.
Heru Perumo. (trader) (February 2014, pers. comm.) Michael Fabinyi. (2013, pers. comm.)
** Fish Marketing Organization, viewed March 2017, <http://www.fmo.org.hk/price?id=8&path=12_43_5_6>.

Prices of wild-caught LRFF typically increase as availability declines

The higher prices of wild-caught fish (Figure 3-36), which typically increase as availability declines, unsurprisingly acts as a considerable incentive to persistently and aggressively seek new fishing grounds, or to continue to procure animals from traditional areas, despite fish populations declining to worryingly low levels, as in the case of the Humphead Wrasse, Leopard Coralgrouper and Flowery Grouper in some locations.^{270,271,272}

FIGURE 3-36

WHOLESALE PRICES (US\$) FOR CULTURED VERSUS WILD-CAUGHT GROUPERS FOR FIVE SELECTED LRFF SPECIES, SPANNING LOWEST TO HIGHEST PRICES, 2005-2016



The data clearly show that wholesale prices for a given species are much higher for wild-caught than cultured individuals. In some cases, prices are doubled for wild-caught animals. They also show a clear discrepancy in absolute terms between the lowest and highest-valued species. Also of note is the greater increase in capture prices compared to culture prices of the same species in recent years, as well as the wider differential between capture and culture prices for the more highly valued species.

Declines in fisheries for market-sized fish have led to a rise in fisheries for juveniles that then need to be grown out to market size

Fishing communities are understandably attracted into supplying fish to this trade in anticipation of high incomes (Section 3.11.2) and/or because of 'donations' to their community or other incentives.²⁷³ Financially, however, the benefits they receive, while sometimes substantial in the short- to mid-term, vary considerably among source countries and can be short-lived. This has happened when traders move away from once-lucrative and formerly productive fishing grounds that have become depleted, or relocate due to worsening trade relationships with local communities or leadership.²⁷⁴ In many instances, declines in fisheries for market-sized fish have led to a rise in fisheries for juveniles that then need to be grown out to market size. This trend from growth to recruitment overfishing²⁷⁵ continues until the fishery ceases altogether due to a lack of sufficient fish. The fishery targeting Leopard Coralgrouper in the Calamianes Province of Palawan, Philippines, is one such example.²⁷⁶

In Hong Kong, LRFFT accounts for at least 4.5% of the total value of all classes of imported seafood, but only 1-2% of the imported seafood volume

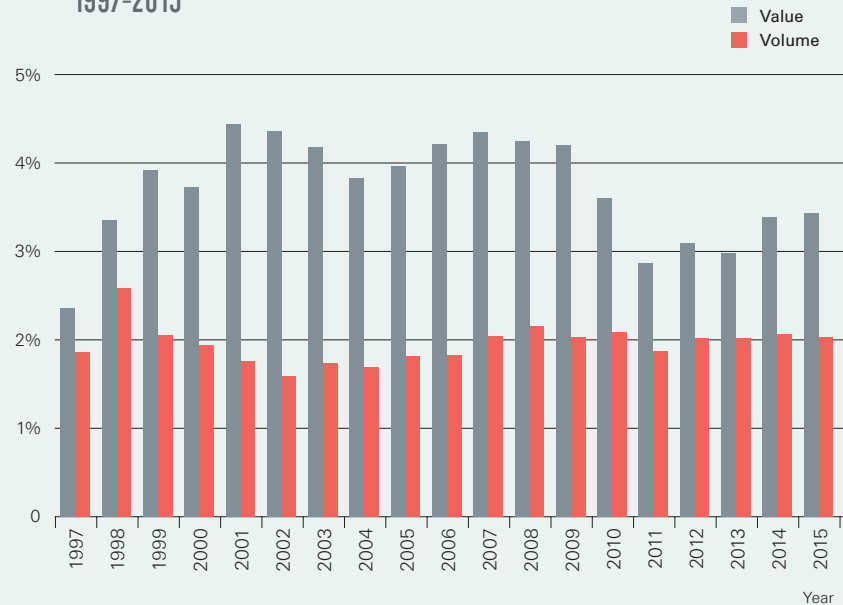
Regarding the value of the LRFFT to Hong Kong, government import data over the last 17 years show that the LRFFT accounts for at least 4.5% ('at least' because the trade is known to be under-reported relative to other seafood categories) of the total value of all classes of imported seafood, even though it represents only 1–2% of the imported seafood volume. By weight, live reef fish is the eighth most common category of seafood imported into Hong Kong, behind (in order) 'other fish', shrimp, molluscs, carp, salmon and crab, according to official figures (C&SD).²⁷⁷

Value of the Trade to Hong Kong

Estimating the total wholesale and retail values of the LRFFT to Hong Kong has always been challenging due to data limitations caused by incompleteness of reported import data (few species are specifically identified, for example), under-reporting and the lack of distinction between cultured and wild-capture sources, an important consideration given the variation in the two prices (Figure 3-37). In addition, there are significant levels of smuggling, both out of source countries and into Hong Kong. The secretive and dispersed nature of the trade also makes realistic estimates particularly onerous. In sum, and considering a range of issues, it is clear that the value and volume of the trade is considerably underestimated.

FIGURE 3-37

VOLUME VERSUS VALUE OF THE LRFFT, EXPRESSED AS PERCENTAGE OF TOTAL SEAFOOD IMPORTS TO HONG KONG, BASED ON HONG KONG IMPORT DATA, 1997-2015



Source: Felix Chan. Unpublished data. Data from C&SD and AFCD.

Using FMO datasets and AFCD import data, wholesale and retail values of LRFF imported into Hong Kong from 2005 to 2016 have been estimated (Table 3-4). While wholesale value calculations were taken directly from the government database, retail values were estimated by applying several simplifying assumptions and extrapolations.²⁷⁸

The 2016 retail value of the LRFFT is estimated at almost US\$1.1 billion

According to Table 3-4, the retail value of the LRFFT in 2016 is estimated at almost US\$1.1 billion. Given the considerable and acknowledged under-reporting of imports into Hong Kong by sea and air (Section 3.8), if it is accepted that imports are under-reported by between 20–50%, then the actual retail value of Hong Kong's LRFFT in 2016 should be well in excess of US\$1 billion annually (Table 3-4). To put this in context, Australia's annual seafood product exports in 2012–2013 were about US\$898 million (AU\$1.18 billion).²⁸³ It should be noted that Australia exports high-value products, such as rock lobster, abalone and tuna.²⁷⁹

TABLE 3-4 ESTIMATED VALUES OF SPECIES IN THE LRFFT

Species	Average Annual Wholesale Price (US\$/kg) ¹	Estimated Total Wholesale Value (US\$), 2016 ²	Estimated Total Retail Value (US\$), 2016 ³
Giant Grouper	39.7	52,837,122	113,071,442
High-finned Grouper	125.8	2,076,123	3,274,046
Green Grouper	23.8	69,820,060	136,692,978
Tiger Grouper	50.5	53,817,954	99,839,548
Flowery Grouper	50.2	9,570,506	18,308,378
Leopard Coralgrouper	78.8	286,123,490	464,950,671
Squairetail Coralgrouper	37.8	6,587,472	13,833,691
Other Groupers	28.4	38,659,358	80,411,465
Humphead Wrasse	153.9	Realistic volume data not available as a result of illegal trade and lack of reporting to AFCD and C&SD.	
Hybrid Groupers	14.1	21,037,381	40,181,399
Mangrove Snapper	14.4	1,309,998	3,248,795
Other marine fish ⁴	16.7	48,247,387	100,354,566
TOTAL (excluding Humphead Wrasse and Wrasses & Parrotfishes)		590,086,855	1,074,166,985

Note:

¹ Species average annual wholesale prices obtained from FMO historical wholesale price datasets for the period 2005 to 2016. Wholesale prices do not consider source of fish (capture or culture) because the database providing volumes does not make this distinction, giving rise to potential overestimation.

² Species average annual wholesale price is multiplied by recorded volume of imports for the suite of imported LRFF species for that year to determine species wholesale value in US\$.

³ In the absence of complete retail price data for the period 2005–2016, species average annual wholesale prices published by FMO have been multiplied by average retail price mark-up to determine retail price value in US\$. Data on wholesale and retail prices collated by Chan for the period 1999–2005 was applied by Peterson and Muldoon (2007) to undertake empirical research. Using accepted statistical approaches to test for ‘co-integration’, they determined that wholesale and retail prices of the main LRFF species for which data have been collected were statistically integrated, thus supporting the notion that average mark-up or margin can be used to determine retail values of key species in the trade.

⁴ Excluding Snooks and Basses and Mangrove Snapper.

Source: FMO, Chan & McGilvray. (2004). Unpublished data.

Peterson & Muldoon. (2007). *Wholesale and retail price integration in the live reef food fish trade*. In Johnston, B. (ed.) *Economics and Market analysis of the Live Reef Fish Trade in the Asia-Pacific region*. ACIAR Working Paper No. 63, Australian Centre for International Agricultural Research, Canberra.

Chan, F. *Ongoing study on LRFFT* conducted at the University of Hong Kong.

3.11.2 Prices, Demand and Scarcity Mean Rising Value and Increasing Pressure to Exploit

Price, Demand and Income Drivers

In conventional markets, price is typically an indicator of levels of supply relative to demand, such that when demand exceeds supply, price usually rises and vice-versa. The LRFFT, however, tends to differ from such conventional markets due to a combination of factors including:

- i) Higher than normal mortality risks associated with live products, especially during transit when these fish are more susceptible to dying from stress or poor transport condition;
- ii) The biologically limited supply due to the nature of the wild fish populations that make up the capture fishery component of the trade (Sections 3.2 & 3.5.2); and
- iii) Wealthy consumers being prepared to pay ever higher prices as their wealth increases and animals become increasingly rare (and hence more expensive), due to a strong association between luxury seafood and social status.

BOX 3-8 ELASTICITY

The degree to which individuals, consumers or producers change their demand or the amount supplied in response to price or income changes is reflected by what is known as its price or income 'elasticity'.

For example, a small change in price and a large change in demand signify a price 'elastic' product, while a large change in price and a small change in demand imply a price 'inelastic' product.

Demand for LRFF is driven by general income levels rather than by price

Importantly, demand for LRFF is driven by general income levels rather than by price, thus confirming it as a luxury good (Section 3.3).^{280,281} As a luxury item, LRFF commodities exhibit different elasticity traits (Box 3-8) compared to non-luxury seafood, such that rising incomes and declining supplies can place additional pressures to supply them even as they get more expensive and natural supplies decline.²⁸² By comparing price trends for high-value, mainly wild-sourced species against lower-value, mainly cultured species, it is possible to make inferences as to the 'luxury status' of different LRFF species. This can help us understand how the demand and supply of that species may be influenced by changes in income. There are also implications for highly desirable species that are largely or only able to be taken from the wild that become more expensive when populations decline.

Value Increasing with Scarcity

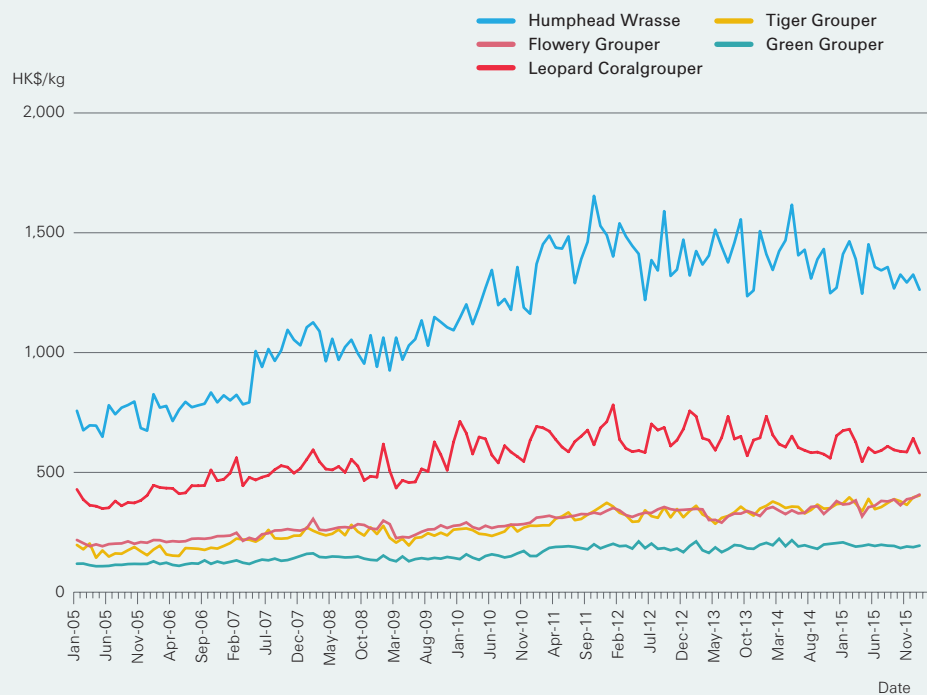
A common and critical problem of luxury markets is that they can stimulate perverse behaviour, whereby increasingly limited natural supplies result in a product becoming more valued as it becomes increasingly rare. One illustrative example is the Humphead Wrasse, which was listed as Endangered in 2004 (Section 3.6.11) and became the first reef food fish to be added to CITES that same year due to unsustainable demands in the international live fish trade. The high demand for this increasingly limited resource has seen the species fetch ever higher prices, deliver higher profit margins, and hence continue to motivate traders to source and market it, illegally if necessary, despite protective legislation and declining supply.

The wholesale price of the Humphead Wrasse has increased disproportionately compared to other LRFF species

The wholesale price of the Humphead Wrasse (all are wild-caught, and most are sold after a period of grow-out in captivity since market-sized fish are uncommon) has increased disproportionately compared to other LRFF species. By comparison, Green Grouper prices remained fairly static between 2005 and 2016. Prices for the highly desired Leopard Coralgroupers have also increased but at lower rates (Figure 3-38). This upsurge in prices for the Humphead Wrasse over the past 12 years, albeit at a slowing rate, has been specific to this species and reflects a phenomenon known as *scarcity value*.

FIGURE 3-38

MONTHLY CAPTURE WHOLESALE PRICES (HK\$) OF FIVE LRFF SPECIES (HUMPHEAD WRASSE, LEOPARD CORALGROUPER, FLOWERY GROUPER, GREEN GROUPER AND TIGER GROUPER), 2005-2015

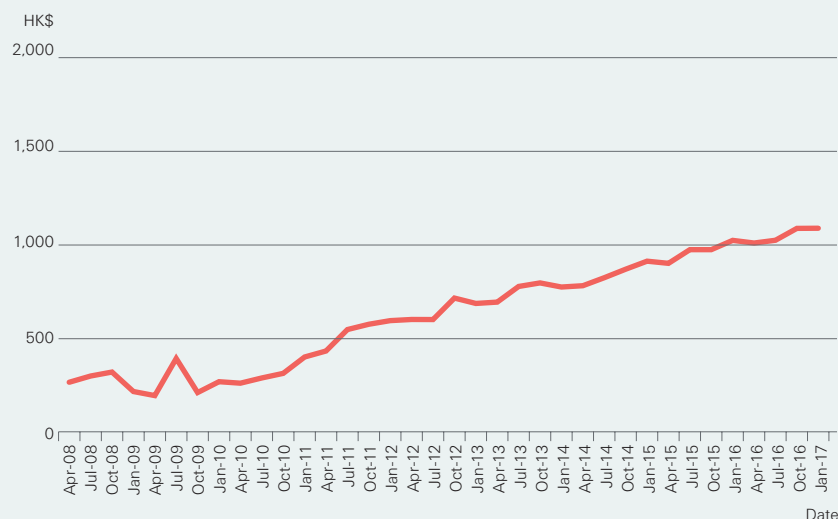


Source: FMO's Fishnet Database, 2013

Peak prices for Leopard Coralgrouper were higher after the economic crisis – likely a result of income elasticity

While scarcity value can help explain significant price rises for Endangered species such as the Humphead Wrasse, other economic indicators provide insights into drivers of price and value, in addition to taste preferences. As noted above and confirmed by Peterson (2007)²⁸³, consumption of LRFF is highly dependent on income. Data on wage growth in Hong Kong (Figure 3-39) show average incomes rising steadily since the global economic crisis of 2008. Prices for the Humphead Wrasse have seen an upsurge since 2009, following the global economic crisis. Even for the Leopard Coralgrouper, whose supply has been consistently increasing due to a combination of growth, continued recruitment overfishing and exploitation of new fishing grounds (Figure 3-38), we can see ‘peak’ prices for this species being slightly higher (and in particular during Chinese New Year) after the economic crisis – likely a result of income elasticity. For species such as Tiger and Green Groupers, the supply of which have been increasing from culture sources, small upward trends in prices are also evident.

FIGURE 3-39 AVERAGE MONTHLY SALARY IN HONG KONG, 2008-2016



Source: C&SD, 2017

Increasing scarcity is masked by the expansion of fishing effort into new grounds and exploitation of new stocks to maintain stability of supply

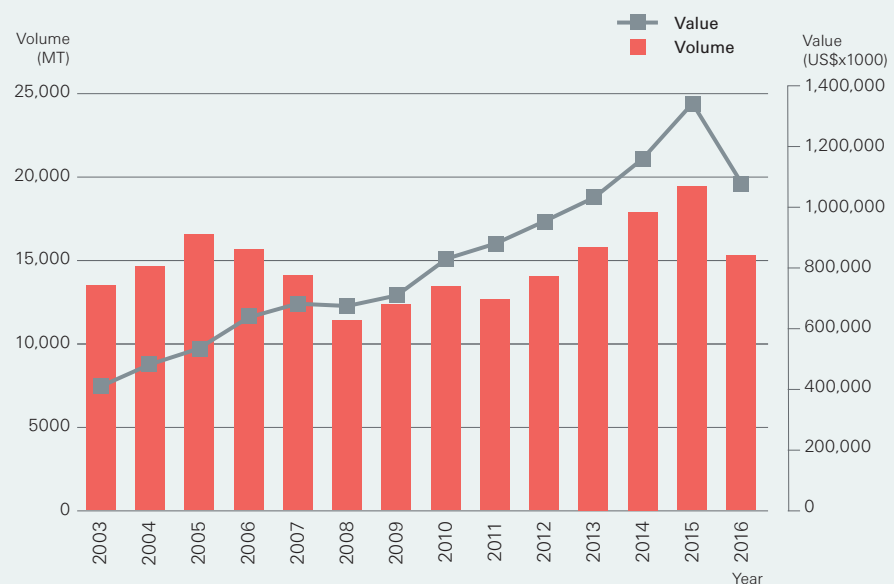
Trade Dynamics Mask Scarcity Threat

As noted above, increasing value is usually associated with increasing rarity or scarcity of highly desirable species in exploited populations, particularly in luxury commodity markets such as the LRFF. ²⁸⁴ Such threats to the resource are even greater when increasing scarcity²⁸⁵ is temporarily masked by the expansion of fishing efforts into new fishing grounds or the exploitation of new stocks to maintain stability of supply, even as populations of a species decline globally or nationally (Sections 3.2 & 3.4). Similar examples have been amply recorded for other luxury seafoods, from invertebrates²⁸⁶ to sharks.^{287,288}

From 2002 to 2016, recorded LRFF import volumes rose on average by less than 1.6% per year, while associated average values of traded fish rose by more than 8.5%.

Further evidence of the likely impacts of greater natural scarcity and rising demand and incomes on luxury fish species can be seen in Figure 3-40 below. While import volumes remained relatively stable over the decade up to 2012, these have increased since 2013, along with steadily rising value. Over this period, while recorded volumes rose on average by less than 1% per year, associated average values of traded fish rose by more than 10% annually. Factoring in the last four years to 2016, volume increases have averaged 1.6%, while value increases averaged 8.5%. The majority of these value increases were driven by high-value luxury species, particularly those traded in large quantities, such as the Leopard Coralgrouper. It is possible that the relative (to volume) rise in value, however, will not continue given the growing proportion of farmed groupers in the trade (hence lower unit value). On the other hand, increasing challenges in feed supply for culture operations of high trophic level carnivores, such as groupers, may limit mariculture growth in the future, alongside continued interest in wild-capture fisheries (Section 3.5).

FIGURE 3-40 VOLUME AND RETAIL VALUE OF IMPORTS, 2003-2016



Sources: AFCD and C&SD data.

HK Fish Net. (2016). Fish (Price in HK\$/kg), <http://sc.afcd.gov.hk/gb/hk-fish.net/english/fisheries_information/wholesale_prices.php>.

Volume data from AFCD/C&SD and retail value are calculated as described in Table 3-4.

As production of Sabah Grouper in Malaysia and Hainan soared, wholesale prices fell dramatically

A contrast to this is the trend of supply and demand irregularities, whereby supply significantly overshoots demand, causing prices to plummet. In the LRFFT, we see this situation associated with farmed, as opposed to wild-sourced, species. A recent example is the hybrid Sabah Grouper, which was initially very popular among Chinese consumers and commanded high prices, with wholesale prices reaching US\$40 per kg in 2011.²⁸⁹ However, encouraged by these prices,

production in Malaysia and Hainan soared, and massive oversupply saw wholesale prices fall dramatically to US\$12–15 (HK\$94–117) per kg by 2013, such that farmers were barely covering the costs of production. In 2016, wholesale prices for the Sabah Grouper stabilised at around US\$20–22 (HK\$156–172) per kg. Similar examples of this '*boom and bust*' cycle in LRFF mariculture can be seen in the farming of Tiger and High-finned Groupers at small-scale hatchery operations in Indonesia, as the market alternates between producing these two species.²⁹⁰ At a major hatchery in Gondol, Bali, productions of the Tiger Grouper, High finned and Leopard Coralgrouper see average survival rates of 30% for Tiger Grouper, but only 2% for Leopard Coralgrouper. Despite an annual production capacity of 2.5 billion grouper seed in 2016 in Bali (Gondol) alone, the domestic aquaculture sector has been unable to absorb this production. The majority of seed produced are sold to aquaculture businesses in Malaysia, Taiwan and the Philippines.²⁹¹

3.11.3 Using the Value Chain to Identify Drivers of Unsustainability

In contrast to a traditional supply chain analysis that identifies the logistics and parties in the supply of a product, a value chain analysis aims to assign information on costs, revenues and profitability to the supply chain agents responsible for moving the product from fishing grounds to market (i.e. freight, processing costs).²⁹² It describes the activities required to bring a product to the final consumer and, in the case of international products, the extent to which intermediaries/agents gain from participating in the chain.²⁹³ Such analysis can help to identify constraints (e.g. information flows and practices, such as handling, quality control, etc.) along the chain that can serve to enhance benefits of trade to agents, especially those in source countries. Value chain analysis can also help to highlight opportunities for value-adding, opportunities and key points for action for a more biologically-sustainable trade, and for exploring issues of equity, market power and benefit sharing that can undermine sustainability.

Better understanding the distribution of economic value along the LRFF value chain requires consideration of the:

- i) Financial risk borne by these various intermediaries and its influence on the distribution of value; and
- ii) Price relationships along the value chain.

Value Distribution

Many factors determine value distribution and the percentage of the final value extracted at certain points along the value chain, particularly complexity (Box 3-9) and risk. Key factors affecting distribution of value include:

- **The amount of processing required for consumer markets.** More processing results in a higher percentage of the final value accruing to processors, usually at the expense of the supplier (fisher).
- **Storage and transportation requirements of the product.** Where the product is transported in fresh or frozen form, a greater contribution of final value tends to accrue to wholesalers and distributors.

Key factors affecting distribution of value include: processing, storage/transportation, perishability and fisher indebtedness

- **The perishable nature of the product and risk of product loss.** Where the product is perishable in nature, as with LRFF, the value extracted by wholesalers and retailers tends to be greater (Figure 3-42).
- **Fisher indebtedness,** whereby patronage systems can reduce the 'net' value a fisher retains from each fish sold.^{294,295}

BOX 3-9**COMPLEXITY IN THE CONTEXT OF VALUE DISTRIBUTION**

'Complexity' is influenced by factors such as:

- Scale of fishing (i.e. artisanal versus industrial);
- Distance of fishing grounds (i.e. fisher) from infrastructure (storage and transport); and
- Market dynamics and level of integration in the supply chain.

The characteristics of developing country fisheries (e.g. many small-scale/artisanal fishers and traders and little regulation) and the remoteness of fishing grounds tend to reinforce complexity in value chains. Remoteness, along with handling and husbandry techniques, will also dictate risk of product loss from mortality as the product moves along the supply chain.

Aquaculture producers, i.e. fish farmers, usually have more control over the product and pricing (compared to fishers dealing directly with their catches), and are less subject to price fluctuations as they can better regulate when they release product onto the market. Similarly, if wild-caught fish are kept in holding pens (i.e. ranching), then their release onto the market can also be somewhat regulated or controlled. This is especially so for high-value species grown out from juvenile stages, such as the Leopard Coralgroupers or Humphead Wrasse, whose prices escalate significantly during peak demand periods (i.e. Chinese New Year). However, such price controls are more likely to be exercised further downstream than by the fisher, or even the culturist.

Risk and Variation in Value Distribution

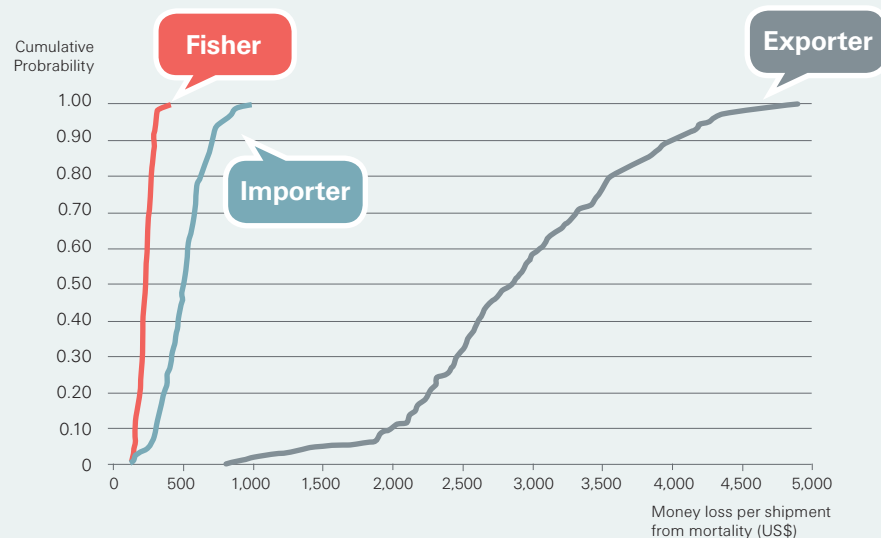
Risk, in many forms, will impact profit margins and distribution of value accruing to the various supply chain actors. Importantly, the risk borne by respective agents will differ, not only along the value chain but also depending on the product or commodity (Figure 3-41). By way of example, risk associated with live food products will differ greatly from those of frozen or canned products. The live nature and high value of product in the LRFFT magnify the risk of financial loss from mortality as fish move along the supply chain and as successive traders take on increasingly larger outlays for fish, as well as absorbing higher transaction costs. The risk of financial losses from mortality is considered the main determinant of value distribution in the LRFFT,²⁹⁶ and is one of the key reasons for the changing value along the chain and the relatively (to retail prices) lower prices paid to fishers:

Risk of financial losses from mortality is considered the main determinant of value distribution in the LRFFT

- **Fishers** are often considered poorly paid, but given that they bear lower risk of fish mortality, it could be argued that their percentage of final value is fair. However, the prices they receive are heavily determined by traders, and fishers appear to have little bargaining power.
- **Middlemen and local traders** who consolidate individual catches into sufficient quantities for trade likewise bear lower risk. As volume-based agents and 'handlers' for larger traders, they tend to receive a smaller percentage of the final value.
- **Traders** in both exporting and importing countries bear the costs of transportation²⁹⁷ to markets, as well as the higher risk of mortality during transit. With successive value-adding (i.e. profit margins) and the outlays of shipping a consignment of LRFF (by air or sea) to market, these agents make significant financial outlays.
- **Retailers** incur considerable costs, such as rent and wages, thereby amplifying their potential financial losses from mortalities of fish held in onsite tanks.

FIGURE 3-41

CUMULATIVE PROBABILITY FUNCTION SHOWING POTENTIAL FINANCIAL LOSS PER SHIPMENT OF LIVE LEOPARD CORALGROUPER, BASED ON KNOWN MORTALITY FACED BY MARKET CHAIN AGENTS



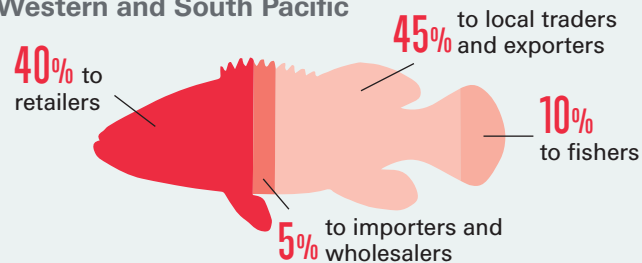
Source: Muldoon, G. & Johnston, W. (2007)

These factors go some way towards explaining the distributions of value in the supply chain, which are presented pictorially in Figure 3-42.

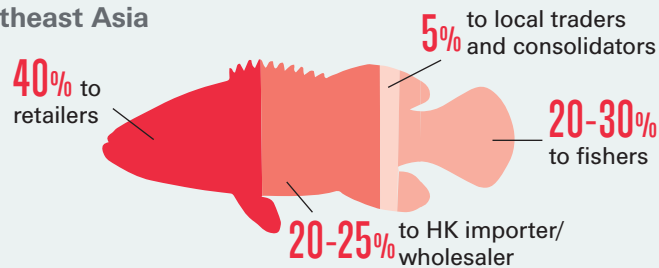
From Figure 3-42 it can be seen that for LRFF emanating from the western Pacific, and possibly the Indian Ocean, fishers receive a considerably lower percentage of final value than fishers in Southeast Asian countries e.g. Indonesia, the Philippines and Malaysia.

FIGURE 3-42 VARIATIONS IN THE DISTRIBUTION OF THE FINAL VALUE OF A LIVE CORALGROUPEL ORIGINATING FROM:

A. The Western and South Pacific



B. Southeast Asia



Sources: Secretariat of the Pacific Community, 2002; Muldoon, G. & Johnston, W. (2007)

Local traders and exporters, on the other hand, receive a much higher percentage of final, or retail, value than their counterparts in Southeast Asia, even after payments to local consolidators.

The higher percentages received by fishers in Asia are corroborated by research²⁹⁸ and can be attributed in large part to higher transport costs and higher risk of loss from mortality for fish coming from more distant source countries in the Pacific or Indian Oceans. In Indonesia, for instance, there may be additional domestic transport costs or other ‘unofficial’ payments, which increase the cost of doing business.²⁹⁹

Retailers can receive around 40% of the final value, reflecting the high costs of rent, utilities and labour borne regardless of product source

Retailers in both cases receive around 40% of the final value, reflecting the high costs of rent, utilities and labour borne by them regardless of product source. Sometimes that percentage can be much higher depending on the season, the holiday and/or the outlet in which the fishes are served (high-end hotel versus local restaurant, for example) (see Box 3-7 in Section 3.11.1).

It should be noted that fishers operating in the one ‘developed’ country that supplies LRFF to Hong Kong – Australia – receive a similar percentage value per fish as fishers in Southeast Asia. However, revenues per trip for Australian fishers and boat owners far exceed those of Southeast Asian fishers due to the higher rate of CPUE generated by healthier fish stocks and through more effective regulation.³⁰⁰

3.11.4 Price Transmission and Market Power Distorted by Intricate Relationships

The difference between prices received by fishers and prices paid by consumers tends to increase the more agents (middlemen) there are in the market chain, along with species rarity.³⁰¹ In addition, the oligopolistic³⁰² nature of markets at the buyer (middlemen, wholesaler/exporter) level of the market chain raises the opportunity for price collusion.³⁰³ Moreover, in fisheries, market chains tend to be buyer-dominated because unstable supply means prices are dictated by the buyer i.e. middlemen, wholesaler/exporter.

One issue faced in the LRFFT is whether price fluctuations influenced by consumer demand or supply limits are being transmitted along the market chain and, if so, how various agents along the chain respond to price changes. For example, are fishers varying their effort in response to price, or are their effort levels consistent regardless of price changes, with the principal outcome of price changes being the increased margins received by downstream agents (i.e. those closer to consumers)? Indications of changing pricing can be seen in the Philippines and Australia, where fishers can be paid more for preferred species during key holiday periods, such as Chinese New Year.^{304,305,306}

Within LRFF fisheries, supply of fishing effort is insensitive to changes in price or income and is thus highly inelastic

In normal circumstances (i.e. typical fisheries), fluctuations or expected changes in prices would influence fishing effort levels and hence catch rates, but there is consensus that within LRFF fisheries, supply of fishing effort (i.e. the amount of fishing activity such as boats, fishermen, gears, fishing time, etc.) is insensitive to changes in price or income and is thus highly inelastic.^{307,308} The artisanal nature of this fishery, typically associated with limited alternative income-generating options for fishers, coupled with a valuable and overexploited stock, means the impact of price *per se* on fishery production will be minimal.³⁰⁹

Market Power is With Demand Country Wholesalers in the LRFFT

There is a significant body of research on how price is transmitted along the market chain.³¹⁰ Typically for fisheries, price volatility is often not transmitted along the market chain, with processors and wholesalers acting as buffers for producers, i.e. fishers. In terms of price determination, or *market power* in fisheries, buyers tend to be flexible, allowing suppliers to guide prices based on their fishing costs, which in turn are driven by stock and effort constraints.³¹¹ The practice by upstream agents of adding profit margins to these supply costs is amplified where products are more perishable (Figure 3-42).³¹²

FIGURE 3-43

LIVE REEF FOOD FISH ON SALE AT LEI YUE MUN RETAIL MARKET, HONG KONG (LEFT); TRUCKS DISTRIBUTING LIVE FISH FROM ABERDEEN FMO TO LIVE FISH OUTLETS AROUND HONG KONG (RIGHT)



Note: Fish are sometimes in poor condition by the time of sale after long journeys from source countries, e.g. the LRFF on the right of the left-hand photo.

Photos: Sadovy, Y., 2015

Normal transmission of prices is distorted by convoluted business relationships along the LRFF chain

Empirical evidence concerning the LRFF trade suggests that the direction and strength of price transmission contrast with that described above.³¹³ In the case of the LRFFT, normal transmission of prices is distorted by convoluted business relationships along the chain where, for example, fishers may be financially beholden (indebted) to middlemen, and middlemen and exporters in supply countries to importers or wholesalers in importing countries (i.e. the 'system of patronage', Section 3.9.1). Critically, within the LRFFT, the concentration of market power is with the Hong Kong wholesalers who control prices along the whole market chain. Their 'business relationships' with producers and middlemen in supply countries, the characteristics of the LRFFT, as well as the disproportionate costs and risks these wholesalers bear during transshipment (Section 3.11.5) embolden them to set prices for both upstream and downstream agents — an implication of the organised nature of the trade.³¹⁴

Wholesalers control the market in both directions

Dismantling price-collusive behaviour could be the first step to empowering fishers

Thus, in summary, wholesalers control the market in both directions. While it is true that fishers have little or no bargaining power, taking into consideration they are assuming comparatively little financial risk, the fishers, in Southeast Asia at least, are receiving a reasonable proportion of the final value of a fish. By understanding vertical relationships in the trade chain, such as price collusion, indebtedness (Section 3.11.3) and where market power lies, strategies can be formed as to where influence could be brought to bear. In theory, dismantling price-collusive behaviour could be the first step to empowering fishers, further enhancing benefits and creating an environment in which the stocks that fuel the trade are better managed in the long term. The challenge is that these are welded on market structures and therefore difficult to change. Given the live nature of the commodity, the characteristics of the source fisheries in developing countries, and complex and well-structured supply chains (see above),³¹⁵ transforming current power relationships will be very challenging.

3.11.5 LRFFT Remains a Lucrative and Attractive Trade, Despite Inequity and Risk

In major LRFF-producing countries, despite low catch rates and claims of inequitable value distribution, the trade can be extremely lucrative to local fishers, earning them up to ten times the value of the same fish sold frozen or fresh. For many, the trade provides an opportunity to move beyond subsistence into a more comfortable life, with average household incomes for those families engaged in the LRFFT much higher: up to six times the provincial average in Palawan, for instance.³¹⁶ Indeed, in Sabah and parts of Indonesia, fishers can earn more than many government officials and financial sector employees.³¹⁷ Consequently, the number of LRFF fishery participants has grown substantially without controls or restrictions, through job and lifestyle migration.³¹⁸ In the absence of good management and effective enforcement, however, these gains are proving to be short-lived in some places, likely to the long-term disadvantage of participating communities, due to degradation of their natural resources.³¹⁹

An example of the LRFFT's appeal to fishers can be seen by comparing the relative and nominal values garnered by LRFF fishers with those by Tuna fishers in the Philippines. In terms of percentage of final value of product retained, both LRFF and Tuna fishers receive around 25%. However, in nominal terms, for Yellowfin Tuna selling in the Philippines for ~PhP900 (HK\$150), fishers receive roughly PhP220 (HK\$37) per kg, while for LRFF, fishers can receive between PhP2,400 (HK\$400) and PhP2,800 per kg (HK\$467) for 'good size', or preferred 'plate-sized' fish (around 500g) to around PhP1,200–1,400 (HK\$200–234) per fish for larger specimens.

Of particular concern is that even at lower production levels (of wild fish populations), fishers may still be earning profits

In terms of sustainability over the longer term, of particular concern is that even at lower production levels (of wild fish populations), fishers may still be earning profits. Since the notion that overfishing will diminish profits is not yet acknowledged, fishers will continue to fish so long as they can generate an income — the classic 'Tragedy of the Commons'.³²⁰ Adding to this is the fact that there are, in some cases, no other real income alternatives. Unless appropriate livelihood offset arrangements can be established, suitable management actions will be difficult to implement.

3.12 Hong Kong's Reluctance to Act, Despite its Responsibility as a Trade Hub

3.12.1 Increasingly Reliant on Imports

Until the 1960s and 1970s, LRFF mainly came from waters adjacent to Hong Kong and southern mainland China's coastal waters. But as demand increased, local stocks declined and traders began to search farther afield. Starting in the 1980s and into the 1990s, potential source countries for live fish in the South China Sea, Indian Ocean and central and southern Pacific were targeted by Chinese traders.

Working through ethnic Chinese local businessmen, the international trade in LRFF quickly took hold, with fish being imported into Hong Kong by sea and air in increasing volumes and from a growing number of source countries (Sections 3.6 & 3.8).

By the 2000s, trade was being conducted with a wide range of countries from as far as the eastern Indian Ocean, e.g. the Maldives and Andaman Sea area, to the Central Pacific, e.g. Tonga.³²¹ However, over the last ten years, many of the smaller countries have reduced or halted their export trade in live reef fishes due to concerns over resource conditions, violations of regulations associated with the trade, economic concerns and costs of transport.

Over the last ten years, many smaller countries have reduced or halted their export trade in LRFF due to concerns over resource conditions

In recent years, LRFF imported into Hong Kong come largely from Southeast Asia (Sections 1.3 & 3.6), with a growing proportion of the total volume coming from mariculture (Section 3.5). Some fish is still imported, however, from the Maldives and Andaman Sea area, with occasional exports from the Pacific, such as Tonga (Figure 3-44).

Today, at least 90% of the live fishes consumed in Hong Kong are imported, with local live fish production at about 1,000 MT annually from mariculture (1,031 MT in 2016).³²² While mainland China likely imports almost all of the wild groupers it consumes, it also produces very large volumes of farmed groupers, mainly for domestic consumption, with some exported to Hong Kong (Section 3.5).

FIGURE 3-44 TRADE ROUTES FOR LRFF INTO HONG KONG AND MAINLAND CHINA FROM SOUTHEAST ASIA AND AUSTRALIA ACCOUNTING FOR THE MAJORITY OF THE TRADE



Source: Muldoon, G. (2009). WWF Coral Triangle program.

A number of pertinent laws in Hong Kong seem to be out of date

3.12.2 Hong Kong Standing Still: Stuck in the Doldrums

A number of pertinent laws seem to be out of date, for example the exemption of Class III (a) vessels in reporting their entry/exit (Section 3.8.1), and the recent update of Cap 548G not requiring Class III (a) vessels to use an Automatic Identification System (AIS) (Part II, Section 3.3). Labelling laws also fall into this category.

Currently, there is no requirement for retailers in Hong Kong to present signage at point of sale indicating the species, country of origin, method of catch, identification of company or other party responsible for the catch/farm, or whether there has been any genetic modification (under the Public Health and Municipal Services Ordinance (Cap 132)).³²³ In this regard, Hong Kong's regulatory framework falls short of international best practices in comparable economies. Canada, the US, the EU, Japan, Australia and even mainland China have legal requirements for at least some of these details to be declared on seafood labels. In the LRFFT in particular, the lack of this information deprives consumers of the ability to make informed decisions and could put their health at risk.

In general, Hong Kong has done little to remedy this oversight. Rules that have been applied are piecemeal and not bespoke to the specific features of the LRFFT, among other seafood trades. As a result, surprisingly little detail is required at point of sale of LRFF.

3.12.3 A Hub for Undeclared and Unmonitored Re-exports

Hong Kong has historically been and remains the trade hub for moving LRFF from source countries in Southeast Asia to mainland China, primarily because:

- i) As a tariff-free port, with no taxation on imported or re-exported food commodities, including LRFF, it involves lower transaction costs than importing directly into mainland China.^{324,325} Nonetheless, traders are legally liable for

FIGURE 3-45

HONG KONG FISH CARRIER VESSEL, PREVIOUSLY IMPLICATED IN ILLEGAL ACTIVITIES, UNLOADING LIVE FISH



Photo: Yvonne Sadovy, Aberdeen FMO, February 2016

taxation of profits in Hong Kong, and because so much is smuggled, it is possible that some or all of this is unpaid (Section 3.9.2).

- ii) Flights between LRFF source countries and Hong Kong are frequent (as opposed to destinations in mainland China). In some instances, there are no direct flights into mainland cities.
- iii) The reputation, history and business/trade connections of Hong Kong traders ensure high quality products, relatively stable supply and ease in shipping LRFF from Hong Kong to mainland China.
- iv) There are good facilities for receiving live fish with little apparent oversight of operations (Figure 3-45).
- v) Cross-border smuggling by sea has a long history and is well-established. There are well-developed networks and logistics between Hong Kong and southern China (Figures 3-46 & 3-47).

Information on the volume of re-exports from Hong Kong is extremely lacking and consistent with the long-established practice of smuggling live seafood

As data and interviews for this study show, information on the volume of re-exports from Hong Kong is extremely lacking. According to C&SD data, re-exports of LRFF from Hong Kong by air or by foreign vessels (Section 3.8.3) are minimal.

This is consistent with the well-known and long-established practice of smuggling live seafood, as well as other commodities, over the border, as affirmed in trader interviews and market studies in both Hong Kong and mainland China, and in reports and newspaper articles.^{326,327}

FIGURE 3-46 SEAFOOD MARKETS, DEPARTURE AND ARRIVAL LOCATIONS FOR SPEEDBOATS TRANSPORTING LIVE FISH BETWEEN HONG KONG AND SHENZHEN



Live fishes are regularly smuggled across the border with mainland China by speedboats, and moved around Hong Kong on small boats often after being held in fish hotels (floating cages in designated mariculture zones) in areas such as Tung Lung Chau and Lamma Island in Hong Kong.³²⁸ There are also reports of transfers (i.e. transshipments) from large carrier vessels to smaller speedboats that occur just outside Hong Kong waters.³²⁹ The speedboats are not subject to any monitoring when entering China. Such activities are evidently illegal due to the nature of the transshipment and the absence of cargo reports by fish carrier vessels to Customs. It is noted that small speedboats regularly take live fish to border-crossing areas at Lau Fau Shan and Yantian, where smuggling, including of seafood, has a long history (Figure 3-48).³³⁰ After entering mainland China, there is a broad distribution network by land and air throughout the country via southern hubs (Figure 3-47).

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A study undertaken by WWF found that there are more than a dozen cities where LRFF is sold in restaurants and traded in markets (Table 3-5).³³¹

FIGURE 3-47 DISTRIBUTION NETWORK AND TRANSPORT MODES, HONG KONG AND MAINLAND CHINA



Source: Hei, C. et al. 2013 and WWF-Hong Kong, 2014

FIGURE 3-48**LIVE FISH OFFLOADED ONTO TROLLEYS FROM A SPEEDBOAT IN YANTIAN, SHENZHEN**

Note: Almost all such trade is illegal.
 Photo: Wu and Sadovy de Mitcheson, 2016

TABLE 3-5**KEY CHINESE CITIES WHERE LRFF IS TRADED IN MARKETS AND RESTAURANTS**

City (Province)	
Beijing	Shanghai
Shenzhen (Guangdong)	Guangzhou (Guangdong)
Fuzhou (Fujian)	Changle (Fujian)
Xiamen (Fujian)	Chengdu (Sichuan)
Wenzhou (Zhejiang)	Hangzhou (Zhejiang)
Qingdao (Shandong)	Dalian (Liaoning Province)
Hainan (Hainan)	Tai Yuan (Shanxi Province, SX)

Source: Hei, C. et al. 2013 and WWF-Hong Kong, 2014

3.12.4 Loopholes and Inconsistencies in Hong Kong Regulations Persist

Hong Kong's LRFFT is governed by a 'patchwork' of local laws and regulations, which include the following regimes:

- Customs;
- Fisheries protection and fish marketing;
- Food safety;
- International conservation; and
- Vessel licensing.

A patchwork of regulations deal with different branches of Hong Kong's legal framework

Each deals with a different 'branch' of the legal framework, with varying degrees of coverage and responsibilities. The applicability and main limitations of each of these branches are summarised in Table 3-6 below and analysed in Part II of this report. Overall, there exists in Hong Kong a poorly linked framework of

TABLE 3-6 IDENTIFICATION OF LIMITATIONS IN HONG KONG LAW AND ENFORCEMENT AS IT RELATES TO THE LRFFT

Regime	Limitations	Significance/Impact
Customs Cap 60 Import and Export Ordinance (Responsible Authority: C&ED)	Exemption of Fishing Craft Registered or Licensed in Hong Kong from providing customs declarations. Fish carriers/cargo vessels such as those carrying LRFF have been allowed by the Hong Kong government (AFCD) to operate under this exemption, despite the clear intention of the law to limit the exemption only to local fishing vessels.	<p>Creates a significant data gap with regards to monitoring the overall situation of the LRFFT and contributes to an underestimation of trade volumes (Section 3.8).</p> <p>Provides an avenue for smuggling regulated species, such as the Humphead Wrasse, into Hong Kong and also out of Hong Kong to the Mainland (Part II, Section 2.2).</p> <p>Provides an avenue for LRFF to be smuggled into Hong Kong without declaring to customs via possible transshipping to HKLFV.</p> <p>Enables tax evasion (on profits from the trade of unreported and imported seafood).</p>
	Limited specificity required in customs declarations.	Hinders traceability needed to combat IUU and related products entering the market (Part II, Section 2.2).
	Transshipments exempt from customs declarations.	Creates a data gap with regards to monitoring the overall situation of the LRFFT and contributes to an underestimation of trade volumes (Part II, Section 2.2).
	Limited manifest particulars despite government guidance.	Hinders traceability needed to combat IUU and related products entering the market.
Fish Marketing Cap 291 Marine Fish (Marketing) Ordinance (Responsible Authority: FMO, AFCD)	No oversight of entrance and exit of live seafood or ability to monitor the composition and volumes of the trade in detail.	In light of customs exemptions and enforcement challenges, contributes to gaps in trade data and smuggling (Part II, Section 2.3).
Fisheries Regulations Cap 171 Fisheries Protection Ordinance (Responsible Authority: AFCD)	Live carriers are not registered/licensed as fishing vessels with AFCD, thus there is no oversight by AFCD.	In light of enforcement challenges, contributes to gaps in trade data and smuggling (Part II, Section 2.3).
Food Safety Cap 612 Food Safety Ordinance (Responsible Authority: FEHD)	Lack of measures to trace LRFF species to origin.	No Code of Practice on Fish aiming to specifically prevent and control ciguatera fish coming into Hong Kong from hotspots of toxic fish that cause ciguatera (Part II, Section 2.4), despite continuous cases of ciguatera poisoning in Hong Kong (see part II).
Conservation Law (CITES Ordinance) Cap 586 Protection of Endangered Species of Animals and Plants Ordinance (Responsible Authority: AFCD)	Lack of sufficient oversight of imports by sea or air to regularly check for Humphead Wrasse. Relies on honesty of traders to declare imports.	Hundreds and possibly thousands of Humphead Wrasse imported/re-exported illegally annually, with minimal deterrence or identification/prosecution of the culprits (Part II, Section 2.5).
	<p>Possession licences' validity of five years significantly in excess of the turnaround for sale of legally-imported species.</p> <p>Lack of investigative mandate and capacity, considering the organised and serious nature of the trafficking of CITES-listed species, limited offence provisions and lenient sentencing for offences.</p>	Facilitates laundering of the Humphead Wrasse (Part II, Section 2.5).
Vessels Licensing Cap 548 Merchant Shipping (Local Vessels) Ordinance (Responsible Authority: Marine Department)	<p>Local fish carriers and fishing vessels (Class III (a) and III (c)) exempted from reporting arrivals and departures into and from Hong Kong waters.</p> <p>Class III (a) fish carriers (>300 GT), which travel internationally, were not included within a recent amendment which required the installation and use of an AIS in Class I and Class II (in March 2018) vessels.</p>	The arrivals/departures exemption makes it harder to track vessels that are in contravention of Cap 60 and Cap 586 (Part II, Section 3.2.3)

Regulatory gaps and lack of oversight and enforcement mean that little is being done to control the smuggling of LRFF

regulations, some of which are outdated and not fit-for-purpose for the live seafood trade. These regulations are overseen by different departments that tend to work independently and often do not collaborate. In other words, they operate in ‘silos’.

The resulting regulatory gaps and lack of oversight and enforcement mean that little is being done to control the smuggling of LRFF into and through Hong Kong; an activity that likely contravenes CITES. In turn, this has contributed to creating a largely unmonitored, difficult-to-regulate and, at times, illegal trade.

Some of the key regulatory loopholes that have led to the current situation, such as the non-observance by fish carriers of their responsibility to declare cargo to customs (Table 3-6), were brought to the government’s attention in 1999. However, as of 2017, these problems remain unaddressed.³³²

3.12.5 Lack of Verifiability and Accessibility, a Challenge to Monitoring and Inspections

It is the role and responsibility of C&SD to manage the submission of all import declarations whether incoming by sea or by air, which must be completed within 14 days of import. Mis- or non-declaration constitutes an offence. The carriers’ responsibility is to ensure that the cargo is accompanied by the appropriate documentation, such as manifests and customs declarations (Part II, Section 2.2).

Air Carriers: In relation to air carriage, only in circumstances where airlines have a clear reason to believe that the cargo could be unsafe, pose a threat to the safety of a flight, contain illegal contraband or carry internationally protected species (e.g. presence of import permits for CITES-listed species) would they seek to investigate, with the cooperation of C&SD or AFCD.³³³ It is not standard practice for airlines or sea carriers (shipping agents, for example) to open cargo to check the contents against the manifests, although regular screening of cargo contents can and does occur if relevant intelligence is provided.³³⁴

However, given the large numbers of boxes that can arrive in each shipment, this screening is likely to be limited to a small proportion of a single shipment, or indeed of total shipments.

Overall, it would appear that there is trust and assumption that consignments have been correctly labelled by consigners or by the companies packing the products and that trade is legal and safe, unless otherwise indicated by intelligence received or suspect cargo. Equally, it could be stated that there is a lack of duty of care on behalf of the carriers.³³⁵

The export process in at least one major supply country facilitates illegal exports to avoid taxation

It is clear, however, that the export process in at least one major supply country facilitates illegal exports to avoid taxation. Exporting Agents at Indonesian airports allow live seafood exporters to under-report the value of their cargo to reduce taxation, and do not adequately oversee or monitor shipment content.³³⁶ In such cases, there is evidently room for better oversight at the final pre-shipping stages to reduce illegal trade. Live capture fishes are also regularly exported from the Philippines despite a national prohibition.³³⁷

When transported by air, LRFF are packed in small polystyrene boxes or larger solid bins fitted with oxygen units, which improve survival, quality and fish to water ratios.³³⁸ Both boxes and bins are sealed before reaching airport cargo areas, making it difficult for airlines to inspect the contents, although in some countries, such as Indonesia, Quarantine Department officials are supposed to sign off on shipments. Airlines tend not to open the sealed polystyrene boxes or oxygenated bins for inspection, given the risk of compromising or damaging the cargo and exposing the carrier to liability.³³⁹ In particular, opening a tank of LRFF that has its own oxygen supply could put the whole cargo at risk. Moreover, the cargo is often wrapped in layers of plastic and netting, which makes it very difficult to open and inspect unless there is good reason (Figure 3-49).

FIGURE 3-49

LRFF SOLID BINS (LEFT) AND POLYSTYRENE BOXES (RIGHT) WRAPPED IN PLASTIC AND NETTING FOR AIR TRANSPORTATION AT JAKARTA AIRPORT



Photos: Yvonne Sadovy, November 2016 (loading flight destined for Hong Kong)

Live fish that go into fish hotels are not accompanied by quarantine papers, risking disease transmission to Hong Kong aquaculture zones

Sea Carriage: When transported into Hong Kong by fish carriers, the LRFF are held in the hold of the ship, which is specially built or modified to keep them alive for up to several weeks. On entering Hong Kong, the fishes are offloaded at wholesale areas (Aberdeen is one such area) or in fish cages in coastal waters (fish hotels) before sale in Hong Kong or transshipment to mainland China. Transshipped fish are then transferred to small fishing vessels or speedboats in polystyrene boxes and moved to border areas. The live fish that go into the fish hotels are not accompanied by quarantine papers, so there is a risk of disease transmission to Hong Kong aquaculture zones from these briefly held fish.

Transshipment: A large portion of port cargo entering Hong Kong, amounting to approximately 49% in 2015,³⁴⁰ is imports rather than transshipments. About 72.4% of Mainland-Hong Kong port transshipment cargo movements were between Hong Kong and the Pearl River Delta region, according to official statistics.³⁴¹ This is an important distinction since the cargo, if transshipped, is exempt from customs declarations, and import data, such as species and volume, will not be provided to C&ED or C&SD by the consignee (Part II, Section 2.2). Thus, where transshipment takes place, there is even less monitoring of cargo.

Traders acknowledge
extensive unregulated cross-
border trade

Documentation: Internationally shipped cargo is usually accompanied by Bills of Lading (by sea) or Air Waybills (AWB) (for air carriage), providing a description of the cargo based on a harmonized coding system (Section 2.2 for codes used). In the case of internationally traded fish entering Hong Kong, however, documentation requirements are currently inadequate. No information is required on the numbers of fish transported in each container or the actual weight of these fish (excluding water and packaging). Information relating to provenance can only be obtained from the AWB, but that corresponds to the country where the cargo is loaded onto the plane, which may or may not be the country of origin (i.e. it could reflect a consignment/transit country; country of consignment and country of origin are distinguished in customs records). This is an important distinction in relation to traceability and is required for certification programmes and food safety (Part II, Section 2.4).

However, a government official who manages the Aberdeen FMO, which handles about 75% of the live seafood traded in Hong Kong,³⁴² adheres to the official line that most seafood stays in Hong Kong. This is not attested by unofficial comments from other government staff³⁴³ or interviews with traders, which acknowledge extensive unregulated cross-border trade. Nor is it consistent with reports of smuggling and other studies.³⁴⁴

3.12.6 The Illegal Trade, Humphead Wrasse Vanishing at the Border

After the Humphead Wrasse's listing on CITES Appendix II in 2004, Hong Kong introduced measures for monitoring and regulating its trade under Cap 586 – the Protection of Endangered Species of Animals and Plants Ordinance (Part II, Section 2.5). Likewise, some of the main source countries restricted exports of the species (Box 3-10), meaning that only small numbers (a few thousand) can be legally traded internationally under CITES export quotas.

As noted in Section 3.6.11, according to C&SD and AFCD data, annual Humphead Wrasse imports fell from 90 MT in 1999 to zero in 2010. Since then, there have been no AFCD/C&SD trade records of Humphead Wrasse being imported into Hong Kong (Figure 3-50). It is not known why for the intervening period (2010–2014) the fish (with legitimate CITES permits) do not appear in C&SD/AFCD import data.

It is clear from a recent study, that despite these figures (Box 3-11) that imports into Hong Kong continue at volumes well in excess of declared numbers and regional country export quotas, i.e. legal imports with CITES permits, with most being illegally imported without CITES permits.³⁴⁵ The same can be said for re-exports to mainland China. While re-exports of this species from Hong Kong into mainland China are considered to be substantial, there have been virtually no recorded re-exports in customs or AFCD data since 2008 (Appendix A-I).

BOX 3-10 COUNTRY MEASURES TO REGULATE THE TRADE IN HUMPHHEAD WRASSE

Malaysia 	Philippines 	Indonesia 
Introduced a zero quota for the international export of live Humphead Wrasse in 2010, after which there have been no recorded imports of Humphead Wrasse from Malaysia into Hong Kong. Malaysia still allows for the capture and trade of this species (in both live and dead forms) domestically, and Hong Kong traders claim to be able to easily obtain Humphead Wrasse to order, with them arriving from Malaysia within a few days by plane. ⁱ	Exports of all live fishes and all CITES Appendix II species from the Philippines are illegal under the Philippines Fisheries Act. This is openly flouted for all LRFF species, as evidenced by C&SD data records that indicate exports of Humphead Wrasse from this country. For many years, Humphead Wrasse were illegally exported from a large grow-out area in Tawi-Tawi and its surrounds, but with administrative and political changes in the area, this activity has declined substantially. ⁱⁱ Some illegal trade occurs between the Philippines and Sabah, Malaysia. ⁱⁱⁱ	Indonesia's CITES Scientific Authority established an export quota of 8,000 Humphead Wrasse per annum in 2006, which was gradually reduced to 2,000 fish in 2012. ^{iv} One area in western Indonesia, the Anambas and Natuna Islands, off the northwest coast of Borneo, is known to be a significant source of Humphead Wrasse, most or all of which are grown-out from small juveniles and illegally exported to Hong Kong by sea. ^v Illegal trade from Indonesia also occurs by air, with exports mixed in with and reported as grouper. ^{vi} This species should only be exported by air from Indonesia (i.e. sea exports are prohibited) and only within a permitted size range.

Sources:

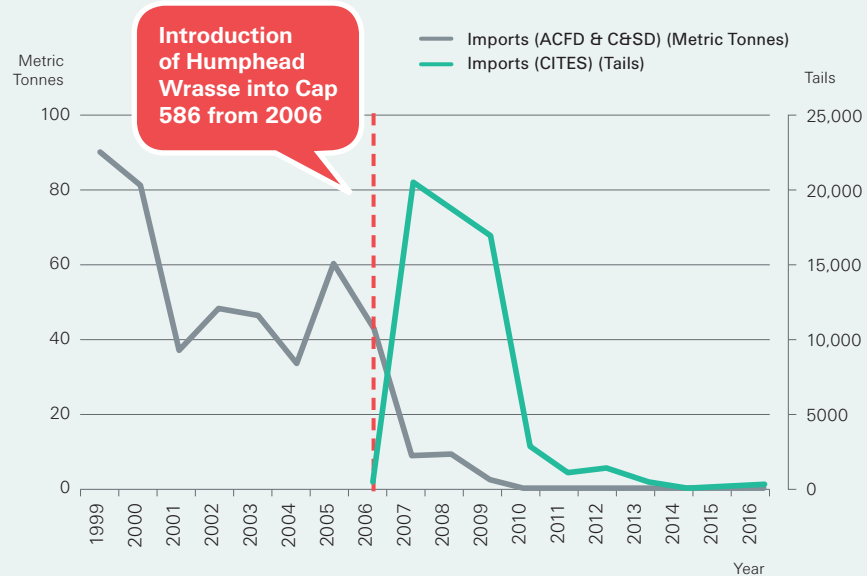
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- ii. Alesna, E. (2012) & Romero, M. (2011) (pers. comm.)
- iii. Fabinyi, M., Pido, M., De las Alas, M.A., Ponce de Leon, E.M., Buenconsejo, J., UyamiBBitara, A., Harani, B. & Caceres, J. (2012). Livelihoods And *The Live Reef Fish For Food Trade In The Municipality Of Balabac, Palawan Province, Philippines. Technical Report*, Townsville and Puerto Princesa City: ARC Centre of Excellence for Coral Reef Studies, James Cook University and Center for Strategic Policy and Governance, Palawan State University.
- iv. CITES. (2006). *CITES national export quota*. CITES, Geneva, <https://cites.org/eng/resources/quotas/export_quotas>.
- v. Workshop on illegal, unregulated and unmonitored trade, conservation planning and nonBdetriment finding of Napoleon (Humphead) wrasse, *Cheilinus undulatus*. IUCN Groupers, Wrasses Specialist Group, Jakarta, Indonesia 8B10 December 2015.
- vi. Wu, J. & Sadovy de Mitcheson, Y. (2016). *Humphead (Napoleon) Wrasse Cheilinus undulatus trade into and through Hong Kong*. TRAFFIC, IUCN, Hong Kong.

BOX 3-11 ILLEGAL TRADE IN HUMPHHEAD WRASSE

The results of a WWF survey conducted in 2012–13 indicated that at least 50 MT, or around 26,000 live Humphead Wrasse, are entering major cities in mainland China every year for which there are no CITES import records. These large quantities entering mainland China are believed to originate from Indonesia (despite a quota of just 2,000) and are almost certain to have passed through Hong Kong.

FIGURE 3-50

IMPORT RECORDS FOR HUMPHHEAD WRASSE, 1999-2016, ACCORDING TO TWO DATABASES*



* AFCD/C&SD; and CITES Import Permits.

Red line indicates the start of regulation under CITES in Hong Kong, 2006.

Despite what appears to be a sharp decline in imports after the implementation of CITES via Cap 586, this has not been reflected at retail markets in the city, since hundreds of the species are seen on sale each year (Figure 3-51), a number that is far higher than indicated by official records. This illustrates that illegal trade for this species continues, although such activity is seeing a decline.

Data source: C&SD, AFCD (CITES) & CITES, 2017

Illegal imports of live Humphead Wrasse into the Hong Kong market continue

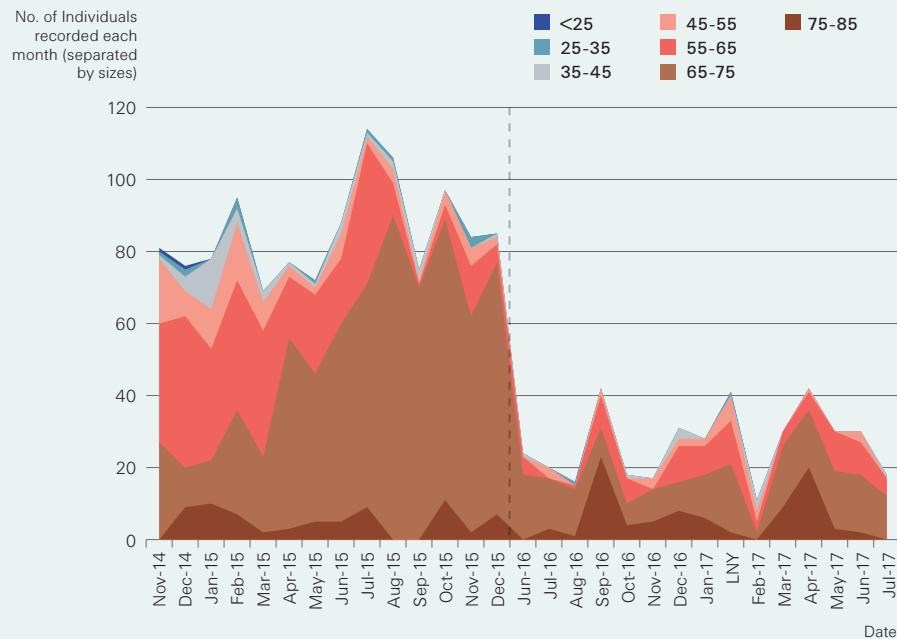
Monthly retail market surveys conducted by Hong Kong University (from November 2014 until December 2015; 14 months) found that despite there being no C&SD, AFCD or CITES records, 1,197 live Humphead Wrasse were available in the three main seafood retail markets in Hong Kong (Figures 3-51 & 3-52). This finding provides clear evidence that illegal imports of live Humphead Wrasse into the Hong Kong market continue unreported and, more importantly, unchecked. Reports indicate that some fish go directly into high-end restaurants and hotels to satisfy specific customer orders and hence bypass open markets i.e. those accessible for survey studies.³⁴⁶

Despite there being eight seizures of Humphead Wrasse by AFCD inspectors between December 2015 and 2016, this represented only 21 specimens. Clearly more enforcement of trade into and through Hong Kong of Humphead Wrasse is needed.³⁴⁷ For those fish on sale for months or even years after the last CITES import was recorded (note that turnaround time is a month or less for individual fish), traders claim that they have been maintained in tanks since import. However, this is not possible, given the conditions that these animals are kept in, which further highlights enforcement limitations.³⁴⁸ The positive news is that there

appears to have been a decline in imports recently, from June 2016 to July 2017 (14 months), possibly due to improved enforcement, with 333 Humphead Wrasse recorded in surveys (using the same methodology as that used previously) at main retail seafood outlets in the city (Figure 3-51).³⁴⁹

FIGURE 3-51

NUMBER OF HUMPHHEAD WRASSES OBSERVED AT RETAIL OUTLETS IN THE THREE MAJOR SEAFOOD AREAS IN HONG KONG (LEI YUE MUN, TUEN MUN AND SAI KUNG), 2014-2017



Note: Visits are conducted monthly, and information is provided in size class (cm). Ongoing surveys show that these numbers have approximately halved in the last year, probably as a result of increased enforcement efforts by AFCD. (Sadovy, Y. (2017, pers. observation))

Source: Wu and Sadovy de Mitcheson, 2016

FIGURE 3-52

IUU HUMPHHEAD WRASSE ON RETAIL SALE (LEFT), WHOLESALE MARKET IN GUANGZHOU (RIGHT) (2013)



Note: None of the thousands of fish for sale in mainland China have associated CITES permits, according to WCMC-UNEP records. This indicates that they are mostly illegal since this species is heavily imported.

Photo: Liu Min, 2013 (left); Yvonne Sadovy, 2013 (right)

3.12.7 The Need for Concrete Action and Commitment

Hong Kong: 'Beyond Jurisdiction' Responsibilities

Hong Kong is endowed with considerable power over its external affairs and may conclude and implement agreements, including those for trade and shipping, with states, regions and relevant international organisations in appropriate strategic areas on its own. The jurisdiction clearly plays a dominant role in the international wildlife trade and the regional LRFFT in particular. As such, it has responsibilities in relation to a range of conventions, agreements and accords that relate to equity, sustainable use and conservation pertinent to Hong Kong and to the LRFFT. Both independently and as part of greater China, Hong Kong has signed commitments to the following environment-related instruments:

- United Nations Sustainable Development Goals (SDGs);
- United Nations Convention on Biological Diversity (CBD); and
- Convention on International Trade in Endangered Species (CITES).

Hong Kong has refrained from being actively involved in many global agreements

Despite this, due to its traditional '*free trade*' status and the argument that certain laws or international frameworks are dictated by mainland China (even though Hong Kong is often treated as a separate signatory), Hong Kong has refrained from being actively involved in many global agreements (see Part II). This includes several recognised instruments to address and engage in fisheries and trans-boundary seafood trade issues, such as FAO (United Nations), ASEAN Plus Three (APT) and APEC (Asia Pacific Economic Cooperation). For instance, it has not signed up to:

- The FAO Compliance Agreement;
- The FAO Port State Measures Agreement; nor
- The FAO United Nations Fish Stocks Agreement.

As a member of APEC, Hong Kong is subject to a series of non-binding obligations and commitments. These have increasingly included recognition of regional fisheries and trade-related issues relevant to Hong Kong specifically, comprehensive monitoring and control of trading in LRFF, and traceability (see below). Further, in 2014, APEC's Ocean-Related Ministers called for the establishment of stronger cooperation among APEC members highlighting four key areas³⁵⁰ and key regional issues related to marine biodiversity conservation, including trans-boundary areas, partnerships to combat IUU and ratifying the FAO's Agreement on Port State Measures (see Appendix B-XVI) to improve tracking of vessels. Despite the obligations and commitments under APEC, since 1998, there has been little evidence of progress toward these.

With its commitment to the CBD, Hong Kong has a responsibility to integrate conservation and sustainable use into its policy

Notably, with its commitment to the CBD (see below), Hong Kong has a responsibility to integrate conservation and sustainable use into its policies, arguably including international trade. Hong Kong, however, has continued with its *laissez-faire* approach embodied by a free and largely unregulated trade of valuable wildlife products, largely ignoring the international component of CBD and instead focusing on a 'City' Biodiversity Strategy and Action Plan (BSAP).

The proportion of world marine fish stocks within biologically sustainable levels has declined from 90% in 1974 to 68.6% in 2013

In summary, relevant laws and agreements in respect of the duties and obligations that apply to Hong Kong are going unheeded. This is in addition to the many shortcomings of monitoring the live seafood trade, including for a CITES-listed species, into and through Hong Kong (e.g. Sections 3.7, 3.8 & 3.9). As a result, the city will continue to contribute to the ongoing degradation of some of the world's most valuable ecosystems. At the same time, it will continue to impede the efforts of countries in the region trying against all odds to manage their wildlife resources and the incumbent international trade.

More broadly, and looking to the future, also of relevance are the sustainable development goals (SDGs), a recent set of universal goals, targets and indicators that United Nations member states will be expected to use to frame their agendas and political policies over the next 15 years. While Hong Kong specifically is not a UN member, mainland China is a member and so SDGs are also pertinent to Hong Kong. Of particular relevance to the marine environment is SDG Goal 14, which seeks to: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.³⁵¹ The increasingly adverse impacts of climate change (including ocean acidification), overfishing and marine pollution are jeopardising recent gains in protecting portions of the world's oceans. Overfishing reduces food production, impairs the functioning of ecosystems and reduces biodiversity. The proportion of world marine fish stocks within biologically sustainable levels has declined from 90% in 1974 to 68.6% in 2013. However, the trend has slowed and appears to have stabilised from 2008 to 2013. In the case of the live reef fish trade, however, considerable progress remains to ensure that these fisheries are sustainable and that transparent and responsible trade supports such initiatives.

As for the SDGs, even where Hong Kong is not party to relevant international legal instruments, these can be models for change for developing better and more responsible standards of practice, such that Hong Kong can work towards attaining international best practices as it aspires to be Asia's '*World Class City*'.

3.13 A Timeline of Remedial Efforts: Have the Initiatives Delivered?

3.13.1 Overview

Recognition of the LRFFT's harmful impact on some wild fish populations has spawned many remedial efforts over the last two decades by individual scientists, numerous NGOs,³⁵² regional international organisations³⁵³ and some governments (e.g. Indonesia, the Philippines, Papua New Guinea, Fiji and Palau). Aimed variously at fishers, governments, traders and consumers, these efforts have focused on: sources and impacts of production; voluntary guidelines for best practice; market collaborations and incentives; improved regulations (i.e. licensing, minimum sizes); trade regulation such as controls on transport mode and hubs; consumer awareness and education; retail market engagement (i.e. hotels and restaurants); CITES; and regional cooperation initiatives.

Overall, few initiatives have been successful in moving the LRFFT towards better oversight, regulation and management, sustainable resource use, improved trade practices and sustainable consumption

Overall, few of these initiatives have been successful in moving the LRFFT towards better oversight, regulation and management, ensuring sustainable resource use, improving trade practices and fostering sustainable consumption of live seafood. Only one joint effort between NGOs and aid agencies (i.e. USAID) has sought to engage the entire supply chain in a holistic way to seek effective collaborative solutions, but with limited success.

Despite an early focus by NGOs and others, limited capacity in fisheries and regional issues meant that a conservation-style agenda was followed, based largely on voluntary measures and intergovernmental collaborations. Insufficient attention was paid to livelihood needs or resource status, hence the initiatives went in somewhat unproductive directions. One positive exception is the CITES Appendix II listing of the Humphead Wrasse in 2004. This has drawn attention to the trade and highlighted specific challenges in the implementation of CITES' listings as well as countries' equivocal attitudes towards regional coastal resources (mainly coral-reef associated) and the seafood trade in general. In the case of Hong Kong and mainland China, the Humphead Wrasse listing has served to reveal extensive illegality of the live seafood trade and the challenges of compliance and enforcement within the Hong Kong retail sector. Increased surveillance in Hong Kong appears to have led to a real reduction in illegal imports in the last year (Figure 3-51).

Key characteristics of the LRFFT present major challenges to effective stakeholder engagement and constructive solutions

It has become clear that several key characteristics of the LRFFT present major challenges to effective stakeholder engagement and constructive solutions:

- The highly dispersed and often remote nature of the fishing grounds where wild LRFF are sourced, sometimes associated with illegal fishing practices like cyanide fishing, makes monitoring and enforcement highly challenging. This is further compounded by fishing activities that are often conducted in secret.
- The inshore coastal coral reef fisheries that supply the LRFFT get very little management attention in developing countries. This is partly because they are so remote and diverse (contributing to difficulty in management and monitoring), and partly because their economic value/importance does not appear to be well-recognised, e.g. compared to high-value, pelagic fisheries such as Tuna. Overall, this translates to poor or absent governance of reef fishes across large swathes of most source countries.
- Inadequate or no monitoring or oversight of export trade volumes and movements in live fish, especially by sea carriers. This is related to poor governance of the trade in general and very limited understanding of the condition of the underlying resource status.
- A highly complex, collusive and secretive or opaque supply chain structure with well-organised trade networks, within which major players are not held to any sort of accountability.
- Many fishers gain superior economic benefits from the LRFFT and have few other income options. In some cases, however, indebtedness by fishers to traders and middlemen (who supply fishing gear, boats, cyanide, loans, etc.) might undermine fishers' bargaining power in respect of prices paid for their

fish, with such power residing with the downstream agents.

- Porous borders and corrupt officials facilitate extensive IUU trade within and between source and destination countries including cross-border trade e.g. out of Indonesia, from the Philippines to Malaysia, from Hong Kong to mainland China.
- Organised crime in the form of business arrangements and connections at various stages along the trade chain that facilitate and enable illegal trade.
- A growing demand base of an increasingly affluent middle class in mainland China that is generally unaware of or uninterested in biological sustainability and is prepared to pay high prices for highly desired species, even as their wild populations decline. This situation makes it difficult to promote sustainable seafood choices and for seafood certification and eco-labelling systems to gain traction. Moreover, the opaqueness of trade networks makes the traceability necessary under these certification systems problematic.
- While culture techniques are improving, full-cycle culture supplying the international LRFFT remains limited to relatively few lower- and medium-valued species. Wild-caught fish, especially the higher-value species, will continue to be traded to meet consumer demands and to allow supply chain agents to reap associated higher profit margins.
- The lack of a regional forum that can effectively compel economies to address live reef fish issues (i.e. RFMOs, APEC, SEAFDEC, ASEAN, etc.) or establish funding or a mandate to deliver on agreed activities on behalf of member countries and in relation to the trade.
- A general lack of interest or political will within the region, at all levels of policy and government, to embrace sustainable natural resource use. In the case of coastal resources there tends to be a focus on easy-to-sell and experimental approaches such as restocking, MPAs, mariculture and artificial reefs as solutions for overfishing rather than what is actually needed. That is, reduction in fishing effort, attention to reproductive capacity of exploited species (ensuring enough fish reach reproductive age and reproduce) and closer monitoring and controls of trade volumes and practices.
- Poor commitment, due to low priority assigned to wildlife crimes in the region, to fully enforcing existing laws and agreements. A key example is the ongoing illegal trade, albeit reducing in Hong Kong, in Humphead Wrasse despite its CITES Appendix II listing. This includes illegal international trade between source and destination centres and laundering within Hong Kong and exports between Hong Kong and mainland China.

As a way of examining the evolution of initiatives, a timeline of actions introduced has been constructed that can be thought of as having four ‘overlapping’ phases (Figures 3-53).

FIGURE 3-53 TIMELINE OF LRFFT INTERVENTION ACTIVITIES INITIATED SINCE 1996

Initially, interventions tended to be at localised and/or national levels in source countries

3.13.2 1996 to 2001 – Localised and/or Specific Issue-Based Activities

This initial phase represented the first attempts to understand and confront the challenges of the LRFFT. The programmes tended to be at localised and/or national levels in source countries, although some had regional reach. While recognising the pervasive influence of Hong Kong as the demand centre for LRFF, these initiatives promoted local policy reform via expert reviews and workshops, with a focus on understanding the LRFFT and lessening local and specific impacts of the trade, including:

- i) Elimination of cyanide fishing;
- ii) Protection of fish spawning aggregations, aggregation sites and use of MPAs;
- iii) Understanding the practice of using wild-caught juveniles for grouper mariculture (deterrence was not considered in this initial phase because the extent of the issue was not well understood);
- iv) Understanding the extent and managing the implications and outcomes of trade expansion into countries in the Pacific and Indian Oceans;
- v) Monitoring the trade (import volumes and prices) into Hong Kong, which, importantly, brought about the elaboration of the Harmonized Code system to better describe live seafood imports; and
- vi) Highlighting the problem and extent of corruption associated with the trade.

Despite most source countries developing new or reviewing existing legislation to manage the destructive aspects of the LRFFT (particularly cyanide fishing), the combination of a lack of enforcement/prosecution, poor knowledge of the resource, weak governance, well-organised trade networks, poor resourcing and widespread corruption hampered any real progress during this period. Efforts to engage with markets and larger industry players, from traders to transporters, were largely ignored. The focus of the Hong Kong government, largely at the prompting of NGOs, was mostly towards reducing the use of cyanide.³⁵⁴

This period also heralded the expansion of the LRFFT into the Pacific, which prompted responses from several source countries that were being targeted by the trade and were under intense pressure to export live fish. The Secretariat of Pacific Community responded by coordinating much of the work. Activities included undertaking inventories of available resources to determine sustainable harvest or offtake, such as in Fiji,³⁵⁵ and to explore the socio-economic benefits, or otherwise, of participating in the trade.³⁵⁶ There were early and evident signs that the resources of these Pacific Island countries were being overexploited, to the detriment of their long-term environmental and socio-economic well-being.

During this period, there was also a tendency for major NGOs to advance their own agendas rather than address the major drivers of unsustainability in this trade. This occurred partly due to a limited capacity for and history with this fishery, despite a long track record of conservation-related work, and partly due to the preference of some NGOs to focus on specific solutions with which they were familiar, such as MPAs, biodiversity hotspots or cyanide fishing. Further, these were issues and topics which could attract funding, whether or not they were actually applicable to the LRFFT or addressed the core issues of sustainability.

3.13.3 2002 to 2006 – Best Practice Standards, Multi-stakeholder Initiatives, Regional Partnerships and a Growing Awareness of the Challenges

2002 to 2006 saw an increased emphasis on market-based approaches along with greater cooperation amongst NGOs, donors in the Pacific, as well as within Asian countries

This second phase saw an increased emphasis on market-based approaches along with greater cooperation amongst NGOs, research and enabling agencies and donors in the Pacific, as well as within Asian countries.^{357,358} Understanding of the trade at the time was expanding, and the first attempt to summarise the key issues was encapsulated in an Asian Development Bank (ADB) publication, 'While Stocks Last' – evidence that concerns about the trade had registered even at the ADB level by the early 2000s.³⁵⁹ Countries continued to struggle with the challenge of managing their LRFF fisheries, and some Pacific Islands had started to pull back from the trade, e.g. Papua New Guinea, Fiji and Palau. Primary concerns included overexploitation of inshore resources and socio-cultural conflicts arising from the exporting of fish for the LRFFT that traditionally supported a local trade.³⁶⁰ At the same time, corruption among local officials was reinforced as a major issue in some areas.

Market-based efforts included building multi-stakeholder consensus-driven voluntary standards of 'best-practice' for the LRFFT³⁶¹ as part of a deeper engagement with supply chain agents and to improve trade and mariculture practices. Other efforts, such as increasing sustainability awareness among consumers on the back of expected growth in demand from mainland China,³⁶² were well-intentioned initiatives designed to advocate for responsibly-produced LRFF, but which ultimately did not produce the desired impacts. This was partly due to a lack of interest in sustainability issues by consumers at the time, and partly due to poor traceability, which undermined the application of emerging certification systems, such as the Marine Stewardship Council.

Collaboration with and advocacy by the NGO community across the various issues of concern, as well as improving capacity for and engagement in fishery-related issues, was a hallmark of this period. These contributed to collaborative initiatives between research and regional enabling agencies and advancement in grouper mariculture technology.^{363,364,365,366,367} There was also an increased focus on the economics of the LRFFT, including supply and demand modelling, value chain analysis and policy recommendations, and discussions on viability, including amongst Pacific Island nations.^{368,369,370}

Finally, this period was characterised by an increasing focus on the use of MPAs to tackle chronic problems within this mainly inshore fishery, such as the protection of spawning aggregations and the creation of harvest refugia to quarantine community benefits. With few exceptions, and as with the previous period, there was little focus on sustainable fisheries at the community level, understanding the status of exploited species, stock assessments, and improvement in monitoring catches, exports and imports by species or by country.³⁷¹

One exception to this overall lack of outcomes during this period was the Humphead Wrasse's CITES listing. This attracted global attention to sustainability issues in the trade, and the species was the first, and to date, only reef food fish to be listed on a CITES Appendix.³⁷² Its listing highlighted the need for greater scrutiny and understanding of the trade and the specific threat to the species from international trade. It led to export quotas being introduced in Indonesia and Malaysia and to a slow reduction of fish illegally entering Hong Kong.

3.13.4 2007 to 2013 – Regional and Whole-of-Supply-Chain Initiatives – the Bigger Picture

More recently, interventions moved towards trans-boundary 'whole-of-supply-chain' approach to 'linking' sources and demand through regional cooperation

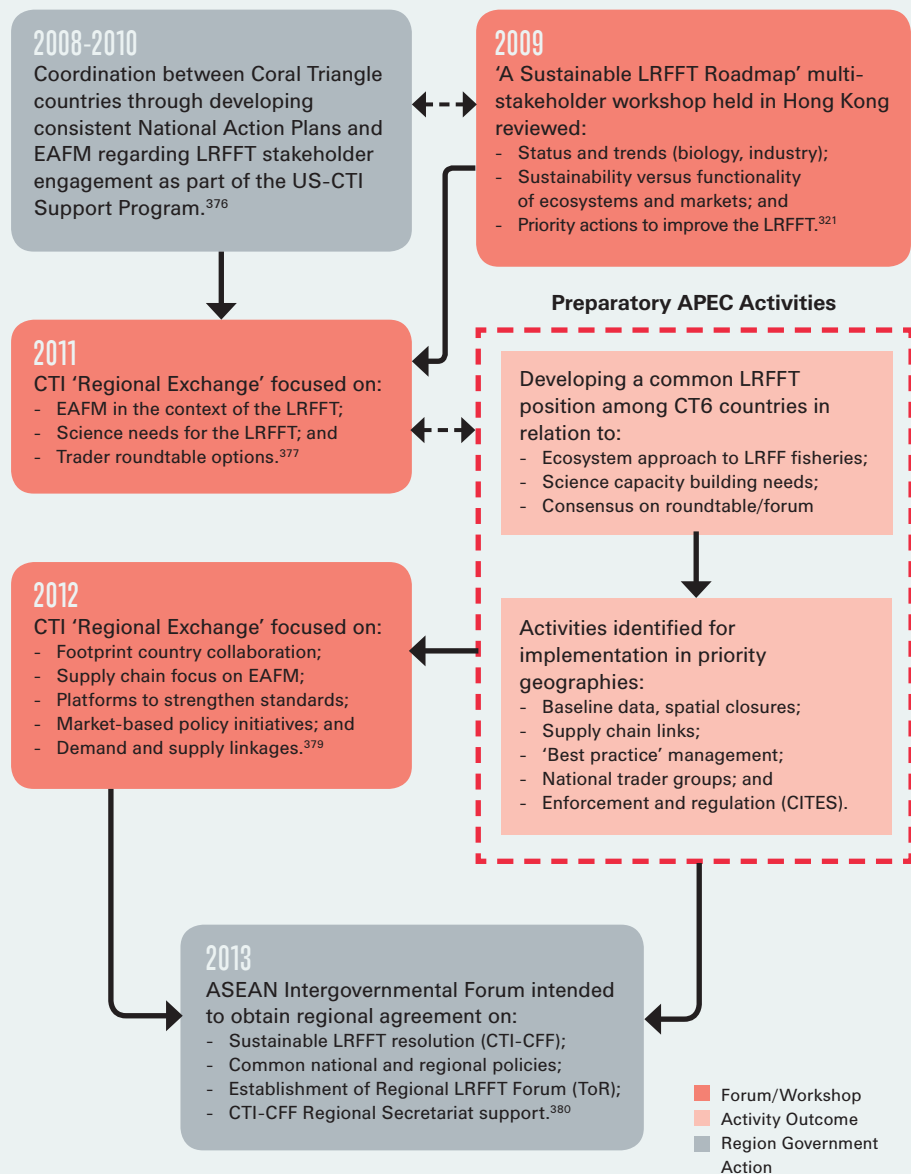
This third phase can be characterised as more of a trans-boundary '*whole-of-supply-chain*' approach to '*linking*' sources and demand through regional cooperation across source country governments, in attempts to scale up efforts such as through the Coral Triangle Initiative for Coral Reefs, Fisheries and Food Security (CTI-CFF), which was initiated in 2007.

The CTI-CFF is a multilateral partnership of six countries formed in 2009 to address the urgent threats facing the coastal and marine resources in one of the most biologically diverse and ecologically rich regions on earth.³⁷³ It was hoped that the scale of this initiative would afford increased opportunities to enhance regulatory aspects of the trade, i.e. imposing moratoria, and act as a catalyst for renewed efforts to promote cooperation on improved monitoring and reporting at a regional scale to tighten the trade. Part of this process saw a stronger emphasis on multi-stakeholder forums and roundtables at national and regional levels.^{374,375}

The establishment of trader roundtables and forums, at national and regional scales, consequently took on increased prominence, and efforts intensified to strengthen collaboration among source countries, mostly within the Coral Triangle, to galvanise regional governments around LRFFT issues. The process of fostering

increased collaboration was an iterative one, utilising the convening power of regional agencies, such as APEC, the US CTI Support Programme and SEAFDEC, to bring NGOs, civil society organisations, academics and industry to the table, so to speak. Together they would review the *status quo*, and develop priority actions in relation to market-based instruments, science and policy needs at national and regional levels (Figure 3-54).^{376,377}

FIGURE 3-54 A SCHEMATIC SHOWING THE ITERATIVE SERIES OF MULTI-STAKEHOLDER FORA DESIGNED TO GALVANIZE REGIONAL GOVERNMENTS INTO CREATING STRONGER LEVERAGE FOR REDRESSING SOCIAL AND ENVIRONMENTAL IMPACTS OF THE LRFFT



Note: The dashed lines indicate an iterative development process while solid lines indicate information flow from one phase to next

Furthering these multilateral approaches were efforts to bridge the overlap between supply and demand and build source country collaborations with Hong Kong and mainland China,³⁷⁸ along with a renewed effort to examine and redress legal and policy shortcomings at a regional scale.³⁷⁹ These measures were accompanied by stronger efforts to engage with mainland China,³⁸⁰ recognising that higher incomes and greater scarcity of particularly desired species would likely continue to amplify demand and drive fishing expansion and overfishing, despite the growth in mariculture.

During this period, there was recognition by APEC of the need for mandatory, rather than voluntary, controls on trade such as certification,³⁸¹ including the acknowledgement of the need for more *responsibly-produced* LRFF by the market.^{382,383,384} Discussion also emerged through the CTI-CFF on ecosystem-based approaches to management of the LRFF^{385,386} which was part of a wider focus on fisheries generally.

3.13.5 2014 to 2017 – Focusing on Species and Demand-side Awareness

Specific species interventions have been launched, e.g. to protect the Leopard Coralgrouper

Over the past three years initiatives with a focus on specific species were launched. For instance, the Palawan Council for Sustainable Development, Philippines, established an initiative to protect the Leopard Coralgrouper during its spawning season to help the depleted stock to recover.

Collaborative work is also ongoing between the IUCN Groupers & Wrasses Specialist Group and the Hong Kong government's AFCD to improve implementation of the CITES II listing for the Humphead Wrasse and to develop ways of reducing illegal trade. This work has already led to a significant reduction in retail sales in this species and the trialling of an identification method ('Fish Face') which uses facial markings to help track legally imported individuals.

This period is typified by increased focus on the role of Hong Kong through transporters and the identification of loopholes in legislation leading to legal questions. Compared to previous years, more focus was placed on the demand end of the supply chain, rather than the source end.

Mariculture production also expanded rapidly during this period, accounting for an increasingly large proportion of the trade in live reef fish. Likewise, production in mainland China soared. The introduction of the Sabah Grouper in 2007 brought startling results, with the species becoming the second most popular farmed grouper in 2016 after the Green Grouper. While the growth in farmed fish was seen as a welcome addition to the production volumes of live fish, the capture of higher-valued wild fish continues to persist, reinforcing the belief that farmed fish will not replace wild fish. At the same time, concerns emerged regarding limitations to the growth of carnivorous fish farming, caused by constraints on available wild-feed supply.³⁸⁷

Progress has been made in securing population assessments and the implementation of the Humphead Wrasse CITES Appendix II listing in Indonesia and Hong Kong

3.13.6 Some Cause for Optimism

International

In recent years there have been new initiatives by both exporting and importing parties, providing hope for progress. Since 2015, Indonesia's Minister of Maritime Affairs and Fisheries Susi Pudjiastuti has increased crackdowns on illegal ventures by foreign fish carrier vessels, limiting their activities to mariculture-produced fish. One Indonesian trader has voluntarily halted exports of Humphead Wrasse and begun to manage his business for effort and minimum sizes, demonstrating that the trade can still be economically viable with such constraints. In Palawan, closed seasons for Leopard Coralgroupers are increasingly implemented, and a recent stock assessment of this species has helped define levels of sustainable fishing.

At the same time, progress has been made in securing population assessments and the implementation of the Humphead Wrasse CITES Appendix II listing in Indonesia and Hong Kong, as well as stock assessments of the Leopard Coralgroupers in Palawan.^{388,389,390} The PCSD has been working with WWF-Philippines and others to develop a sustainable development plan for this species, including stakeholder engagements and species studies.³⁹¹

Hong Kong

The Hong Kong government has acknowledged the pressure facing particular marine resources, including some LRFF species

Although the government does not place high priority on international seafood trade issues, in recent years it has acknowledged the pressure facing particular marine resources, including some LRFF species. In 2013, the government recommended that shark fin and Bluefin Tuna no longer be served at official functions, and in 2016, it expanded this to include Humphead Wrasse and Red (Hong Kong) Grouper. The Red Grouper used to be part of the local (Hong Kong and mainland China) live fish trade before declining populations made it a globally threatened species.³⁹²

Most recently, studies have started to examine the role of different transport carriers in the LRFFT, and taken a more in-depth look at ongoing IUU of Humphead Wrasse into Hong Kong and, in particular, the lack of monitoring of Hong Kong-based fish carrier vessels which appear to be largely operating outside the law. These studies have proven useful for examining possible opportunities for intervention in the transport sector as well as areas for greater enforcement and oversight on the CITES-listed species.^{393,394} AFCD has also been scrutinising the activities of Humphead Wrasse traders more closely, with several recent prosecutions for illegal possession. Such actions have led to much lower imports of this species into the city since 2015, according to ongoing surveys at retail markets (Figure 3-51).

Likewise, improvements to the harmonized coding of imports have been made by the C&ED to enhance understanding of the trade, as evidenced by the recent addition of the Hybrid Groupers category. The government's acknowledgement of the responsibility of Hong Kong fish carriers to report their cargo to Customs should also improve reporting practices in the future.

Regarding the private sector, there has been much industry-led action on the banning of shark fin imports. WWF is currently working with global shipping companies to draft 'no shark fin' industry guidelines.³⁹⁵ So far, 16 shipping lines, accounting for 68% of the total market share, have set up 'no shark fin' policies. In addition, 36 airlines have announced similar bans on the carriage of shark fin.

However, with the introduction of the Competition Ordinance in December 2015 in Hong Kong,³⁹⁶ future industry-led initiatives must be approached with caution, due to risks of breaching collusion/anti-competition regulations. For this reason, it is crucial that the government take a leading role in responsible trade.

Recent initiatives are only the beginning of many more commitments and regulatory measures that are needed to address Hong Kong's unsustainable LRFFT

In the BSAP 2016–2021, which was prepared in compliance with the CBD, the government made the following commitments with respect to the LRFFT:³⁹⁷

- Action 5b) Step up enforcement against wildlife crime (establish an inter-departmental task force on wildlife crime, to strengthen collaboration and intelligence exchange).
- Action 22a) Promote sustainable consumption (conduct public engagement and explore relevant measures on promotion of sustainable consumption of biological resources).

Subsequent to the BSAP process, in 2016 the Council on Sustainable Development launched a public engagement exercise on the promotion of sustainable consumption of biological resources, which included seafood. In late 2016, the government re-affirmed the legal obligation of fish carriers to submit customs declarations by formally requesting the industry to do so. Enforcement, however, remains a challenge due to limited oversight of vessel movements.

Whilst such initiatives are welcome, they represent only the beginning of many more commitments and regulatory measures that are needed to address Hong Kong's unsustainable LRFFT. ■

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171. Trash fish are usually marine fish that have little or no market value as human food but are sometimes used in the production of fish meal. Many such small fish, however, are the juveniles of food fish for other fish species as well as for humans. Groupers have the poorest of all feed conversion ratios of marine fish cultured in China, and require large volumes of feed fish. (Source: De Silva, S.S. & Turchini, G.M. (2009). *Use of wild fish and other aquatic organisms as feed in aquaculture – a review of practices and implications in the Asia-Pacific*. In Hasan, M.R. & Halwart, M. (eds.). (2009). *Fish as feed inputs for aquaculture: practices, sustainability and implications*. FAO Fisheries & Aquaculture Technical Paper. FAO, Rome.)
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Growth overfishing occurs when fish are harvested at an average size that is smaller than the size that would produce the maximum yield per recruit. A recruit is an individual that makes it to maturity, or into the limits specified by a fishery, which are usually size or age.
Recruitment overfishing is when the rate of fishing is above that at which recruitment to the exploitable stock becomes significantly reduced. This is characterised by a greatly reduced spawning stock, a decreasing proportion of older (or mature) fish in the catch, and generally very low recruitment year after year. This may lead to stock collapse if prolonged and combined with poor environmental conditions.
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PART II

SLIPPING THROUGH THE NET

POLICY AND REGULATIONS
IN HONG KONG



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BACKGROUND

Within the LRFFT supply chain there is a significant Illegal, Unreported and Unregulated (IUU) component

The wild-caught reef fishes that make up the majority of the Live Reef Food Fish Trade (LRFFT) pass through a complex supply chain that involves smuggling across (often multiple) national borders. Notably, within the supply chain there is a significant Illegal, Unreported and Unregulated (IUU) component, which originates largely from developing countries where controls are minimal or absent.

In 2013, the UN Office on Drugs and Crime (UNODC) estimated the illegal trade in marine wildlife in East Asia and the Pacific region, inclusive of live reef fish for food, ornamental reef fishes and corals, to be worth US\$850 million to the criminal enterprises involved.¹ The illegal trade in Humphead Wrasse, a species listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), draws particular interest and reflects the threats to the species' conservation status in Southeast Asia (see Part I, Section 3.6).

As noted in Part I of this report, in 2016 the modes of transport for LRFF imported into Hong Kong comprised:

- Air transport [53.5%];
- Hong Kong Licensed Fishing Vessels (HKLFV) [31.1%];
- Hong Kong Licensed Fish Carriers (HKLFC);
- Foreign sea vessels [15.2%]; and
- Land [0.2%].

Hong Kong is a major trade hub. A wide range of seafood, including fish and invertebrate species, is transported to and through the city. The normal import/export route is regulated by the Hong Kong Customs and Excise Department (C&ED) as established in customs law and regulation. Traders make declarations to C&ED, and the Hong Kong Census and Statistics Department (C&SD) compiles these data into import and re-export trade records.²

Historically, the 'Coral Triangle' region (see Part I, Section 1) has been the major supplier, with Indonesia, Malaysia and the Philippines collectively contributing around 63% ($\pm 6\%$) of total LRFF imports into Hong Kong over a 17-year period from 1999 to 2016 (Appendix A-III). Other important source countries are Thailand, Australia and Taiwan, with Taiwan increasing its supply in recent years. Besides the customs regime, other regimes including those of food health safety, fisheries and international conservation also place requirements on food and other articles brought into Hong Kong.

There is no centralised live fish-specific framework that governs the trade. As a result, the LRFFT in Hong Kong is largely unmonitored, with much of it illegal. This report highlights the substantial gaps and loopholes in Hong Kong's existing regulatory framework as regards this trade, and makes suggestions as to how the government can take steps towards better monitoring and regulation. Such changes would facilitate a more sustainable and transparent trade that can support certification, improve food safety, enable Hong Kong to live up to international commitments and ensure legality. Ultimately these should lead to a trade that is biologically, socially and economically sustainable. ■

ORDINANCE TO REGULATION TO POLICY

The LRFFT supply chain is complex and often extensive

2.1 Supply Chain and Relevance to Legal Framework

The LRFFT supply chain is complex and often extensive: from the fisher to the first/second buyer and/or grow-out stopover/consolidator, to the exporter, importer, wholesaler, distributor, retailer and, finally, the consumer (Part I, Section 3.9). There is substantial vertical integration between fishers, buyers and exporters in source countries and with importers in the major trade hub of Hong Kong.³

Hong Kong is a free port without customs tariffs on imports or exports, tariff quotas or surcharges (save for a few exceptions unrelated to the LRFFT). Exports from Hong Kong also benefit from preferential tariff treatment in numerous jurisdictions, under various free trade agreements.⁴

These factors, together with the historic trading networks in Southeast Asia and beyond, and the location of the city at the gateway to the vast Chinese market, make Hong Kong attractive to the LRFFT.

Hong Kong plays a varied role in the LRFFT supply chain as the importer, consumer, re-exporter and transshipment centre

For this reason, Hong Kong plays a varied role in the LRFFT supply chain as the importer, consumer, re-exporter⁵ and transshipment centre. The local laws applicable to these players and the fish trade in general fall under the areas and legislation set out in Table 1.

As there is no centralised legal framework, the live fish trade is governed by a patchwork of laws and regulations that cover different branches of the framework and involve several government agencies with varying functions and authority.

TABLE 1 MAIN LAWS APPLICABLE TO THE LRFF IN HONG KONG

Import and Export Ordinance (Cap 60) and accompanying regulations, particularly the Import and Export Manifests Notice (Cap 60C) and the Import and Export (Registration) Regulations (Cap 60E)	Customs Regime
Marine Fish (Marketing) Ordinance (Cap 291)	Fish Marketing Regime
Food Safety Ordinance (Cap 612)	Food Safety Regime
Protection of Endangered Species of Animals and Plants Ordinance (Cap 586)	Conservation Regime
Merchant Shipping (Local Vessels) Ordinance (Cap 548) and accompanying regulations, particularly the Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation (Cap 548D), which applies to fishing vessels and fish carriers.	Shipping Regime

Data source: Evans, V. & Hashim, S. (2017, pers. comm.)

The applicability and main limitations of each of these branches are tabulated in Table 2, denoting the departments responsible for handling and keeping the relevant documents under each statutory or regulatory requirement.

2.2 Customs Regime

2.2.1 Introduction

Lodgement of import/export declarations is required for goods imported from, or exported to China

Under **Article 116 of the Basic Law**, Hong Kong is a separate customs territory from China. Therefore, lodgement of import/export declarations for any article, other than an exempted article, is required for goods imported from or exported to China or another country.

Under Hong Kong's customs regime, the governing legislation is the **Import and Export Ordinance (Cap 60)** and its accompanying regulations, particularly the **Import and Export (Registration) Regulations (Cap 60E)** and the **Import and Export Manifests Notice (Cap 60C)**.

The main requirements highlighted relate to the submission of manifests and declarations to customs. There are also various provisions in the Import and Export Ordinance in relation to import/export licences, i.e. ss.6C and 6D, which restrict the import and export of prohibited articles without the necessary licences.

LRFF, however, do not fall within '*prohibited articles*' (see Appendix B-I on Pertinent Definitions) and thus do not require import and export licences, unless the LRFF species comes within the **Protection of Endangered Species of Animals and Plants Ordinance (Cap 586)**, as discussed below.

TABLE 2 APPLICABILITY AND LIMITATIONS OF RELEVANT LAWS AND REGULATIONS TO LIVE FISHES/INVERTEBRATES

	Customs		Fish Marketing	Food & Safety	Conservation
Requirements	Manifests requirement ⁶	Declaration requirement ⁷	Restrictions relating to fish defined as 'marine fish' (Live fish in the LRFFT are not 'marine fish' for definition purposes); Landing and sale only allowed through the Fish Marketing Organization	Record-keeping requirement	Requirements pursuant to the Convention on International Trade in Endangered Species of Wild Fauna and Flora
Governing Instrument	<i>Import and Export Ordinance (Cap 60)</i>		<i>Marine Fish (Marketing) Ordinance (Cap 291)</i>	<i>Food Safety Ordinance (Cap 612)</i>	<i>Protection of Endangered Species of Animals and Plants Ordinance (Cap 586)</i>
	<i>Import and Export Manifests Notice (Cap 60C)</i>	<i>Import and Export (Registration) Regulations (Cap 60E)</i>			
Governing Department	Customs and Excise Department	Customs and Excise Department	Fish Marketing Organization	Food and Environmental Hygiene Department	Agriculture, Fisheries and Conservation Department
LRFF Imports and Exports by Air	Applicable	Applicable	Not applicable	Applicable to imports but not exports	Applicable
LRFF Imports and Exports by Foreign Registered Vessels*	Applicable	Applicable	Not applicable	Applicable to imports but not exports	Applicable
LRFF Imports and Exports by Local Hong Kong Licensed Fishing Vessels (HKLFV)	Applicable	Generally applicable, but not applicable to 'marine fish ... arriving in Hong Kong direct from fishing grounds on fishing craft registered or licensed in Hong Kong'; Also not applicable to transshipment and articles in transit	Not applicable	Applicable to imports but not exports; Also not applicable to transshipment and articles in transit	Applicable but difficult to detect infringement because of (1) exemptions from customs declarations under the Import and Export (Registration) Regulations (Cap 60E) and (2) scarcity of inspections
LRFF Imports and Exports by Land	Applicable	Applicable	Not applicable	Applicable to imports but not exports	Applicable
LRFF as Transshipment	Applicable	Not applicable	Not applicable	Not applicable	Applicable
LRFF Re-exports	Applicable	Applicable	Not applicable	Not applicable	Applicable
LRFF as Articles in Transit	Not applicable	Not applicable (under the term 'transit cargo')	Not applicable	Not applicable	Applicable
Limitations	Because the Marine Department exempts Class III vessels from reporting entry/exit schedules, it is problematic for C&ED to check whether manifests have been submitted by such vessels, since there are no entry/exit records.	Because the Marine Department exempts Class III vessels from reporting entry/exit schedules, it is problematic for C&ED to check whether manifests have been submitted by such vessels, since there are no entry/exit records.	'Marine fish' definition under relevant legislation does not include live fish or invertebrates.	Records are only required to be kept for a period, and need not be handed over to the authorities for compilation.	Difficulty in detecting infringements

*Including Vessels Registered in China

Exemptions under the customs regime have had important repercussions for Hong Kong's ability to monitor the LRFFT

A comparable trade to the LRFFT is that of other marine species listed under CITES Appendix II, such as seahorses and sharks. The one relevant example for the LRFFT is the Humphead (Napoleon) Wrasse (*Cheilinus undulatus*) listed in CITES Appendix II (Section 7).

The exemptions under this regime have had important repercussions for Hong Kong's ability to monitor the LRFFT (see Appendix B-II for the full list of exempted articles). These include the exemption of Hong Kong licensed fishing vessels from submitting import declarations.

While it is not a requirement to lodge an import/export declaration in respect of an exempted article, customs guidelines state that importers/exporters are requested (but not mandatorily required) to advise their carriers/forwarders to indicate clearly on the cargo manifest the relevant category of their exempted article. This is to facilitate trade documentation and verification work.⁸ The role of manifests is further discussed below (Section 4).

To address data gaps arising from this exemption, which were highlighted in an issue by the Advisory Council on the Environment (ACE),⁹ the Agriculture, Fisheries and Conservation Department (AFCD) now prepares quarterly reports on the live marine fish trade, which contain information on imports of LRFF collected voluntarily from traders (Part I, Section 2).

In terms of its international obligations, it appears that Hong Kong, similar to other countries, does not have a general responsibility to report imports to any particular institution, such as the World Customs Organization (of which Hong Kong has been a member since 1987). It does, however, have reporting responsibilities relevant to LRFF imports under issue-specific instruments, as well as accountability to the Secretariat of CITES through China's membership.

Moreover, those live fishes that are cargo and not caught by fishing vessels cannot be considered as part of Hong Kong's fishery production and so do not need to be reported to FAO.

2.2.2 Import and Export Ordinance (Cap 60): Pertinent Definitions

The pertinent definitions of the Import and Export Ordinance (Cap 60) (Appendix B-I) as applied to LRFF provide that:

1. Fish in general, and thus LRFF, would fall under the definition of 'cargo';
2. LRFF exiting Hong Kong as re-exports would fall under the definition of 'export';¹⁰
3. LRFF subject to CITES restrictions would be a 'prohibited article' (the import or export of which, being articles, is controlled by the **CITES Ordinance**, i.e. Cap 586) and thus subject to certain restrictions;

'Fishing craft registered or licensed in Hong Kong' are exempted from declaring their fish 'cargo'

4. *'Fishing craft registered or licensed in Hong Kong'* are all exempt from declaration requirements under the Import and Export (Registration) Regulations, exempting the fish they carry (fish *'cargo'*) from declaration (discussed in greater detail below). The Hong Kong government recently specified that this exemption does not apply to fish carriers that only import fish (rather than go to fishing grounds to catch the fish). However, the existence of the exemption has contributed to problems in monitoring the LRFF trade; and
5. *'Transshipment'* means articles consigned through a Bill of Lading or Air Waybill (AWB) from a place outside Hong Kong to another place outside Hong Kong. This definition is important since transshipment is exempt from much of the Import and Export regulations.

2.2.3 Manifests: Import and Export Manifests Notice (Cap 60C) and Import and Export (Registration) Regulations (Cap 60E)

Import and Export Manifests

Particulars of all cargo are to be provided in the form of 'manifests' to C&ED on request, as set out under the following (see Appendix B-III):

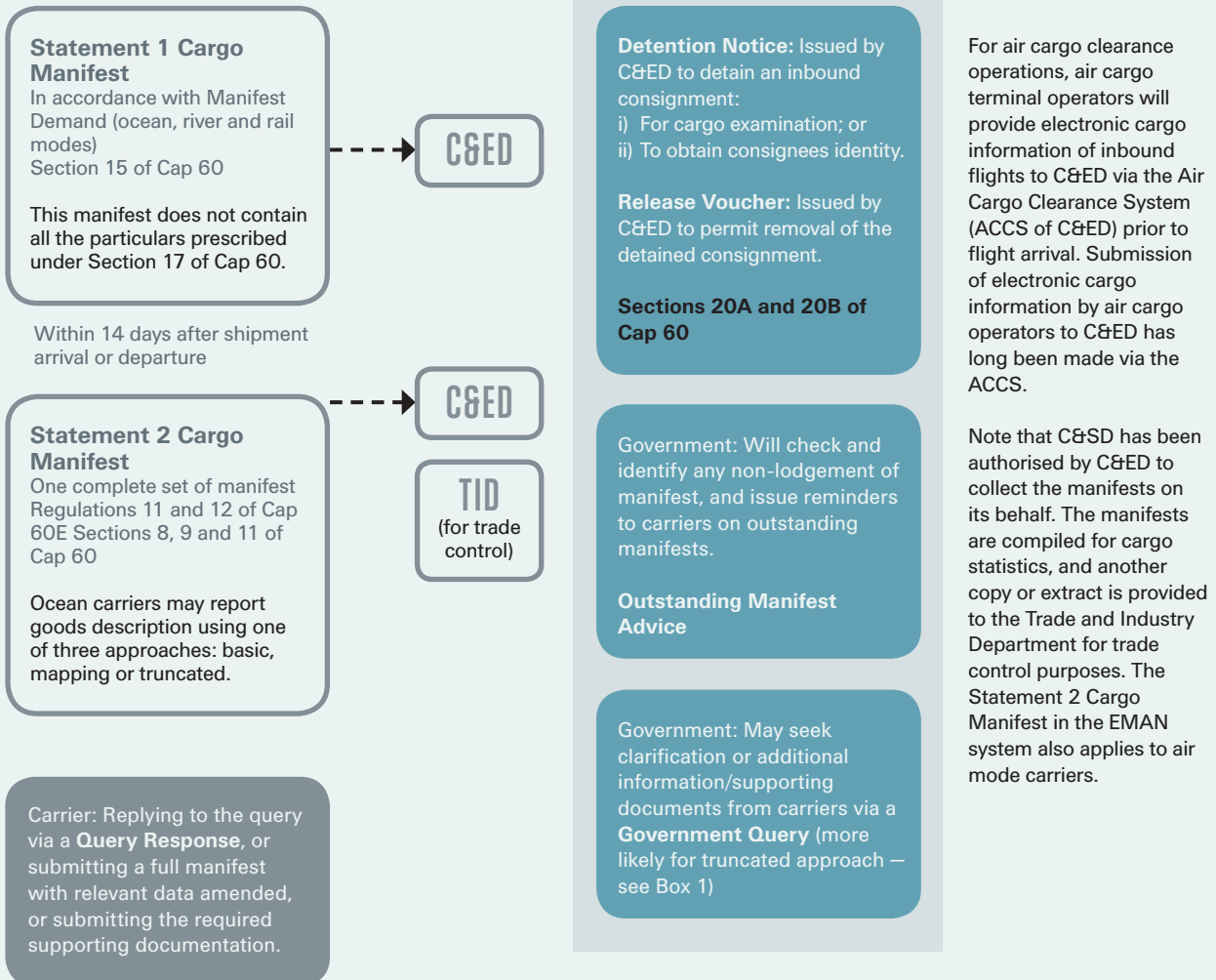
- **Import and Export Ordinance (Cap 60)** ss.15 (1)
- **Import and Export (Registration) Regulations (Cap 60E)** Regs 11, 12 and 12A
- **Import and Export Manifests Notice (Cap 60C)**

To facilitate cargo clearance, a carrier (being a vessel, aircraft or vehicle) shall, on entering or leaving Hong Kong, provide C&ED with a manifest made on demand under s.15 of **Cap 60**.

C&ED has the power to verify the particulars declared in manifests,¹¹ and the Commissioner of C&ED has the power to prescribe the particulars of cargo/consignment that must be provided (s.17 of the **Import and Export Ordinance**). Failure to provide particulars or to allow C&ED to board, inspect and search constitutes an offence.¹² Providing false particulars is also an offence.¹³

Cargo manifests can be submitted on paper or electronically¹⁴ via the government's 'Electronic System for Cargo Manifests' (EMAN service). The EMAN service is applicable to air, rail, ocean and river modes of transport (Figure 1).

While manifests may still be submitted on paper, it is *'the ultimate objective of the Government to accept electronic submission of cargo manifest (for the air, rail, ocean and river modes of transport) as the only means of submission'*.¹⁵

FIGURE 1 SUBMITTING MANIFESTS

Source: Commerce & Economic Development Bureau. (2016). *How to Submit Cargo Manifests by Using Electronic Service for Air, Rail, Ocean and River Carriers (EMAN) Guidebook*. C&ED, Hong Kong

It is an offence to import or export unmanifested cargo, which *prima facie* would include unmanifested LRFF

Unmanifested Cargo

There is a serious statutory offence of importing or exporting unmanifested cargo, which *prima facie* would include unmanifested LRFF as they fall within the definition of ‘cargo’. This carries a much heavier sentence than the offence of simply not providing particulars of cargo.

Failure to provide particulars carries a maximum sentence of a HK\$1,000 fine and imprisonment for one month.¹⁶ This is a mere ‘slap on the wrist’ compared to the maximum sentence of a HK\$2,000,000 fine and imprisonment for seven years on conviction on indictment¹⁷ when importing or exporting unmanifested cargo.

Hong Kong licensed or registered fishing craft carrying cargo are not exempt from providing a manifest

Hong Kong licensed or registered fishing craft including those that carry cargo are not exempt from requirements to provide a manifest (as they are customs declarations), and prosecutions have been made where fishing vessels have carried unmanifested cargo (Section 4).¹⁸

No such exemption is stated in the Ordinance or in the relevant regulation, the **Import and Export Manifests Notice (Cap 60C)**. The s.15 duty to provide particulars covers the master or agent of a 'vessel' that is entering and leaving Hong Kong. Fishing craft falls under the definition of 'vessels' as provided in s.2 of the Ordinance and therefore need to comply with this duty.

The manifests requirement also applies to transshipment cargo,¹⁹ but not to articles in transit.²⁰ There is no specific exclusion for transshipment cargo in the **Import and Export Ordinance**²¹ or in the Import and Export Manifests Notice. Rather, under the Import and Export Manifests Notice, the particulars to be provided include 'a clear indication of whether or not the cargo is transshipment cargo'. Obviously, there would be no need to file a Manifests Notice and provide this information if all transshipment cargo were exempt from this requirement.²² On the other hand, articles in transit are not considered 'cargo' under s.2 of the Ordinance, and since the s.15 duty applies only to 'cargo', articles in transit are not subject to this duty.

Particulars Required in Manifests

The **Import and Export Manifests Notice (Cap 60C)** sets out the particulars of the information to be provided in manifests. The most relevant (for the purposes of monitoring LRFFT) are:

1. The description (guidance on which is detailed in the subparagraph below), gross weight and gross volume of the cargo (where not carried by vessel, e.g. by air, either the gross weight or the gross volume may be given); details such as indication of fish species are not required.
 - (a) According to the EMAN Guidebook, *'goods description should be provided to the details that prohibited articles required to be covered by a licence/supporting document can be easily identified from other articles without such a requirement. For this purpose, specific goods description should be provided while generic terms should be avoided as far as possible. Words that carry no description to the goods concerned, say 'Consolidated cargo', 'General cargo', 'Consol', 'Articles', 'Sample', 'STC (Said to Contain)', 'FAK (Freight of All Kinds)', 'Please see attached', etc. are not acceptable.'*²³
 - (b) Examples were quoted for illustrative purposes in the same publication, although none related to live fish or live animals. It is interesting to note that 'Frozen/Chilled Meat' is not acceptable, but 'Frozen Fish Fillet' is. This demonstrates that the specificity required is rather minimal, and that species identification is not relevant.²⁴
 - (c) Further, according to the EMAN Guidebook, ocean carriers may report goods description using one of the three approaches (Box 1);²⁵

2. Name and address of the consignor and consignee;
3. The place in which the cargo was loaded;
4. Reference number and letters of the Bill of Lading, Air Waybill or Air Consignment Note;
5. Clear indication of whether it is transshipment cargo;
6. Import or export licence number (only applicable where the import/export of the cargo requires a licence, for example of certain CITES-listed species subject to licensing requirements); and
7. Name, date of arrival and voyage/flight number of carrying vessel/aircraft.

The manifests are provided to the C&SD but, unlike customs declarations, the data are not published.

The Harmonized Commodity Description and Coding System, better known as the Harmonized System (HS) codes (Box 1 (ii)), refers to the classification system under which imported and exported goods are categorised and declared in Hong Kong (see Part I, Table 2-2).

BOX 1 GOODS DESCRIPTIONS ON MANIFESTS: THREE APPROACHES

- i) *'Basic approach: carriers to report what shippers/forwarders have reported/will report in a government licence/notification/permit or import/export declaration in respect of the cargoes shipped; and for cargoes not covered by such documents, carriers to provide the goods descriptions by making reference to the examples quoted [in the government publication];*
- ii) *Mapping approach: carriers to provide HS-6 or HS-4 equivalent descriptions if Harmonized System (HS) codes have been captured for the cargoes shipped [...]; or*
- iii) *Truncated approach: carriers to provide the first 350 characters kept in their systems for the cargoes shipped as a way of passing on the information provided by shippers/forwarders.'*

2.2.4 Customs Declarations: Import and Export (Registration) Regulations (Cap 60E)

Import and Export Declarations

Import or export/re-export declarations are required to be lodged within 14 days of importing or exporting any article, other than an exempted article

Under Cap 60E, every person who imports or exports any article other than an exempted article is required to lodge an accurate and complete import or export/re-export declaration with the Commissioner of Customs and Excise within 14 days of importing or exporting the article.

The statutory requirements and sanctions concerning export declarations are similar to those for imports (Appendix B-IV). Note that re-exports are also subject to the same declaration requirement.

Prosecution may be initiated against any person who fails to lodge the required declaration, or knowingly or recklessly lodges any declaration that is inaccurate.

When completing import/export declarations, importers and exporters must use the appropriate codes and units of quantity published in the Hong Kong Imports and Exports Classification List (Harmonized System) (Appendix B-V).²⁶

With regards to the LRFFT, the current information under this system is limited by two aspects:

The HKHS system could be improved by adding codes to distinguish hatchery-produced groupers as well as chilled/fresh/frozen groupers

1. Limitations in species identification in the Hong Kong Harmonized Commodity Description and Coding System (HKHS). Although species identification is detailed in some instances, it could be improved by expanding commodity coding to distinguish hatchery-produced groupers and major categories of reef fishes such as chilled/fresh/frozen grouper. The LRFF species listed by HKHS codes are presented in Part I, Table 2-2.

Fishing craft registered or licensed in Hong Kong are also exempt from reporting their entry to and exit from Hong Kong waters

2. LRFF brought in on fishing craft registered or licensed in Hong Kong are exempt from declaration requirements (see below). All “fishing” vessels from fishing grounds are exempted from reporting their entry to and exit from Hong Kong waters under Cap 548 Merchant Shipping (Local Vessels) Ordinance, as detailed in Section 3. The scope of these exemptions and enforcement issues regarding vessels that do not fall within this exemption has had an impact on the LRFFT as described below.

It is further important to understand what information is required to be submitted, not just in terms of fish-descriptive information to monitor the trade, but also to understand the implications on non-trade-related concerns, such as food safety.

The information required to be submitted in import, export and re-export declarations as applicable to LRFF is presented in Appendix B-IV.

In a 1999 study on data collection of LRFF,²⁷ the authors noted that due to revisions carried out in 1997, ‘[the] new system, providing species-specific data for a few species, is clearly an improvement over the old recording system.’

A comparison between the 1997 system and the current system shows that species-specific identification has improved, with the addition of six species.²⁸ Another improvement is that marine fish fry used to be recorded only by value (HK\$), with no mention of species or quantity. This is no longer the case as fish fry²⁹ are recorded in weight. As of January 2016, there is differentiation of three types of LRFF fry and the major Hybrid Grouper (Sabah).

Whether the fish are wild-caught or cultured is not recorded

However, whether the fish are wild-caught or cultured is not recorded. Moreover, only live fish are recorded, even in the case of the Humphead Wrasse. This is of concern, given the increasing trade in fresh/chilled/frozen fish.

The import/export declarations lodged by importers and exporters are then used for compiling trade statistics by C&SD. They are also widely used in 'Hong Kong and abroad as an indicator of Hong Kong's trade position, and some major decisions on economic policy are taken on the basis of them.'³⁰ According to C&SD, the statistics are primarily used for macroeconomic analysis, rather than for monitoring or tracking the imports and exports of commodities.³¹

Trade statistics are important to facilitate research, discussion, planning and decision-making

These statistics are intended to facilitate research, discussion, planning and decision-making within the government and the community,³² and are therefore an important data source for monitoring Hong Kong's LRFFT.

The Exemptions

Two categories are exempt from these customs declaration requirements (Box 2):

- Transshipment cargo and transit cargo; and
- Marine fishes '*arriving in Hong Kong direct from fishing grounds on fishing craft registered or licensed in Hong Kong*'.

There appear to be three limbs to the latter's exemption:

- The marine fish must arrive direct from fishing grounds;
- The marine fish must arrive on '*fishing craft*'; and
- The '*fishing craft*' must be registered or licensed in Hong Kong.

BOX 2 CAP 60E: REGULATION 3 EXEMPTIONS IN RESPECT OF REGULATIONS 4 AND 5

*'Nothing in regulations 4 and 5 shall apply to or in respect of—
(a) transshipment cargo;
(b) transit cargo;
[...]*

i) marine fish, including edible crustaceans, molluscs and other similar edible products derived from the sea, arriving in Hong Kong direct from fishing grounds on fishing craft registered or licensed in Hong Kong (emphasis added)

There have been concerns as to whether the exemption for 'fishing craft registered or licensed in Hong Kong' applies to, Hong Kong's fish carriers

There have been concerns as to whether the exemption for '*fishing craft registered or licensed in Hong Kong*' might apply to, or be thought to apply to, Hong Kong licensed fish carriers (HKLFC) carrying LRFF. A large component of the LRFF brought into Hong Kong via sea vessels is believed to be on board such vessels, which, depending on carrier size, transport 15–45 MT of fish per shipment (see Part I).

In September 2016, the Hong Kong government made a clear statement on this issue, asserting that: '*fish carriers which just import fish into Hong Kong do not satisfy the exemption conditions under Regulation 3(i) of Cap 60E*'.³³

This has been an important distinction to clarify, given the volumes of LRFF transported into Hong Kong by the fish carriers, a number of which evidently do not submit customs declarations (see also Part I, Section 3.8 on under-reporting).³⁴

All cargoes imported into Hong Kong, including live fish, must be recorded in manifests

2.2.5 Analysis

Manifest Particulars are Limited

All cargoes (including live fish) imported into Hong Kong by air, ocean and river modes of transport must be recorded in manifests. This must contain the particulars in relation to the goods as required by the relevant regulations.³⁵ The main issue of concern is that statutory manifest requirements as regards cargo particulars, i.e. the commodity description, are limited and thus hinder product traceability.³⁶ This has become increasingly important in addressing IUU products entering the market.

It is notable that ocean carriers are recommended by government guidelines to provide HS-6 or HS-4 equivalent descriptions (Box 3).³⁷ No such specific mention is made for air and/or land carriers. On contacting C&ED, no explanation was provided as to why the recommendation was specified for ocean-going vessels only. On the contrary, C&ED believed that the recommendation should equally apply to aircrafts.³⁸

BOX 3 HS CODES: EXAMPLE OF COMMODITY DESCRIPTION DETAILS

(Currently used in customs declarations for some LRFF species, but not mandated in manifests)

HS-2 digits: **03** Fish and crustaceans, molluscs and other aquatic invertebrates

HS-4 digits: **0301** Live Fish

HS-8 digits: **0301 9914**.... Green Grouper (*Epinephelus coioides*)

For consistency, it would make sense for such recommendations to also apply to air and land carriers. With the objective of LRFFT monitoring in mind, the official guidelines regarding declarations could be further amended, such that where carriers (regardless of air, ocean or land) have LRFF cargo, the provision of HS-8 equivalent descriptions should *'meet the needs of Hong Kong'*.³⁹ This would help to provide reliable statistics and increase coverage to better monitor the trade, since manifests are by far the most widely applicable tool, covering all categories in the customs regime except articles in transit.

More species-specific HKHS codes are needed to monitor the trade effectively

It is notable that the most recent amendments (the 2016 Amendments) to the Hong Kong Imports and Exports Classification List introduced a code (0301 9920) for the 'Hybrid Groupers (e.g. Sabah Grouper), live' (Table 3).⁴⁰ However, additional species-specific HS codes should also be introduced,⁴¹ such as for the Hong Kong Grouper, which is currently classed as Endangered according to the IUCN Red List of Threatened Species.⁴² Fresh/frozen/chilled groupers/fillets should also be included under the HKHS. Despite markedly increasing trade volumes, this category remains virtually undocumented (Part I, Sections 3.4 & 3.10).

Information currently required under manifest obligations is extremely limited

Manifest requirements are of value to the LRFFT because they apply to all fish and the information must be handed in to C&SD. This contrasts with legislation such as the **Food Safety Ordinance** (Section 2.4), wherein the importer/exporter retains the records and only produces them upon request. However, the range of information currently required under manifest obligations is extremely limited and insufficient for the purposes of monitoring the trade. This is in comparison to the record-keeping requirements under the **Food Safety Ordinance** (Section 2.4), where information demanded is in much greater detail.

TABLE 3 HKHS CODES RELEVANT TO LRFF: COMPARING 2016 CLASSIFICATIONS TO 1997 CLASSIFICATIONS⁴³

1997 HKHS Code	1997 Description	1997 Unit in Quantity	2016 HKHS Code	2016 Description	2016 Unit in Quantity
0301 9912	Fish fry, marine	Marine fish fry recorded by value (HK\$) only	0301 9914	Green grouper fry (<i>Epinephelus coioides</i>), live	Kg
			0301 9915	Mangrove red snapper fry (<i>Lutjanus argentimaculatus</i>), live	Kg
			0301 9919	Marine fish fry, live, NESOI ⁴⁴	Kg
			0301 9920	Hybrid groupers (e.g. Sabah grouper), live	Kg
0301 9921	Giant grouper (<i>Epinephelus lanceolatus</i>)	Kg	0301 9921	Giant grouper (<i>Epinephelus lanceolatus</i>), live	Kg
0301 9922	High-finned grouper (<i>Cromileptes altivelis</i>)	Kg	0301 9922	High-finned grouper (<i>Cromileptes altivelis</i>), live	Kg
		Kg	0301 9924	Green grouper (<i>Epinephelus coioides</i>), live	Kg
		Kg	0301 9925	Tiger grouper (<i>Epinephelus fuscoguttatus</i>), live	Kg
		Kg	0301 9926	Flowery grouper (<i>Epinephelus polyphekadion</i>), live	Kg
		Kg	0301 9927	Leopard coralgroupers (<i>Plectropomus leopardus</i>), live	Kg
0301 9923	Spotted Grouper/ Coral trout (All <i>Plectropomus</i> spp.)	Kg	0301 9928	Squaretail coralgroupers (<i>Plectropomus areolatus</i>), live	Kg
0301 9929	Other groupers	Kg	0301 9929	Groupers, live, NESOI	Kg
0301 9931	Humphead wrasse (<i>Cheilinus undulatus</i>)	Kg	0301 9931	Hump-head wrasse (<i>Cheilinus undulatus</i>), live	Kg
0301 9939	Other wrasse and parrotfish	Kg	0301 9939	Wrasses and parrotfish, other than Hump-head wrasse, live	Kg
0301 9941	Snooks and basses	Kg	0301 9941	Snooks and basses, live	Kg
			0301 9951	Mangrove red snapper (<i>Lutjanis argentimaculatus</i>), live	Kg
0301 9999	Other marine fish	Kg	0301 9999	Marine fish, NESOI, live	Kg

The so-called ‘fishing craft exemption’ has arguably created a significant data gap in monitoring the LRFFT

Locally licensed fish carriers are not exempted from submitting customs declarations under the current legislation, despite the practice to do so

The Fishing Craft Exemption

The so-called ‘*fishing craft exemption*’, contained in the **Import and Export (Registration) Regulations (Cap 60E)**, has arguably created a significant data gap with regards to monitoring the overall situation of the LRFFT. This is because operators of fish carriers may have treated this exemption as applicable to fish carrier vessels, a notion backed by actual evidence (Part I, Section 3.8). Also, the very fact that AFCD has been voluntarily gathering data from LRFFT vessels in Hong Kong strongly implies that data are not being officially collected.

Legal analyses undertaken for this report, as well as communications with C&ED and AFCD between 2014 and 2017,⁴⁵ indicate that these locally licensed fish carriers are not exempted from submitting customs declarations under the current legislation, despite ongoing practices to the contrary. As stated above, since September 2016, the Hong Kong government has specified that ‘*fish carriers which just import fish into Hong Kong do not satisfy the exemption conditions under Regulation 3(i) of Cap. 60 E.*’⁴⁶

The historical context to the current situation is instructive. The exemption regarding ‘fishing craft registered or licensed in Hong Kong’ came into force under **Legal Notice 256 of 1984 (L.N. 256 of 1984)**. Until the early 2000s, there was, in practice, no requirement for locally licensed or registered fishing vessels bringing live seafood into Hong Kong to report their cargo to Customs. This was in accordance with international practice of ‘*fishing vessels*’. Rather, fish catches by local vessels were typically considered part of the catch of the fishing fleet, and therefore part of the local production in Hong Kong.

While ‘*fishing vessels*’ cannot be registered under the Hong Kong Shipping Register (since 2005), both ‘*fishing vessels*’ and ‘*fish carriers*’ can be locally licensed as ‘*Class III*’ vessels (Box 4).⁴⁷ The term ‘*fish carriers*’ was introduced in the 2007 amendment of Cap 548. Before that, all vessels carrying fish were classed as ‘*fishing vessels*’.⁴⁸

BOX 4 CLASS III VESSELS

The definition of a Class III vessel is encapsulated in Schedule 1 of the **Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation (Cap 548D)** as part of the Marine Department’s licensing regime.

Class III vessels include:

- a) fish carrier; c) fishing vessel; or
- b) fishing sampan; d) outboard open sampan.

In 2007 fish carriers were distinguished from fishing vessels

The 2007 amendment therefore distinguishes fish carriers from fishing vessels. This differentiation has important connotations for the LRFFT, since LRFF cargoes that enter Hong Kong on fish carriers, which are considerably more voluminous than ‘cargoes’ brought in on fishing vessels, are required to be reported to Customs.

Government’s View, Historically Unclear:

A government statement in 2000 (see below) explained the rationale behind the legal exemption, and suggested that such ‘*fishing craft*’ were limited to ‘local fishing vessels’ that actively carried out fishing activities, as opposed to fish transport/carrier vessels. The statement was made in response to the recommendations contained in a report published by TRAFFIC East Asia and the World Wide Fund for Nature (WWF) Hong Kong in June 1999.⁴⁹

‘AFCD, with the co-operation of the trade, monitors the live reef fish trade closely. While import of fish through vessels or flights has to comply with the trade declaration requirement, fish caught by local fishing vessels are exempted from making trade declarations in line with the international practice. To monitor the overall situation of the trade, AFCD collects information on imported fish from major live reef fish traders in Hong Kong on a monthly basis.’⁵⁰

The reporting exemption was intended to cover only local fishing vessels that caught fish, as opposed to those that carried fish for import

According to this statement, the exemption was intended to cover only local fishing vessels that caught fish, as opposed to those that carried fish for import. The need to have a coherent vessel licensing/registration and categorisation system was recognised in the enforcement of this exemption provision.

The government also rejected the suggestion that ‘*locally licensed fishing vessels and fish transportation vessels be required to make trade declarations*’ [emphasis added], stating in the same statement that:

‘We consider that the current information collection system [...] works effectively and provides the necessary information for monitoring purposes. Therefore, we see no imminent need to impose an additional requirement on these vessels. Moreover, most fishing vessels go in and out of Hong Kong waters every day and the declaration requirement would unnecessarily impose burden on their daily operations. Such a requirement would likely attract objection from fishermen.’⁵¹

As noted above, AFCD does collect information on imported fish from major live reef fish traders in Hong Kong, but only on a voluntary basis. Such data collection is reportedly unsystematic and incomplete (see Part I). The government’s position has been that:

‘Restricting loading and wholesaling of live fish to the designated locations solely for the purpose of collection of data would likely be perceived as an unnecessary trade restriction and unacceptable to the trade.’⁵²

The Government's Current View:

Following numerous enquiries between 2014 and 2017, C&ED and AFCD confirmed that *'fish carriers which just import fish into Hong Kong do not satisfy the exemption conditions under Regulation 3 (i) of Cap 60E. To our understanding, this requirement applies to any such vessels licensed by the Marine Department, irrespective of their classification under the Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation, Cap 548D.'*⁵³

When LRFF are caught by fishers in source countries and transferred to a Hong Kong vessel, that vessel is not exempt from Hong Kong declaration requirements

The above statement and correspondence mean that when LRFF are caught by fishers in source countries (for instance in Indonesian fishing grounds) and then transferred to a Hong Kong registered or licensed vessel outside of those fishing grounds (for transport back to Hong Kong), that vessel is not exempt from Hong Kong declaration requirements.

The extent to which the aspect of 'fishing grounds' is monitored is unclear. However, in some countries, fishing activities by foreign vessels require permits, and these are not usually granted for inshore fisheries in those countries. Indonesia, for instance, now only permits foreign vessels to pick up cultured fish from designated ports, rather than sourcing from wild-capture fisheries.⁵⁴

According to the Hong Kong Marine Department, a vessel cannot be both a 'Fishing vessel' and a 'Fish carrier'. In other words, 'Fish carriers' should not be engaged in fishing.⁵⁵

The export of all live fish from the Philippines is illegal. Although this regulation has been largely ignored

Moreover, the export of all live fish from the Philippines is illegal (although this regulation has been largely ignored by the country itself). For these reasons, Hong Kong vessels are not legally able to visit fishing grounds in several of the major producer countries.

Given the recent government statements, it appears that the enforcement of Cap 60 (that fish carriers must submit declarations in addition to manifests)⁵⁶ remains an ongoing issue.

The Transhipment/Transit Exemption

Transhipment and articles in transit are exempt from certain C&ED regulations and legislation. **Import and Export (Registration) Regulations (Cap 60E)** Reg 3 states that *'Nothing in regulations 4 and 5 [being the regulations requiring import and export declarations] shall apply to or in respect of- (a) transhipment cargo; (b) transit cargo.'*

Transhipment and articles in transit are subject to less regulation

Since some LRFF cargo is not ultimately bound for Hong Kong, their transhipment and articles in transit are subject to less regulation than that of other customs categories (see its treatment under the CITES regime, discussed in Section 2.5 below). Note, however, that such cargo is still subject to certain requirements. For example, transhipment cargo still requires a manifest, and unmanifested transhipment cargo has resulted in convictions (see **HKSAR v Shek Tak Tai HCMA 795/2000 (unreported)** 24 October 2000, examined in Section 4).

The government's response to enquiries as to whether transshipment cargo is inspected states: *'Transshipment cargo is subject to the same control measures and customs clearance procedures, including being selected for customs inspection based on risk assessment, applicable to import cargo in Hong Kong.'*⁵⁷ The response also stated that the carrier of an air cargo shipment is expected to have full details, including the itinerary, of the cargo concerned.

While the government has a *'Transshipment Cargo Exemption Scheme'* to relieve transshipment from reporting requirements, LRFF does not fall within this exemption. Under the Scheme, subject to certain conditions stipulated by the Trade and Industry Department (TID), shipping companies, transportation companies, airline companies and their appointed agents (registered with the Department under the *'Transshipment Cargo Exemption Scheme'*) are exempted from the import and export licensing requirements in respect of certain types of transshipment cargoes. These types do not include live fish.⁵⁸

Transshipment comprises a large portion of Hong Kong's port cargo – 51.8% in 2015

Generally, transshipment comprises a large portion of Hong Kong's port cargo. With an average annual growth rate of 2% between 2005 and 2015, port transshipment cargo movements took up 51.8% of port cargo throughput in 2015.⁵⁹ In particular, movements between Hong Kong and mainland China accounted for the largest share (39.8%) of Hong Kong's port transshipment cargo.⁶⁰ About 72.4% of Mainland-Hong Kong port transshipment cargo movements were between Hong Kong and the Pearl River Delta region.⁶¹ Reiterating the earlier concern that LRFF is not regulated in terms of traders purporting to bring LRFF under the *'fishing craft'* exemption, it is not clear whether these transshipment statistics are reflective of the LRFFT.

With regards to how regulation of the transshipment of LRFF might be improved, the **Recommendations of the Kobe II Process (Document K3-001)** on tuna transshipment provide useful reference.⁶²

By way of comparison, tuna fisheries are also facing issues of sustainable biological management and trade monitoring. The Kobe Recommendations suggest enhancing cooperation among tuna Regional Fisheries Management Organisations (RFMOs). The aim was to standardise transshipment declaration forms so that they use the same format and include the same required data fields to the maximum extent possible, as well as to develop minimum standards for the timeframes by which such declarations should be submitted to tuna RFMO Secretariats, flag States, coastal States and port States.

Note that Hong Kong currently carries out Port State Control (PSC) Inspections of foreign ships under the **Tokyo Memorandum of Understanding on Port State Control in the Asia-Pacific Region**,⁶³ having made 909 inspections of foreign ships in 2014 and detained 64 *'sub-standard'* ships.⁶⁴ Thus, insofar as foreign ships that are fish carriers are concerned, they are subject to PSC Inspections.

The US Lacey Act, defines 'import' to include any landing of wildlife in the United States

The United States' Lacey Act⁶⁵ (Section 6), in contrast, defines 'import' to incorporate items in transshipment. For the purposes of the Lacey Act, the term 'import' includes any landing of wildlife in the United States, *'whether or not such landing, bringing, or introduction constitutes an importation within the meaning of the customs laws of the United States.'*

Congress made this distinction to permit the seizure and forfeiture of illegal wildlife being shipped through the United States, as well as to allow for seizures at the time of entry, rather than waiting until wildlife that has been quarantined or held under bond is released and thus *'imported'* according to customs law.⁶⁶ There is no provision for such specific differentiation of the meaning of *'import'* in Hong Kong laws.

2.3 Fish Marketing Regime

2.3.1 Introduction

The FMO was established under the statutory authority of the Marine Fish (Marketing) Ordinance (**MF(M)O (Cap 291)**), and currently operates seven wholesale fish markets in Hong Kong. The Ordinance requires all fresh/processed marine fish to be landed and sold at these seven wholesale fish markets operated by the FMO.⁶⁷ In 2015–2016, the FMO handled approximately 35,300 tonnes of fish.⁶⁸

However, Cap 291 does not encompass the LRFFT. Although it covers fresh/processed marine fish, live marine fish (plus live crustaceans and molluscs) are excluded from the definition of *'marine fish'* and fish in transshipment. The arrival of LRFF in Hong Kong is therefore excluded from oversight by the FMO, with no associated trade data or other information collected on the quantity of live fishes. The FMO does, however, provide information on the wholesale prices of live marine fish, and the AFCD continues to collect some voluntary data from HKLFV.⁶⁹

Live marine fish are excluded from the definition of 'marine fish'

However, it would seem that the FMO structure is fully suitable for the provision of live fish and of 'efficient and orderly wholesale marketing for the fishermen, fish wholesalers and buyers'. Live fish are largely landed at facilities adjacent to FMOs, and the sector is clearly in need of more orderly marketing.⁷⁰ Moreover, there seems to be no reason for live and dead fish to be handled so differently within these facilities (where both are marketed side by side) in terms of reporting requirements and government oversight.

2.3.2 Marine Fish (Marketing) Ordinance (Cap 291)

The **MF(M)O (Cap 291)** distinguishes between live and non-live fish. According to section 2, *"'marine fish' (海魚) means any fish or part thereof, whether fresh or processed, in any manner indigenous in sea water or partly in fresh water and partly in sea water, including any product derived therefrom, but excluding all crustaceans or molluscs and fish alive and in water." (emphasis added)*

With regards to suggestions that ‘live fish’ be included in the definition of ‘marine fish’ under the **MF(M)O**, the government stated in 2000 that:

‘At present, the Ordinance restricts the landing and wholesale of marine fish to seven designated wholesale markets run by the Fish Marketing Organization and live fish are not covered in the Ordinance. The current system works well so far. Restricting landing and wholesaling of live fish to the designated locations solely for the purpose of collection of data would likely be perceived as an unnecessary trade restriction and unacceptable to the trade.’⁷¹

However, since most live seafood is currently landed at facilities adjacent to FMOs, having ‘designated locations’ for LRFF should not constitute a ‘hardship’ for the trade. Moreover, contrary to the statement, the current reporting system and government oversight of the LRFFT are clearly not ‘working well’.

In contrast, other jurisdictions, such as Canada,⁷² do not distinguish between living and non-living seafood.⁷³ Inter-state trade laws in the United States mostly make no distinction between live and non-live fish, but target individual species instead.⁷⁴

2.3.3 Analysis

‘Live fish’ is clearly not included in the government’s definition of ‘marine fish’ and should be

There is no case law elaborating on the definition of ‘marine fish’. Likewise, there is minimal case law in relation to the **MF(M)O**.⁷⁵ However, ‘live fish’ is clearly not included and amendments would have to be made to bring this category within the definition of ‘marine fish’ (at least for Hong Kong fishing vessels).

If LRFF are brought within the **MF(M)O**, the accompanying regulations would apply. This would mean including all LRFF (and, presumably, other live seafood). Transhipment would also need to be included. Mechanisms already in place could readily be used to control and monitor the LRFFT, although this would not be without problems, as outlined below. The following regulations would be particularly useful tools for the LRFFT: **Marine Fish (Marketing and Exportation) Regulations (Cap 291A)** Regs 1, 2, 3, 4A, 4B, 4C, 4E and 4G (Appendix B-VI).

Covering ‘live fish’ in the **MF(M)O** instead of the customs regime might create certain problems:

- 1) From a regulator’s perspective, this could create an artificial distinction between air and sea carriers of LRFF. If one is viewed as more onerous than the other, the possibility of legal challenges from the more burdened sector cannot be discounted.
- 2) If LRFF are brought under the definition of ‘marine fish’, other restrictions in **MF(M)O (Cap 291)** will apply. For example, under Reg 3 of the **Marine Fish (Marketing and Exportation) Regulations (Cap 291A)**, except with a permit issued by the Director of Marketing, no fresh marine fish shall be transported on land in one vehicle nor in the waters of Hong Kong in one vessel, in quantities in excess of 60 kg, unless it is transhipment cargo.

- 3) The FMO charges sellers a commission of 7% of the total value of all sales (for fish sold by auction or negotiation) or HK\$5 per 15 catties⁷⁶ (9 kg) (for fish sold by direct sales) for their services. This would impose a new and mandatory commission on LRFF traders. Conversely, it might be said that this would not be unjustifiably onerous since sellers covered by the **MF(M)O** have always been required to pay commission for dead fish and that this is a customary charge for FMO services. Furthermore, unlike traders of dead fish, LRFF traders have been paying the FMO to rent its facilities.

The FMO is geared towards developing local fisheries,

The FMO is geared towards developing local fisheries, and invests its surplus earnings in the development of the local fishing industry. Specifically, it provides low-interest loans to fishermen, upgrades its services and facilities at markets, and provides training grants and scholarships for fishermen and their children.

There may be ways of remedying this mismatch. For example, surplus earnings proportionate to the percentage paid by LRFF traders could go towards schemes that benefit the LRFF industry (such as good quality/safe seawater for holding live fish) instead of the local fishing industry.

In sum, regarding potential improvements to the regulation of the LRFFT, it appears that amendments to the C&ED regime would be more befitting than amendments to the FMO regime. This is in view of the nature and issues of the trade, which are more aligned with trade imports/exports (the purview of C&ED) than local fisheries (the purview of FMO).

2.4 Food Safety Regime

2.4.1 Introduction

The need to ensure food safety provides an important reason to improve regulation of the LRFFT

The need to ensure food safety provides an important reason to improve regulation of the LRFFT. In this regard, the importance of tracing LRFF sources in relation to public health and safety coincides with the opportunity of regulating the trade's environmental impact.

The Food Safety Ordinance (Cap 612) was gazetted on 8 April 2011 and commenced full operation on 1 February 2012. In brief, this Ordinance:

- Creates a registration scheme for food importers and distributors;
- Requires food traders to maintain proper records; and
- Empowers authorities to tighten import control on specific food types or make orders to prohibit the import and supply of problematic food and order food recall.

The Ordinance thus requires food traders (including importers) to keep records. The measures are relevant to persons operating food businesses, including fishermen.⁷⁷ Records of the businesses from which they obtain their food must be kept, as well as the businesses to which they supply their food.

The Food Safety Ordinance record-keeping requirement aims to aid traceability in the event of food incidents

The record-keeping requirement aims to aid tracing in case of food incidents, by identifying where the problematic food came from and where it has gone. In line with international practices, food businesses are now required to maintain a '*one-step-backward, one-step-forward*' approach in record-keeping.⁷⁸

This Ordinance thus introduces a food tracing mechanism to help the government trace the source of food more effectively and take prompt action when dealing with food incidents. The mechanism includes a registration scheme for food importers and distributors, as well as a record-keeping requirement relating to the movement of food. There is also a **Code of Practice on Keeping Records Relating to Food**.⁷⁹

The following draws upon the salient parts of the Ordinance and the Code of Practice. A template record contained in the Code of Practice is in Appendix B-VII.

Record-keeping requirements includes live aquatic products

2.4.2 Food Safety Ordinance (Cap 612) (FSO)

The record-keeping requirements apply to food that is intended for human consumption and includes live aquatic products, such as fish. It does not apply to the propagation or promotion of growth of live aquatic products in captivity. However, fish in '*fish hotels*'⁸⁰ are regarded as food and hence the requirements of record-keeping still apply.⁸¹ Generally, it applies to:

1. any person who, in the course of business, acquires food in Hong Kong, imports food, or supplies food in Hong Kong by wholesale; and
2. any person who captures local aquatic products (including fish '*captured from a local fishing vessel, whether in Hong Kong waters or in other waters*') and who, in the course of business, supplies them in Hong Kong.

It does not apply to:

1. any person who imports the food solely in the course of business as a food transport operator (meaning a person who transports food under a contract of carriage but at no time has any proprietary interest in the food);
2. any person who imports the food solely for the purpose of exporting it, if the fish is air transshipment cargo;⁸² or if during the period between import and export, the food remains in the vessel, vehicle or aircraft in which it was imported;
3. any person or a class of person exempted by the Director of Food and Environmental Hygiene (DFEH); and
4. any acquisition, import or supply that took place before 1 February 2012 (date of commencement of the **Food Safety Ordinance**).

Separate from the record-keeping requirement, food importers and distributors are required to be registered in accordance with ss.4 and 5. Owners of Class III vessels, i.e. fish carriers, fishing sampans, fishing vessels and outboard open sampans, are exempted from such registration.⁸³ This does not, however, affect the aforesaid record-keeping requirements.

Under s.27, the DFEH or an officer authorised by him may require a person to produce any record required to be kept by the person under Part 3 of the Ordinance for inspection.

Under s.28, the DFEH is empowered to use the record, or any information contained in the record, for the purpose of exercising powers or performing functions under the Ordinance. Further, the DFEH may disclose to the public any information contained in the record produced to him if he is satisfied that public disclosure of the information is necessary for the protection of public health.

2.4.3 Analysis

Statutory Requirements

The information required to be recorded depends on whether the LRFF would be regarded as '*acquisition of imported food*' (s.22) or '*capture of local aquatic products*' (s.23) (Table 4). See Appendix B-VIII for details of the information required in each case.

TABLE 4 FOOD SAFETY ORDINANCE REQUIREMENTS RELEVANT TO THE LRFF, SS.22 AND 23

(s.22) Acquisition of Imported Food	(s.23) Capture of Local Aquatic Products from a Local Fishing Vessel
<p>Requires only 'a description' of the fish and the place from which it was imported.</p> <p>(The specificity of such description is not dictated. The Code of Practice simply suggests that it should enable the trader to identify the food product in order to ensure traceability.)</p> <p>It is clear from C&ED legislation and regulations that LRFF caught outside of Hong Kong waters constitute 'imports' (being articles brought into Hong Kong), and are thus subject to regulatory requirements such as manifests notices.</p>	<p>The common name of the fish would be required, as well as the area/country of its capture.</p>

Acquisition of Imported Food

For acquisitions of imported food (s.22), records must be kept of the following information:

- The date the food was acquired;
- The name and contact details of the company or person from whom the food was acquired;
- The place from which the food was imported;
- The total quantity of the food; and
- A description of the food.

Capture of Local Aquatic Products

For captures of local aquatic products (s.23), records must be kept of the following information:

- The date or period of the capture;
- The common name of the local aquatic products;
- The total quantity of the local aquatic products; and
- The area of the capture. (The **Code of Practice** states that where the area of capture is outside Hong Kong, the country of the water areas where the aquatic products were captured should be stated.)

The FSO defines a 'local aquatic product' as captured from a local fishing vessel, whether in Hong Kong waters or outside

S.2 of the **FSO** defines a 'local aquatic product' (i.e. the relevant category for s.23) as an aquatic product captured from a local fishing vessel, whether in Hong Kong waters or in other waters. '*Local fishing vessel*' means a Class III vessel (see Box 4) (within the meaning of the **Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation (Cap 548D)**) that is licensed under that Regulation.

Therefore, despite the use of the term '*Capture of local aquatic products*' (which seemingly applies only to fish caught in Hong Kong), s.23 actually covers fish caught outside Hong Kong waters, as long as they are captured from a vessel licensed as Class III in Hong Kong. Accordingly, it would appear that fish caught by foreign vessels (vessels not licensed as Class III) in foreign waters do not need to adhere to s.23 requirements, although they would still have to adhere to the less detailed s.22 requirements.

The **Code of Practice on Keeping Records Relating to Food**⁸⁴ envisages fish originating from non-local fishing grounds be caught, stating in relation to the duty under s.23:

*'4.9 Examples of the common name of aquatic products commonly found in Hong Kong are at Appendix IV. They serve to provide a general reference for the trade in making the capture record. (Appendix IV makes reference to the family of groupers. See **Code of Practice on Keeping Records Relating to Food**, p.31.)*⁸⁵

4.10 Some examples of common capture area are Hong Kong waters, Guangdong Coast, and around the Xisha/Zhongsha, Nansha and Nansha Islands (Appendix V). For local aquatic products captured outside Hong Kong and the Mainland, traders should state the country of the water areas where the aquatic products were captured (e.g. Indonesia, Malaysia, Vietnam and Kiribati).'

Procedural Requirements

The records must be made at or before the time the food is imported or captured. For live aquatic products such as LRFF, records must be kept for three months after the date the food was acquired, captured or supplied.⁸⁶

There is no stipulated format for the records of each transaction to be maintained. The **Code of Practice** suggests that traders may choose one of the following means for compliance with the legal requirement:

1. Keeping the receipts/invoices, which should contain the required information (an example of the invoice is in the **Code of Practice**);
2. Creating their own transaction records (both written records or electronic records are acceptable); or
3. Using templates of record-keeping provided in the Code (and Annexed here).

While the FSO could be an important legal tool for regulating the LRFFT, there are several gaps in the legislation

While the FSO could be an important legal tool for regulating the LRFFT, there are several gaps in the legislation for such purpose, most notably:

1. As an individual record-keeping exercise (as opposed to a central compilation of information), the requirement is only to keep records and produce them upon request, presumably when a food safety issue arises. In terms of data provision, this differs vastly from the handling of all information by default, which would provide a better picture of the trade. This drawback is rooted in the exercise's legislative approach, which is geared towards tracing a health threat if and when that threat arises, rather than being an active monitoring tool.
2. S.22 does not require records be kept of the actual country of origin, i.e. the fishing grounds from which the fish originated.
 - a) It follows that there is no record of the place the fish was first caught, if the fish has been re-exported through another country after being caught and before coming to Hong Kong. Although this is not an uncommon trade practice, the information is crucial to monitoring the LRFFT and the sustainability of fish stocks. The fact that the country of origin is not recorded also seriously impacts the operational strength of the FSO, in terms of traceability and its objective to deter public health crises.

Records of the place that the fish was first caught are not required

From a traceability/public health perspective, a requirement to record the actual country of origin is desirable

- b) Given that the FSO envisages being part of an international trend in '*one-step-backward, one-step-forward*' record-keeping, it is arguable that the tracing/public health objective is not defeated. Assuming that all other countries have imposed a '*one-step-backward, one-step-forward*' record-keeping system, the government should be able to trace LRFF to its country of origin. However, this is an unwise assumption to make, and time is always of the essence in public health issues. From traceability/public health points of view, a requirement to record the actual country of origin is therefore desirable.
- c) However, insofar as LRFF are covered by s.23 (i.e. fish caught by Class III vessels in Hong Kong waters or other waters, but not fish caught by foreign vessels), the above-mentioned deficiencies of s.22 are remedied by s.23, since it requires information on the area of capture and does not have an exemption for transshipments or transits. Nonetheless, (1) the provision currently excludes a lot of fish as most are caught by foreign vessels; and (2) '*area of capture*' is a vague term. If the approach in the **Code of Practice**⁸⁷ is adopted (which suggests providing only the name of the country), it is arguable that information given is insufficient and unspecific enough to assume the food safety purposes and intention of the Ordinance.

As noted above, transshipments and articles in transit are not subject to these record-keeping requirements under the exception provided by s.22(4).⁸⁸ This would exclude a significant portion of LRFF (the provisions examined above are presented in Appendix B-VIII).

In Canada, by contrast, importers of live fish (including locally registered vessels bringing in non-local fish) must complete a Fish Import Notification form with all the details of the product, and submit the form to the Canadian Food Inspection Agency. They must also retain records for at least three years.⁸⁹

In terms of amendments to the FSO and its accompanying regulations, or to other food safety legislation and regulations, the following examples may be of referential value, such as for the inclusion of a grace period or the use of international food standards:

1. **The Pesticides Residues in Food Regulation (Cap 132CM)**, which was passed by the Legislative Council (LegCo) in June 2012 and came into operation on 1 August 2014, after a grace period of about two years. This regulation covers around 360 pesticides;⁹⁰ and
2. The proposed approach⁹¹ to natural toxins (shellfish toxins and mycotoxins) in food to 'Make reference to Codex standards and supplement with standards of Mainland and other major food exporting countries' under the **Harmful Substances in Food Regulations (Cap 132AF)**, as stated by the FEHD.⁹²

Food Safety Code of Practice: Then and Now

In addition to legislation, the government had in place a Code of Practice to enhance food safety of LRFF specifically. The **Code of Practice on the Import and Sale of Live Marine Fish for Human Consumption: For Prevention and Control of Ciguatera Fish Poisoning** (the '**Code of Practice on Fish**') was published on 15 December 2004,⁹³ and detailed the voluntary submission of information to the FEHD for monitoring coral reef fish imports and sources of fish incriminated in ciguatera fish poisoning incidents.

The **Code of Practice on Fish** is no longer in force, despite persistence of ciguatera poisoning cases in Hong Kong

This **Code of Practice on Fish** is no longer in force, despite the persistence of ciguatera poisoning cases in Hong Kong (six people affected in 2017).^{94,95,96} Formerly listed in the '*Food Legislation/Guidelines*' section of the Centre of Food Safety website,⁹⁷ the Code has been replaced by the following note: '*Please note that the Code of Practice has been removed, but that fish traders and fishermen are still advised to be very cautious when importing or selling fish from unknown or suspicious sources to reduce the chance of ciguatera fish poisoning.*'⁹⁸

The Code was presumably removed due to a review prompted by one of its statements, which noted that the Code '*will be reviewed regularly in consultation with the fish trade and other relevant parties*'. In the absence of a **Code of Practice on Fish** to specifically discourage and control imports of ciguatoxic fish into Hong Kong, citizens are put at increased risks of LRFF entering from ciguatera hotspots, such as Kiribati. Ciguatera is associated with certain species of fish from certain countries or regions.

Ciguatera is associated with certain species of fish from certain countries or regions

While no longer in force, the **Code of Practice on Fish** remains useful for its information on what could and has been done to target ciguatera for the monitoring of the LRFFT. These include:

- Importers submitted a form to the Veterinary Public Health Section of the FEHD for every import of live coral reef fish, within 48 hours of arrival of every shipment using a specified form; and
- The form consisted of information reporting the date of arrival, amount in weight, fish type, size, source of fish (both '*country*' and '*area*'), transportation mode and registration number, and landing point.

Although there is currently no LRFF-specific Code of Practice under the food safety regime, the present **Code of Practice on Keeping Records** provides some guidance on mandatory obligations for local aquatic products. The **Code of Practice on Fish** was a voluntary code, but it provided useful information for the monitoring of the trade. The current FSO legislation and the accompanying Code of Practice put in place mandatory requirements, and while they are not specific to the LRFFT and do not produce sufficient information for compiling and monitoring, they have demonstrated in part that it is feasible to require LRFF traders to retain information on all their LRFFT.

2.5 Endangered Species Regime

2.5.1 Introduction

The **CITES Ordinance** requires a licence to be issued in advance by AFCD for the import, introduction from the sea, export, re-export or possession of specimens of a scheduled species

The **Protection of Endangered Species of Animals and Plants Ordinance** ('**CITES Ordinance**') (**Cap 586**)⁹⁹ entered into force on 1 December 2006 and is the local legislation that gives effect to CITES in Hong Kong.¹⁰⁰ The Ordinance requires a licence to be issued in advance by AFCD for the import, introduction from the sea, export, re-export or possession of specimens of a scheduled species, whether alive, dead, or consisting of its parts or derivatives (including medicines). The Ordinance also specifies the circumstances under which no licence is required for trade in endangered species (for example, no need for import licences for Appendix II and III species and where the article is for personal use). The regime closely follows the requirements stipulated in CITES.

CITES is designed to protect species from extinction by commercial international trade

CITES is designed to protect species from extinction by commercial international trade. Signatory states are required to provide varying degrees of protection depending on the status of the particular species. Regulated species are listed on one of the three appendices in the treaty:

- **Appendix I:** Those threatened with extinction;
- **Appendix II:** Those that could face extinction if their trade is not controlled; and
- **Appendix III:** Those facing over-exploitation in a particular country.

Member countries decide multilaterally to list a species on Appendices I and II. A country may unilaterally put one of its species on Appendix III.¹⁰¹

There is an exemption from import licensing requirements for so-called '*pre-Convention*' specimens, subject to production of proof that the specimens are '*pre-Convention*' and also to the authority's inspection and satisfaction that the specimens tally with the particulars in the relevant documentary proof.¹⁰²

Additionally, the **CITES Ordinance** provides statutory basis for a higher penalty in relation to offences committed for commercial purposes (whether committed by the defendant or on his behalf) (see ss.10 and 16 of the **CITES Ordinance**).

2.5.2 Protection of Endangered Species Ordinance (Cap 586) (CITES Ordinance)

The Permit System

As indicated above, CITES operates through a permit system that requires export and import permits for species listed in Appendix I, and export permits for species in Appendices II and III. Every state is required to designate a Management Authority and Scientific Authority to review permit applications. In Hong Kong, the issuance of certificates in respect of endangered species is carried out by AFCD and takes two to five working days.¹⁰³

To comply with CITES, Hong Kong must designate port(s) of entry and exit, and create a detailed record of trade, regarding specimens of listed species

To implement the treaty, countries must designate ports of entry and exit, and create a detailed record of trade in specimens of listed species¹⁰⁴ Certain exceptions are provided under CITES, including specimens that are transhipped while in Customs' control.¹⁰⁵ A licence is necessary for imports and exports between Hong Kong and mainland China, which has its own CITES Management Authority.

General problems with CITES as an international system include:

- Countries' poor compliance with record-keeping and reporting requirements;
- Poor enforcement due to staff shortages and inadequate training in species identification; and
- The ability to trade with non-parties to CITES.¹⁰⁶

In the case of marine species under Appendix II, there are challenges in developing non-detriment findings¹⁰⁷ in source (exporter) countries. However, much progress has been made in this respect, and the principals involved are similar to those of sustainable resource use widely adopted for fisheries management in general.¹⁰⁸

Transshipment/In Transit

Certain exceptions are provided under CITES, including specimens that are transhipped while in Customs' control.¹⁰⁹ Although it should be noted that records of Humphead Wrasse indicate re-export as opposed to in-transit shipments.¹¹⁰ The extent of application of the international instrument to animals transhipped or in transit (see Appendix B-IX) is ambiguous. Under Article VII.1, they are excluded from the Convention. However, subsequent resolutions suggest a stricter approach, including Resolution Conf. 9.7 which recommends that Parties '*inspect transit shipments, check the presence of valid export documentation as required under the Convention or satisfactory proof of its existence*', and '*adopt legislation allowing them to seize and confiscate transit shipments without such documentation or proof thereof*'.¹¹¹

Hong Kong has been notable as one of the Parties enacting legislation to this end, requiring that specimens in transit be accompanied by valid documentation issued by a competent authority in order to be exempt from controls, even where the specimens remain at all times in the vessel or aircraft that they were brought in.¹¹²

LRFF that are regularly transported over the border into mainland China are mostly undocumented and sometimes illegal

However, LRFF that are regularly transported over the border are mostly undocumented and sometimes illegal.¹¹³ There are well-established and recognised trade routes between Hong Kong and mainland China, via areas such as Sha Tau Kok and Yantian.¹¹⁴ While Hong Kong previously documented the trade of the CITES-listed Humphead Wrasse into China, it no longer does so, according to government records for the CITES database. This is in spite of reports of regular Humphead Wrasse imports from Hong Kong.¹¹⁵ Clearly, there is potential for intervention here to improve trade documentation of the Humphead Wrasse

and LRFF in general. The unreported/undocumented shipments of Humphead Wrasse between Hong Kong and China are more of a smuggling issue. It is very unlikely the traders make use of the 'exception' of transshipment/in transit under the current control regime.¹¹⁶

2.5.3 Analysis

Requirements According to Appendix Listings

Appendix I Species

Traders of species listed on Appendix I must present an export permit to the customs agency of the exporting country, and both export and import certificates to the importing country's customs officials. In theory, this provides a 'double-check' against illegal trade. The Management Authority of the exporting country must certify that: (1) the trade will not adversely affect species survival; (2) the specimen was not obtained illegally and will be transported with minimal risk of death, damage or cruel treatment; and (3) an import permit has been granted.¹¹⁷

Domestic Implementation:¹¹⁸

- In Hong Kong, *'the import, introduction from the sea, export, re-export or possession of an Appendix I species requires a licence issued in advance by the AFCD. Each licence is valid for one shipment at one time and in one lot or for one keeping premises.'*
- *'Commercial trade in an Appendix I species of wild origin is not allowed and the AFCD will not issue a licence.'*
- Appendix I species bred in captivity for commercial purposes at CITES-registered farms are treated as Appendix II specimens¹¹⁹ and subject to the same control as Appendix II specimens. Evidence is needed to show that the animals were indeed captive bred, but in reality, it is difficult to differentiate between captive-bred and wild-caught fishes.

Appendix II Species

No import permit is required (except for live animals or plants of wild origin), subject to the production of a valid CITES export permit from the place of previous export.¹²⁰

For live animals of wild origin, possession licences are required, which must be on public display

But the same conditions for granting an export of Appendix I species apply to Appendix II species, and importation requires the presentation of an export permit or re-export certificate prior to import.¹²¹ For live animals or plants of wild origin, possession licences are also required, which are issued for each keeping premises and must be on public display.¹²² However, despite these conditions, many Humphead Wrasse are retailed in Hong Kong with no evident possession permits.¹²³

Possession licences for Humphead Wrasse are valid for five years, which is meaningless for a species that is bought and sold within a few weeks

Domestic Implementation:¹²⁴

- The import and introduction from the sea of an Appendix II species is subject to the production of a valid CITES export permit and inspection by an authorised officer upon the landing of the specimen in Hong Kong. If it is a live specimen of wild origin, a licence issued in advance by the AFCD is also required. Each licence is valid for one shipment at one time and in one lot.
- The export or re-export of an Appendix II species requires a licence issued in advance by AFCD. Each licence is valid for one shipment at one time and in one lot.
- The possession of a live specimen of wild origin of these species requires a licence (Appendix B-IX). However, this system is largely ineffective for live animals with short turnaround times, unless there is regular inspection of keeping premises. Licences are for five years for a set number of fish, which is meaningless for a species that is turned around (bought and sold) within a few weeks. This can make 'laundering' of additional animals very easy unless there are regular inspections and enforcement, or unless individual animals are tagged. Measures to these effects have yet to be implemented, as illustrated by the case of the Appendix II-listed Humphead Wrasse.¹²⁵

It is noted that, the requirement of import licence and possession licence for Appendix II species of live animals or plants from wild origin are stricter controls implemented in Hong Kong, but they are not compulsory requirements under CITES.

Appendix III Species

If a country has placed a species on Appendix III, an export permit is still required. Since the listing only means that the species is overexploited in the listing country, no general assessment is needed for the export permit.¹²⁶

Domestic Implementation:

- The import of an Appendix III species is subject to the production of a valid CITES export permit or a certificate of origin and inspection by an authorised officer upon its landing in Hong Kong.
- Its export or re-export requires a licence issued in advance by AFCD. According to available records, no re-export licence or re-export certificate has been issued for Humphead Wrasse since 2008, despite ongoing reports from Mainland traders that they obtain this species via Hong Kong.¹²⁷

A summary of conditions for permits under each CITES Appendix is presented in Table 5.¹²⁸

TABLE 5

THE INTERNATIONAL FRAMEWORK: SUMMARY OF CONDITIONS FOR PERMITS UNDER CITES FOR EACH CITES APPENDIX AND DOMESTIC IMPLEMENTATION¹²⁹

Appendix	Permit Conditions	Export Permit Required?	Re-export Certificate Required?	Import Permit Required?	Possession Permit Required?
I	Not for commercial trade; trade not detrimental to the species; trade is legal and avoids cruel or injurious shipping of live specimens.	Yes Granted only if import permit is already in hand. (CITES Ordinance s.7)	Yes Granted only if in accordance with CITES and there is a valid import permit. (CITES Ordinance s.8)	Yes (CITES Ordinance s.5) Similar requirements on introduction from the sea are also imposed. (CITES Ordinance s.6)	Yes (CITES Ordinance s.9)
II	Trade not detrimental to the species; trade is legal and avoids cruel or injurious shipping of live specimens.	Yes (CITES Ordinance s.13)	Yes Granted only if import was in accordance with CITES. (CITES Ordinance s.14)	No But requires prior presentation of the export permit, certificate of origin, re-export permit or re-export certificate (whichever applicable). If it is a live specimen of wild origin, a licence issued in advance by AFCD is also required. (CITES Ordinance s.11) Similar requirements on introduction from the sea are also imposed. (CITES Ordinance s.12)	Yes If the species in question is a live specimen of wild origin, a permit is issued for each keeping premises. (CITES Ordinance ss.15 and 21)
III Party has listed the species	Trade is legal and avoids cruel or injurious shipping of live specimens.	Yes (CITES Ordinance s.13)	Yes Granted on the basis that the specimens were processed in/re-exported from that State. (CITES Ordinance s.14)	No But requires production of a valid CITES export permit and inspection upon the landing of the specimen in Hong Kong. If it is a live specimen of wild origin, a licence issued in advance by AFCD is also required. (CITES Ordinance s.11) Note: No similar requirements on introduction from the sea are imposed (cf. Appendix II). No import permit is required if certain certificates referred to in CITES Ordinance s.19 (e.g. a certificate of origin where the specimen is imported from a non-listing country) are produced.**	No
III Party has not listed the species	Specimen originated from that Party.	No Certificate of origin			

** CITES Ordinance s.19(1) states — ‘A person may import a specimen of an Appendix III species if, upon the landing of the specimen in Hong Kong—

- a) he produces, or causes to be produced, to an authorized officer—
 - i) where the import is from a place specified in parentheses placed against the species in Appendix III, a Convention certifying document or certificate in lieu in respect of the specimen;
 - ii) where the import is from a place that is not so specified in Appendix III and the specimen originates from such a place, a certificate of origin in respect of the specimen; or
 - iii) in any other case, a certificate—
 - A) that is issued in respect of the specimen by a relevant authority of the place from which the specimen is imported and

remains in force when relied on to show compliance with this Ordinance; and B) that shows that the specimen was processed in that place, or has previously been taken into that place from another place;

- b) an authorized officer has inspected the specimen to compare it with the particulars on that Convention certifying document, certificate in lieu, certificate of origin, or the certificate referred to in paragraph (a) (iii), as the case may be, and is satisfied that the particulars tally; and
- c) that person surrenders, or causes to be surrendered, to the authorized officer the document referred to in paragraph (b) for retention and cancellation.’

Relationship Between Endangered Species and Customs Regimes

There is some overlap between the CITES regime and the customs regime, since the CITES regime is premised upon the occurrence of an import/export relationship. As CITES-restricted articles come within the definition of '*prohibited article*' under the customs regime (see s.2 of the **Import and Export Ordinance**), s.8 of the **Import and Export Ordinance** is therefore applicable, requiring delivery of the import licence and manifest. Further, s.12 provides for powers of inspection of the articles by C&ED.

Listing LRFF Species on CITES Appendices

The mechanism for listing a species on CITES requires a certain percentage of votes from Parties present and voting at a Conference of the Parties to CITES, the required percentage depending on the Annex listing sought. Parties are allowed to take out a '*reservation*' on species listings, in which case they are treated as a non-Party to the Convention with respect to that species until their reservation is withdrawn.¹³⁰

The only CITES listing of LRFF species is the Humphead Wrasse

The only CITES listing of LRFF species is the Humphead Wrasse, which was proposed for listing by the United States, Fiji and the European Union (EU)¹³¹ in 2002.¹³² The most recent Conference of the Parties (17th meeting, 2016) also included revised Decisions to effectively implement the listing of the Humphead Wrasse.¹³³

With regards to the government's ability to participate in further listings of species, the Hong Kong government stated in 2000 that:

*'China is a member of CITES and HKSAR is part of China's delegation only. HKSAR is therefore not in a position to propose listing of endangered species on its own. Nevertheless, AFCD has sent the report to the CITES Management Authority of the Mainland and to major live reef fish exporting countries (including the Philippines, Maldives and Indonesia) for their consideration of the findings and recommendations therein.'*¹³⁴

Unlike ivory, which is desired in many countries, China and Hong Kong are by far the major destinations of live fishes

In the case of live fish, Hong Kong remains a major trade hub because of its tariff-free status and long-established regional networks. For this reason, LRFFT does not appear to be going elsewhere (Part I, Section 3.11). Moreover, unlike ivory, which is desired in many countries, China and Hong Kong are by far the major destinations of live fishes. ■

ISSUES ARISING FROM VESSEL REGISTRATION, LICENSING AND THE FLAG STATE SYSTEM

The nationality of vessels and the flag state system affect issues of jurisdiction and enforcement in Hong Kong

3.1 Vessel Registration/Licensing and the Flag State System

The nationality of vessels and the flag state system affect issues of jurisdiction and enforcement in Hong Kong. The starting point is that vessels on the high seas are subject to no authority except that of the state whose flag they fly. In the absence of any territorial sovereignty upon the high seas, no state may exercise any kind of jurisdiction over foreign vessels.¹³⁵

Under international law, every state is under a duty to fix the conditions for the grant of nationality to its ships, for the registration of ships in its territory, and for the right to fly its flag. Ships have the nationality of the state whose flag they are entitled to fly. The flag state has exclusive jurisdiction over the ship (apart from treaty provisions to the contrary). International law imposes upon the flag state obligations to maintain good order and general security on the high seas. The right to enjoy the protection of the law balances the responsibility of the flag state for the behaviour of its ships.¹³⁶

An exception to the exclusive jurisdiction of the flag states is where treaties are implemented or in the case of 'hot pursuit'

As noted above, an exception to the exclusive jurisdiction of the flag state is where treaties¹³⁷ are implemented, for example mutual powers to visit and search conferred by bilateral treaties to conserve fish stocks and to control smuggling. Another route to exercise jurisdiction outside flag jurisdiction is the right of '*hot pursuit*', in which the state has jurisdiction to pursue the ship for violation of that state's laws under certain circumstances, even where the ship does not fly the state's flag.

Registration is evidence of a ship's nationality and entitlement to fly that country's flag.¹³⁸ A genuine link must exist between the flag state and the ship. In particular, the state must effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag.¹³⁹

According to Article 91(1) of the **Law of the Sea Convention 1982**,¹⁴⁰ which applies to Hong Kong: '*Every State shall fix the conditions for the grant of its nationality to ships, for the registration of ships in its territory, and for the right to fly its flag. Ships have the nationality of the State whose flag they are entitled to fly. There must exist a genuine link between the State and the ship.*'

According to Article 94(6): '*A State which has clear grounds to believe that proper jurisdiction and control with respect to a ship have not been exercised, may report the facts to the flag State. Upon receiving such a report, the flag State shall investigate the matter and, if appropriate, take any action necessary to remedy the situation.*'

The **UN Convention on Conditions for Registration of Ships**, adopted by a diplomatic conference in 1986, seeks to impose precise modalities for the effective exercise of jurisdiction and control by the flag state, but the Convention has not yet entered into force.¹⁴¹ The Hong Kong Ship Register does not allow registration if the ship is already registered elsewhere. Some countries, however, allow ships to register despite already being registered with another flag state, without requiring a genuine link between the state and the ship owner. This results in '*double*' or '*parallel*' registration. Such a practice has given rise to a problem known as '*flags of convenience*' (FoC), as well as enforcement/jurisdictional issues. Ships flying such flags derive certain benefits, such as tax breaks and less stringent flag state inspections. However, they may be subject to more inspections from PSC and the International Transport Workers' Federation, resulting in higher rates of detention and increased costs of operation.¹⁴²

Hong Kong maintains its own shipping register (the HKSR) and confers 'nationality' on ships independent from mainland China

3.2 The Registration and Licensing System in Hong Kong

3.2.1 Legal Framework

Until 3 December 1990, the United Kingdom Merchant Shipping Acts (the Acts) (except for the Merchant Shipping Act 1988) applied to the registration and mortgages of ships in Hong Kong. A ship registered at the Port of Hong Kong was, therefore, a British ship.¹⁴³ With the transfer of sovereignty to mainland China in 1997, Hong Kong was authorised by the mainland to maintain its own shipping register (the HKSR) and to confer 'nationality' on ships.¹⁴⁴

The Hong Kong government appointed a Steering Committee in 1987 to advise the government on the establishment of an independent shipping registry, which resulted in the enactment of the **Merchant Shipping (Registration) Ordinance (Cap 415)**.¹⁴⁵

There is no vessel register specific to the LRFFT. The current regime is:

1. Generally, vessels may be registered with the Marine Department's HKSR, except fishing vessels and ships engaged in processing living resources of the sea, including whale and fish factories and aqua farming vessels, which cannot be registered with the HKSR;
2. Local vessels, including those carrying out fish-related purposes (i.e. Class III vessels), are licensed by the Marine Department; and
3. AFCD maintains a register of '*local fishing vessels*' based on the Marine Department's aforesaid licensing.

The **Merchant Shipping (Local Vessels) Ordinance (Cap 548)** and the **Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation (Cap 548D)** apply to fishing vessels and vessels that transport fish to and from Hong Kong. From the s.2 definition (see below), fishing vessels are explicitly covered and transport ships are implicitly covered. Whether a vessel is 'local' does not depend on the vessel being registered with the HKSR.

Until the end of 2016, 18,540 vessels were licensed to operate locally and/or in the Pearl River Delta Region.¹⁴⁶ This is to be distinguished from vessels registered with the HKSR. Of the former, 31 were licensed as fish carriers in 2016, and 1,997 were licensed as fishing vessels (Part I, Section 3.7).¹⁴⁷

3.2.2 The Hong Kong Shipping Register (HKSR) and Fishing Vessels

The HKSR is independent from the mainland China shipping register, with 2,540 ships registered with it as of May 31, 2017.¹⁴⁸ The Hong Kong Special Administrative Region owns and administers it independently. All maritime policy and administrative decisions are made in Hong Kong. The statutory basis for the HKSR is the **Merchant Shipping (Registration) Ordinance**.¹⁴⁹ Under the **Merchant Shipping (Registration) Ordinance**, the proper colours of a registered ship is the national flag of the People's Republic of China (PRC) flown directly above the regional flag of the Hong Kong Special Administrative Region

(see s.37 and Schedule 1 of the Ordinance). Under this Ordinance, ‘ship’ means every description of vessel capable of navigating in water not propelled by oars, and includes any ship, boat or craft and air-cushion vehicle or similar craft used wholly or partly in navigation in water (see s.2 of the Ordinance). Once a ship is registered in Hong Kong:

- It can enjoy the benefits in connection with flying the Hong Kong flag; and
- The Hong Kong government will exercise its jurisdiction over the ship.¹⁵⁰

Hong Kong is popular for ship registration. For Chinese-funded ships, Hong Kong registration is preferable to mainland China registration or FoC registration due to lower taxation. It also offers lower levels of interference in respect of PSC and international organisations that carry out inspections, compared to FoC ships.

The Hong Kong government claims in its publications that it ensures the quality standards of ships registered in Hong Kong are maintained in accordance with relevant international conventions while they are flying the Hong Kong flag.¹⁵¹

The Flag State Quality Control (FSQC) System in Hong Kong was developed in 1999 for monitoring and maintaining the quality of ships under the HKSR. The FSQC System monitors ships after they have joined the HKSR. All PSC Inspections and incidents related to Hong Kong-registered ships and their companies are monitored and recorded in the FSQC System. Any Hong Kong-registered ship with doubtful quality standards will be subject to FSQC inspections by the Marine Department’s surveyors of ships. All ships to be registered under the Hong Kong flag are subject to quality assessment prior to their registration, under the Pre-Registration Quality Control (PRQC) System which was introduced in 2004. Only those ships that pass the quality checks are registered.¹⁵²

Hong Kong-registered ships are required to comply with requirements of IMO conventions, but these are more focused on combating pollution than monitoring fishing activities

According to the Hong Kong Shipping Register User’s Handbook, as part of quality assurance, Hong Kong-registered ships are required to comply fully with the requirements of International Maritime Organization (IMO) Conventions ratified by Hong Kong, including those with respect to protection of the marine environment. It is unclear how these requirements apply to fishing vessels since they cannot be registered in this manner. The Conventions generally relate to oil pollution in the sea. In special circumstances, exemption from Convention requirements may be granted, provided that safety, as well as protection of the marine environment, would not be jeopardised.¹⁵³ Thus, the IMO Conventions are more focused on combating pollution than monitoring fishing activities.

Generally, Hong Kong is considered a strict observer of its obligations as a flag state. Hong Kong’s fulfilment of its obligations as the flag state is summarised in ‘A Comparative Study of ‘Hong Kong Flag’ Ship Registration’ (Appendix B-X).¹⁵⁴

Since 16 September 2005, fishing vessels cannot be registered under the HKSR, pursuant to the Director of Marine stating that it would be inappropriate to register fishing vessels, having regard to their use, nature or condition and to the difficulty of providing adequate supervision and control in Hong Kong.¹⁵⁵

3.2.3 Licensing of Local Vessels

Licensing has broader coverage than the registration system. Under the **Merchant Shipping (Local Vessels) Ordinance (Cap 548)**, ss.11 and 13, **all local vessels must be certificated and licensed**. According to s.2, 'local vessels' to which the ordinance applies include, *inter alia*:

- *any vessel used solely within the waters of Hong Kong, whether registered under the Merchant Shipping (Registration) Ordinance (Cap 415) or in a place outside Hong Kong;*
- *any vessel regularly employed in trading to or from Hong Kong unless registered in a place outside Hong Kong;*
- *any vessel possessed or used for pleasure purposes in the waters of Hong Kong;*
- *any vessel employed in sea fishing plying regularly in the waters of Hong Kong, or using the waters of Hong Kong as a base; or*
- *any vessel—*
 - i) registered in the Mainland of China or Macau;*
 - ii) employed in trading to or from Hong Kong; and*
 - iii) issued with any certificate by a government authority of the Mainland of China or Macau permitting its trading to Hong Kong other than any accepted convention certificate (Replaced 24 of 2005 s.2).*¹⁵⁶

Licensing for local vessels is undertaken according to the **Merchant Shipping (Certification and Licensing) Regulation (Cap 548D)**.¹⁵⁷ Under this Regulation:

Fishing-related vessels are registered as Class III vessels with fish carriers as (a) and fishing vessels as (c)

- a) Fishing-related vessels would fall under Class III vessels: (a) fish carrier; (b) fishing sampan; (c) fishing vessel; and (d) outboard open sampan (see Schedule 1 of the Regulation).¹⁵⁸
- b) As of 2016, there were 6,631 Class III vessels (out of 18,540 licensed vessels in total) comprising:¹⁵⁹
 - 31 licensed as Fish Carriers;
 - 1,982 licensed as Fishing Sampans;
 - 2,997 licensed as Fishing Vessels; and
 - 2,621 licensed as Outboard Open Sampans.Class III vessels are restricted in that they '*shall be used exclusively for fishing and related purposes*' (Reg 5).
- c) Applications are made either for full or for temporary licences. The validity period for a full licence cannot exceed 12 months (Reg 15–20).

A vessel can only be licensed as one vessel type, either as a fish carrier (Class III (a)) or as a fishing vessel (Class III (c))'

AFCD Register of Local Fishing Vessels

AFCD also maintains a register of 'local fishing vessels,' being 'any fishing vessel in respect of which an operating licence [by the Marine Department under the **Merchant Shipping (Local Vessels) Ordinance**] has been issued' (Box 5). 'Fishing' is defined as '[including] the capture or taking of fish, and any attempt to do so'. The AFCD register should not include fish carriers, since vessels cannot have dual registration and the register is for local fishing vessels. According to AFCD, 'a vessel can only be licensed as one vessel type, i.e. either as a fish carrier (Class III (a)) or a fishing vessel (Class III (c)), by the Marine Department. But the vessel owner can apply for a change of vessel type, i.e. from Class III (a) to (c), subject to certain conditions.'¹⁶⁰

BOX 5 REGISTER OF LOCAL FISHING VESSELS

A certain extent of interaction between AFCD and the Marine Department is specifically provided for in statute: the AFCD Director may obtain from the Director the establishment of a statutory register of local fishing vessels as provided for in **Cap 171** ss.13 and 14. The Director must keep a register of such registered vessels for the purposes of the Fisheries Protection Ordinance. The register is to contain, in respect of every registered vessel, information including the name and address, the certificate of ownership number, and conditions imposed to regulate fishing. Giving false statement or information in fishing vessel registration is an offence.

The register (including the names of certificate holders but no other particulars or information concerning them) is to be made available for inspection by any person at the headquarters of the Agriculture, Fisheries and Conservation Department during normal public office hours.

The Marine Department compiles statistics on vessels arriving and departing Hong Kong

3.2.4 Analysis

Marine Department Statistics – Omit Locally Licensed/Registered LRFFT Vessels

The Marine Department compiles statistics on vessels, both Hong Kong-flagged and foreign-flagged, arriving and departing Hong Kong as part of its '*Principal Port Statistics*'.¹⁶¹ These statistics include, inter alia, statistical data for a number of parameters:

- Vessel arrivals by ship type, including the number and percentage share of 'Fishing/Fish Processing Vessel' (0.2%) as opposed to other ship types (e.g. Convention Cargo Vessel and Dry Bulk Carrier);¹⁶² it is understood from the Marine Department that fish carriers should be classified here as fish processing vessels;¹⁶³
- Vessel arrivals by flag;¹⁶⁴
- Average time in port for vessels departing Hong Kong by ship;¹⁶⁵
- PSC Inspections;¹⁶⁶

- Hong Kong-licensed vessels by class classification, including the number and tonnage of Class III vessels;¹⁶⁷ and
- Prosecution statistics, although there is no separate category for offences relevant to LRFF (such as unmanifested cargo). The specified categories relate mainly to safety, licence breaches and pollution. There is a large unspecified category of '*other marine offences*'.¹⁶⁸

Exclusion of River Vessels: However, the data in relation to fishing vessels is limited in some respects. For instance, fishing vessels are not included in river vessel statistics because the accurate number of trips made by locally licensed fishing vessels plying between Hong Kong and the river trade limits is not available.¹⁶⁹ As such, data on the percentages of total vessel arrivals in Hong Kong that are fishing vessels are likely inaccurate.¹⁷⁰ This could be a significant gap in the context of LRFFT, since '*river*' refers to transport by vessels in waters in the vicinity of Hong Kong, the Pearl River and other inland waterways in Guangdong Province and Guangxi Autonomous Region, which are accessible from waters in the vicinity of Hong Kong.

It is a long-established practice to exempt fishing vessels, including fish carriers, from applying for either arrival or departure port clearance

Exclusion of Fishing Vessels and Fish Carriers: Cap 548 Merchant Shipping (Local Vessels) Ordinance s.69 provides for exemptions from the requirements of the Ordinance. Accordingly, regarding the requirements of local vessels to report their arrivals and departures into and from the waters of Hong Kong under Cap 548 and its subsidiary legislation, the Marine Department has advised that having taken into account the operations of fishing vessels including fish carriers, it is a long-established practice to exempt them from the application of section 3 (Arrival clearance required upon arrival) under Cap 548F¹⁷¹ and section 28 (Port Clearance to be obtained before departure) of Cap 548.¹⁷² The exemption is endorsed in the operating licence of fishing vessels through Cap 548 s.69 (Director's general power of exemption).^{173,174}

In response to queries about the reason for the exemption, the Marine Department has indicated that its prime concern is vessel safety, i.e. local vessels shall be properly certificated and licensed and meet the safety requirements as stipulated in Cap 548, but that the Department will not regulate these vessels' commercial activities. Indeed, regarding the formalities related to the import of live fish, the Department defers to C&ED and/or AFCD.

The lack of data on fish carriers' entry/exits makes it difficult for C&ED to detect non-reporting, and for AFCD to regulate the illegal import of Humphead Wrasse

Since fish carrier vessels do not have to report their entry and exit to the Marine Department, it is therefore difficult for C&ED to detect non-reporting under Cap 60, and for AFCD to effectively regulate the illegal import of Humphead Wrasse under Cap 586.

The AIS can provide useful information on vessels' behaviour, such as engaging in IUU fishing

3.3 Automatic Identification System (AIS)

The **International Convention for the Safety of Life at Sea (SOLAS)** (1974) concerns the safety of merchant ships and specifies '*...the minimum standards for the construction, equipment and operation of ships, compatible with their safety.*'¹⁷⁵ The Convention requires all passenger vessels, all commercial vessels that are 300 GT or over that travel internationally, and all cargo vessels that are 500 GT or over that do not travel internationally to carry an Automatic Identification System (AIS) transponder.¹⁷⁶ The AIS is an automated tracking system primarily used in the maritime world to avoid collisions, but can also provide useful information on vessels' behaviour, such as engaging in IUU fishing.

According to the **Merchant Shipping (Local Vessels) (Safety and Survey) Regulation (Cap 548G)** s.80A, the compulsory use of an AIS mandated by the Marine Department '*...applies to a Class I vessel that is licensed to carry more than 100 passengers except-*

- a) a floating restaurant;*
- b) a stationary vessel; or*
- c) a vessel the operating licence of which restricts the vessel to plying within a typhoon shelter.'*

An amendment to this Regulation was gazetted on 9 December 2016 by LegCo¹⁷⁷ and commences on 1 March 2018. The Amendment imposes the installation and use of AIS on Class II vessels due to their large size (as well as the dangerous nature of goods carried). The Section 80A amendment is:-

'80A

2) This Section also applies to a Class II Vessel that is –

- a) a dangerous goods carrier;*
- b) a noxious liquid substance carrier;*
- c) an oil carrier; or*
- d) a vessel of 300 gross tonnage or above fitted with a propulsion engine.'*

Fish carriers are notably excluded from the requirement to use AIS

Class III (a) vessels (Hong Kong Licensed Fish Carriers) are notably excluded from this new requirement despite evidence that such vessels over 300 GT travel internationally.¹⁷⁸ Although the IMO requirements are guidelines, the reason for the lack of requirement for an AIS transponder on such vessels is unclear. ■

ENFORCEMENT

4.1 Unmanifested Cargo

4.1.1 Prosecutions and Lack of Deterrent Sentencing: Cases

As noted in Part I of this report, the requirement to provide manifests applies to fishing vessels. There are few recent written judgments in the legal database relating to unmanifested cargo on fishing vessels, presumably because most cases are decided in Magistrates' Courts and do not go on appeal. Therefore, written judgments are not made available via the legal database:

It is a defence to a charge of unmanifested cargo if the defendant proves that he/she did not/could have known the cargo was unmanifested

1. The High Court case of **Hong Kong SAR v Diao Rui and Chen Rong Yao**¹⁷⁹ **HCMA 606/2013** (unreported), 26 May 2014, involved prosecution of unmanifested cargo of, *inter alia*, 78 bags of tropical fish, and provides guidance on the threshold for mounting the defences to the offence. It is a defence to a charge of unmanifested cargo if the defendant proves that he did not know and could not, with reasonable diligence, have known that the cargo was unmanifested. The judge, on the burden of proof to be discharged regarding this defence, stated that:
 - a) If the defendant seeks to rely on the statutory defence under section 18(2) of the **Import and Export Ordinance (Cap 60)**, the prosecution should prove beyond reasonable doubt that:
 - The accused knew his input or output of goods was not listed in the manifest; or
 - If exercising reasonable effort, he would have discovered the existence of these goods.

- b) If the circumstances are distinctive, or cause some discomfort, the level of reasonable diligence should be strengthened accordingly;
 - c) If the prosecution can disprove any one of the reasons behind the statutory defence beyond reasonable doubt, the defendant will not succeed in his statutory defence;
 - d) It is always difficult for the prosecution to prove that the accused knew of the offending factors, but depending on the evidence, it is possible. An evidential burden is not discharged by the mere mouthing of words by a defendant, whether to the police upon apprehension, or to the court in testimony, that he was unaware that the container housed unmanifested cargo. The prosecution's duty is to show that if the defendant used reasonable diligence, he would have discovered the offending factors;
 - e) Specifically, for the offence of the import or export of unmanifested goods for carrier/transport workers, reasonable diligence generally refers to the supervising of loading or inspection of the cargo. These can be carried out by supervision or inspection of all the cargo or random sampling of the cargo. Sampled inspection or examination can constitute reasonable diligence, depending on the circumstances, such as the representativeness of the sampling; and
 - f) For example, sampled inspection of only the periphery of the goods would be difficult to constitute reasonable diligence. Generally speaking, the sampled inspection should be spread broadly and should cover the bottom, the depth or the corner of the cargo. If the cargo appears suspicious it should be examined. Therefore, even for sampled inspection, to be regarded as reasonable diligence it will often be necessary to move the cargo around.
2. The case of **HKSAR v Sze Mei-mun & Ors DCCC 3/2011** (unreported), Reasons for Verdict on 16 January 2013 (conviction upheld upon appeal by judgment on 14 May 2014 in *HKSAR v Sze Mei Mun* [2014] 3 HKLRD 452),¹⁸⁰ was a successful prosecution of, inter alia, conspiracy to export unmanifested cargo (marked oil) on local fishing vessels.¹⁸¹ The prosecution resulted in prison terms between four and six years: *HKSAR v Sze Mei-mun & Ors DCCC 3/2011* (unreported), Reasons for Sentence on 8 February 2013. C&ED made the arrests after mainland authorities took action against the syndicate carrying out the conspiracy.¹⁸²
 3. In **HKSAR v Tse Yuk Wah [2007] 2 HKLRD D7**, the defendant pleaded guilty to attempting to export unmanifested cargo. Wah drove a truck to the Lok Ma Chau control point, intending to leave the Hong Kong territory. Customs officers at the control point found six cartons of undeclared goods inside the truck, the total value of which exceeded HK\$1.04 million. The Magistrate adopted a starting point of 15 months' imprisonment, and reduced the term to 10 months on account of plea. It was held that the offence was serious in that the defendant intentionally smuggled goods with a total value exceeding HK\$1 million. An immediate custodial sentence was eminently justified and correct in principle. The starting point was not manifestly excessive. While

lack of knowledge of what was being transported could be a mitigating factor, it did not apply here since it was clear that the defendant chose not to declare goods that he very well knew had to be declared.

4. In **HKSAR v Kwok Chu Ho [2007] 1 HKC 491**, a sentence of 15 months' imprisonment after trial for attempting to export unmanifested cargo was held to be within the tariff and not manifestly excessive.
5. The case of **HKSAR v Ling Lai Hung HCMA 928/2006** (unreported), 17 July 2007, concerned an unsuccessful prosecution of the crew of a fishing vessel on the charge of attempting to export unmanifested cargo, being 65,000 litres of marked oil in that case. The Magistrate acquitted the defendants after trial on the ground that the prosecution had failed to prove knowledge of the alleged unmanifested cargo. The appeal was based on the unrelated issue of the Magistrates handing down a forfeiture order for the cargo.
6. The case of **HKSAR v Shek Tak Tai HCMA 795/2000** (unreported), 24 October 2000, sets out the relevant considerations in sentencing. The Court of First Instance considered an appeal against a sentence of three months' imprisonment, where the person had been convicted of dealing with cargo with intent to assist another person to export the cargo without a manifest. The cargo in question was live water turtles, and the vessel used was a fishing vessel. The Court approved the imprisonment sentence handed down by the Magistrate, which had taken into consideration that this was an '*extremely prevalent type of offence in Hong Kong waters*', the approximate value of the goods was high, and that the amount of tax that would have been saved was not a small return (some 23% of total tax would have been saved by the smuggling).

4.1.2 Seizures and the Practical Problems of Enforcement

Enforcement Agencies

Enforcement against vessels is carried out by the Marine Enforcement Division and/or the Marine Strike and Support Division of the C&ED, and the Marine Region of the Hong Kong Police Force (Marine Region).

The Marine Region (Police) carries out patrols and has Regional Crime Units to carry out investigations of smuggling by sea.

The Marine Region carries out patrols and has Regional Crime Units to carry out investigations of crimes by sea. It is responsible for, *inter alia*, enforcing the laws of Hong Kong in regional waters and preventing smuggling by sea. With a fleet of 120 launches and craft, it patrols some 1,651 square kilometres of waters within Hong Kong. According to government publications, its recent enforcement developments include:¹⁸³

- Since 2010, adoption of a Versatile Maritime Policing Response (VMPR) strategy, which integrates technologically-advanced coastal surveillance systems with an enhanced radar system and a new fleet of fuel efficient high-performance vessels to provide a fast, effective and flexible approach in the execution of its statutory duties; and

- Since the implementation of the **International Ship and Port Facility Security Code (ISPS Code)** in Hong Kong on 30 June 2004, the Marine Region has assisted the Director of Marine Department in conducting audits of the 33 ISPS Code facilities as well as providing an enhanced response capability through the VMPR strategy.

Seizures of Live Fish

Seizures of unmanifested live fish from fishing vessels by Hong Kong enforcement officers include:

- On 26 February 2007, C&ED seized 4,630 kg of unmanifested cargo, including freshwater fish and turtles, from a local fishing vessel from Guishan, Guangdong at the waterfront south of the Marine Cargo Terminal, Hong Kong International Airport. Divisional Commander (Marine Enforcement Division), Mr. Lam Chi-keung, said on 27 February 2007 that Hong Kong Customs had maintained vigorous inspection of vessels coming in and leaving Hong Kong waters to guard against unmanifested fish;
- On 25 February 2007, C&ED seized 42,000 kg of unmanifested freshwater fish from a Mainland fishing vessel, which included freshwater groupers;¹⁸⁴
- On 9 September 2005, C&ED seized 1,716 kg of unmanifested freshwater fish, including live freshwater fish, worth about HK\$81,400 from a local fishing boat returning from mainland China. C&ED stated that it had '*stepped up enforcement and tightened inspection of vessels coming in and leaving Hong Kong waters*', and that '[the] seizure of unmanifested freshwater fish in this case [was] concrete evidence of the success of Customs enforcement actions'.¹⁸⁵

Seizures of other unmanifested cargo from fishing vessels by Hong Kong enforcement officers include:¹⁸⁶

- On 18 August 2013, C&ED seized 300 boxes of chilled salmon from a local fishing vessel that was exporting them as unmanifested cargo. Lee Choi-wah, the chairman of the Hong Kong Chamber of Seafood Merchants (HKCSM), commented that '*seafood smuggling into the mainland has always been around*', and that the route typically involves importing seafood from overseas, delivering it from the airport to a local boat, and then transporting it to the mainland;¹⁸⁷
- On 30 October 2013, C&ED seized unmanifested cargo from a fishing vessel in Hong Kong waters, which included, among other things, CITES Appendix II species (i.e. pangolin scales — note that the pangolin has been listed on Appendix I since September 2016). The press release stated that in the course of enforcement action, the fishing vessel accelerated, fled and was ultimately intercepted;¹⁸⁸ and
- On 4 December 2013, C&ED seized 2,600 kg of live geoduck clams, which were inside a secret compartment in a fishing vessel.¹⁸⁹

The extent to which enforcement relating to LRFF is carried out is unclear

It is clear from the above cases that C&ED carries out enforcement action in relation to unmanifested cargo. In conducting research for this report, no examples of prosecutions/seizures specifically relating to LRFF unmanifested cargo were identified, thus the extent to which enforcement relating to LRFF is carried out is unclear. This is in spite of C&ED's claims that vigorous inspection of vessels coming in and leaving Hong Kong waters is conducted to guard against unmanifested fish.

Problems in Enforcement

The following problems persist:

Enforcement authorities face practical difficulties in intercepting at sea

- The prosecution faces difficulty in disproving the statutory defences. As noted above, the defendant has a defence in proving that he did not know and could not with reasonable diligence have known that the cargo was unmanifested, such as through sampled inspection. As noted in the judgment of **Hong Kong SAR v Diao Rui and Chen Rong Yao HCMA 606/2013**¹⁹⁰ (unreported) above, it is often difficult for the prosecution to prove that the accused knew of the offending factors.
- Enforcement authorities face practical difficulties in intercepting at sea. Enforcement can only occur if the fish has or had actually been taken into Hong Kong waters or territory. Interception at sea must be either on Hong Kong ships, on foreign ships when in Hong Kong waters, or on foreign ships outside Hong Kong waters only when the pursuit of the ship started within Hong Kong waters and continued outside such waters uninterrupted – see below for details on the 'right of hot pursuit'.
- There are difficulties in discovering problematic cargo, whether in sea vessels or land cargo. Secret compartments used to hide seafood make smuggling activities difficult to detect during inspection.¹⁹¹
- The exemption of fishing vessels and fish carriers from reporting entry and exit to/from Hong Kong waters (Section 2.2) means that enforcement of Cap 60 Manifests: Import and Export Manifests Notice (Cap 60C) and Import and Export (Registration) Regulations (Cap 60E) is problematic regarding these vessels.
- While enforcement of manifest requirements is an important foundation for regulating the LRFFT, in practice the provision of manifests does not provide much efficacy in regulating the trade. The information required to be provided on manifests is insufficient for the purposes of monitoring and tracking the LRFFT, for instance. Nonetheless, regular reporting would lead to better understanding of volumes of trade and would help move the LRFFT towards greater accountability and transparency.

It is noted that food safety concerns in relation to seafood constituted a huge incentive to better enforce manifest requirements (see Section 2.4, Appendix B-VIII). On 17 July 2013, following a LegCo query regarding protection against high concentrations of heavy metal cadmium in shellfish, the Secretary for Food and Health responded by referring to the offence against importation of unmanifested cargo and the seizure of seafood by C&ED.¹⁹²

4.2 CITES Infringements

Past statistics and predicted performance by AFCD in respect of duties conducted under CITES are presented in Table 6.¹⁹³

TABLE 6 PAST STATISTICS AND PREDICTED PERFORMANCE BY AFCD IN RESPECT OF DUTIES CONDUCTED UNDER CITES

Endangered Species	2012/2013	2013/2014	2014/2015	2014/2015
Licences/Certificates	27,101	26,317	25,805	22,729
Species Inspections	31,563	33,426	32,363	29,694
Successful Prosecutions	131	176	249	184

Source: AFCD Annual Reports

An analysis of prosecution in Hong Kong under the CITES Ordinance is set out below.

4.2.1 Prosecutions and the Lack of Deterrent Sentencing

Hong Kong currently has a relatively lenient sentencing regime under its CITES Ordinance

Generally speaking, as compared against other jurisdictions, Hong Kong has a relatively lenient sentencing regime under CITES. It should be noted, however, that the government is currently reviewing CITES penalties with a view to increasing them. The table below sets out pertinent offences and penalties in Hong Kong, and compares them against those in the United Kingdom and Australia.

Hong Kong currently has a more lenient maximum imprisonment term compared to the United Kingdom and Australia. In particular, illegal imports/exports of Appendix I species for commercial purposes provide for a maximum of two years' imprisonment in Hong Kong. In contrast, importing or exporting CITES species in Australia, whether Appendices I, II or III (not necessarily for commercial purposes), attracts a maximum of 10 years' imprisonment. Maximum fines in Hong Kong are also generally lower.

Furthermore, the CITES Ordinance (Cap 586) currently does not provide for CITES offences to be indictable. Such offences can only be tried summarily in Hong Kong,¹⁹⁴ although at the time of writing provision is being made for indictable offences (Table 7). Since CITES offences are not indictable, there are few written judgments on these offences in the legal database. This is because summary offences are tried in Magistrates' Courts and do not result in written judgments available in the legal database. The only situation for a summary offence to be heard in a higher court is if the case were transferred to the District Court because there is an indictable offence on the same charge sheet, or if the case upon being heard in the Magistrates' Court was appealed to the High Court.

TABLE 7 COMPARISON OF MAXIMUM FINES FOR CITES SPECIES: HONG KONG, THE UNITED KINGDOM AND AUSTRALIA

Jurisdiction	Legislative Provision	Offence	Max. Fine in HK\$ ¹⁹⁵	Max. Prison Sentence
Hong Kong*	CITES Ordinance (Cap 586), section 10	Import/introduction from the sea/export/re-export/possession/control of specimens of Appendix I species, without licence, for commercial purposes	HK\$5,000,000	2 years
	CITES Ordinance (Cap 586), sections 5–9	Import/introduction from the sea/export/re-export/possession/control of specimens of Appendix I species, without licence (not necessarily for commercial purposes)	HK\$100,000 ¹⁹⁶	1 year
*At the time of writing submitted to the Legislative Council	CITES Ordinance (Cap 586)	Protection of Endangered Species of Animals and Plants (Amendment) Bill, 2017 proposes the following changes to Cap 586:		
	Sections 5–9	Appendix I summary offences Appendix I on indictment	HK\$5,000,000 HK\$10,000,000	2 years 10 years
	Sections 11–15	Appendix II and III summary offences Appendix II and III on indictment	HK\$500,000 HK\$1,000,000	1 year 7 years
United Kingdom	EU Council Regulation 338/97 and Control of Trade in Endangered Species (Enforcement) Regulations 1997/1372, Regulation 8	Purchases, offers to purchase, acquires for commercial purposes , displays to the public for commercial purposes, uses for commercial gain, sells, keeps for sale, offers for sale or transports for sale any specimen of a scheduled species , ¹⁹⁷ without permit/certificate	Summary conviction: HK\$60,000 ¹⁹⁸ Conviction on indictment: no limit specified	Summary conviction: 6 months Conviction on indictment: 5 years
Australia	Environment Protection and Biodiversity Conservation Act 1999, sections 303CC and 303CD	Import/export of CITES specimens without licence (not necessarily for commercial purposes)	HK\$1,022,000 ¹⁹⁹	10 years
	Environment Protection and Biodiversity Conservation Act 1999, section 303GN	Possession of CITES specimens ²⁰⁰ (not necessarily for commercial purposes)	HK\$1,022,000 ²⁰¹	5 years

The measures proposed in the Cap 586 Amendment Bill²⁰² would address some of these concerns.

The Court of Appeal has stated that the prime considerations in sentencing offenders for breaches of CITES should be protection and deterrence.

Imprisonment for trade in critically endangered species is rare

1. In the case of **HKSAR v Xie Jinbin [2011] 2 HKLRD 631**, concerning theft and exploitation of a protected tree,²⁰³ the Court of Appeal emphasised the need for a '*clear and strong message*' of deterrence, having regard to the purpose of CITES.²⁰⁴ In reality, however, most sentences for breaches of CITES imposed under Cap 586 are lenient. Imprisonment for trade in (as opposed to theft of) critically endangered species is rare, and even when jail terms are imposed, sentences are short.

2. In the High Court case of 香港特別行政區 訴曾偉強 HCMA 44/2009 (unreported), 25 June 2009, the defendant was reported to have been sentenced to a fine of only HK\$1,200 for possessing an Appendix I scarlet macaw contrary to s.9 (1) and (2) of Cap 586.
3. The case of HKSAR v Cheung Mo Tak HCMA 89/2012 (unreported), 8 June 2012, further demonstrated the leniency shown by Hong Kong courts to smugglers of endangered species. In that case, the Court of First Instance reviewed and upheld a sentence of only two months' imprisonment for a woman who pleaded guilty to smuggling into Hong Kong two rhinoceros horns (a CITES Appendix I listed species). The horns, valued at HK\$1.3 million, were destined for the Mainland. While the maximum penalty for the offence is one year's imprisonment, the Magistrate took a starting point of three months' imprisonment for the offence. The sentence was then discounted by one third for the guilty plea. On appeal, the Court of First Instance judge ruled that the sentence of 2 months' imprisonment was adequate, despite evidence before the court that the criminal operation, in which the defendant had a role, was involved and elaborate, and that the defendant had, by her own admission, trafficked rhinoceros horn before.
4. On 15 June 2012, in the unreported decision on HKSAR v Zhang, heard at Tsuen Wan Magistracy, a Chinese national was convicted of illegally smuggling 43 critically endangered Palawan forest turtles (a CITES Appendix II listed species) into Hong Kong from the Philippines. It was the second time the defendant had been caught smuggling endangered species into Hong Kong. In February 2012, he was convicted of illegally smuggling 60 reptiles, including 20 Palawan forest turtles, into Hong Kong and was fined HK\$8,000. While liable to a maximum of two years' imprisonment, the defendant was sentenced to just six weeks' imprisonment for his second offence in four months.
5. On 15 March 2014, in the unreported decision of Magistrate Joseph To Hoshing on HKSAR v Sameh and Abdelaziz, Tsuen Wan Magistracy, two men were convicted of illegally smuggling 128 spider and radiated tortoises into Hong Kong (both CITES Appendix I listed species). The court accepted that the market value of the animals was HK\$320,400, but imposed a fine of only HK\$45,000 on the principal offender, suspending a two-month prison term for 18 months.

While serious CITES violations continue to be tried in the main by Magistrates, the ongoing penalty review and government intention to introduce indictable offences provide some hope that this will change.

4.2.2 Relevance of the Organized and Serious Crimes Ordinance (OSCO)

In the event the case is tried in the District Court or the Court of First Instance, those prosecuting offenders for theft involving endangered species would do well to note the provisions of s.27 of the **Organized and Serious Crimes Ordinance (OSCO) (Cap 455)** (Appendix B-XI). S.27 provides that on an application for enhancement of sentence in respect of certain '*specified offences*' (which includes, amongst other things, offences such as theft and importing or exporting unmanifested cargo),²⁰⁵ a judge can raise the usual tariff for the offence, if satisfied that it was an organised crime.

1. In the Court of Appeal decision, **HKSAR v Wen Zelang [2006] 4 HKLRD 460**, it was held that, given the prevalence of the theft of incense trees (*Aquilaria sinensis*), an enhancement of sentence under s.27 of OSCO by 25% was not excessive.
2. In **HKSAR v Zheng Yaohui DCCC 1/2013** (unreported), 14 March 2013, it was noted that the usual sentence for theft of the endangered tree (three years after trial) should be enhanced by 25% to reflect the prevalence of the crime. The Reasons for Sentence specified that '*[as] said, the Court of Appeal had clearly expressed its view that a deterrent sentence is necessary for this type of offence.*'²⁰⁶
3. A more recent case related to the theft of incense trees, **HKSAR v Wang Quanwen CACC 263/2014** (unreported), 27 March 2015, again demonstrated the court's use of power to enhance sentences for that specified offence, and allowed the prosecution's application under s.27 of OSCO to enhance the theft sentence on the ground of '*the nature and extent of any harm, whether direct or indirect, caused to the community by the recent occurrences*' of the specified offence. The Court of Appeal upheld the lower court's sentencing decision. The total weight of the relevant wood was of a far greater amount and value than both **HKSAR v Wen Zelang** and **HKSAR v Xie Jinbin**. The lower court judge took a starting point of four years, which was ultimately reduced to three years and four months, taking into account the appellant's guilty plea and applying a 25% enhancement pursuant to s.27(2)(d) of OSCO. In affirming that sentence, the Court of Appeal noted that '*[the] whole purpose of enhancement is to create a final sentence which contains additional elements of punishment and deterrence.*'

The discrepancy in sentencing between cases based on convictions for theft of endangered incense trees and cases based on convictions for CITES offences highlights the inadequacy of sentencing powers in legislation specific to wildlife crime. Power to enhance sentences would become available if CITES offences were included as '*specified offences*' under OSCO. As OSCO already lists the import and export of '*certain prohibited items*' as contrary to sections 6C and 6D of the **Import and Export Ordinance**, the inclusion of CITES-listed specimens to

the schedule of '*certain prohibited items*' (i.e. by amending Part 2 of Schedule 1 of the **Import and Export (General) Regulations (Cap 60A)**) would allow CITES offences to benefit from the provisions of OSCO.

Besides enhanced sentencing powers, other powers available under OSCO include further investigative powers available to the police. Notably, Interpol's Environmental Security Task Force endorses the use of specialist-trained police to combat wildlife crime. These would be made available were CITES crimes recognised under OSCO.

4.2.3 Seizures and Practical Problems of Enforcement

In terms of the practicality of enforcement under the CITES regime, there is an Informers Reward Scheme, wherein members of the public are encouraged to provide information on illegal import, export and possession of endangered species to AFCD. A Registered Informer who provides reliable information leading to the successful seizure of endangered species or conviction will be rewarded with cash.²⁰⁷

There are concerns as to the sufficiency of training of government staff in terms of identification of endangered and protected species

There are, however, concerns as to the sufficiency of training of government staff in terms of identification of endangered and protected species, which is a crucial part of CITES enforcement. AFCD and WWF jointly published an identification manual to assist government officers in the recognition of fish species, and to assist traders in making consistent trade declarations.²⁰⁸ The Pew Charitable Trusts also provided training to AFCD and C&ED on shark fin species identification in 2015/2016 (following the introduction of five additional shark species into **Cap 586** in 2014).

A difficulty faced by enforcers is proving that the fish was caught outside Hong Kong waters

A difficulty faced by enforcers, specifically in relation to CITES (but not offences of unmanifested cargo), is proof that the fish was caught outside Hong Kong waters. This is because CITES only creates offences in relation to international trade, not trade in locally caught species.

The fish must also be brought within Hong Kong waters to come within the meaning of importation and be caught by the offences of CITES and unmanifested cargo.

Further, the same difficulties pointed out in acting against unmanifested cargo, being the limitations of intercepting at sea and problems with discovering concealed cargo, apply equally to CITES enforcement. In the latter case, AFCD is not fully capacitated for law enforcement or organised crime investigations. This would otherwise be possible with police force involvement.

4.3 Jurisdiction to Prosecute

The main bases of jurisdiction are territorial jurisdiction, extraterritorial jurisdiction by legislation and nationality/personality jurisdiction. For jurisdictional purposes, Hong Kong territory consists of the land mass, internal waters (including ports) and their beds, territorial sea and its subsoil, and the air space above these parts.

Hong Kong's territorial sea is 12 nautical miles, measured from its baselines. Within these territorial perimeters, Hong Kong has the right to exercise jurisdiction over persons, property, acts or events.²⁰⁹

Hong Kong has adopted the 'objective territorial principle'

In respect of its criminal jurisdiction, Hong Kong has adopted the 'objective territorial principle', i.e. an offence is deemed to have been committed within the territory if it was completed or intended to be completed therein.²¹⁰

Further, it has come to be accepted (and reaffirmed by Hong Kong courts) that the legislature, acting in the interests of '*peace, order and good government*', may legislate extraterritorially against any conduct deemed contrary to these interests (see for example **Somchai Liangsiriprasert v Government of the USA [1990] HKLR 85**).²¹¹

Similarly, the legislature is empowered to legislate extraterritorially to the extent required to give effect to an international agreement that applies to Hong Kong. Examples include:²¹²

- **Aviation Security Ordinance** (offences against safety of aircraft and acts of violence committed during hijacking or attempted hijacking);
- **Crimes Ordinance** (application of the criminal law to Hong Kong ships on high seas – s.23B; extraterritorial effect of sexual offence provisions listed in Sch.2 – certain sexual offences committed against children outside Hong Kong; related arrangements and advertisements – ss.153P, 153Q and 153R);
- **Crimes (Torture) Ordinance** (offence of torture committed in Hong Kong or elsewhere – s.3);
- **Dumping at Sea Ordinance** (control over non-Hong Kong aircrafts, vessels and other marine structures – s.15);
- **Internationally Protected Persons and Taking of Hostages Ordinance** (attacks and threats of attack on protected persons committed outside Hong Kong by any person whatever nationality – s.3);
- **Merchant Shipping (Prevention and Control of Pollution) Ordinance** (extensive intervention powers, including the sinking and destruction of any ship, in relation to incidents on the high seas involving spillage of oil and other hazardous substances);
- **Prevention of Child Pornography Ordinance** (addition to Sch.2 of the Crimes Ordinance – sexual offence provisions that have extraterritorial effect); and
- **United Nations (Anti-Terrorism Measures) Ordinance** (extraterritorial jurisdiction in respect of acts that occur outside Hong Kong – s.11).

Particularly relevant to LRFF vessels is the '*personality principle*', where jurisdiction may be extended by a state to crimes or civil wrongs committed outside the territory by its nationals

Particularly relevant to LRFF vessels due to flag nationality is the '*personality principle*', where jurisdiction may be extended by a state to crimes or civil wrongs committed outside the territory by its nationals. Several statutes provide for the exercise of criminal jurisdiction on such a basis. The Crimes Ordinance covers acts committed by '*residents of the HKSAR*' on board a 'Hong Kong ship' in any port or harbour outside Hong Kong, or on board a ship that is '*neither a Hong Kong ship nor a ship to which the person belongs*' (s.23B). Similarly, the Dumping

at Sea Ordinance extends enforcement powers over '*Hong Kong aircraft, Hong Kong vessels and other Hong Kong marine structures, wherever they are*'.²¹³

As defined in these ordinances, the '*nationality*' anchor in respect of persons takes the form of permanent residence (as evidenced in registration and the issuance of an identity card), whereas in respect of ships or aircraft, it is the mere registration or licensing of the ship or aircraft.²¹⁴

Flags of Convenience represent a prosecutorial challenge for jurisdictions that enforce fishing regulations

Due to the flag state system (Section 3.1), foreign ships may be operating under a FoC. The flag states of FoC allow ships to register and operate under their flag, without the intention and/or the means to enforce regulations, including fisheries regulations. They represent a prosecutorial challenge for jurisdictions that do enforce fisheries regulations. Around 32 to 40 ship registries are considered FoC.²¹⁵ Vessels operating under FoC relevant to the LRFFT are not limited to fishing vessels, but include support, refuelling and transshipment.

There is the right of hot pursuit regarding foreign vessels in Hong Kong waters

In respect of vessels without Hong Kong nationality but which have been in Hong Kong waters, there is the right of hot pursuit. Article 23 of the **Convention on the High Seas of 1958** gives a right of pursuit of foreign ships, even outside the state's territorial sea (depending on whether such pursuit commenced in the state's waters), where the state believes the ship has violated the state's laws. This would be relevant where foreign ships are believed to have violated Hong Kong's customs regime in respect of unmanifested or undeclared fish (Appendix B-XII).

4.4 Summary of General Enforcement and Prosecution Issues in Hong Kong

In sum, enforcement authorities face difficulties in carrying out proper inspections, such as identifying species in trade under CITES, discovering concealed cargo and intercepting vessels at sea, as well as following up with criminal investigations. Furthermore, there are complications with detecting infringements concerning transshipment to which CITES and manifests requirements still apply (such as vessels covered by the fishing craft exemption).

According to government responses upon enquiry, an airline as the carrier of cargo shipment is expected to have full details, including the itinerary of the cargo concerned. Transshipment cargo is subject to the same control measures and customs clearance procedures applicable to import cargo in Hong Kong.²¹⁶ This includes being selected for customs inspection based on risk assessment. ■

INTERNATIONAL LAW AND AGREEMENTS

International law provides a 'model' for changes in local regulations

5.1 Introduction

International law is relevant, both in terms of the duties that apply to Hong Kong and also where Hong Kong is not party to the international legal instrument in question, as it provides a 'model' for changes in local regulations so Hong Kong can work towards attaining international best practice.

Generally, Hong Kong is said to possess '*a high degree of international legal personality falling short of Statehood*'.²¹⁷ Hong Kong is endowed with considerable power over external affairs²¹⁸ and, under **Basic Law** Article 151, may on its own conclude and implement agreements with states, regions and relevant international organisations in appropriate strategic areas, which expressly include trade and shipping.²¹⁹

Academic articles have emphasised that Hong Kong's status as an international legal person is not necessarily diminished by any failure on the part of the government to make full use of its wide external affairs powers and responsibilities, or by any reluctance on the part of the court to apply rules grounded in customary international law and other '*softer*' sources of international law.²²⁰

With regard to the application of treaties entered into by the PRC and treaties entered into by the UK and extended to Hong Kong before 1997, under **Basic Law** Article 153:

- The application to Hong Kong of international agreements to which the PRC is or becomes a party shall be decided by the Central People's Government, in accordance with the circumstances and needs of Hong Kong, and after seeking the views of the Hong Kong government.
- International agreements to which the PRC is not a party but which are implemented in Hong Kong may continue to be implemented. The Central People's Government shall, as necessary, authorise or assist the government of the Region to make appropriate arrangements for the application to the Region of other relevant international agreements.
- It should be noted that treaties may, at the same time, be applied to Hong Kong but not to the PRC.²²¹

Article 152 of the **Basic Law** also provides for representatives of the Hong Kong government to participate in international organisations or conferences in appropriate fields limited to states and affecting the Region as members of delegations of the PRC or in other appropriate capacities.²²²

Hong Kong operates a 'dualist' system, whereby the executive branch enters into treaty obligations, and law-making is vested in the legislature.

In terms of the application of international law in domestic law, Hong Kong operates a 'dualist' system, whereby the executive branch enters into treaty obligations, but the law-making function is vested in the legislature. Therefore, unincorporated treaties do not automatically possess the force of domestic law.²²³

5.2 UN Convention on the Law of the Sea (UNCLOS) (1982)

As noted above, **UNCLOS (1982)** applies to Hong Kong. It provides for articles regarding conservation of living resources and fish stocks. However, some articles are not directly relevant to Hong Kong's regulation of the LRFFT, as they relate only to living resources and fish stocks in a coastal State's own exclusive economic zone. Hong Kong's LRFF are sourced from coastal areas outside Hong Kong. There is also a generalised duty on the conservation of living resources on the high seas, but such duty is worded too generally to immediately translate into enforcement action by Hong Kong. The provisions are set out in Appendix B-XIII and address:

- The conservation of living resources and conservation measures;
- Management of fish stocks; and
- Enforcement of laws and regulations of the coastal State.

In addition, available scientific information, catch and fishing effort statistics, and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organisations, whether sub-regional, regional or global, where appropriate and with participation by all states concerned.

5.3 FAO Instruments

5.3.1 Introduction

The FAO has developed several international fisheries instruments aimed at providing a framework for establishing a more adequate system of ocean governance including:

- The FAO Compliance Agreement (1993);
- The United Nations Fish Stocks Agreement (1995);
- The Code of Conduct for Responsible Fisheries (1995);
- International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (2001);
- Port State Measures Agreement (2009); and
- Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels.

5.3.2 The FAO Compliance Agreement (1993)

The **Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas** (referred to as the **Compliance Agreement**) was an agreement to promote compliance with international conservation and management measures by fishing vessels on the high seas. It arose out of attempts to prevent the practice of reflagging of vessels in order to avoid the application of high seas conservation and management measures determined by regional fishery organisations.

Essentially, the problem was that only vessels flying the flags of the Parties to regional fishery organisations could be compelled to comply with the conservation measures determined by it. Some vessels were then registered in countries that were not bound by the conservation measures in question. The vessel could then fish with impunity in an area subject to conservation measures, claiming that it was not bound by those measures under international law because its State of registration was not a Party.²²⁴

In September 1992, the FAO Council *'agreed that the issue of reflagging of fishing vessels into flags of convenience to avoid compliance with agreed conservation and management measures [...] should be addressed immediately by FAO, with a view to finding a solution which could be implemented in the near future.'* The FAO Conference, at its Twenty-Seventh Session (November 1993), through Resolution 15/93, approved the Compliance Agreement for submission to governments for acceptance. Pursuant to Article X.1, the Agreement is open to acceptance by any Member or Associate Member of FAO, and to any non-member State that is a member of the United Nations (UN), or of any of the specialised agencies of the UN or the International Atomic Energy Agency.²²⁵ The Agreement entered into force on 24th April 2003.

Neither China nor Hong Kong is a signatory to the Compliance Agreement.^{226,227}

Building on the general framework of the **1982 UNCLOS**, the **Compliance Agreement** (Box 6) seeks to address the threat to international fisheries management posed by vessels that do not abide by agreed fishing rules. The Agreement contains three basic requirements:

The Compliance Agreement seeks to address the threat to international fisheries management posed by vessels that are not abiding by fishing rules

- Each flag state must ensure that its vessels do not engage in any activity that undermines the effectiveness of international fishery conservation and management measures, whether or not the flag state is a member of the regional fishery organisation that adopted such measures;
- No flag state shall allow any of its vessels to be used for fishing on the high seas unless the flag state has specifically authorised it to do so; and
- No flag state shall grant such authority to a vessel unless the flag state is able to control the fishing activities of that vessel.

BOX 6 THE COMPLIANCE AGREEMENT

The **Compliance Agreement** applies to '*fishing vessels*', meaning '*any vessel used or intended for use for the purposes of the commercial exploitation of living marine resources, including mother ships and any other vessels directly engaged in such fishing operations*' (Article I). The term '*directly engaged in fishing operations*' suggests that LRFF carrier vessels are not included. The primary substantive articles are presented in Appendix B-XIV. Moreover, LRFF vessels are not known to be active on the high seas as the fish they collect are supplied to them in coastal waters.

To abide by these rules, flag states must actively oversee the high seas fishing operations of their vessels. Parties may exempt vessels less than 24 metres (i.e. around 79 feet) (Article II). However, in the event that a Party has granted an exemption for fishing vessels of less than 24 metres:

'such Party shall nevertheless take effective measures in respect of any such fishing vessel that undermines the effectiveness of international conservation and management measures. These measures shall be such as to ensure that the fishing vessel ceases to engage in activities that undermine the effectiveness of the international conservation and management measures (Article III).'

From interviews conducted with LRFF traders in Hong Kong,²²⁸ LRFF-related vessels range from 80 feet (24.4 metres) to 150 feet (45.7 metres), indicating that they generally would not be caught by the 24-metre exemption.

Parties must decide on a case-by-case basis whether to authorise any vessel to fish on the high seas. They may not permit any vessel to fish on the high seas at all unless they are able to prevent the vessel from undermining agreed conservation rules. The Agreement also seeks to increase the transparency of high seas fishing operations through the collection and dissemination of data. Parties must submit to FAO a wide range of information on each of their respective high seas fishing vessels.

The efficacy of the **Compliance Agreement**, particularly in relation to PSC (which would be the main role of trade route/consumer jurisdictions such as Hong Kong), has been called into question. The problems are succinctly summarised:²²⁹

'Although legally binding, the effectiveness of these provisions entirely depends on the good will of flag states, because no specific consequences are provided for in the case of non-compliance. In fact, port states control is not addressed in the Agreement, except in Article 5(2), which suggests that the Parties should make arrangements regarding the undertaking by port states of investigatory measures as may be considered necessary to establish whether a fishing vessel, that is voluntarily in the port of a state other than its flag state, has been used contrary to the provisions of the Agreement.'

5.3.3 The UN Fish Stocks Agreement (1995)

The UN Fish Stocks Agreement opened for signature in 1995 and came into force in 2001.²³⁰ As of 23 May 2017, 86 states have ratified this Agreement, with Thailand, an important source of LRFF (see Part I), being the most recent country to ratify (28 April 2017).²³¹

The Agreement provides for the establishment of '*Regional Fisheries Management Organisations*' (RFMOs), and sets out comprehensive areas in which such organisations will have competence, covering scientific research, stock assessment, monitoring, surveillance, control and enforcement (Article 10).

In the early 1990s, a consensus developed among the States that the general provisions of UNCLOS requiring cooperation between States in the conservation and management of high seas fisheries resources (Articles 117–120) needed strengthening. This led to the **1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks**, also known as the **United Nations Fish Stocks Agreement**.²³²

The **UN Fish Stocks Agreement** seeks to build upon two provisions of UNCLOS:

- All States have a duty to ensure that their nationals comply with conservation measures adopted for high seas stocks (UNCLOS 1982, Article 117); and
- On the high seas, States have jurisdiction over vessels flying their flag (UNCLOS 1982, Articles 90–98).²³³

It also represents a more concerted effort with regards to PSC. See 'The "Genuine Link" Concept in Responsible Fisheries: Legal Aspects and Recent Developments, *FAO Legal Papers Online*':

*'On the one hand, the 1995 UN Fish Stocks Agreement seems to restate the provisions of the 1993 FAO Compliance Agreement on the duties of flag states, however, only in as far as those provisions apply to straddling and highly migratory fish stocks. On the other hand, the former addresses the issue of enforcement more thoroughly than the latter as regards the regulation of port state control and the implementation and enforcement of conservation and management measures through Regional Fisheries Management Organizations (RFMOs). The 1995 Fish Stocks Agreement actually introduces port states control in relation to fisheries matters, and regulates boarding and inspection on the high seas by members of RFMOs or parties to the Agreement, to other members of the same RFMO or other parties to the Agreement.'*²³⁴

The Agreement does not apply to China. China signed on 6 November 1996, but did not ratify this Agreement.²³⁵ It has not been signed by or applied to Hong Kong.²³⁶

5.3.4 The Code of Conduct for Responsible Fisheries (1995)

The **Code of Conduct** is a voluntary soft law²³⁷ instrument that further elaborates the evolving set of rules for fisheries governance. It spells out, inter alia, port State and flag State responsibilities for the activities of fishing vessels flying its flag, and seeks to advance management measures by agreement among States that improve the optimal and sustainable use of fisheries resources.²³⁸ It was adopted by the Twenty-Eighth Session of the FAO Conference on 31 October 1995.²³⁹ Its specific objectives are presented in Appendix B-XV.

In response to enquiries as to whether the Hong Kong government follows the Code, the government has stated that it considers the existing fisheries management measures and other relevant measures related to marine conservation implemented in Hong Kong to be generally in line with the principles laid down in the Code.²⁴⁰

5.3.5 International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing

In 2001, the members of FAO concluded an **International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)** within the framework of the **Code of Conduct for Responsible Fisheries**. It complements certain aspects of the **1993 FAO Compliance Agreement** and the **1995 UN Fish Stocks Agreement**.²⁴¹ The IPOA-IUU is a voluntary instrument.

The legal foundation of the IPOA-IUU was elaborated within the framework of the **FAO Code of Conduct for Responsible Fisheries** as envisaged by Article 2(d).²⁴²

The abstract to the IPOA-IUU summarises the status, application and objective of this instrument:

'The IPOA-IUU is a voluntary instrument that applies to all States and entities and to all fishers. Following the IPOA's introduction, the nature and scope of IUU fishing is addressed. This is followed by the IPOA's objective and principles and the implementation of measures to prevent, deter and eliminate IUU fishing. These measures focus on all State responsibilities, flag State responsibilities, coastal State measures, port State measures, internationally agreed market-related measures, research and regional fisheries management organisations. Special requirements of developing countries are then considered, followed by reporting requirements and the role of FAO.'

Flag State responsibilities (paragraphs 34–50) pertain to fishing vessel registration, record of fishing vessels and authorisation to fish.

Paragraph 48 states, *'Flag States should ensure that their fishing, transport and support vessels do not support or engage in IUU fishing. To this end, flag States should ensure that none of their vessels re-supply fishing vessels engaged in such activities or tranship fish to or from these vessels.'*

Port State measures (paragraphs 52–64) provide, among other things, that:

- *States should use measures for port State control of fishing vessels in order to prevent, deter and eliminate IUU fishing. Such measures should be implemented in a fair, transparent and non-discriminatory manner. (paragraph 52)*
- *Prior to allowing a vessel port access, States should require fishing vessels and vessels involved in fishing related activities seeking permission to enter their ports to provide reasonable advance notice of their entry into port, a copy of their authorization to fish, details of their fishing trip and quantities of fish on board, with due regard to confidentiality requirements, in order to ascertain whether the vessel may have engaged in, or supported, IUU fishing. (paragraph 55)*
- *Where a port State has clear evidence that a vessel having been granted access to its ports has engaged in IUU fishing activity, the port State should not allow the vessel to land or tranship fish in its ports, and should report the matter to the flag State of the vessel. (paragraph 56)*
- *If, in the course of an inspection, it is found that there are reasonable grounds to suspect that the vessel has engaged in or supported IUU fishing in areas beyond the jurisdiction of the port State, the port State should immediately report the matter to the flag State of the vessel and, where appropriate, the relevant coastal States and regional fisheries management organisation. (paragraph 59)*
- *States should cooperate within relevant RFMOs to develop compatible measures for port State control of fishing vessels. (paragraph 62)*

Neither China nor Hong Kong has submitted a National Plan of Action.²⁴³

5.3.6 Port State Measures Agreement (2009)

The **Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (2009)**, also known as the **Port State Measures Agreement (PSMA)**, was approved by the FAO Conference and opened for signature on 22 November 2009 by all States and regional economic integration organisations.

The Port State Measures Agreement aims to prevent, deter and eliminate IUU fishing

The main purpose of the PSMA is to prevent, deter and eliminate IUU fishing through the implementation of robust port State measures. The PSMA envisages that parties, in their capacities as port States, will apply the Agreement in an effective manner to foreign vessels when seeking entry to ports or while they are in port. The application of the measures will, *inter alia*, contribute to harmonised port State measures, enhanced regional and international cooperation, and block the flow of IUU-caught fish into national and international markets. The PSMA is binding and stipulates minimum port States measures.²⁴⁴

The legislative and operational issues in implementing the PSMA are summarised in '*A Guide to the background and implementation of the 2009 FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing*' at pp.70–77.²⁴⁵ (Appendix B-XVI)

The working assumption of PSMA is that legislative provisions should apply equally to both local vessels and foreign vessels

The PSMA provisions only apply to foreign vessels. The working assumption, however, is that any State becoming party to the PSMA would have implementing legislation in place that implements the provisions of the PSMA, without discrimination, to be World Trade Organization (WTO) compliant. That is to say, those legislative provisions should apply equally to both local vessels and foreign vessels. Urging Hong Kong to become a party to the PSMA could thus be an effective way to remedy regulatory loopholes in the oversight of the LRFFT, because the domestic implementing legislation should apply to Hong Kong-flagged and other vessels equally.

Whilst Hong Kong is not party to most of the agreements noted above that deal with IUU, it is party to the **Agreement for the Establishment of the Asia-Pacific Fishery Commission**, Baguio, 26 February 1948, as amended in 1976, 1993 and 1996, which promotes '*the full and proper utilization of living aquatic resources by the development and management of fishing and culture operations and by the development of related processing and marketing activities in conformity with the objectives of its Members*'.²⁴⁶

On a transnational level, it is encouraging to see a growing international commitment to take action against IUU. In particular, beyond North America and Europe, countries in East and Southeast Asia are taking further initiatives.

For example, Indonesia has urged the international community to consider IUU fishing as a form of transnational organised crime due to its grave environmental and economic repercussions,²⁴⁷ and has been cracking down on illegal fishing vessels, including from China.

The Agreement entered into force on 5 June 2016. As of 22 June 2017, there were 48 Parties to the Agreement including LRFFT source and trading countries such as Thailand and Indonesia, but excluding China, Malaysia and the Philippines.²⁴⁸

China and Hong Kong are not signatories.²⁴⁹

5.3.7 Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels

The Global Record aims to provide a powerful tool to prevent, deter and eradicate IUU fishing activities

The **Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels (Global Record)** is a voluntary, phased and collaborative global initiative to make information available on vessel identification, and to provide a reliable and rapid way to contrast such data with other sources. Fishing vessels are included, in addition to other vessels involved in fishing operations.

The main objective of the Global Record is to provide a powerful tool to prevent, deter and eradicate IUU fishing activities, making it more difficult for vessels to operate outside the law.

The Global Record hopes to create synergies with other international instruments like the PSMA and the **Voluntary Guidelines for Flag State Performance**. The Global Record was endorsed by FAO Member States through the FAO Committee on Fisheries (COFI) as one of the main global tools to combat IUU fishing.²⁵⁰ This initiative appears to still be under development.

On 6 June 2014, FAO reported that work on the Global Record has progressed. FAO presented a Strategy Document on the proposed way forward for the Global Record,²⁵¹ and demonstrated a Prototype System at the Side Event on IUU fishing at COFI 31.²⁵² There is no indication, however, that Hong Kong is part of this initiative. The first meeting of the Global Record Informal Open-Ended Technical and Advisory Working Group was held on 23–25 February 2015. The meeting, which was attended by 25 participants from FAO Members and Observers, addressed key issues relating to the Global Record, such as its scope, system development and governance framework. The participants' list, however, did not include any representatives from Hong Kong.²⁵³ So far, work on the Global Record has been carried out partially through the support of several donors such as Australia, the EU, the Republic of Korea, the UK and the US.²⁵⁴

Most international seafood trade is now bound by WTO trade agreements.

5.4 World Trade Organization (WTO)

5.4.1 Issues Arising from Extraction and Use of Natural Resources

The World Trade Organization (WTO) was established in 1995 as the successor to the **General Agreement on Tariffs and Trade (GATT)** founded after World War II. The system of international trade rules was developed through a series of trade negotiations or rounds held under **GATT**. With the accession of China in November 2001, Vietnam in January 2007 and the Russian Federation in August 2012, the major fishery producing and/or consuming countries are now members of the WTO, and most international seafood trade is now bound by WTO trade agreements.²⁵⁵

The WTO framework is referenced and recognised as an important set of rules with which new measures must be consistent. IPOA-IUU Paragraph 65 states that internationally agreed market-related measures *'are to be implemented in a manner which recognizes the right of States to trade in fish and fishery products harvested in a sustainable manner and should be interpreted and applied in accordance with the principles, rights and obligations established in the World Trade Organization, and implemented in a fair, transparent and non-discriminatory manner.'*

Trade rules on the extraction and use of natural resources were thoroughly examined in the WTO's *'World Trade Report 2010: Trade in natural resources'*.²⁵⁶ At the outset, it must be noted that Hong Kong's link to LRFF conservation might be considered extraterritorial. The application of the following rules and exceptions for natural resources products might be limited insofar as the natural resources of LRFF, which trade measures seek to protect, are not within the territory of Hong Kong.

The WTO rules that are most relevant to the LRFFT are:

1. Generally, trade must adhere to the principle of non-discrimination, which prohibits measures restricting trade (such as imposing certain conditions on imports of LRFF from certain countries); and
2. The trade measures that might fall into certain exceptions, in particular:
 - Measures that are necessary to protect human, animal or plant life or health (exception at Article XX (b)); or
 - Measures that are related to the conservation of exhaustible natural resources (exception at Article XX (g)).

Article XX General Exceptions are provided in Appendix B-XVII for reference.

A WTO member may apply trade-related environmental measures if it falls under a WTO exception

In brief, a WTO member may apply its trade-related environmental measure if the measure falls under one of the exceptions related to the protection of the environment, usually being those in paragraphs (b) and (g) of Article XX. Pursuant to these two paragraphs, WTO members may adopt policy measures that are necessary to protect human, animal or plant life or health, or relate to the conservation of exhaustible natural resources.

To introduce trade-related environmental measures, a WTO member must establish a connection between its environmental policy goal and the measure at issue.

The member must demonstrate that the measure satisfies the requirements in the exception, and that it is not applied in a manner which would constitute '*a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail*', and is not '*a disguised restriction on international trade*'.

In order for a trade-related environmental measure to be eligible for an exception under Article XX paragraphs (b) and (g), the member has to establish a connection between its stated environmental policy goal and the measure at issue. Measures necessary to protect human, animal or plant life or health have included protecting dolphins, as an example. Measures relating to the conservation of exhaustible natural resources have included policies aimed at the conservation of tuna, salmon, herring, dolphins and turtles.

In justifying that the measure is 'necessary' to protect human, animal or plant life or health under Article XX (b), the following are considered:

- The contribution made by the measure;
- The importance of the common interests or values protected; and
- The impact of the measure on international trade.

Comparisons are then made with possible alternatives, which may be less trade restrictive while providing an equivalent contribution to the achievement of the objective pursued.²⁵⁷

Under Article XX (g), the measure has to be primarily aimed at the conservation of exhaustible natural resources for the exception to apply. Further, there is a requirement of 'even-handedness', which means that the measure to protect the exhaustive natural resources must be in force and restrict imported products, domestic production and consumption products.

The three cases below illustrate the application of WTO rules to marine conservation issues:

1. *United States — Tuna-Dolphin I (Mexico)*: Prohibition on importing tuna caught using methods that incidentally killed or seriously injured dolphins. The measure was successfully challenged:
 - a) Article XX(b) did not extend to measures protecting human, animal or plant life outside of the jurisdiction of the country taking the measure; and
 - b) The US had not shown it had exhausted all options that did not infringe the rules and were reasonably available to effect the objective of protecting dolphin life, e.g. through negotiation of international co-operative arrangements. Further, the US instituted efficacy of protection as a condition (linking the maximum incidental dolphin-taking rate, which Mexico had to meet, to the taking rate actually recorded for US fishermen). A limitation on trade based on unpredictable conditions could not constitute being primarily aimed at the conservation of dolphins as meant by Article XX(g).

2. *United States — Tuna-Dolphin II (European Economic Community)*: Prohibition on tuna imports from countries that imported tuna caught using methods that incidentally killed or seriously injured dolphins. This was aimed against tuna laundering.

The measure was successfully challenged:

- a) Converse to the decision in *United States — Tuna I* on territorial jurisdiction, the panel (while not conclusively deciding on this point) noted that Article XX did not limit the location of the natural resources to be conserved, allowing for the possibility of extraterritorial application;
 - b) The measure failed to come within Article XX (g). The panel found that measures taken were an impermissible attempt to force other countries to change their policies;²⁵⁸ and
 - c) The measure failed to come within Article XX (b). The panel concluded that measures taken to force other countries to change their policies, which were effective only if such changes occurred, could not be considered 'necessary' for the protection of animal life or health in the sense of Article XX (b).²⁵⁹
3. *United States — Shrimp Turtle*: A ban was imposed on the importation of shrimp harvested with technology that may adversely affect certain sea turtles, unless the harvesting nation was certified to have a regulatory programme and an incidental take-rate comparable to that of the US (in particular, that the harvesting nation harvested shrimp using turtle excluder devices).²⁶⁰
- The measure was successfully challenged:
- a) The measure to protect sea turtles *would* be legitimate under Article XX, provided certain criteria such as non-discrimination were met; and
 - b) The US measure was disallowed, not because it sought to protect the environment but because it discriminated between WTO members. It provided countries in the western hemisphere — mainly in the Caribbean — technical and financial assistance and longer transition periods for their fishermen to start using turtle-excluder devices. It did not give the same advantages to the four Asian countries (India, Malaysia, Pakistan and Thailand) that filed the complaint with the WTO.²⁶¹

5.4.2 Principle of Non-Discrimination: Most Favoured Nation (MFN) and National Treatment (Articles I and III of the GATT)

The principle of non-discrimination may constrain the ways in which a WTO member can impose measures to manage externalities.

The principle of non-discrimination may constrain the ways in which a WTO member can impose measures designed to manage externalities. The principle is articulated in the Most Favoured Nation (MFN) (Article I of the GATT) and National Treatment obligations (Article III of the GATT). Prohibitions and restrictions on imports and exports are also subject to a non-discrimination obligation under Article XIII of the GATT.²⁶²

A key question is whether it is consistent with the principle of non-discrimination for WTO members to treat products differently based on non-product-related process and production methods (PPMs). An example of this would be to treat products differently depending on the source of energy used in the manufacturing

process. For instance, where the value-added tax (VAT) applied to a plastic toy manufactured using 'clean' electricity is lower than the VAT applied to the same toy when it is manufactured using electricity from other sources.²⁶³

Some argue that it is consistent to treat goods with PPMs that minimise negative externalities differently from goods with PPMs that do not minimise these externalities. Others argue that policies such as these are inconsistent with the principle of non-discrimination because 'like' products are not afforded equal treatment. The basis of this argument is that different PPMs is not an appropriate basis to treat products differently that are otherwise physically identical. Many equate such discrimination with 'richer countries attempting to impose their environmental and social standards on the rest of the world'. From a legal perspective, the focus of the debate concerns the meaning of the term 'like products' as it appears in various provisions of the GATT.²⁶⁴

The analysis of likeness between two products must be undertaken on a case-by-case basis. The four criteria that have been considered in the process are:

1. the properties, nature and quality of the products;
2. the end uses of the products;
3. consumers' tastes and habits; and
4. the tariff classification of the products.²⁶⁵

Those seeking to justify differential treatment based on PPMs are likely to emphasise that in the case *EC (European Communities) – Asbestos*, the WTO Appellate Body considered the health risks associated with chrysotile asbestos fibres in its analysis of the products' properties (Appellate Body Report, *EC – Asbestos*, paras. 135–136). By analogy, it has been suggested that distinctions relating to PPMs could also be taken into account in the analysis of likeness. An example would be consumers' tastes and habits, where consumers perceive those products that minimise negative externalities differently from those products that do not.

Some commentators have interpreted the Appellate Body's decisions in *United States – Shrimp Turtle* and *EC – Asbestos* as supporting the proposition that differentiation based on PPMs is permitted by the GATT. Conversely, there are others that consider that differences in PPMs do not necessarily make products unlike. Those holding this view emphasise that the properties, end uses and tariff classification are the same for both products, even if their PPMs differ. They would refer to the GATT Panel in *Tuna-Dolphin II*, which found that '[...] Article III calls for a comparison between the treatment accorded to domestic and imported like products, not for a comparison of the policies or practices of the country of origin with those of the country of importation' (GATT Panel Report, *Tuna-Dolphin II*). It is worth noting, however, that this panel report dates back to 1994 and was not adopted by the contracting parties, which means that it was never legally binding.²⁶⁶

5.4.3 WTO Exceptions that Permit Otherwise Inconsistent Conduct (Article XX of the GATT)

Article XX of the GATT, entitled 'General Exceptions', permits WTO members to take certain actions that are inconsistent with their GATT obligations. The WTO Appellate Body has found that in order for such conduct to be protected by Article XX, a member must first show that the measure in question is of a type that is covered by one of the sub-paragraphs of Article XX. Secondly, the measure must be '*applied in a manner that is consistent with the chapeau of Article XX, which requires that measures not be applied in a manner that would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade*' (Appellate Body Report, *United States – Shrimp Turtle*, paras. 118–121).²⁶⁷

WTO recognises that a member, may need to act inconsistently with its obligations in order to manage negative externalities

In sum, the WTO recognises that a member, in certain circumstances, may need to act inconsistently with its obligations in order to manage negative externalities, such as a negative impact on the environment. In the context of trade in natural resources, the most relevant 'exceptions' are contained in Article XX of the GATT.²⁶⁸

Article XX (b)

As stated above, Article XX (b) permits the adoption of measures that are necessary to protect human, animal or plant life or health. When invoking Article XX (b), a member must first show that the policy underpinning the measure in question falls within the range of policies designed to protect human, animal or plant life or health. Next, it must prove that the inconsistent measure is necessary to fulfil the policy objective.²⁶⁹

On the first question, it is often the case that parties to a dispute will agree that the policy in question is designed to protect human or animal life, and thus falls under Article XX (b). Where parties disagree, a panel will undertake an assessment of the purported risk and determine whether the policy in question is designed to protect human or animal life from this risk.²⁷⁰ Examples of policies accepted that have been designed to protect human or animal life include that to protect dolphin life and health,²⁷¹ that against consumption of cigarettes,²⁷² and that to reduce the risk posed by asbestos fibres.²⁷³

On the second question, in *Brazil – Retreaded Tyres*, the Appellate Body stated that a determination of whether a measure is 'necessary' for the purposes of Article XX (b) involves an assessment of 'all the relevant factors, particularly the extent of the contribution to the achievement of a measure's objective and its trade restrictiveness, in the light of the importance of the interests or values at stake' (para. 156). The Appellate Body further stated that a measure will be 'necessary' if it is 'apt to bring about a material contribution to the achievement of its objective' (Appellate Body Report, *Brazil – Retreaded Tyres*, para. 151).²⁷⁴

Article XX (g)

Article XX (g) of the GATT permits the adoption of measures that are related to the conservation of exhaustible natural resources, provided that such measures are made effective in conjunction with restrictions on domestic production or consumption. In *United States – Shrimp Turtle*, the issue arose of whether the term ‘exhaustible natural resource’ refers exclusively to mineral or non-living resources, or could also encompass living and renewable resources (particularly sea turtles in that case). On the question of whether a renewable natural resource could be considered exhaustible, the Appellate Body stated:

*‘One lesson that modern biological sciences teaches us is that living species, though in principle, capable of reproduction and, in that sense, ‘renewable’, are in certain circumstances indeed susceptible of depletion, exhaustion and extinction, frequently because of human activities. Living resources are just as ‘finite’ as petroleum, iron ore and other non-living resources’ (para. 128).*²⁷⁵

Measures recognised as dealing with the conservation of exhaustible natural resources include the conservation of tuna stocks,²⁷⁶ of salmon and herring stocks,²⁷⁷ and of sea turtles.²⁷⁸

In addition to showing that the natural resource in question is ‘exhaustible’, a WTO member relying on Article XX (g) must also ensure that its measure relates to the conservation of this resource. In one dispute, this requirement was satisfied because the measure was ‘primarily aimed’ at the conservation of a natural resource (Appellate Body Report, *United States – Gasoline*).²⁷⁹ When a WTO member establishes a measure to force other members into changing their policies, and the efficacy of that measure is conditioned by whether the changes could occur, such a measure cannot be ‘primarily aimed’ at the conservation of exhaustible natural resources.²⁸⁰

In another dispute, it was noted that ‘the means and ends relationship’ between the measure and the legitimate policy of conserving an exhaustible natural resource was ‘observably a close and real one’ (Appellate Body Report, *United States – Shrimp Turtle*, paras. 142–144). Finally, the requirement that the measure be ‘made effective in conjunction with restrictions on domestic production or consumption’ has been described as ‘a requirement of even-handedness in the imposition of restrictions, in the name of conservation’ (Appellate Body Report, *United States – Gasoline*, pp.20–21).²⁸¹

Article XX (j)

Article XX (j) also deals with natural resources, but, due to the nature of its subject matter, is vastly less likely to be utilised in the context of LRFFT as compared to Articles (b) and (g). Article XX (j) allows WTO members to take measures that are essential to the acquisition or distribution of products in general or local short supply. However, any such measures must be consistent with the principle that all members are entitled to an equitable share of the international supply of such products. This provision, in its original form, was adopted for a limited period of

time to 'take care of temporary situations arising out of the war', before being accepted as a permanent provision in 1970. The phrase 'general or local short supply' was intended to apply to 'cases where a product, although in international short supply, was not necessarily in short supply in all markets throughout the world'. It was not used in the sense that every country importing a commodity was in short supply. This exception would provide WTO members with some flexibility to take trade-restrictive action when a particular resource becomes temporarily scarce. This flexibility is constrained by the requirement imposed by sub-paragraph (j) to respect the principle of equitable shares for members and the requirements of the chapeau of Article XX.²⁸²

5.4.4 Extraterritorial Scope of the Exceptions in Articles XX (b) and (g)

It is arguable as to whether there exists an implied limitation, such that a WTO member imposing a trade measure cannot invoke the general exceptions outside its territorial jurisdiction. Article XX does not specifically require that the human, animal or plant life or health being protected or the natural resources in question be within that member's territorial jurisdiction.

The following cases are relevant on this point:

1. The ***United States – Tuna-Dolphin I*** case was the first case to discuss the applicability of the exceptions to a measure taken by a member to protect resources outside its jurisdiction. In this case, the US imposed a ban on Mexico, prohibiting the importation of tuna caught using methods that incidentally tended to kill dolphins. The Panel in that case decided that the exceptions applied only if the measure was limited within its 'territorial jurisdiction'. However, the Panel's report was never adopted due to rules under the previous framework requiring a consensus to adopt the report.
2. A sequel case, the ***US–Tuna–Dolphin II*** case, involved a prohibition on 'tuna-laundering'. The US prohibited tuna products from countries that processed tuna caught by the offending countries (i.e. countries that used methods that incidentally harm dolphins). The case, converse to *US–Tuna–Dolphin I*, stated that Articles XX (b) and (g) *may* have extraterritorial effect.²⁸³ It noted that the text of the Articles did not spell out limitation on the location of the resources to be conserved, and that two previous panels have considered Article XX (g) to be applicable to policies related to migratory species of fish, and had made no distinction between fish caught within or outside the territorial jurisdiction of the disputing member.²⁸⁴ The Panel then emphasised that measures imposed on the members' own nationals and vessels were certainly covered by the Article XX exception. Again, the Panel's report was never adopted due to rules under the previous framework requiring a consensus to adopt the report.
3. Subsequently, the ***US–Shrimp–Turtle*** case explicitly gave extraterritorial scope to Article XX (g), but on a different basis. The Appellate Body did not address the question of whether or not there is an implied jurisdictional limitation in Article XX. Rather, it found that since migratory species of the turtles, being the natural resources in question, were present in US waters that provided a *nexus* for the measure to be saved under Article XX (g).²⁸⁵

There might be extraterritorial challenges in applying the Article XX exception to Hong Kong's LRFFT

There might be extraterritorial challenges in applying the Article XX exception to Hong Kong's LRFFT for the following reasons. *US–Tuna–Dolphin II* suggested that general extraterritorial application is possible, but did not conclusively state so. *US–Tuna–Dolphin II* only conclusively allowed extraterritorial application to nationals and vessels of the member operating the measures, but some of the vessels carrying out the LRFFT are not Hong Kong ships. In fact, it is not known with any certainty how much LRFF are carried on HKLFV because reporting is poor and because this had been effectively exempted until recently (Section 2.2 and Part I Section 3.8). *US–Shrimp–Turtle* allowed extraterritorial application, but only because the resources involved were migratory species that passed through US water, thus providing sufficient 'nexus'. LRFF are not generally thought to be internationally migratory species and therefore would not have this nexus with Hong Kong.

There is no clear case law demonstrating that measures addressing LRFF conservation concerns with extraterritorial effect would definitely be covered by the relevant Article XX exceptions.

5.4.5 Labelling (Technical Barriers to Trade Agreement)

A WTO member may seek to encourage better management of certain negative externalities by requiring products to bear 'eco-labels'. An eco-label is a policy instrument designed to provide consumers with information about the impact of a product (including its PPM) on the environment and on sustainable development. The rationale underpinning eco-labelling is that supportive consumers will usually select the product for which negative externalities were best managed and, in doing so, compel environmentally unfriendly producers to adjust their products and PPMs to better address these externalities.²⁸⁶

The **Agreement on Technical Barriers to Trade (TBT Agreement)** governs the use of technical regulations and voluntary product standards. The definition of technical regulations includes documents that refer to '*product characteristics or their related processes and production methods*'. Similar language is used in the definition of a standard. The second sentence of both definitions, however, refers to labelling requirements '*as they apply to a product, process or production method*'. The absence of the qualifying language '*relating to*' in the second sentence '*has been interpreted by some as providing some scope for the labelling of a non-product related process or production method (i.e. that does not leave a trace in the final product, so-called 'unincorporated PPMs') to be covered by the TBT Agreement.*'²⁸⁷

If an eco-label is regulated by the TBT Agreement, a WTO member must ensure that it is applied in a non-discriminatory manner

If an eco-label is regulated by the TBT Agreement, a WTO member must ensure that it is applied in a non-discriminatory manner to imported '*like*' products (Article 2.1, TBT Agreement). Moreover, members must ensure that the eco-label is not prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to international trade (Article 2.2, TBT Agreement). Article 2.4 of the TBT Agreement expresses a preference for the use of international standards as a basis for technical regulations where those standards exist or their completion is imminent. Under Article 2.5, whenever a technical regulation is in

WTO members have the right to adopt sanitary and phytosanitary measures to protect human, animal or plant life or health

accordance with relevant international standards, it shall be rebuttably presumed not to create an unnecessary obstacle to international trade. However, members are not required to use international standards where those standards would be an ineffective or inappropriate means for the fulfilment of the legitimate objectives pursued.²⁸⁸

5.4.6 Sanitary and Phytosanitary Measures (SPS Agreement)

The **Agreement on Sanitary and Phytosanitary Measures (SPS Agreement)** recognises that WTO members have the right to adopt sanitary and phytosanitary measures to protect human, animal or plant life or health (Article 2(1), SPS Agreement). However, the SPS Agreement imposes a number of conditions on this right.²⁸⁹

First, SPS measures must be applied only to the extent necessary to protect human, animal or plant life or health, and must be based on scientific principles and not maintained without sufficient scientific evidence (Article 2(2), SPS Agreement). Second, SPS measures must not arbitrarily or unjustifiably discriminate among WTO members where identical or similar conditions prevail (Article 2(3), SPS Agreement). Finally, members may choose to base their SPS measures on international standards (Article 3(1), SPS Agreement). Measures which conform to international standards shall be deemed necessary to protect human, animal or plant life or health, and presumed to be consistent with the relevant provisions of the SPS Agreement and the GATT (Article 3(2), SPS Agreement). Members may introduce measures which result in a higher level of SPS protection than would otherwise be achieved by measures based on international standards, provided that there is scientific justification or as a consequence of the level of SPS protection a member determines to be appropriate (Article 3(3), SPS Agreement).²⁹⁰

Article 2(4) of the SPS Agreement provides that if an SPS measure conforms to the requirements of the SPS Agreement, it is deemed to comply with the exception contained in Article XX (b). In the context of trade in natural resources, the SPS Agreement provides WTO members with a mechanism to limit, or even ban, the importation of certain harmful natural resource products without breaching their WTO obligations.²⁹¹

Import licences are sometimes used to control the import of products for conservation purposes

5.4.7 Import Licensing

Import licences are sometimes used to control the import of products for conservation purposes. For example, endangered specimens of wild animals and plants covered by the CITES Agreement (Sections 2.5 & 4.2) may be imported in exceptional circumstances, and this requires a permit. Some countries have also adopted import licensing schemes to control the importation of certain forestry products. The **WTO Agreement on Import Licensing Procedures** may be relevant in these cases. The Agreement provides that import licensing should be simple, transparent and predictable. It requires publication of information that allows traders to know how and why the licences are granted, and includes requirements regarding notifications to the WTO. The Agreement also provides guidance on how governments should assess applications for licences.²⁹² Import

licences and import quotas for fish and fishery products are still widely used by the majority of developing countries. Moreover, important markets such as Japan and the EU use them for some products.²⁹³

5.4.8 Summary of WTO Issues

Trade measures imposed on LRFF to address environmental concerns may, from the WTO perspective, constitute restrictions that in effect discriminate against trade from certain WTO members. The challenge then lies in:

- Showing that such measures are allowed under Article XX as environmental justifications meeting the requisite requirements; and
- Showing that the exceptions provided by Article XX have extraterritorial application.

5.5 Other International Legal Instruments and Principles

5.5.1 Convention on Biological Diversity

Other international legal instruments relevant to the LRFFT are CITES and the Convention on Biological Diversity (1992) (CBD). CITES has been implemented by domestic legislation and has been discussed in depth in Sections 2.5 and 4.2 above.

The Convention on Biological Diversity was extended to Hong Kong on 9 May 2011

The CBD was extended to Hong Kong on 9 May 2011. Aside from introducing the **Genetically Modified Organisms (Control of Release) Ordinance (Cap 607)** on 1 March 2011 to bring Hong Kong in line with the **CBD's Cartagena Protocol on Biosafety** (which is relevant in the case of the LRFFT in respect of Hybrid Groupers, most commonly the Sabah Grouper), the Hong Kong government considered that their existing nature conservation policies and measures were generally in line with the objectives of the Convention.

There are various articles in the CBD that could be interpreted as having bearing to the LRFFT. These include Article 3 ('*Principle*' provision) and Article 14.

Article 3 of CBD provides for an obligation to not cause transboundary harm

Article 3 provides for an obligation to not cause transboundary harm: '*States have [...] the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.*'

Article 3 is by no means a new concept in environmental law. Wording identical or similar to Article 3 has appeared in other various environmental legal instruments.²⁹⁴ It is also notable that the wording of Article 3 covers damage to all other jurisdictions, not just neighbouring jurisdictions.

A State's responsibility towards the environment outside its own territory has been recognised in international courts

A State's responsibility towards the environment outside its own territory has been recognised in international courts, but only in the limited context of pollution or directly hazardous activities, rather than regulation of imports/exports: see International Court of Justice Advisory Opinion (1996), *'Legality of the Threat or Use of Nuclear Weapons'*: *'The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.'* (paragraph 29); see also the *'Trail Smelter'* arbitration, 1938, being an earlier international arbitral declaration on the obligation to not cause transboundary harm as international law.

It is, therefore, difficult to envisage stricter LRFFT regulation based only on the relatively abstract wording of Article 3. Although Article 3 does show that the intention of the treaty is to not be limited to matters of simply cross-boundary harm, there is little precedent to assist the argument that it encompasses policies with further geographical impact that is not of pollution or directly hazardous activities, such as LRFFT regulation.

Article 14 provides for impact assessment and minimising adverse impacts beyond the limits of national jurisdiction

Article 14 provides for impact assessment and minimising adverse impacts beyond jurisdiction. Article 14(c) article provides for States to:

'(c) Promote, on the basis of reciprocity, notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to significantly affect adversely the biological diversity of other States or areas beyond the limits of national jurisdiction, by encouraging the conclusion of bilateral, regional or multilateral arrangements, as appropriate.'

However, similar to the problems with Article 3, Article 14 does not lay out specific and concrete obligations to assess and minimise impact of the LRFFT and is relatively abstract. Article 14(c) only '[encourages] *the conclusion*' of arrangements that might preserve the biodiversity of LRFF.

5.5.2 Asia-Pacific Economic Cooperation (APEC)

Under APEC Hong Kong is subject to a series of non-binding obligations and commitments

As a member of the Asia-Pacific Economic Cooperation (APEC), Hong Kong is subject to a series of non-binding obligations and commitments. These have increasingly included recognition of regional fisheries and trade-related issues. Specific recommendations²⁹⁵ relevant to Hong Kong were promulgated in 1998 including, amongst others, comprehensive monitoring of the LRFFT, support to exporting countries to control the sale of illegally captured live reef fish, and support of the development of traceability (see below).

Hong Kong is part of APEC's Oceans Fisheries Working Group (OFWG), which was established in 2011.^{296,297} Its main areas of involvement include: the conservation and sustainable use of fisheries resources; sustainable development of aquaculture and habitat preservation; development of solutions to common

resource management problems; the enhancement of food safety and quality of fish and fisheries products; and sector-specific work relating to trade and investment liberalisation and facilitation.²⁹⁸

In 2014, APEC's Ocean-Related Ministers called for the establishment of stronger cooperation among APEC members, highlighting four key areas²⁹⁹ and, notably, the following regional issues:

- Importance of enhancing marine biodiversity conservation, domestically and regionally, including in transboundary areas;
- Importance of strengthening partnerships to combat IUU through measures to keep IUU catches from entering the market; and
- Importance of ratifying or acceding to the **PSMA**, and of improving tracking of fishing vessels.

Little progress has been made under APEC in relation to regional reef fish fisheries

Despite these obligations and commitments, overall, little progress has been made under APEC in relation to regional reef fish fisheries since 1998, with the noteworthy exception of the increased resolution for codification of several LRFFT species by C&SD and the recent Hong Kong trawling ban. This is despite a clear recognition that Hong Kong should play a major role in moving towards better practices. Furthermore, it is understood³⁰⁰ that, so far, no detailed discussion on the LRFFT has been made by the APEC OFWG, and that Hong Kong has no plan to submit proposed activities related to the LRFFT.

Nevertheless, such laws and agreements are relevant in terms of the duties and obligations that apply to Hong Kong. Even where Hong Kong is not party to the international legal instrument in question, this can be a '*model*' for change in the city's regulations and standards, such that Hong Kong can work towards attaining international best practice and live up to the name of '*World Class City*'.

5.5.3 Summary of International Laws and Agreements – Hong Kong's Status

Hong Kong may be a signatory to some international agreements relevant to the LRFFT, but this is not enough to regulate the trade for sustainability

In sum, Hong Kong is signatory to some international agreements relevant to the LRFFT, but this is not enough to appropriately regulate the trade, given its level of unsustainability. There are many relevant agreements to which Hong Kong could be a signatory, not just to provide a better framework for control of the LRFFT, but also to benefit the trade in all seafood. Given that Hong Kong relies heavily on imports for its seafood, it should consider readdressing its status as regards these agreements where possible, as outlined in Table 8 below. ■

TABLE 8 SUMMARY OF HONG KONG'S STATUS REGARDING PREVIOUSLY OUTLINED INTERNATIONAL LAWS AND AGREEMENTS

Laws and Agreements	Applies to Hong Kong?	Hong Kong's Status
Convention on International Trade in Endangered Species of Wild Fauna and Flora	Yes	Local legislation under Cap 586
United Nations Convention on the Law of the Sea (1982)	Yes, but not directly relevant to Hong Kong's regulation of the LRFFT.	
FAO Compliance Agreement (1993)	No, Hong Kong has no fishing vessels engaged in harvesting activities on the high seas.	Not a signatory
United Nations Fish Stocks Agreement (1995)	China has not ratified the Fish Stocks Agreement, and Hong Kong's engagement is not known.	Not been signed by, or applied to, Hong Kong
The Code of Conduct for Responsible Fisheries (1995)	Yes	Not adopted by Hong Kong, but its relevance is recognised by the government.
International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (2001)	Yes	Hong Kong has not submitted a National Plan of Action.
Port State Measures Agreement (2009)	Yes	Not a signatory
Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels	Yes	Hong Kong does not appear to be involved.
Convention on Biological Diversity (1992)	Yes	Signatory – Developed a Biodiversity Strategy and Action Plan (2016– 2021).

COMPARATIVE LAW

IUU, traceability and trafficking have become issues of increasing importance with respect to illegal food harvesting, seafood fraud and food safety

6.1 Introduction

As fish stocks decline globally, notably so in Asia, IUU, traceability and trafficking have become issues of increasing importance with respect to illegal food harvesting, seafood fraud (i.e. mislabelling) and food safety. Several countries have established regulations with the explicit objective of combating IUU fisheries, which complement existing regulations for food labelling and marine products' import licensing that ensure product traceability, originally for food safety purposes. Compared to other jurisdictions that also have significant volumes of fish trade, Hong Kong has extremely low levels of regulation and monitoring applicable to the LRFFT. The following section provides examples of regulations implemented in such jurisdictions.

6.2 United States

6.2.1 The Lacey Act

The **Lacey Act of 1900** is a unique, overarching US law that helps to bolster the power of both domestic and international conservation laws. The Lacey Act is highly relevant to developing better practices in marine conservation – the FAO's *'A Guide to the background and implementation of the 2009 FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing'* repeatedly referenced the Act in the context of 'long arm' jurisdiction: '[relating] to fish that were caught in violation of the laws of another country but brought to port.'

Under the Lacey Act, it is an offence for any person to import, trade or sell, fish that was harvested illegally in its country of origin

A standard legal provision, based on the Lacey Act, makes it an offence for any person to undertake certain activities, such as importing, trading or selling such fish or fish products. This is a highly effective '*long-arm*' provision that strengthens regional cooperation among States, and acts as a means of deterring and preventing IUU fishing and related activities.

As noted above, the Lacey Act also casts a much wider net over trade by using a broader definition of any landing of wildlife in the US, '*whether or not such landing, bringing, or introduction constitutes an importation within the meaning of the customs laws of the United States.*' Transshipment is therefore covered.³⁰¹ A brief overview of the Lacey Act as provided by Caiti Troyer of the Arizona State University is adopted below to provide a comparison against the Hong Kong approach.³⁰²

The Lacey Act serves as a buffer of sorts to ensure that the breaking of any wildlife law (be it foreign or domestic) is considered a crime in the US. In essence, the Act prohibits any fish, wildlife or plant specimens '*taken, possessed, transported, or sold in violation of a state, federal, tribal or foreign law or regulation*'³⁰³ to be '*import[ed], export[ed], transport[ed], [sold], receive[d], acquire[d], or purchase[d]*' in any capacity (if a US law or regulation or Indian tribal law is violated) or in interstate or foreign commerce (if a State or foreign law or regulation is violated). Thus, the Lacey Act adds an additional punitive layer on top of the domestic laws already discussed, and as a means of enforcing foreign laws, regulations and rules that may not otherwise be penalised within the US. It should be noted that in the UNODC's first World Wildlife Crime Report published in 2016, a key issue raised was that due to a lack of international regulation, species that are particularly vulnerable to being trafficked can be traded legally, regardless of whether they have been sourced in contravention of national laws.³⁰⁴

There are two steps to a Lacey Act violation. The first requirement is that there must be some violation of an existing or predicate law. In order for this predicate law to be violated, the wildlife or plant, or part thereof, must be '*taken, possessed, transported, or sold in violation of any law, treaty, or regulation of the USA or in violation of any Indian tribal law*'³⁰⁵ or '*in violation of any law or regulation of any State or in violation of any foreign law*'.³⁰⁶ However, a violation of the predicate law is not enough to constitute a Lacey Act violation. The Lacey Act is only violated when a person then attempts³⁰⁷ or is able to '*import, export, transport, sell, receive, acquire, or purchase*' the animal or plant that was taken illegally.³⁰⁸ Possession of any illegally taken specimens in violation of State or foreign law within any US jurisdiction is also a violation of the Act.³⁰⁹ The major caveat to this framework is that the Lacey Act violation of state or foreign law must include interstate or foreign commerce.³¹⁰

For the purposes of the Lacey Act, the term '*import*' means to '*land on, bring into, or introduce into, any place subject to the jurisdiction of the United States, whether or not such landing, bringing, or introduction constitutes an importation within the meaning of the customs laws of the United States.*'³¹¹ This definition

allows the Lacey Act to apply to all items that are in transshipment, as well as items that have not yet been quarantined or technically imported according to customs law.³¹² The provision thus makes the Lacey Act broader than even some of its domestic, predicate laws, as it applies to all shipments that enter US territory and those that may not have even left the foreign port yet (as long as there was intention).³¹³

In addition to the prohibitions listed above, the Act also requires that all wildlife imported, exported or transported in interstate commerce be clearly marked³¹⁴ and that all plant imports be declared,³¹⁵ unless the plant or product is used only as packaging material.³¹⁶ Finally, the Lacey Act prohibits any false labelling of products or false identification of any animal or plant that is intended to be or has been '*imported, exported, transported, sold, purchased, or received from any foreign country*'³¹⁷ or '*transported in interstate or foreign commerce*'.³¹⁸

The predicate laws or regulations (or treaties for the US) that must be broken before a Lacey Act violation occurs can be either domestic or foreign. In fact, the range of laws or regulations that can serve as the predicate law to be broken is expansive. The violated law or regulation can be '*criminal, civil, or even administrative in nature and either national or local in scope*'.³¹⁹ However, there are three requirements, discussed below, that must be met for the law or regulation to qualify under the terms of the Lacey Act:

- The predicate law must be related to fish or wildlife in some way.³²⁰ In cases where there is a question of the intention and nature of the predicate law in relation to plants or wildlife, the government '*bears the burden of establishing that wildlife protection is one of the purposes of the underlying law*';
- The law had to have been '*validly promulgated and enacted*'.³²¹ That is, any law that is used as a predicate law must have been properly passed and implemented by the originating country, state, location, etc.; and
- The law must be in effect at the time of the violation. Several court cases have established the necessity that predicate state laws or regulations withstand constitutional challenges.³²² However, as long as a foreign law is in effect at the time of the Lacey Act violation, subsequent invalidation of the law is not grounds for acquittal under the Lacey Act.^{323,324}

It is important to recognise that, though a violation of a foreign law may serve as the required first step for Lacey Act violations, the procedural rules under which the Lacey Act is implemented are governed by the Act itself and not by the predicate act that has been violated.³²⁵ In this regard, rules concerning limitation periods and penalties for violations are dictated by the Lacey Act statute and regulations,³²⁶ thus avoiding '*assimilating foreign law into federal law*'.³²⁷ Although there have been challenges to the constitutionality of the Act, none have been successful.³²⁸

Civil sanctions under the Lacey Act can carry a maximum fine of US\$10,000 (approximately HK\$78,000), depending on knowledge and the market value of the wildlife, as well as '*[...] on the nature, circumstances, extent, and gravity of*

*the prohibited act committed and the violator's culpability, ability to pay, and such other matters as justice may require.*³²⁹

Criminal sanctions under the Lacey Act can either be misdemeanours or felonies (the latter is the equivalent of an '*indictable offence*' in Hong Kong). Under the Act, there can be forfeiture of wildlife, fish, plants, equipment, and/or permits and licences as follows:

Permits, licenses and stamps

- a) Most of the above can be revoked if one is convicted of a criminal violation under the Act.³³⁰

Wildlife, fish and plants

- a) Specimens are subject to '*strict-liability forfeiture*' under the Act, '*notwithstanding any culpability requirements for civil penalty assessment or criminal prosecution.*'³³¹
 - i) There is no '*innocent owner*' defence for this type of forfeiture.³³²
 - ii) The only exception to this rule is that violations of the marking prohibition³³³ are not subject to forfeiture.³³⁴

Equipment

- a) Vessels or equipment used '*in the importing, exporting, transporting, selling, receiving, acquiring, or purchasing of fish or wildlife or plants*' may be subject to forfeiture with the following conditions:³³⁵
 - i) A felony conviction must be obtained prior to forfeiture.
 - ii) The violation must involve or intend to involve the sale or purchase of the illegal specimen.
 - iii) The owner must have been a consenting party to the act or known of its illicit use in the exercise of due care. Thus, the innocent owner defence can be invoked.

6.2.2 The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act

The **Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA)**³³⁶ put forward a certification system requiring the US's National Oceanic and Atmospheric Administration (NOAA) to actively seek out nations engaged in IUU fishing and to push these nations to address the issue, after which these nations will be given certification according to their success. Nations receiving negative certification may be refused at port.

In February 2016, NOAA Fisheries announced a proposed rule,³³⁷ the first phase of a US Seafood Traceability Program, in a move that will help address IUU fishing and improve management and sustainability of fisheries globally. The rule, which specifically aims to facilitate the traceability of seafood imported into the US, requires the aggregation of fisheries data through reporting and filing procedures on species and their products that have been identified as vulnerable to IUU fishing and seafood fraud.³³⁸

To address IUU, the EU introduced a warning system, that can ban fish imports into the EU

Unregulated shipping conditions may involve cruel or injurious shipping of live specimens

6.3 Europe

6.3.1 EC 1005/2008 IUU and Traceability³³⁹

The EU's recent Council Regulation '*EC 1005/2008 – Establishing a community system to prevent, deter and eliminate IUU fishing*'³⁴⁰ requires each shipment of wild-harvested fish imports to have a catch certification, validated by the vessel's flag state and detailing the products' catch, transport vessel information and catch area among other features. The regulation was implemented in 2010, and allows the EU to first warn ('yellow card') non-cooperating countries and potentially restrict trade through a ban ('red card'), if warnings are not heeded.

As of January 2017, only Cambodia had 'red card' status, whilst Taiwan and Thailand had 'yellow cards'. The Philippines was previously carded but has been removed from the European Commission's (EC) watch list, as a result of credible progress in addressing IUU.³⁴¹

After investigating the potential for a comprehensive seafood traceability system, Canada also established a Catch Certificate Program in 2010, requiring catch certificates to accompany fish exports destined for the EU. The program imposes annual audits, ensuring that certified exports can be traced back to their associated vessels, catch area and time of capture, among conducting other trader reviews.³⁴²

6.3.2 European Food Safety Authority on Animal Welfare and New Zealand Animal Welfare (Commercial Slaughter) Code 2010

Europe: Provides valuable reference in terms of how Hong Kong can improve regulations controlling the transport, enclosure and stocking density of imported live fish. Unregulated shipping conditions may involve cruel or injurious shipping of live specimens, such as high density crowding and lack of feeding for extended periods in transit. Hong Kong currently has no such regulations, risking mistreatment of animals and the spread of zoonotic diseases.³⁴³ The European Food Safety Authority's (EFSA) regulatory recommendations on food safety and fish cruelty (see also Appendix B- XVIII) include:

- The maintenance of high oxygen availability;
- The methodology of loading fish, including physical contact between the fish body surface and other surfaces, distances fish may drop from pumps or elevators, and duration of loading;
- The length of food deprivation for fish of various species, size and temperature (of the water they are in);
- The design of container or boat wells to ensure that fish do not injure themselves, and that containers are watertight to avoid risk of biosecurity breaches due to spillages; and
- Checking and logging of the water quality and condition of the fish.

The EFSA Panel on Animal Health and Welfare recommendations are also relevant to the welfare of fish when they reach the seafood markets. Research shows that in wet markets in Hong Kong, fish are routinely kept alive on platters and surfaces for display, with no water, while they suffocate. Some are chopped through the middle and left to die slowly.³⁴⁴ Where fish are removed from water and exposed to air, their gills collapse and there is reduced oxygen intake, resulting in anoxia. The time to death is temperature and moisture dependent, but the EFSA has reported that death may take minutes to hours.³⁴⁵ The World Organisation for Animal Health (OIE), of which Hong Kong is a participant through the PRC, has stated that the most basic requirements for the welfare of fish include handling methods appropriate to the biological characteristics of the fish and a suitable environment to fulfil their needs.

The EFSA has regulatory recommendations on food safety and fish cruelty that are of important referential value.

Hong Kong has no regulations controlling the transport, enclosure and stocking density of imported live fish

Hong Kong currently has no regulations controlling the transport, enclosure and stocking density of imported live fish. Whilst the **Prevention of Cruelty to Animals Ordinance (Cap 169)** applies to these animals, active enforcement is not pursued. Without legislation to protect them, fish can be intensively stocked on boats, leaving them little room to swim and exposing them to injury from other fish. For wild-caught animals, which are used to travelling across large reef areas or migrating hundreds of thousands of kilometres at sea, the space restrictions placed on them are of particular concern.

New Zealand: Unlike New Zealand, Hong Kong has no legislative requirements for slaughtering wild fish. Guidance can be taken from the New Zealand Animal Welfare (Commercial Slaughter) Code 2010, which has been drafted to align with OIE guidelines for the slaughter of animals for human consumption. The Code applies to all finfish caught and held for killing at a later time. It requires that:

- Fish pumps, brailing equipment, nets and other fish handling equipment must be designed, maintained and used in a manner that minimises harm to live finfish;
- Where finfish are held in tanks, they must not be overcrowded to the extent that their welfare is compromised;
- Manual concussion must not be used to stun unrestrained fish;
- Killing methods must result in rapid and irreversible loss of consciousness; and
- Gill arches must not be ripped or severed in unstunned fish.

The Code identifies acceptable methods of killing fish as appropriate doses of euthanising drugs, concussion, brain spiking (by experienced handlers only) or electrical stunning (at specified levels for each species). ■

CASE STUDY:

THE HUMPHHEAD WRASSE

Implementation of CITES requirements for the Humphead Wrasse has proven to be problematic

The Humphead (Napoleon) Wrasse, *Cheilinus undulatus* (Section 2.5 and Part I, Sections 3.6 & 3.12), is listed on CITES Appendix II, the first marine food fish to be so listed globally and the only species in the LRFFT with a CITES listing. However, effective implementation of the CITES requirements of this species has proven to be problematic. As a result, and due to ongoing IUU in the LRFFT,^{346,347} decisions have been made at successive CITES Conference of the Parties to pay attention to the effective implementation of the Humphead Wrasse listing, including at the 15th, 16th and 17th meetings in 2010, 2013 and 2016, respectively. The Decisions³⁴⁸ have called for action by both exporting and importing Parties. The major legal exporter is Indonesia, and the major legal importer is Hong Kong.

There are already numerous restrictions in place, imposed by foreign governments on the trade of Humphead Wrasse:

- a) In December 2003, Australia prohibited all take and possession of Humphead Wrasse, other than for limited educational purposes and public display;
- b) In Guangdong Province, southern mainland China, permits are required for the sale of this species. These permits are domestically regulated and not related to CITES;
- c) Indonesia allows fishing only for research, mariculture and licensed artisanal fishing, and exports are only permitted by air. Export is banned from Indonesia if the fish weigh less than 1 kg or more than 3 kg and unless fish of that weight were caught by permit holders who are traditional fishermen or researchers.³⁴⁹ It imposes an annual export quota of fewer than 2,000 fish (reviewed each year), and there are national level regulations on catch sizes;

- d) All exports of live fish and CITES II species are banned from the Philippines, although this is widely ignored (see Part I);
- e) The Maldives instituted an export ban in 1995;
- f) Papua New Guinea has prohibited the export of Humphead Wrasse over 2 feet (65 cm) (total length) since 2002;
- g) Malaysia has had a zero-export quota under CITES since 2010;
- h) Niue has banned all fishing for this species since 1996;
- i) Countries that once exported the species to Hong Kong no longer permit exports, including Palau (since 1998) and Fiji, both of which control use nationally; and
- j) The Humphead Wrasse is a US National Marine Fisheries Service (NMFS) Species of Concern. Species of Concern are species about which the NMFS has some concerns regarding their status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act.

Humphead Wrasse continues to be imported and sold in Hong Kong in violation of CITES requirements

Despite the various restrictions and controls outlined above, the species continues to be:

- Sold without CITES import permits in mainland China (which requires permits for sale at the national level);
- Exported illegally from Indonesia and the Philippines aboard Hong Kong vessels and aircraft;
- Traded in Hong Kong without possession or import permits; and
- Smuggled over the border into mainland China without re-export permits.

Between 2014 and 2016, 434 Humphead Wrasse were imported into Hong Kong, according to AFCD CITES data. However, from retail market surveys, several thousand fish were estimated to have been imported. This highlights illegal imports of the species and the poor enforcement of its sales in the city. Recent surveys (Part I, Section 3.12) show (a) ongoing illegal trade but (b) much lower numbers on retail since mid-2016 — a sign that government oversight is improving.

The Humphead Wrasse is imported predominantly by sea because some of the fish collection locations are accessible only or most readily by boat (the Anambas Islands of Indonesia, for example). The species is also imported by air due to its high value, convenience in certain locations (such as out of the Philippines),³⁵⁰ and the fact that air transport reduces the risk of mortality.

Although the Humphead Wrasse is imported by both air and sea, in terms of numbers, it is likely to be imported predominantly by sea because some of the major Humphead Wrasse collection locations are accessible only by boat (the Anambas and Natuna Islands of Indonesia, for example). The species is also imported by air due to its high value (air transport is quicker and can reduce mortality (see Part I, Section 3.7), and convenience in certain locations (such as out of the Philippines)).³⁵¹ Although air exports from Indonesia are legal, mixed-fish

shipments have sometimes included this species without the necessary CITES App II permits having been issued.³⁵² In 2014–2015, hundreds more Humphead Wrasse were found on retail sale in Hong Kong than had been legally imported with CITES permits,³⁵³ and individuals continue to enter the city without the necessary paperwork, according to ongoing surveys conducted by the University of Hong Kong at retail outlets.³⁵⁴ Many of these outlets do not display their possession permits, even though they are required to do so under the conditions of these permits, and there have been at least four prosecutions since December 2015 of illegal possession at local restaurants/live seafood stalls.³⁵⁵ However, a reduction in trade has been observed since mid-2016 that may be attributed in part to increased enforcement by AFCD.

The possession permit (which is required in Hong Kong for possession of a live CITES Appendix II species) is not considered fit for purpose

Importantly, the possession permit (which is required in Hong Kong for possession of a live CITES Appendix II species) is not fit for purpose for the control of trade in this species, which has a turnaround time of less than 3–4 weeks in retail outlets, usually much shorter.³⁵⁶ The possession permit is valid for five years, and is granted for the sale of a certain number of fish which must have been imported legally. The five-year duration of the Possession Licence is very long, and as a result, potentially inappropriate for a live CITES II species with rapid (typically much less than one month) turnaround from entry to the city to sale to consumer and given that some traders do not report their transactions to AFCD in a timely manner, if at all, as required. However, the license duration could be acceptable (and therefore kept consistent with other CITES II licence durations) if there is sufficient enforcement capability to readily detect laundering during the validity of the licence by enforcement officers. This would have to be done either by tagging or chipping the live animal or using a facial recognition database to record each individual fish at import. Our work has clearly and unequivocally shown that laundering is occurring and is difficult to detect without a marking method and this needs to be effectively addressed if the 5-year validity remains.^{357,358}

Without tagging fish, it is impossible for enforcement officers to enforce the possession licence requirements

Even with regular patrols to shops and restaurants, since fish are not individually tagged, it would be impossible for officers to know whether they are counting the same or different fish from their last visit. Enforcement capacity is limited in this regard, and it is strongly recommended that the possession permit be granted for shorter time periods, or invalidated once the approved number of fish has been sold (companies are required to maintain sales records for inspection at any time by AFCD officers). Individual animals could be marked to facilitate traceability and to avoid laundering. This is common practice for CITES-listed species, including live animals, and there are now well-established marking methods, even for food fish, such as pit tags placed in the abdomen, or, for smaller volumes, individually distinctive body patterns.³⁵⁹

In summary, implementation of the Appendix II listing of the Humphead Wrasse could be improved by one or several measures:

1. Tagging or other means of identification of each fish on arrival in Hong Kong so that individuals can be tracked;
2. Closer oversight of imports of live fish into Hong Kong; as for dead fish, they could be landed at designated landing places (like FMOs) for inspection, which would make Humphead Wrasse harder to conceal;
3. Increased frequency of inspections of transaction records (CITES possession permit holders must have a record of each Humphead Wrasse transaction made and have this available for inspection);
4. Confiscations and prosecutions for cases of illegally held fish;
5. Increased penalties for violations (under review; see Table 7) including heavier fines/prison sentences and refusal to grant CITES possession permits following violations;
6. Stricter enforcement of display of possession permit violations;
7. Increased engagement by AFCD with the trade;
8. Reduction of possession permit validity to one month; and
9. Encouraging outlets to ensure that the sources from which they purchase Humphead Wrasse obtain the species legally. ■

CONCLUSION

Traders, transport and logistics agents/carriers, are exploiting a vacuum created by inadequate and outdated regulation in Hong Kong

8.1 Hong Kong has an Obligation to Act

In practice, the players in Hong Kong's LRFFT, including traders, transport and logistics agents/carriers, are exploiting a vacuum created by inadequate and outdated regulation, loopholes in the law and lax enforcement of live seafood trade into and through Hong Kong.

The rationale underlying Hong Kong's current LRFFT-related legislation and enforcement mechanisms is influenced by several perspectives: the city's free port status, customs regulations, food health concerns, environmental conservation, historical factors, and its international obligations and responsibilities. In practice, however, little consideration is given to environmental conservation and biological diversity, natural resource sustainability, commodity traceability, food safety and international obligations. The outcome is a trade in live seafood that is largely unregulated and substantially unmonitored, even for CITES-listed species, with potential health risks to consumers.

This report has highlighted weaknesses and gaps in the current regulatory framework and laws that exacerbate, if not facilitate, the current state of affairs.

Several shortcomings persist in Hong Kong's LRFFT regulatory framework

8.2 Framing the Issues

Despite a fairly comprehensive commodity census system administered by C&SD, several shortcomings persist in Hong Kong's LRFFT regulatory framework:

- While locally licensed fishing carriers (HKLFC: Class III (a)) are not legally exempted from reporting declarations and manifests, in practice, they had been exempt from customs declarations until December 2016. AFCD has attempted to compensate for the apparent under-reporting by informally collecting data from traders (by fax or phone). However, this voluntary system involves an unknown subset of imports and traders, and for almost two decades has been neither systematic nor representative;
- Government oversight of fish carrier vessels (HKLFC: Class III (a)) is problematic because these vessels do not have to report their movements (entry/exit to/from Hong Kong);
- LRFF transshipments and transit cargo by air carriers are also exempt from the requirement to furnish import declarations;
- Specificity of import declarations and manifest data is minimal (in general);
- Under the fish marketing regime, the category 'marine fish' does not include 'live fish'. This exempts locally registered vessels from landing their live fish at any specified landing points, unlike the requirement to land for dead fish;
- Because LRFF are largely outside the purview of the fish marketing regime, and because carriers have been treated as local fishing vessels by customs, the trade has been subject to very little government oversight;
- Inspections of cargo vessels carrying live seafood are difficult to undertake, given the nature of the cargo and how it is held (in water). Inspections for Humphead Wrasse can be particularly challenging, given their low numbers in trade and the ability of traders to conceal the species in underwater compartments;
- Hong Kong lags behind numerous other jurisdictions in its approach to traceability of seafood imports and oversight of vessels in relation to IUU. Indeed, these issues have yet to be properly addressed; and
- Although the Hong Kong government goes beyond the requirements stipulated in CITES Appendix II, its possession permit system for such species is flawed because it cannot be enforced effectively and is in fact being used to launder CITES-listed species, including Humphead Wrasse.

These loopholes and gaps serve to:

- Significantly hinder and undermine monitoring of the LRFFT in terms of volume and species composition;
- Facilitate and hide illegal trade;
- Limit the understanding of trade dynamics (pathways and provenance);
- Greatly underestimate the value of the trade to the city's economy;
- Expose Hong Kong citizens to health risks (i.e. ciguatera);
- Have negative implications for Hong Kong-based businesses sourcing wild fish populations;³⁶⁰ and
- Make traceability, with its implications for seafood safety and for engaging in seafood certification schemes, extremely challenging.

8.3 The Customs Regime

The Fishing Craft Exemption

As discussed above, there is evidence to show that some LRFF have been brought in by fish carriers without submitting customs declarations. This may have occurred due to misconceptions that the Fishing Craft Exemption applied to fish carrier vessels. The question now is how enforcement may be improved such that fish carriers submit both declarations and manifests for their importation of LRFF in line with their legal obligations. These requirements are not particularly onerous, bearing in mind that other cargo carriers are subject to exactly the same requirements vis-à-vis declarations and manifests.

The need to ensure fish carriers submit declarations and manifests is important from an information gathering perspective,

The need to ensure that fish carriers submit declarations and manifests for their LRFF cargo is all the more important from an information gathering perspective, as the AFCD's voluntary system for collecting information from HKLFV is neither systematic nor representative. Furthermore, since a proportion of total trade data is unknown, the information is of limited value for understanding the trade. The information collected from an unknown proportion of traders cannot, therefore, be used to extrapolate overall volumes (see Part I of this report concerning critique that the AFCD does not appear to be fully informed regarding the extent and practice of the trade, and concerning data compatibility, inconsistencies and anomalies as regards AFCD, CITES and C&SD customs data).

It should be noted that LRFF entering Hong Kong by air are not affected by the 'fish craft' declaration exemption. For LRFF entering by air, room for improvement may be in respect of transshipment (see below).

Import Manifests Lacking Specifics

In respect of manifests under the Import and Export Regulations, details required are minimal and do not include species identification. In terms of place of origin, only the place where the LRFF was loaded is required. In respect of declarations under the Import and Export Regulations, the specificity is much higher, and HKHS codes cater for some species identification. The place of origin (*'origin country'*) must be declared. This latter system is relatively comprehensive for providing a profile of trade composition.

However, while progress has been made in identifying key species in trade via C&SD's database (as regards foreign-owned sea carriers and air shipments), there remain limitations in the specificity of species identification, improvement of which would greatly enhance understanding of the trade.

Part I of this report highlighted a trend whereby chilled and frozen reef fishes are increasingly being included in the international trade in reef fishes. This is of importance because implications of overexploitation for source populations are the same whether trade is in dead or live fishes. There are, however, no data to quantify this trade in Hong Kong, since chilled/fresh/frozen reef fishes are not distinguished at any biological (species or higher taxon) level in the current

It is clear that a considerable amount of live seafood is smuggled into mainland China through Hong Kong

commodity coding (although Humphead Wrasse is distinguished by a separate code for live fish), and declarations of chilled Humphead Wrasse entering Hong Kong for personal use are exempted. The suggestion that frozen reef fishes or frozen groupers be included as a new commodity category in trade statistics could be made to C&SD when it undertakes its regular commodity code updates.

The Transshipment Exemption and Unmonitored Re-exports

Transshipment and articles in transit are exempt from certain customs regulations and legislation. Generally, transshipment comprises a large portion of Hong Kong's port cargo; however, it is not known how much LRFF pass through Hong Kong (en route to China) in this way. According to government responses upon enquiry, an airline, as the carrier of an air cargo shipment, is expected to have full details, including the itinerary, of the cargo concerned. Whilst not publicly available, the data evidently exist.³⁶¹ Although very little is known of cross-border movements by sea, it is clear that a considerable amount of live seafood is smuggled into mainland China through Hong Kong.

Regarding the data gap and LRFF entering by air, room for improvement may be related to transshipment (for which the manifest and CITES requirements apply, but the declaration requirement does not) and articles in transit (for which the manifest and declaration requirements do not apply, but the CITES requirement does). This is likely to require extremely specific legislative or regulatory amendments, applicable only to the LRFFT, as a general revision of the obligations placed on transshipment and articles in transit is unlikely.

8.4 Marine Fish Marketing Regime

The definition of '*marine fish*', should include both live and dead fishes

LRFF entering Hong Kong by sea are currently excluded from FMO records because they are not '*marine fish*' as defined under the relevant regime. Since live fish do not have to be reported to the FMO, this creates another loophole for non-reporting. It is recommended that, in order to maintain consistency and to accord with the commonly and reasonably understood use of the term '*marine fish*', this category should include both live and dead fishes. Furthermore, live fish, like dead fish, should be landed at FMO facilities (where much of the live fish imported is already landed). This would bring the live fish sector (i.e. live fish coming into the city on Hong Kong fishing vessels, but not fish carriers) under better control, and align LRFF with the way dead fish are handled by the government.

8.5 Food Safety Regime

The Food Safety Ordinance does not require (as it once did) that records be kept of the country of origin, i.e. the fishing grounds from which the fish originated. This would appear to be a serious oversight, since ciguatera is highly location-specific, even within a country, and represents an ongoing food safety risk for Hong Kong citizens. Despite government guidelines, education and information on this matter, there is no way citizens can protect themselves once such fish have

entered Hong Kong. Posters distributed to restaurants to advise the public of the issue are also rarely posted.³⁶² The matter is particularly relevant for wild-captured fish due to their sustained popularity with consumers (see Part I), despite LRFF accounting for smaller proportions of total trade volumes (in favour of cultured fish). Moreover, as wild stocks decline, traders are likely to seek supplies from sources further afield, increasing the risk of encountering ciguatoxic fishes.

8.6 The Need for Enhanced Enforcement

8.6.1 The Endangered Species Regime

The inadequacy of government oversight of the Humphead Wrasse under CITES led to a Decision at CITES CoP15³⁶³ to form a working group to look into the issue. Subsequently, at CoP16 and CoP17, IUU issues in relation to the Humphead Wrasse came up for attention. These will be further discussed at the end of 2017 by the CITES Secretariat. Meanwhile, illegally traded Humphead Wrasse continue to leak into the city with significant laundering (Part I, Section 3.12.6). AFCD has responded by initiating evaluations of the issuance of possession licences, as well as trialling identification measures to improve enforcement. Such measures have reduced the numbers of Humphead Wrasse on sale over the last year.

It is clear from numerous cases that AFCD continues to seize wildlife contraband, including, on occasion, Humphead Wrasse. However, in spite of prosecutions under Cap 586, little investigation into the supply chain has been undertaken. The department responsible for wildlife crime (AFCD) does not currently have the capacity, training or mandate to investigate criminality or cope with such organised crime. The Customs and Excise Department does have such powers, however, it appears that these are rarely employed as regards the illegal trade in wildlife.

8.6.2 Customs Regime

Inspections of Air Cargo

Traders are known to illegally ship Humphead Wrasse by air, by hiding them in grouper shipments to avoid detection (Part I, Box 3-10), since shipments leaving Indonesia airports are generally not carefully checked by export agents of quarantine departments. Often, their value is under-reported to avoid tax payments.³⁶⁴

LRFF air carriers entering Hong Kong are typically not inspected by C&ED, or even by the air carriers themselves. At the outset, there is no requirement for air carriers to conduct such inspections, and opening containers may pose logistical risks to the cargo and incur claims against the airline.³⁶⁵ The other major reason is that fish carriers are not required to report their entry and exit to the Marine Department, such that Customs cannot effectively follow up on cargo manifests and declarations. Evidently, these loopholes have hindered effective enforcement of Cap 60. It must also be noted that not all fish carriers are adequately submitting declarations of their cargo (Section 4).

Re-exports are in clear need of better documentation in accordance with Hong Kong's Import and Export Ordinance

Re-exports not Recorded

Likewise, re-exports are in clear need of better documentation in accordance with the **Import and Export Ordinance**. The association of the LRFFT with IUU and smuggling, demonstrated by cases of live Humphead Wrasse smuggled across Hong Kong's borders, highlights the existence, importance and challenges of unregulated trade and customs infringements (Part I, Section 3.12.3).

8.7 Limited Traceability

The capability to trace seafood products is gaining increasing attention within the government, business and NGO sectors in response to large-scale trade in IUU products, product mislabelling, food safety concerns and human rights abuses in the supply chain.³⁶⁶ The movement towards traceability and accountability in the seafood trade is currently being led by the EU, the world's biggest seafood market. Despite the push for countries to sign the Port State Measures Agreement, and so combat IUU, Hong Kong and mainland China are not yet signatories.

In 2015, USAID, the Coral Triangle Initiative and Southeast Asian Fisheries Development Centre came together in the Oceans and Fisheries Partnership to develop a transparent and financially sustainable catch documentation and traceability system to help ensure that fisheries resources are legally caught and properly labelled.³⁶⁷ This will be a risk-based electronic system to be applied to wild-capture fisheries in Southeast Asia and the Pacific region.

Despite international movement towards traceability, Hong Kong has done little other than implement CITES and more recently sign up to the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) (as regards the management of the Chilean Seabass trade).³⁶⁸

The Food Safety Ordinance requires record-keeping by importers for a specified period, but the records are only to be used in the event of a food contamination incident. Since IUU wildlife, including seafood, is known to be traded on airlines, and threatened species are often part of this trade, there is a growing need to seek innovative ways and means to improve inspection capacity and protocols and enhance enforcement within and through Hong Kong.

8.8 Summary of Data Deficits and Needs

Data collection is an industry-wide problem for the LRFFT

Data collection is an industry-wide problem for the LRFFT, though Hong Kong is said to be offering '*the most comprehensive available data on the trade*' from its recorded imports.³⁶⁹ Without accurate data, meaningful monitoring of LRFFT's impact to inform resource management, or to move towards certification systems that require traceability, is not possible. This makes it difficult to make a case for changing regulations and legislation, or to incentivise businesses to seek or push for sustainable sources. The inadequacy of data available may also affect sentencing considerations, since the court will take into account harm done by the

offence if such harm is evidenced, as seen from case law in relation to CITES. In summary, data are lacking with respect to:

- Manifests under the Import and Export Regulations. The specificity required is minimal, and only the place where the LRFF was loaded is required;
- Declarations under the Import and Export Regulations. The specificity is much higher, and the HKHS codes cater for some species identification. Further, the place of origin (*'origin country'*) is required to be declared. However, implementation of the manifest/declaration requirement by Hong Kong fish carrier vessels is problematic, largely due to the fact that these vessels do not have to report their movements to the Marine Department;
- The FSO, which does not require that records be handed in to the authorities, thus data cannot be compiled; and
- Live seafood carried on Hong Kong fishing vessels, because live fish/invertebrates are not classified as *'marine fish'* and hence are not subject to reporting if entering on fishing vessels.

The data collected are used in a number of ways, both domestically and internationally, and therefore data gaps have ramifications beyond the domestic level. Examples include:

- Hong Kong has direct reporting responsibilities in relation to CITES through China's membership;
- Trade data are important for establishing Hong Kong's trade position globally and for making policy decisions. Given the high value of this trade and the involvement of internationally protected species, monitoring and legality are crucial for the city's reputation, obligation and standing;
- Various projects and instruments encourage and/or rely on the provision of fishery-related data to develop a global understanding of fisheries, the seafood trade, and their trends over time:
 - FishStat or the Coordinating Working Party on Fishery Statistics;³⁷⁰
 - The FAO voluntary Code of Conduct for Responsible Fisheries, which has a web-based reporting system on implementation of the Code;³⁷¹
 - The Port State Measures Agreement, FAO statistics on China Fishery Commodity and Trade Statistics;³⁷²
 - The online dataset for Fishery Commodities Global Production and Trade (which includes Hong Kong as a searchable item);³⁷³ and
 - The Yearbook of Fishery and Aquaculture Statistics – Summary tables (in which Hong Kong is listed as a separate data subject in some documents; in other documents, only China is listed).³⁷⁴

Data on vessels involved in the LRFFT are as important as data on the LRFF. Hong Kong has yet to engage meaningfully in collaborative data-sharing, as envisaged by agreements such as the PSMA. Generally, Hong Kong's trade data on live reef fish appear nowhere in such fora, despite the high value of the trade and the volumes involved. ■

RECOMMENDATIONS

9.1 The Customs Regime

9.1.1 Closing the ‘Fishing Craft Exemption’ Loophole

The most effective change in the legal framework that would give an immediate result would be to close the gap that has allowed LRFF entering and leaving Hong Kong waters by sea to go unreported.

It is a key recommendation of this review that the exemption from declaration requirements for marine fish *‘arriving in Hong Kong direct from fishing grounds on fishing craft registered or licensed in Hong Kong’*, which has long been applied by the authorities, be widely clarified. In addition to clarifying that the exemption does not apply to fish carriers (Class III (a)), this should be publicised throughout the industry and rigorously enforced.

A longer-term solution to concretely and properly embed such change would require legislative footing. This would require clarifying, and thus amending, the ‘fishing craft’ provision in the **Import and Export (Registration) Regulations (Cap 60E)** Regulation 3. The wording could be amended to ‘not include within that exemption fish carriers (Class III (a)), meaning those that primarily obtain live marine fishes and invertebrates by means other than fishing from the waters of other countries.’ The power to do so lies with the Chief Executive in Council (Cap 60 s.31) and is a potentially powerful tool due to its comparative ease of coming into effect. Cap 60 s.31 provides that the Chief Executive in Council may make regulations for certain designated purposes, meaning that it will not need to go through the lengthier legislative process.³⁷⁵

Regardless of such regulatory amendments, however, this will not change the main problem in this area: the lack of regulation over LRFF brought in by local fishing craft. The exemption for local fishing craft (Class III (c)) (which, in addition to carriers, also bring in live fish not obtained directly from fishing grounds) will require legislative change, since it is laid down in the **Ordinance** itself rather than being within the ambit of the s.31 regulatory powers.

Either way, the enforcement of such a provision would depend on whether it was possible to identify vessels falling within the statutory definition of such '*fish carriers*'. Realistically, this could only occur if vessels were required to install a vessel monitoring system (VMS), a tool for the monitoring, control and surveillance of fisheries activities. A VMS provides fishery management agencies with accurate and timely information about the location and activity of regulated fishing vessels.³⁷⁶ A VMS would be able to distinguish whether the vessel is a carrier that primarily obtains live marine fish from the waters of other countries, and therefore could answer the question of whether the vessel in question falls in or out of the statutory exemption.

Although under-reporting issues and the nature of the trade are more aligned with trade imports/exports (the purview of C&ED) rather than local fisheries (the purview of AFCD), looking forward, the Hong Kong government should consider amending the definition of '*marine fish*' under **MF(M)O (Cap 291)** to include 'live fish'. This would mean that all fish landed by HKLFV would be reported to FMO rather than just dead fish, as is the current practice. This would negate the need for AFCD to obtain voluntary data, which, as it stands, is insufficient.

9.1.2 Building on the Current System – Import Declarations and Manifests

There are inevitably practical limitations in including species identification details regarding the level of species resolution in both import declarations and manifests. However, there is clearly room for building on the current system and updating species resolution as the trade changes (an example is the relatively new appearance of hybrids like the Sabah Grouper).

One approach would be to use the existing manifest system, since HKLFC are not exempt from the requirement to submit manifests. This would require C&ED to enforce the manifest requirements and C&SD to maintain the HKLFC manifest data and make the country of origin, volume and species data publically accessible, in the same manner as data derived from import declarations within the C&SD database. The level of detail, however, would need to be enhanced to provide as much species-specific data as is practical, in addition to country of origin as noted below. This would relieve AFCD of the need to informally collect HKLFC data, besides being relevant to food safety concerns already discussed.

Provision of HS-8-Digit Coding on Manifests

A main recommendation in this review in relation to the reporting of goods descriptions on manifests is that government guidelines should strongly recommend both ocean carriers and airline carriers carrying LRFF to provide descriptions in 8-digits, according to the HKHS. For fish carriers, the government encourages (but does not make compulsory) HS-6 or HS-4 equivalent descriptions to be submitted via manifests. For air carriers, although there is no such specific guidance on the level of reporting, our consultation with C&ED provided no explanation for this and so our recommendation is that air carriers should follow the same guidance.³⁷⁷

Nevertheless, for identifying goods to species level, a specificity of HS-8 is required. If HS-8 equivalent descriptions are included in manifests of both air and ocean carriers for all LRFF, the retrieval of species-specific information for each shipment will be possible. This will a) maximise the government's ability to monitor volumes and values of what is being traded into and out of Hong Kong; b) enable airlines to monitor what they carry far more effectively; c) greatly improve the traceability of seafood for food safety and other issues; and d) be more in line with current or developing practices associated with international trade elsewhere that are becoming increasingly relevant, such as certifications or other environmentally relevant issues.

The requirement of HS codes or equivalent descriptions in manifests is already in practice in Japan (requiring at least HS-6 levels) and in the trade statistics collection of the EU (requiring up to HS-6 and CN8 levels). Notably, Taiwan has 11 digit codes. Given the importance of Hong Kong as a trade hub in general and of LRFF in particular, HS-8 level detail in cargo manifests is highly advisable and certainly has precedent elsewhere in major trade areas.

In the case of ocean-going vessels, the provision of such level of detail should not be onerous since the vessels will already have the relevant information about the species, provenance and weights they are carrying on board for business purposes and due to food safety regulations; these are all carefully recorded at loading in source countries. To provide such information should be no more difficult than for other cargo/commodities, whether there is a restricted landing area or not for such vessels in Hong Kong. In other words, there is no practical reason not to provide such trade data. Indeed, not being required to provide the information could be seen as an unfair advantage compared to other cargo operations, and could also facilitate or enable unlawful activities such as tax avoidance.

Coding for Chilled/Fresh/Frozen Groupers

It is also recommended that C&SD add commodity codes to identify chilled/fresh/frozen reef fishes (as it does for tuna, etc.) due to its growing international trade, especially in groupers, and concerns over its sustainability (as there are for taxa such as tuna). Currently, chilled/fresh/frozen reef fish cannot be distinguished from the generic chilled/fresh/frozen fish/fillets, etc. commodity coding of C&SD. On 28 June 2014, a recommendation was made to C&SD³⁷⁸ to facilitate the

recognition of chilled/fresh/frozen reef fishes/fillets and those of the Humphead Wrasse due to the increasing tendency to ship chilled/fresh/frozen fish and fillets, in addition to live reef fishes. This is relevant given that the sustainability issues for the taxa involved are the same whether they are traded live or dead, especially if high prices are involved for each form.

The newly proposed categories of chilled/fresh/frozen reef fishes (*'frozen grouper or grouper fillets', 'frozen wrasses, other than HHW [Humphead Wrasse], or fillets'* and *'frozen snapper or snapper fillets'*) will aid understanding of this emerging trend. Since this trade is likely to be made up of a distinctive and small group of reef fishes that come from a specific fishing sector (snappers, wrasses and groupers) and are highly valued because of their type, their identification in trade documentation should be practical, straightforward and readily distinguishable from other major categories such as whitefish, other pelagics, salmon, sharks, etc., many of which are already identified to a more useful taxonomic level than reef fishes. Several countries that regularly trade significant volumes of chilled/fresh/frozen groupers use a separate category, such as Taiwan (see Part I).

9.1.3 Transhipments and Re-exports

Standardising Declarations

With regard to improvement of LRFF transhipment documentation and regulation, the Recommendations of the Kobe II Process (Document K3-001), which contain conclusions on tuna transhipment, are helpful. Along with LRFF, tuna fisheries face issues of sustainable management and trade monitoring. The Recommendations suggest cooperating with other tuna RFMOs to standardise transhipment declaration forms so that they use, to the maximum extent possible, the same format and include the same required data fields. They should also develop minimum standards for the timeframes by which such Declarations are submitted to tuna RFMO Secretariats, flag States, coastal States and port States. An RFMO that focuses specifically on reef fisheries across Southeast Asia could provide direction, organise training and develop international initiatives for this valuable but poorly understood and undervalued fishery and food security sector. A potentially relevant RFMO for reef fishes is APFIC.

Facilitating Wildlife Seizures from Transhipments

The US's Lacey Act defines 'import' to incorporate items in transhipment (Section 6.2.1). This distinction was made to permit the seizure and forfeiture of illegally procured wildlife being shipped through the US, as well as to allow for seizures at the time of entry, rather than waiting until wildlife quarantined or held under bond is released and thus 'imported' according to customs law.³⁷⁹ There is no such differentiation in Hong Kong laws, and LRFF illegally harvested in source countries can be legally imported into Hong Kong. Hong Kong should consider undertaking a review of legal options with a view to developing a law akin to the US's Lacey Act.

Re-exports

There appears to be substantial cross-border trade in re-exporting live seafood, which is unregulated and unmonitored and most likely conducted to avoid China import tariffs. Seafood smuggling from Hong Kong to mainland China by sea has been happening for many years and is clearly an enforcement issue. Some smuggling occurs by air, which also goes unrecorded. Given the apparent lack of re-export data, there is a need for clearer record-keeping on cross-border trade and stronger enforcement action at the border to reduce seafood and other smuggling.

9.2 CITES Enforcement

To address the problem of illegal trafficking and laundering of Humphead Wrasse, the following is recommended:

- Ensure that shipments and retail outlets are more regularly and thoroughly inspected; and
- To improve enforcement, either amend the possession licence for Humphead Wrasse in Hong Kong to one or a few months' validity (to reflect maximum turnover time for this species in possession — average of two weeks), or ensure that legally imported fish are individually tagged/identified to reduce laundering through retail outlets by undetected replacement of fish.

To further enhance enforcement, it is recommended that legislation be amended to the effect that Cap 586 would trigger the enhanced enforcement powers of Cap 455, the **Organized and Serious Crimes Ordinance**. This could potentially be achieved via the inclusion of CITES-listed specimens to the schedule of '*certain prohibited items*' (by amending Part 2 of Schedule 1 of the **Import and Export (General) Regulations (Cap 60A)**, since OSCO already lists the import and export of '*certain prohibited items*' as contrary to sections 6C and 6D of the **Import and Export Ordinance**), such that there is enhanced sentencing and investigative powers for CITES offences via the provisions of OSCO.

9.3 Food Safety

It is recommended that the **Code of Practice on the Import and Sale of Live Marine Fish for Human Consumption: For Prevention and Control of Ciguatera Fish Poisoning** (published in 15 December 2004 and now no longer in force) be reintroduced on a mandatory basis.

Since hotspots for ciguatoxic fishes are highly location-specific, documentation of origin by country alone is insufficient. It is suggested that more detailed location data be documented, including latitude and longitude information or the town/municipality/province/subnational region, to improve food traceability in respect of carriage of ciguatoxic fishes.

9.4 Government Coordination

It is recognised that many issues under the government's purview are cross-departmental. It was clear from numerous conversations with government departments working jointly on the implementation of a piece of legislation (i.e. AFCD and C&ED on CITES; AFCD, MarDep, C&SD and C&ED on vessel movements and reporting) that they may have different interpretations of requirements/procedures in relation to live seafood generally, and to Hong Kong vessels in particular, and few channels for interaction and coordination in many cases (e.g. between Customs and the Marine Department).

It is recommended that there is greater knowledge-sharing among government departments, as well as education on environmental matters for improved coordination and understanding of the issues surrounding biological sustainability of the LRFFT. This could be achieved via shared databases and regular meetings.

A useful model is the US's interagency Task Force on Wildlife Trafficking, which is co-chaired by the Department of State, the Department of the Interior and the Department of Justice, and brings together 17 government departments and agencies for a whole-of-government approach to combating wildlife trafficking.³⁸⁰

9.5 Regional Responsibilities and Voluntary Regulation

Given Hong Kong's status as a wildlife trade hub, a study on the feasibility of introducing requirements such as those under the US Lacey Act should be implemented. ■

ENDNOTES

1. United Nations Office on Drugs and Crime. (2013). *Transnational Organized Crime in East Asia and the Pacific – A Threat Assessment*, UNODC, Vienna, Chapter 7, p.86.
2. Lau, P. & Parry-Jones, R. (1999). *The Hong Kong trade in live reef fish for food*. WWF-Hong Kong, Traffic East Asia. The report stated that 'While Hong Kong still remains one of the few places where imports are recorded at the species level, confusion on identification of certain species by certain traders may reduce the usefulness of such a system unless checks are implemented and a standardised identification manual is provided and used ... there are other species which should be recorded in trade at the species level.'
3. Muldoon, G., Cola, R. & Soede, L.P. (2009). *Towards A More Sustainable Live Reef Food Fish Trade In The Coral Triangle: First Regional Workshop*. Coral Triangle Support Programme, WWF, p.53.
4. Regarding exporting to jurisdictions with preferential tariff treatment, see website of the Customs and Excise Department – http://www.customs.gov.hk/en/faqs/cargo_clearance/clearance/index.html and http://www.customs.gov.hk/en/passenger_clearance/duty_free/. Also see website of the Trade and Industry Department – http://www.tid.gov.hk/english/import_export/tariffroo/tariffroo_maincontent.html, regarding 'Information on Tariff and Rules of Origin for Hong Kong, China'.
5. Re-exports under the Hong Kong customs regime refer to products which have previously been imported into Hong Kong and which are re-exported without having undergone processing which has changed permanently the shape, nature or utility of the product. See Census and Statistics Department. *How to Complete and Lodge Import/Export Declarations*. C&SD, Hong Kong, p.11, <http://www.censtatd.gov.hk/FileManager/EN/Content_93/B8XX0022.pdf>.
6. 'The masters or agents of the vessels are required to furnish manifests in respect of the cargoes being imported or exported if they are requested to do so.' See Customs and Excise Department. *Cargo Examination*. C&ED, Hong Kong, <http://www.customs.gov.hk/pda/en/traders/cargo_clearance/clearance/examination.html>.
7. 'Any persons who import or export any articles, other than exempted articles, are required to lodge accurate and complete import/export declarations within 14 days after the importation/exportation of the article.' See Customs and Excise Department. *Import and Export Declaration*. C&ED, Hong Kong, <http://www.customs.gov.hk/en/cargo_clearance/declaration/>.
8. Census and Statistics Department. *How to Complete and Lodge Import/Export Declarations*. C&SD, Hong Kong, <http://www.censtatd.gov.hk/FileManager/EN/Content_93/B8XX0022.pdf>.
9. Advisory Council on the Environment. (2000). *Hong Kong Trade in Live Reef Fish for Food - Measures Taken by Government*. ACE Paper 31/2000, Environmental Protection Department, Hong Kong.
10. See Import and Export (Registration) Regulations (Cap 60E) Regulation 5, regarding the equal treatment of exports and re-exports in relation to declaration requirements.
11. S.15 of the Import and Export Ordinance (Cap 60) provides for C&ED to board the vessel, inspect the cargo and search for contraband. Under s.2, 'contraband' (違禁品) means an article which is exported, imported or otherwise dealt with contrary to the provisions of this Ordinance or any other law controlling the import or export of any article.
12. S.15(2) of the Import and Export Ordinance (Cap 60).
13. S.36(1)(c) of the Import and Export Ordinance (Cap 60).
14. The options of submission (paper or electronic) are provided for in s.15(1B) of the Import and Export Ordinance (Cap 60).
15. For the practical differences between electronic and paper submissions, see Commerce & Economic Development Bureau. (2016). *How to Submit Cargo Manifests by Using Electronic Service for Air, Rail, Ocean and River Carriers (EMAN) Guidebook*. CEDB, Hong Kong, p. 2, <[http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_\(Eng\).pdf](http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_(Eng).pdf)>.
16. S.15(2) of the Import and Export Ordinance (Cap 60).
17. Or to a fine of \$500,000 and imprisonment for two years (on summary conviction), according to s.18(1) of the Import and Export Ordinance (Cap 60). Note that an available defence to this offence is that the defendant did not know and could not with reasonable diligence have known that the cargo was unmanifested.
18. See *HKSAR v Sze Mei Mun* [2014] 3 HKLRD 452 and *HKSAR v Ling Lai Hung* HCMA 928/2006 (unreported), 17 July 2007.
19. Transshipment is that which is consigned on a through bill of lading or a through air waybill from a place outside Hong Kong to another place outside Hong Kong; and is or is to be removed from the vessel, aircraft or vehicle in which it was imported and either returned to the same vessel, aircraft or vehicle or transferred to another vessel, aircraft or vehicle before being exported, whether it is or is to be transferred directly between such vessels, aircraft or vehicles or whether it is to be landed in Hong Kong after its importation and stored, pending exportation.
20. Articles in transit are those brought into Hong Kong solely for the purpose of taking them out of Hong Kong, and which remain at all times in or on the vessel or aircraft in or on which it is brought into Hong Kong.
21. See s.6A of the Import and Export Ordinance (Cap 60) on the 'Restriction on import and export of strategic commodities', which exempts the application of that provision to articles in transit and air transshipment cargo. 'Strategic commodities' include munitions and nuclear materials.
22. There is a regulation specifically on the delivery of transshipment notification and manifest (Cap 60A Reg 6DAC and Reg 6DAE), but this applies only to 'specified articles', of which LRFF are not.
23. Commerce & Economic Development Bureau. (2016). *How to Submit Cargo Manifests by Using Electronic Service for Air, Rail, Ocean and River Carriers (EMAN) Guidebook*. CEDB, Hong Kong, p. 11, <[http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_\(Eng\).pdf](http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_(Eng).pdf)>.
24. Commerce & Economic Development Bureau. (2016). *How to Submit Cargo Manifests by Using Electronic Service for Air, Rail, Ocean and River Carriers (EMAN) Guidebook*. CEDB, Hong Kong, p. 13, <[http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_\(Eng\).pdf](http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_(Eng).pdf)>.
25. Commerce & Economic Development Bureau. (2016). *How to Submit Cargo Manifests by Using Electronic Service for Air, Rail, Ocean and River Carriers (EMAN) Guidebook*. CEDB, Hong Kong, p. 13, <[http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_\(Eng\).pdf](http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_(Eng).pdf)>.
26. Census and Statistics Department. (2016). *Hong Kong Imports and Exports Classification List (Harmonized System) 2017 Edition*. C&SD, Hong Kong, <<http://www.statistics.gov.hk/pub/B2XX00212017XXXXB0100.pdf>>. Also see <http://www.censtatd.gov.hk/trader/declaration/index.jsp> and <http://www.statistics.gov.hk/pub/B2XX00192012XXXXB0100.pdf>.
27. Lau, P. & Parry-Jones, R. (1999). *The Hong Kong trade in live reef fish for food*. WWF-Hong Kong, Traffic East Asia.
28. Hybrid Groupers (e.g. Sabah Grouper); Green Grouper (*Epinephelus coioides*); Tiger Grouper (*Epinephelus fuscoguttatus*); Flowery Grouper (*Epinephelus polyphekadion*); Leopard Coralgrouper (*Plectropomus leopardus*); Mangrove Snapper (*Lutjanus argentimaculatus*).

29. Refers to juveniles or 'seeds' of commercially important species.
30. Census and Statistics Department. *How to Complete and Lodge Import/Export Declarations*. C&SD, Hong Kong, p.3, <http://www.censtatd.gov.hk/FileManager/EN/Content_93/B8XX0022.pdf>.
31. Poon, K.I. (Customs and Excise Department) (2017, pers. comm.)
32. Census and Statistics Department. (2015). *Vision, Mission and Values*. C&SD, Hong Kong, <http://www.censtatd.gov.hk/about_us/our_vision_mission_and_values/index.jsp>.
33. Letter from AFCD to Prof. Yvonne Sadovy, Dr. Yannick Kuehl, Mr. Wilson Lau and Dr. Allen To dated 16 November 2016, referencing emails sent by the Customs and Excise Department dated 6 September 2016 and 21 September 2016.
34. Sadovy, Y.J. (2017, pers. comm.) 'Under-reporting is strongly suggested, by amongst other indications: customs data showing no obvious increase in CSD import data after 2006 when carriers were licensed as a separate category, past exemptions, illegal imports of HHW from my personal observations on vessels which have not been reported as imports by sea. Moreover, despite a marked increase in live carrier vessels in the last year, imports have declined. These and other sources of information lead me to infer that live carrier vessels are under-reporting, collectively, their imports.'
35. Confirmed in an email from the Customs and Excise Department to Prof. Yvonne Sadovy dated 8 May 2017. Also confirmed in a letter from AFCD to Prof. Yvonne Sadovy, Dr. Yannick Kuehl, Mr. Wilson Lau and Dr. Allen To dated 17 February 2017.
36. FAO Regional Office for Asia and the Pacific. (2016). *Combating illegal fishing and strengthening seafood traceability*. FAO, Rome, viewed 15 September 2016, <<http://www.fao.org/asiapacific/news/detail-events/en/c/396002/>>.
37. Commerce & Economic Development Bureau. (2016). *How to Submit Cargo Manifests by Using Electronic Service for Air, Rail, Ocean and River Carriers (EMAN) Guidebook*. CEDB, Hong Kong, p. 13, <[http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_\(Eng\).pdf](http://www.cedb.gov.hk/citb/doc/en/gets/EMAN_Guidebook_(Eng).pdf)>.
38. Customs and Excise Department. (2014, pers. comm.)
39. Census and Statistics Department. (2012). *Hong Kong Imports and Exports Classification List (Harmonized System) 2012 Edition*. C&SD, Hong Kong, p.1, <<http://www.statistics.gov.hk/pub/B2XX00192012XXXXB0100.pdf>>.
40. Census and Statistics Department. (2012). *Hong Kong Imports and Exports Classification List (Harmonized System) 2012 Amendments*. C&SD, Hong Kong, pp. 8-24, <http://www.censtatd.gov.hk/FileManager/EN/Content_93/HKIECL2012_amendment_booklet_20111108.pdf>.
41. Shea, S. (2016, pers. comm.) Also see Census and Statistics Department. (2016). *Hong Kong Imports and Exports Classification List (Harmonized System) 2016 Amendments*. C&SD, Hong Kong, <http://www.censtatd.gov.hk/FileManager/EN/Content_93/HKIECL2016_amendment_booklet_20151029.pdf>.
42. International Union for Conservation of Nature. (2017). *Home page*. The IUCN Red List of Threatened Species, IUCN, Cambridge, <www.iucnredlist.org>.
43. As of 2016, the input codes in effect were the 'Full list of Hong Kong Harmonized System (HKHS) codes (2016)', listed at <http://www.censtatd.gov.hk/trader/declaration/index.jsp>. For 1997 classifications, see Lau, P. & Parry-Jones, R. (1999). *The Hong Kong trade in live reef fish for food*. WWF-Hong Kong, Traffic East Asia, p.3.
44. NESOI commonly refers to 'Not Elsewhere Specified or Indicated'.
45. Agriculture, Fisheries and Conservation Department. (2016 and 2017, pers. comm.)
46. Letter from AFCD to Prof. Yvonne Sadovy, Dr. Yannick Kuehl, Mr. Wilson Lau and Dr. Allen To dated 16 November 2016, referencing emails sent by the Customs and Excise Department dated 6 September 2016 and 21 September 2016.
47. Class III Vessels are defined as: Fish Carrier, Fishing Sampan, Fishing Vessel and Outboard Open Sampan.
48. Marine Department. (2016, pers. comm.)
49. Lau, P. & Parry-Jones, R. (1999). *The Hong Kong trade in live reef fish for food*. WWF-Hong Kong, Traffic East Asia.
50. Advisory Council on the Environment. (2000). *Hong Kong Trade in Live Reef Fish for Food - Measures Taken by Government*. ACE Paper 31/2000, Environmental Protection Department, Hong Kong, <http://www.epd.gov.hk/epd/mobile/english/boards/advisory_council/ace_paper0031.html>.
51. Advisory Council on the Environment. (2000). *Hong Kong Trade in Live Reef Fish for Food - Measures Taken by Government*. ACE Paper 31/2000, Environmental Protection Department, Hong Kong, <http://www.epd.gov.hk/epd/mobile/english/boards/advisory_council/ace_paper0031.html>.
52. Advisory Council on the Environment. (2000). *Hong Kong Trade in Live Reef Fish for Food - Measures Taken by Government*. ACE Paper 31/2000, Environmental Protection Department, Hong Kong, <http://www.epd.gov.hk/epd/mobile/english/boards/advisory_council/ace_paper0031.html>.
53. Chan, I.K.K. (AFCD) (2016, pers. comm.)
54. Sadovy, Y.J. (2016, pers. comm.)
55. Ho, V. (AFCD) (2017, pers. comm.)
56. The Customs and Excise Department confirmed in an email to Prof. Yvonne Sadovy dated 8 May 2017 that 'All cargoes (including live fish) imported into Hong Kong by air, ocean and river modes of transport shall be recorded in the manifest containing the particulars in relation to the goods as required by the Regulations.'
57. Enquiry sent on behalf of ADM Capital Foundation on 31 July 2014 and responded to in writing by the Customs and Excise Department on 25 August 2014.
58. The following types of transshipment cargo are exempted: pharmaceutical products and medicines as defined by Section 2 of the Pharmacy and Poisons Ordinance (Cap 138), except dangerous drugs as defined by Section 2 of the Dangerous Drugs Ordinance (Cap 134); rice as specified in the Schedule to the Reserved Commodities (Control of Imports, Exports and Reserve Stocks) Regulations (Cap 296A); frozen or chilled meat and poultry as specified in Part I of the First Schedule to the Import and Export (General) Regulations (Cap 60A); Chinese herbal medicines and proprietary Chinese medicines as specified in Part I of the First Schedule and Part I of the Second Schedule to the Import and Export (General) Regulations (Cap 60A); rough diamonds as specified in Part I of the First Schedule and Part I of the Second Schedule to the Import and Export (General) Regulations (Cap 60A); and powdered formula as specified in Part I of the Second Schedule to the Import and Export (General) Regulations (Cap 60A). Customs and Excise Department. (2017). *Transshipment Cargo Exemption Scheme*. C&SD, Hong Kong, <http://www.customs.gov.hk/en/cargo_clearance/prohibited_articles/exemption/index.html>.
59. Census and Statistics Department. (2016). 'Port Transshipment Cargo Statistics, 2005 to 2015', *Hong Kong Monthly Digest of Statistics, May 2016*, C&SD, Hong Kong, viewed August 2016, <<http://www.statistics.gov.hk/pub/B71605FA2016XXXXB0100.pdf>>.
60. Census and Statistics Department. (2016). 'Port Transshipment Cargo Statistics, 2005 to 2015', *Hong Kong Monthly Digest of Statistics, May 2016*, C&SD, Hong Kong, viewed August 2016, <<http://www.statistics.gov.hk/pub/B71605FA2016XXXXB0100.pdf>>.

61. Census and Statistics Department. (2016). 'Port Transshipment Cargo Statistics, 2005 to 2015', *Hong Kong Monthly Digest of Statistics, May 2016*, C&SD, Hong Kong, viewed August 2016, <<http://www.statistics.gov.hk/pub/B71605FA2016XXXXB0100.pdf>>.
62. Network of Tuna Agencies and Programs. (2011). Third Joint Meeting of the Tuna Regional Fisheries Management Organizations, La Jolla, California (USA) July 11-15, 2011 – Recommendations of the Kobe II Process. Document K3-001, Tuna-org, <<http://www.tuna-org.org/Documents/TRFMO3/Kobe%20III%20Jul%202011%20-%20Kobe%20%20process%20outcomes%20ENG.pdf>>.
63. 'The main objective of the Tokyo MOU is to establish an effective port State control regime in the Asia-Pacific region through co-operation of its members and harmonization of their activities, to eliminate sub-standard shipping so as to promote maritime safety, to protect the marine environment and to safeguard working and living conditions on board ships.' Tokyo MOU. (2017). *Home page*. Tokyo MOU, <<http://www.tokyo-mou.org>>.
64. Marine Department. (2014). *Port of Hong Kong Statistical Tables 2014*. Marine Department, Hong Kong, p.32, <http://www.mardep.gov.hk/en/publication/pdf/portstat_ast_2014.pdf>.
65. Office of Law Enforcement. (2017). *Lacey Act*. 18 USC 42-43, 16 USC 3371-3378, US Fish & Wildlife Service, Washington, <<https://www.fws.gov/international/laws-treaties-agreements/us-conservation-laws/lacey-act.html>>.
66. Anderson, R.S. (1995). 'The Lacey Act: America's premier weapon in the fight against unlawful wildlife trafficking', *Public Land and Resources Law Review*, vol. 16, no. 27, p.67.
67. The FMO currently operates seven wholesale fish markets. These are located at Aberdeen, Shau Kei Wan, Kwun Tong, Cheung Sha Wan, Castle Peak, Tai Po and Sai Kung.
68. Yip, H. (Fish Marketing Organization) (2017, pers. comm.)
69. See website of Fish Marketing Organization – http://www.fmo.org.hk/price?id=8&path=12_43_56/.
70. See website of Fish Marketing Organization – <http://www.fmo.org.hk/index>.
71. Advisory Council on the Environment. (2000). *Hong Kong Trade in Live Reef Fish for Food - Measures Taken by Government*. ACE Paper 31/2000, Environmental Protection Department, Hong Kong, <http://www.epd.gov.hk/epd/mobile/english/boards/advisory_council/ace_paper0031.html>.
72. The Canadian Food Inspection Agency, which oversees fish imports, viewed 7 October 2017, <<http://www.inspection.gc.ca/food/fish-and-seafood/imports/basic-importers/eng/1352307383535/1352307591494?chap=4>>.
73. Zummo, D. *Importing Live Fish into Canada*. The Fisheries Law Centre, British Columbia, p.1.
74. Long, K. *Inter-State Trade of Live Fish*. The Fisheries Law Centre, British Columbia, p.1.
75. The only case was Attorney General v Cheung King-Chow [1989] HKCFI 83; HCMA987/1989 (unreported), 4 December 1989, which related to the scope of powers under the ordinance in relation to 'selling'.
76. Catty is one of the measuring units used in the local seafood trade. 1 catty = 604.8 gram.
77. The inclusion of 'fishermen' within the definition of 'persons carrying on a food business' is noted on the government website. Centre for Food Safety. (2017). *Food Safety Ordinance (Cap 612)*. Food and Environmental Hygiene Department, Hong Kong, <http://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/whatsnew_fstr_Food_Safety_Bill.html>.
78. Centre for Food Safety. (2011). *Code of Practice on Keeping Records Relating to Food*. Food and Environmental Hygiene Department, Hong Kong, p.3, <http://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/files/FSO_COP_Record_Keeping_e.pdf>.
79. Centre for Food Safety. (2011). *Code of Practice on Keeping Records Relating to Food*. Food and Environmental Hygiene Department, Hong Kong, <http://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/files/FSO_COP_Record_Keeping_e.pdf>.
80. 'Fish hotel' refers to a fish raft which is used to temporarily keep imports of marketable-size fish. The fish are in temporary captivity, and are not used for the propagation or promotion of growth during their stay in the raft. They will then be sold to local markets for consumption or re-exported to other places.
81. S.21 of the Food Safety Ordinance (Cap 612).
82. 'Air transshipment cargo' is defined by s.2 of the Import and Export Ordinance (Cap 60) as cargo that is both imported and consigned for export in an aircraft and which, during the period between its import and export, remains within the cargo transshipment area of Hong Kong International Airport.
83. Schedule 1, row 10, column 2 of the Food Safety Ordinance (Cap 612).
84. Centre for Food Safety. (2011). *Code of Practice on Keeping Records Relating to Food*. Food and Environmental Hygiene Department, Hong Kong, <http://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/files/FSO_COP_Record_Keeping_e.pdf>.
85. Centre for Food Safety. (2011). *Code of Practice on Keeping Records Relating to Food*. Food and Environmental Hygiene Department, Hong Kong, <http://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/files/FSO_COP_Record_Keeping_e.pdf>.
86. Centre for Food Safety. (2011). *Code of Practice on Keeping Records Relating to Food*. Food and Environmental Hygiene Department, Hong Kong, p.13, <http://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/files/FSO_COP_Record_Keeping_e.pdf>.
87. Note that the Code of Practice does not have the force of law.
88. The specific exemption in s.22(4) of the Food Safety Ordinance states that:
'This section does not apply ... (b) to an acquisition of food that is imported solely for the purpose of exporting it, if—(i) the food is air transshipment cargo; or (ii) during the period between import and export, the food remains in the vessel, vehicle or aircraft in which it was imported; or (c) to an acquisition of food that is imported solely in the course of business of a food transport operator.'
89. Zummo, D. *Importing Live Fish into Canada*. The Fisheries Law Centre, British Columbia, p.2.
90. Centre for Food Safety. (2012). *Legislation and Regulations on Food Safety in Hong Kong*, Seminar on Food Testing and Certification, 4 December 2012. Food and Environmental Hygiene Department, Hong Kong, p.9, <http://www.hkctc.gov.hk/en/doc/Legislation_Regulations_Food_Safety_HK.pdf>.
91. Centre for Food Safety. (2012). *Legislation and Regulations on Food Safety in Hong Kong, Seminar on Food Testing and Certification, 4 December 2012*. Food and Environmental Hygiene Department, Hong Kong, p.19, <http://www.hkctc.gov.hk/en/doc/Legislation_Regulations_Food_Safety_HK.pdf>.
92. Centre for Food Safety. (2012). *Legislation and Regulations on Food Safety in Hong Kong, Seminar on Food Testing and Certification, 4 December 2012*. Food and Environmental Hygiene Department, Hong Kong, pp.18-19, <http://www.hkctc.gov.hk/en/doc/Legislation_Regulations_Food_Safety_HK.pdf>.
93. Food and Environmental Hygiene Department. (2004). *Code of Practice on the Import and Sale of Live Marine Fish for Human Consumption: For Prevention and Control of Ciguatera Fish Poisoning*. FEHD, Hong Kong, <http://www.cfs.gov.hk/english/whatsnew/whatsnew_fsf/files/fish_cop_e.pdf>.
94. Department of Health. (2017). *CHP investigates two suspected ciguatera food poisoning clusters — 31 March 2017*. Press Releases, The Government of the Hong Kong Special Administrative Region, <<http://www.info.gov.hk/gia/general/201703/31/P2017033100907.htm>>.

95. Department of Health. (2017). *CHP investigates suspected ciguatoxin food poisoning case – 1 April 2017*. Press Releases, The Government of the Hong Kong Special Administrative Region, <<http://www.info.gov.hk/gia/general/201704/01/P2017040100704.htm>>.
96. Department of Health. (2017). *CHP investigates ciguatoxin food poisoning case – 1 April 2017*. Press Releases, The Government of the Hong Kong Special Administrative Region, <<http://www.info.gov.hk/gia/general/201705/26/P2017052600752.htm>>.
97. Centre for Food Safety. (2017). *Food Legislation/Guidelines*. Food and Environmental Hygiene Department, Hong Kong, <http://www.cfs.gov.hk/english/food_leg/food_leg.html>.
98. Centre for Food Safety. (2013). *Food Safety Files*. Food and Environmental Hygiene Department, Hong Kong, <http://www.cfs.gov.hk/english/whatsnew/whatsnew_fsf/whatsnew_fsf_fish_cop.html>.
99. Protection of Endangered Species of Animals and Plants Ordinance (Cap 586) (2006), viewed 7 October 2017, <<https://www.elegislation.gov.hk/hk/cap586>>.
100. CITES has been implemented in Hong Kong since 1976 through the enactment of the Animals and Plants (Protection of Endangered Species) Ordinance (Cap 187). It was repealed and replaced by the Protection of Endangered Species of Animals and Plants Ordinance (Cap 586) in December 2006.
101. Weiss, E.B., McCaffrey, S.C., Magraw, D.B. & Tarlock, A.D. (2007). *International Environmental Law and Policy*, 2nd edn, Aspen Publishers, New York, p.819.
102. See Article VII(2) of CITES for the exemption for 'pre-Convention' specimens, which states that 'Where a Management Authority of the State of export or re-export is satisfied that a specimen was acquired before the provisions of the present Convention applied to that specimen, the provisions of Articles III, IV and V shall not apply to that specimen where the Management Authority issues a certificate to that effect.'
103. Agriculture, Fisheries and Conservation Department. (2017). *How to Apply for a [CITES] Licence*. AFCD, viewed 7 October 2017, <https://www.afcd.gov.hk/english/conservation/con_end/con_end_lc/con_end_lc_how/con_end_lc_how.html>.
104. Weiss, E.B., McCaffrey, S.C., Magraw, D.B. & Tarlock, A.D. (2007). *International Environmental Law and Policy*, 2nd edn, Aspen Publishers, New York, pp.819-820.
105. Weiss, E.B., McCaffrey, S.C., Magraw, D.B. & Tarlock, A.D. (2007). *International Environmental Law and Policy*, 2nd edn, Aspen Publishers, New York, pp.819-820.
106. Heppes, J.B. & McFadden, E.J. (1987). 'The Convention on International Trade in Endangered Species of Wild Fauna and Flora: Improving the Prospects for Preserving Our Biological Heritage', *Boston University International Law Journal*, vol. 5, pp. 229, 232-234, 237-239, 241-242.
107. Non-Detriment Findings: Terms used in the text of the Convention on Trade in Endangered Species such as 'threatened with extinction' [Article II, paragraph 1] and 'utilization incompatible with their survival' [Article II, paragraph 2(a)] in relation to inclusion of species in the Appendices have been largely defined through the adoption of Resolution Conf. 9.24 (Rev. CoP16) on *Criteria for amendment of Appendices I and II*. However, concepts linked with the issuance of permits, such as '...detrimental to the survival of that species' [Article III, paragraphs 2(a), 3(a) and 5(a); and Article IV, paragraphs 2(a) and 6(a)], and 'maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs' [Article IV, paragraph 3], have been little clarified by the Parties. These have become collectively known as the 'non-detriment findings' (NDFs).
108. Vincent, A.C.J., Sadovy de Mitcheson, Y.J., Fowler, S.L. & Lieberman, S. (2013). 'The role of CITES in the conservation of marine fishes subject to international trade', *Fish and Fisheries*, vol. 15, no. 4, pp. 563-592.
109. Weiss, E.B., McCaffrey, S.C., Magraw, D.B. & Tarlock, A.D. (2007). *International Environmental Law and Policy*, 2nd edn, Aspen Publishers, New York, p.820.
110. Agriculture, Fisheries and Conservation Department. (2017, pers. comm.)
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113. Wu, J. & Sadovy de Mitcheson, Y. (2016). *Humphead (Napoleon) Wrasse Cheilinus undulatus trade into and through Hong Kong*. TRAFFIC, IUCN, Hong Kong.
114. Customs and Excise Department. (2015). *Notice of Seizure - CPM/2/30/15*. C&ED, Hong Kong. Seized on a vessel which crossed the bay with over 12,000 live turtles – some endangered species.
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115. Wu, J. & Sadovy de Mitcheson, Y. (2016). *Humphead (Napoleon) Wrasse Cheilinus undulatus trade into and through Hong Kong*. TRAFFIC, IUCN, Hong Kong.
116. Agriculture, Fisheries and Conservation Department. (2017, pers. comm.)
117. Weiss, E.B., McCaffrey, S.C., Magraw, D.B. & Tarlock, A.D. (2007). *International Environmental Law and Policy*, 2nd edn, Aspen Publishers, New York, p.820.
118. Agriculture, Fisheries and Conservation Department. (2013). *Licensing and Inspection Requirements*. AFCD, Hong Kong, <http://www.afcd.gov.hk/english/conservation/con_end/con_end_reg/con_end_reg_lic/con_end_reg_lic.html>.
119. S.2(2) of the CITES Ordinance provides that 'For the purposes of this Ordinance, a specimen of an Appendix I species shall be treated as a specimen of an Appendix II species if—(a) in the case of an animal or any part or derivative of an animal, the animal is bred in captivity for commercial purposes by a captive-breeding operation registered by the Secretariat for breeding animals of an Appendix I species [...].'
120. Endangered Species Protection Division. (2006). *Protection of Endangered Species of Animals and Plants Ordinance, Cap. 586: Guidelines on Import of Endangered Species*. Endangered Species Advisory Leaflet No.1 (Revised), Ref : AF CON 07/37, Agriculture, Fisheries and Conservation Department, Hong Kong, <https://www.afcd.gov.hk/textonly/english/conservation/con_end/con_end_lc/con_end_lc_guide/files/Import_Cap586e.pdf>.
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128. Convention on International Trade in Endangered Species of Wild Fauna and Flora. (2005). *Administrative and Monitoring Implications of listing and down-listing of commercially-exploited aquatic species, including the implications of Annex 4 of Resolution Conf.9.24*. CITES Workshop on Introduction from the Sea Issues, CITES, Geneva, p.6, viewed 7 October 2017, <<https://www.cites.org/eng/prog/ifs.php>>.
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129. Convention on International Trade in Endangered Species of Wild Fauna and Flora. (2005). *Administrative and Monitoring Implications of listing and down-listing of commercially-exploited aquatic species, including the implications of Annex 4 of Resolution Conf.9.24*. CITES Workshop on Introduction from the Sea Issues, CITES, Geneva, p.6, viewed 7 October 2017, <<https://www.cites.org/eng/prog/ifs.php>>.
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131. International Union for Conservation of Nature. *Consideration of Proposals for Amendment of Appendices I and II*. CoP Prop. 33, IUCN, Gland, <http://cmsdata.iucn.org/downloads/cop_13_hhw_listing_proposal.pdf>.
132. 12th meeting of the Conference of the Parties. Approved in 2004 (13th meeting of the Conference of the Parties).
133. Convention on International Trade in Endangered Species of Wild Fauna and Flora. (2016). *Decisions of the Conference of the Parties to CITES in effect after its 17th meeting*. CITES, Geneva, <<https://cites.org/sites/default/files/eng/dec/valid17/E17-Dec.pdf>>.
'16.139 To implement effectively the Appendix-II listing of the humphead wrasse, Parties should:
a) use existing documents listed in paragraph 13 of document CoP16 Doc. 62 (Rev. 1) in their implementation of the Appendix-II listing of the humphead wrasse; and
b) investigate reported violations of the Convention and of related national laws in relation to trade in the humphead wrasse, and take appropriate enforcement actions in accordance with their national legislation.
In addition, range States and importing Parties should strengthen bilateral and regional cooperation, including intelligence exchange and enforcement actions.'
134. Advisory Council on the Environment. (2000). *Hong Kong Trade in Live Reef Fish for Food - Measures Taken by Government*. ACE Paper 31/2000, Environmental Protection Department, Hong Kong, <http://www.epd.gov.hk/epd/mobile/english/boards/advisory_council/ace_paper0031.html>.
135. Enunciated by the Permanent Court of International Justice in the landmark Lotus case, The Case of the S.S. 'Lotus' (France v. Turkey) (1927), PCIJ, Ser A, no.10, p.25, and subsequently affirmed in the Convention on the High Seas (1958) Article 6(1) and the Law of the Sea Convention (1982) Article 92(1).
136. Brownlie, I. (2008). *Principles of Public International Law*, 7th edn, Oxford University Press, Oxford, p. 228.
137. Such treaties include the United States-Canada Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and the Bering Sea (1953), the Treaty Concerning Pacific Salmon (1986), the Convention on the Conduct of Fishing Operations in the North Atlantic (1967) and the Straddling Stocks Agreement (1995).
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138. Brownlie, I. (2008). *Principles of Public International Law*, 7th edn, Oxford University Press, Oxford, p. 422.
139. Article 5(1) of the Convention on the High Seas (1958).
140. United Nations Convention on the Law of the Sea, <http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf>.
141. Brownlie, I. (2008). *Principles of Public International Law*, 7th edn, Oxford University Press, Oxford, p. 423.
142. Zhang, L.Y. (2010). 'A Comparative Study of "Hong Kong Flag" Ship Registration', *Asia Pacific Law Review*, vol. 18, no. 2, p.197.
143. Mayer Brown JSM. (2008). *Guide to Shipping Register and Shipping Tax Regime in Hong Kong*. Mayer Brown JSM, Hong Kong, <https://www.mayerbrown.com/files/Publication/ebd45e69-3522-4e40-8940-1c428b6a7897/Presentation/PublicationAttachment/cf24e179-4a0f-4382-a739-2c7e25a827d6/guide_jsmshipping_july08.pdf>.
144. Section VIII of Annex I to the Sino-British Joint Declaration, which relates to the transfer of sovereignty, states that:
'The Hong Kong Special Administrative Region shall maintain Hong Kong's previous systems of shipping management and shipping regulation, including the system for regulating conditions of seamen. The specific functions and responsibilities of the Hong Kong Special Administrative Region Government in the field of shipping shall be defined by the Hong Kong Special Administrative Region Government on its own. Private shipping businesses and shipping-related businesses and private container terminals in Hong Kong may continue to operate freely. **The Hong Kong Special Administrative Region shall be authorised by the Central People's Government to continue to maintain a shipping register and issue related certificates under its own legislation in the name of "Hong Kong, China".**'
145. Mayer Brown JSM. (2008). *Guide to Shipping Register and Shipping Tax Regime in Hong Kong*. Mayer Brown JSM, Hong Kong, <https://www.mayerbrown.com/files/Publication/ebd45e69-3522-4e40-8940-1c428b6a7897/Presentation/PublicationAttachment/cf24e179-4a0f-4382-a739-2c7e25a827d6/guide_jsmshipping_july08.pdf>.
146. Marine Department. (2016). *Port of Hong Kong Statistical Tables 2016*. Marine Department, Hong Kong, Table 25, <http://www.mardep.gov.hk/en/publication/pdf/portstat_ast_2016.pdf>.
147. Marine Department. (2016). *Port of Hong Kong Statistical Tables 2016*. Marine Department, Hong Kong, Table 25, <http://www.mardep.gov.hk/en/publication/pdf/portstat_ast_2016.pdf>.
148. Marine Department. (2017). *Number and Gross Tonnage of Ships Registered in Hong Kong*. Marine Department, Hong Kong, <http://www.mardep.gov.hk/en/pub_services/pdf/mon_stat.pdf>.
149. S.4 provides for the Director of Marine to appoint a Registrar of Ships.
150. Marine Department. (2016). *Hong Kong Shipping Register User's Handbook: Section 1 – General*. Marine Department, Hong Kong, <http://www.mardep.gov.hk/en/pub_services/sec01.html#p1>.

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153. Marine Department. (2016). *Hong Kong Shipping Register User's Handbook: Section 8 – Quality Assurance*. Marine Department, Hong Kong, <http://www.mardep.gov.hk/en/pub_services/sec08.html>.
154. Zhang, L.Y. (2010). 'A Comparative Study of "Hong Kong Flag" Ship Registration', *Asia Pacific Law Review*, vol. 18, no. 2, p.197.
155. Government Logistics Department. (2005). *Merchant Shipping (Registration) Ordinance (Chapter 415)*. Government Notice 4653, GLD, Hong Kong, <<http://www.gld.gov.hk/egazette/pdf/20050937/egn200509374653.pdf>>.
Marine Department. (2016). *Hong Kong Shipping Register User's Handbook: Section 1 – General*. Marine Department, Hong Kong, <http://www.mardep.gov.hk/en/pub_services/sec01.html#p1>.
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157. Marine Department. (2017). *Certification and Licensing of Local Vessels*. Marine Department, Hong Kong, <http://www.mardep.gov.hk/en/pub_services/ocean/cllv.html>.
'Every vessel shall be certificated and licensed for the appropriate class and type specified in Schedule I to the Merchant Shipping (Certification and Licensing) Regulation, Cap 548D prior to operating the vessel in the waters of Hong Kong. The owner of a vessel should firstly apply to the Director of Marine for an Approval-in-Principle Letter (AIP Letter) before applying for the approval of plans, survey, Certificate of Ownership (COO) and Operating Licence (OL).' The AIP letter requirement does not apply to certain Class III fishing sampans and Class III outboard sampans.
158. Schedule 1 of the Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation (Cap 548D), <[http://www.blis.gov.hk/blis_pdf.nsf/6799165D2FEE3FA94825755E0033E532/B1C2384587914298482575EF0018BD40/\\$FILE/CAP_548D_e_b5.pdf](http://www.blis.gov.hk/blis_pdf.nsf/6799165D2FEE3FA94825755E0033E532/B1C2384587914298482575EF0018BD40/$FILE/CAP_548D_e_b5.pdf)>.
Marine Department. (2016). *Application for Approval-in-Principle Letter – Guidance Notes*. MD 521, Marine Department, Hong Kong, <<http://www.mardep.gov.hk/en/forms/pdf/md521n.pdf>>.
159. Marine Department. (2017). *Hong Kong Licensed Vessels (New Series)*. Marine Department, Hong Kong, <http://www.mardep.gov.hk/en/publication/pdf/portstat_2_y_e3.pdf>.
160. Marine Department. (2016, pers. comm.); Ho, V. (AFCD) (2017, pers. comm.)
161. The Statistics are based on declaration forms submitted to the Marine Department by shipping companies/agents for declaring arrivals/departures of vessels under their charge.
Marine Department. (2015). *Port of Hong Kong Statistical Tables 2015*. Marine Department, Hong Kong, <http://www.mardep.gov.hk/en/publication/pdf/portstat_ast_2015.pdf>.
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Marine Department. (2015). *Port of Hong Kong Statistical Tables 2015*. Marine Department, Hong Kong, p.7, Table 6, <http://www.mardep.gov.hk/en/publication/pdf/portstat_ast_2015.pdf>.
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167. Marine Department. (2015). *Port of Hong Kong Statistical Tables 2015*. Marine Department, Hong Kong, p.29, Table 25, <http://www.mardep.gov.hk/en/publication/pdf/portstat_ast_2015.pdf>.
168. Marine Department. (2015). *Port of Hong Kong Statistical Tables 2015*. Marine Department, Hong Kong, p.27, Table 24, <http://www.mardep.gov.hk/en/publication/pdf/portstat_ast_2015.pdf>.
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171. Merchant Shipping (Local Vessels) (General) Regulation (Cap 548F), <[http://www.blis.gov.hk/blis_pdf.nsf/4f0db701c6c25d4a4825755c00352e35/9C50F39D215707F148575EF0018DA1F/\\$FILE/CAP_548F_e_b5.pdf](http://www.blis.gov.hk/blis_pdf.nsf/4f0db701c6c25d4a4825755c00352e35/9C50F39D215707F148575EF0018DA1F/$FILE/CAP_548F_e_b5.pdf)>.
172. Chan, I. (AFCD) (2017, pers. comm.)
173. S.69 of the Merchant Shipping (Local Vessels) Ordinance (Cap 548), <http://www.blis.gov.hk/blis_pdf.nsf/6799165D2FEE3FA94825755E0033E532/15D60944D1497359482575EF00188B2F?Op=OpenDocument&bt=0>.
174. Jiang, G.F. (Marine Department) (2017, pers. comm.)
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176. Chapter V, Regulation 19, s.2.4 of SOLAS 'Carriage requirements for shipborne navigational systems and equipment', <<http://www.imo.org/en/OurWork/facilitation/documents/solas%20v%20on%20safety%20of%20navigation.pdf>>.

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179. 香港特別行政區 訴刁銳 HCMA 606/2013.
180. On appeal, the Court of Appeal found that the trial judge erred in law in determining that 'it is not necessary for the prosecution to prove that there was no manifest', but held that notwithstanding that statement there was no miscarriage of justice in respect of that error, given the facts of the case.
181. Man, J. (2012). 'Fishing boats in "smuggle" 600 million litres of fuel', *South China Morning Post*, 14 August, <<http://www.scmp.com/news/hong-kong/article/1013822/fishing-boats-smuggle-600-million-litres-fuel>>.
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183. Hong Kong Police Force. (2016). *Hong Kong: The Facts – The Police*. Hong Kong Police Force, Hong Kong, <<http://www.gov.hk/en/about/abouthk/factsheets/docs/police.pdf>>.
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185. Customs and Excise Department. (2005). *Customs seizes unmanifested freshwater fish – 9 September 2005*. Press Releases, C&ED, Hong Kong, <http://www.customs.gov.hk/en/publication_press/press/index_id_386.html>.
186. HKSAR Government. (2007). *Customs seizes unmanifested freshwater fish and turtles*. Press Releases, HKSARG, Hong Kong, <<http://www.info.gov.hk/gia/general/200702/27/P200702270205.htm>>.
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189. Customs and Excise Department. (2013). *Customs foils fishing vessel smuggling case (with photos) – 4 December 2013*. Press Releases, C&ED, Hong Kong, <http://www.customs.gov.hk/en/publication_press/press/index_id_1079.html>.
190. 香港特別行政區 訴刁銳 HCMA 606/2013.
191. Customs and Excise Department. (2013). *Customs foils fishing vessel smuggling case (with photos) – 4 December 2013*. Press Releases, C&ED, Hong Kong, <http://www.customs.gov.hk/en/publication_press/press/index_id_1079.html>.
192. Food and Health Bureau. (2013). *LCQ22: Shellfish supplied to Hong Kong*. FHB, Hong Kong, <http://www.fhb.gov.hk/en/legco/replies/2013/lq130717_q22.htm>.
193. Financial Services and the Treasury Bureau. (2015). *The 2014-15 Budget: Estimates for the year ending 31 March 2015, Head 22 – Agriculture, Fisheries and Conservation Department*. FSTB, Hong Kong, p.41, <<https://www.budget.gov.hk/2014/eng/pdf/head022.pdf>>.
- Also see Financial Services and the Treasury Bureau. (2017). *The 2016-17 Budget: Estimates for the year ending 31 March 2017, Head 22 – Agriculture, Fisheries and Conservation Department*. FSTB, Hong Kong, p.41, <<https://www.budget.gov.hk/2016/eng/pdf/head022.pdf>>.
194. Under Criminal Procedure Ordinance Cap 221 s.14A, where any provision in any Ordinance creates, or results in the creation of, an offence, the offence shall be triable summarily unless there are other specified circumstances.
195. Converted currencies are rounded up to the nearest HK\$1,000.
196. A Level 6 fine is imposed, being \$100,000 under Schedule 8 of the Criminal Procedure Ordinance (Cap 221).
197. Being Annex A to the Principal Regulation, which includes:
 - (1) All CITES Appendix I species, except where EU Member States have entered a reservation;
 - (2) Some CITES Appendix II and III species, for which the EU has adopted stricter domestic measures; and
 - (3) Some non-CITES species.European Commission. (2017). *The European Union and Trade in Wild Fauna and Flora*. EC, Brussels, <http://ec.europa.eu/environment/cites/legislation_en.htm>.
198. Level 5 fine; according to the standard scale of fines in section 37(2) of the Criminal Justice Act 1982, a Level 5 fine is £5,000.
199. 1,000 penalty units; according to the federal penalty units in section 4AA of the Crimes Act 1914, a penalty unit means AUS\$170.
200. Under section 303CA of the Act, the authorities must establish a list of CITES species, and the list must include all species from time to time included in any of Appendices I, II and III to CITES. The list must not include any other species.
201. 1,000 penalty units; according to the federal penalty units in section 4AA of the Crimes Act 1914, a penalty unit means AUS\$170.
202. For example, AFCD Circular (2 June 2017) on the Plan for Phasing out the Local Trade in Elephant Ivory and Licence to Re-export Pre-Convention Ivory, viewed 7 October 2017, <https://www.afcd.gov.hk/english/conservation/con_end/files/ES02_17e.pdf>.
203. In the course of judgment, the judge specifically drew a distinction between theft of CITES protected trees and those which are not CITES protected, stating in paras. 9 and 10 that 'In our view, counsel's argument started on the false premise that Buddhist pine is an endangered species. He ... failed to appreciate that not all members of the family are protected. According to Schedule 1 of the Protection of Endangered Species of Animals and Plants Ordinance, Cap 586 (the 'Ordinance') only two members of the family are protected: namely, *Podocarpus neriifolius* and *Podocarpus parlatorei*. According to Mr Pang, the scientific name of Buddhist pine is *Podocarpus macrophyllus*. Buddhist pine is therefore not a protected species for which special consideration applies. **This explains the lower starting point adopted in the Buddhist pine cases.** ... The Buddhist pine cases referred to by Mr Allman-Brown were launched by the prosecution as ordinary cases of theft, albeit of some peculiar property, rather than as cases of protection of endangered flora. The focal point in those authorities was on illegal immigrants crossing Hong Kong waters for the purpose of stealing trees and the quantity of trees thus stolen, rather than on protection of endangered flora.'
204. At para. 13: In delivering the judgment of the Court of Appeal, Yeung JA gave a description of the use of incense tree and referred to its scientific name, *Aquilaria sinensis*. He then referred to Hong Kong's international obligation under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (the 'Convention') and the Ordinance. He said:

- '15. In our opinion, the judge was right to have taken a serious view of the offence when the defendants had expressly come to Hong Kong for the purpose of cutting endangered trees for profit.
16. A clear and strong message is needed to deter Mainland people from coming to Hong Kong to cut endangered trees, be they Buddhist Pines or incense trees ...'
205. Under s.2, a 'specified offence' means any of the offences specified in Schedule 1 or Schedule 2 of the Organized and Serious Crimes Ordinance; conspiracy to commit any of those offences; inciting another to commit any of those offences; attempting to commit any of those offences; and aiding, abetting, counselling or procuring the commission of any of those offences. Theft and importing or exporting unmanifested cargo are offences listed in Schedule 1.
206. See also **HKSAR v Liu Huan Lan & Anor** DCCC 644/2013 (unreported), 26 August 2013; **HKSAR v Rong Lixing & Anor** DCCC 98/2012 (unreported), 8 March 2012; **HKSAR v Xie Xiaoming & Anor** DCCC 961/2012 (unreported), 22 November 2012; **HKSAR v Fok Kong Fung & Ors** DCCC 475/2011 (unreported), 22 June 2011; **HKSAR v Yang Jianwei** DCCC 998/2011 (unreported), 1 November 2011.
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213. Chan, S.C. & Lim, C.L. (eds.) (2011). *Law of the Hong Kong Constitution*, Sweet & Maxwell, Hong Kong, p.98.
214. Chan, S.C. & Lim, C.L. (eds.) (2011). *Law of the Hong Kong Constitution*, Sweet & Maxwell, Hong Kong, p.99.
- Certain offences cast an even wider jurisdictional net. In respect of offences against the person or against property committed either ashore or afloat in any place outside Hong Kong, it is in fact sufficient for the master/seaman/apprentice to be at the time when the offence was committed, or at any time within the previous three months, employed in any Hong Kong ship.
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219. Chan, S.C. & Lim, C.L. (eds.) (2011). *Law of the Hong Kong Constitution*, Sweet & Maxwell, Hong Kong, p.89.
220. Chan, S.C. & Lim, C.L. (eds.) (2011). *Law of the Hong Kong Constitution*, Sweet & Maxwell, Hong Kong, p.87.
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224. Food and Agriculture Organization. (2002). *Fishing Vessels Operating under Open Registers and the Exercise of Flag State Responsibilities - Information and Options*. Fisheries Circular No. 980, FIPL/C980, FAO, Rome, <<ftp://ftp.fao.org/docrep/fao/005/y3824e/y3824e00.pdf>>.
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226. The signatories are Albania (8 Nov 2005), Angola (7 Mar 2006), Argentina (24 Jun 1996), Australia (19 Aug 2004), Barbados (26 Oct 2000), Belize (19 Jul 2005), Benin (4 Jan 1999), Brazil (2 Mar 2009), Canada (20 May 1994), Cape Verde (27 Jan 2006), Chile (23 Jan 2004), Cook Islands (30 Oct 2006), Cyprus (19 Jul 2000), Egypt (14 Aug 2001), European Union (6 Aug 1996), Georgia (7 Sep 1994), Ghana (12 May 2003), Japan (20 Jun 2000), Madagascar (26 Oct 1994), Mauritius (27 Mar 2003), Mexico (11 Mar 1999), Morocco (30 Jan 2001), Mozambique (9 Jan 2009), Myanmar (8 Sep 1994), Namibia (7 Aug 1998), New Zealand (14 Jul 2005), Norway (8 Dec 1994), Oman (1st Jul 2008), Peru (23 Feb 2001), Republic of Korea (24 Apr 2003), St. Kitts & Nevis (24 Jun 1994), St. Lucia (23 Oct 2002), Senegal (8 Sep 2009), Seychelles (7 Apr 2000), Sri Lanka (29 Aug 2014), Sweden (25 Oct 1994), Syrian Arab Republic (13 Nov 2002), Tanzania (17 Feb 1999), United States of America (19 Dec 1995), Uruguay (11 Nov 1999).
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236. Department of Justice. (2017). *List of Treaties in Force and Applicable to the Hong Kong Special Administrative Region*. DOJ, Hong Kong, <<http://www.doj.gov.hk/eng/laws/interlaw.html>>.
237. The term 'soft law' refers to quasi-legal instruments that do not have any legally binding force, or whose binding force is weaker than the binding force of traditional or 'hard' law.
238. Fisheries and Aquaculture Department. (2017). *Fisheries and aquaculture governance*. Food and Agriculture Organization, Rome, <<http://www.fao.org/fishery/topic/13255/en>>.
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240. AFCD. (2017, pers. comm.) (email to Sadovy, Y.) 'For fisheries management measures, in recent years, we have been promoting the sustainable development of the fisheries industry through, among others, implementing a suite of fisheries management and enhancement measures to help conserve marine resources. These include, among others, the trawl ban and establishment of a registration system for local fishing vessels with a view to controlling fishing effort in the waters of Hong Kong. We are also preparing for the designation of Fisheries Protection Areas to protect important fish nursery and spawning grounds in Hong Kong waters. Other relevant management measures include, but not limited to, the implementation of marine parks and reserve to protect, restore and enhance marine life, manage the use of related resources, etc.'
241. Fisheries and Aquaculture Department. (2017). *Illegal, Unreported and Unregulated (IUU) fishing*. Food and Agriculture Organization, Rome, <<http://www.fao.org/fishery/topic/3195/en>>.
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251. Food and Agriculture Organization. (2014). *Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels – The way forward*. Strategy Document Global Record, COFI/2014/SBD.2, FAO, Rome, <<http://www.fao.org/cofi/25270-058225474f2f66fda237cb6821261e069.pdf>>.
252. Fisheries and Aquaculture Department. (2014). *Global Record at COFI 31*. Food and Agriculture Organization, Rome, <<http://www.fao.org/fishery/nems/40602/en>>.
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255. Fisheries and Aquaculture Department. (2017). *Utilization and trade*. Food and Agriculture Organization, Rome, <<http://www.fao.org/fishery/topic/13275/en>>.
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257. Important decisions on 'necessity' include: *US – Gasoline, Thailand – Cigarettes, EC – Asbestos* (the first time an environmental measure passed the 'necessity' test) and *Brazil – Retreaded Tyres*.

258. *'the prohibition on imports of tuna into the United States taken under the primary nation embargo could not possibly, by itself, further the United States conservation objectives. The primary nation embargo could achieve its desired effect only if it were followed by changes in policies and practices in the exporting countries. ... the embargoes on tuna implemented by the United States were taken so as to force other countries to change their policies with respect to persons and things within their own jurisdiction, since the embargoes required such changes in order to have any effect on the conservation of dolphins. ...*
... The Panel concluded that measures taken so as to force other countries to change their policies, and that were effective only if such changes occurred, could not be primarily aimed either at the conservation of an exhaustible natural resource, or at rendering effective restrictions on domestic production or consumption, in the meaning of Article XX (g).'
259. *'The Panel also recalled that measures taken under the primary nation embargo prohibited imports from a country of any tuna, whether or not the particular tuna was harvested in a way that harmed or could harm dolphins, as long as the country's tuna harvesting practices and policies were not comparable to those of the United States. The Panel observed that, as in the case of the intermediary nation embargo, the prohibition on imports of tuna into the United States taken under the primary nation embargo could not possibly, by itself, further the United States objective of protecting the life and health of dolphins. The primary nation embargo could achieve its desired effect only if it were followed by changes in policies and practices in the exporting countries. In view of the foregoing, the Panel observed that both the primary and intermediary nation embargoes on tuna were taken by the United States so as to force other countries to change their policies with respect to persons and things within their own jurisdiction, since the embargoes required such changes in order to have any effect on the protection of the life or health of dolphins.'*
260. Alternatively that the particular fishing environment of the harvesting nation did not pose a threat to sea turtles.
261. World Trade Organization. (2017). *India etc versus US: 'shrimp-turtle'*. Environment Disputes 8, WTO, Geneva, <http://www.wto.org/english/tratop_e/envir_e/edis08_e.htm>.
262. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, pp.169-170, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
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265. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, pp.169-170, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
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267. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, p.168, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
268. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, pp.171-172, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
269. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, pp.171-172, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
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271. In the two *Tuna* disputes, the panel and the parties accepted – implicitly in *US – Tuna I (Mexico)*, explicitly in *US – Tuna II (EEC)* – that the protection of dolphin life or health was a policy that could fall under Article XX(b): *'[...] [T]he Panel noted that the parties did not disagree that the protection of dolphin life or health was a policy that could come within Article XX(b).'*
 Van den Bossche, P. (2006). *The Law of World Trade Organisation*, Cambridge University Press, Cambridge, p.603.
272. *Thailand – Cigarettes* case.
273. *EC – Abestos* case.
274. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, pp.171-172, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
275. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, p.168, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
276. *US – Canadian Tuna* case.
277. *Canada – Salmon and Herring* case.
278. *US – Shrimp* case.
279. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, p.168, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
280. Per the *US – Tuna (EEC)* case, the Panel stated that *'[...] measures taken so as to force other countries to change their policies, and that were effective only if such changes occurred, could not be primarily aimed at either the conservation of an exhaustible natural resource, or at rendering effective restrictions on domestic production or consumption, in the meaning of Article XX(g).'*
281. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, p.168, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
282. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, p.168, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
283. *'... the Panel could see no valid reason supporting the conclusion that the provisions of Article XX(g) apply only to policies related to the conservation of exhaustible natural resources located within the territory of the contracting party invoking the provision. The Panel consequently found that the policy to conserve dolphins in the eastern tropical Pacific Ocean, which the United States pursued within its jurisdiction over its nationals and vessels, fell within the range of policies covered by Article XX(g).'*
284. Canada - Measures affecting the exports of unprocessed herring and salmon, adopted 22 March 1988, 35S/98; United States - Prohibition of imports of tuna and tuna products from Canada, adopted 22 February 1982, 29S/91.

285. *The sea turtle species here at stake, i.e., covered by Section 609, are all known to occur in waters over which the United States exercises jurisdiction. Of course, it is not claimed that all populations of these species migrate to, or traverse, at one time or another, waters subject to United States jurisdiction. Neither the appellant nor any of the appellees claims any rights of exclusive ownership over the sea turtles, at least not while they are swimming freely in their natural habitat -- the oceans. We do not pass upon the question of whether there is an implied jurisdictional limitation in Article XX(g), and if so, the nature or extent of that limitation. We note only that in the specific circumstances of the case before us, there is a sufficient nexus between the migratory and endangered marine populations involved and the United States for purposes of Article XX(g).*
286. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, pp.170-171, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
287. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, pp.170-171, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
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289. World Trade Organization. (2010). *World Trade Report 2010: Trade in natural resources*. WTO, Geneva, pp.170-171, <http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf>.
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293. Fisheries and Aquaculture Department. (2017). *Utilization and trade*. Food and Agriculture Organization, Rome, <<http://www.fao.org/fishery/topic/13275/en>>.
294. Such as Stockholm Declaration 1972, Principle 21; Rio Declaration 1992, Principle 2; Rio Forest Principles 1992, Principle 1 (a); Desertification Convention 1994, Preamble; UN Framework Convention on Climate Change 1992, Preamble; ECE Convention on Long Range Transboundary Air Pollution 1979, Preamble; Convention for the Protection of the Natural Resources and Environment of the South Pacific Region 1986, Article 4(6); ASEAN Agreement on the Conservation of Nature and Natural Resources 1985, Article 20 (not verbatim, but similar wording).
295. Advisory Council on the Environment. (1998). *Recommendations of the APEC Workshop on the Impact of Destructive Fishing Practices on the Marine Environment*. ACE Paper 33/98, Environmental Protection Department, Hong Kong, <http://www.epd.gov.hk/epd/english/boards/advisory_council/ace_paper9833.html>.
296. Asia-Pacific Economic Cooperation. (2016). *Ocean and Fisheries Working Group*. APEC, Singapore, <<http://www.apec.org/Groups/SOM-Steering-Committee-on-Economic-and-Technical-Cooperation/Working-Groups/Ocean-and-Fisheries>>.
297. Other members are Australia, Brunei Darussalam, Canada, Chile, People's Republic of China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, The Republic of the Philippines, Russian Federation, Singapore, Chinese Taipei, Thailand, United States and Vietnam.
298. NOAA Fisheries. (2010). *Pacific Regional Fishery Management Organizations*. National Oceanic and Atmospheric Administration, Washington, <http://www.nmfs.noaa.gov/sfa/reg_svcs/Councils/Training2010/Tab%20Q%20%20International%20Fisheries%20Issues/H%20andout/Legislation%20by%20Council.pdf>.
299. (1) Coastal and marine ecosystem conservation and disaster resilience;
(2) The role of the ocean on food security and food-related trade;
(3) Marine science, technology and innovation; and
(4) Blue Economy. For a list of relevant cases, see Rocco, V.J. (2008). 'Wildlife Conservation Under the Lacey Act: International cooperation or legal imperialism?', *New York State Bar Journal*, vol. 80, p.10.
300. AFCD. (2014, pers. comm.)
301. Anderson, R.S. (1995). 'The Lacey Act: America's premier weapon in the fight against unlawful wildlife trafficking', *Public Land and Resources Law Review*, vol. 16, no. 27, p.19.
302. Material provided by Caiti Troyer of the Arizona State University, 'The Regulatory Frameworks for the Illegal International Trade in Wildlife, Fish, and Plants in the U.S., Australia, and the U.K.', 9 February 2014.
303. 16 United States Code (U.S.C.) § 3372 (a) (1)-(2).
304. United Nations Office on Drugs and Crime. (2016). *World Wildlife Crime Report: Trafficking in Protected Species*. UNODC, Vienna, <https://www.unodc.org/documents/data-and-analysis/wildlife/World_Wildlife_Crime_Report_2016_final.pdf>.
305. 16 U.S.C. § 3372 (a) (1).
306. 16 U.S.C. § 3372 (a) (2)(A), (B)(i).
307. 16 U.S.C. § 3372 (a) (4).
308. For a list of relevant cases, see Rocco, V.J. (2008). 'Wildlife Conservation Under the Lacey Act: International cooperation or legal imperialism?', *New York State Bar Journal*, vol. 80, p.10.
309. 16 U.S.C. § 3372 (a) (3).
310. 16 U.S.C. § 3372 (a) (2)(A), (B)(i); Anderson, R.S. (1995). 'The Lacey Act: America's premier weapon in the fight against unlawful wildlife trafficking', *Public Land and Resources Law Review*, vol. 16, no. 27, p.58.
311. 16 U.S.C. § 3371 (b).
312. Anderson, R.S. (1995). 'The Lacey Act: America's premier weapon in the fight against unlawful wildlife trafficking', *Public Land and Resources Law Review*, vol. 16, no. 27, p.67.
313. Anderson, R.S. (1995). 'The Lacey Act: America's premier weapon in the fight against unlawful wildlife trafficking', *Public Land and Resources Law Review*, vol. 16, no. 27, p.56.
314. 16 U.S.C. § 3372 (b).
315. 16 U.S.C. § 3372 (f).
316. 16 U.S.C. § 3372 (f) (3).
317. 16 U.S.C. § 3372 (d) (1).
318. 16 U.S.C. § 3372 (d) (2).
319. Rocco, V.J. (2008). 'Wildlife Conservation Under the Lacey Act: International cooperation or legal imperialism?', *New York State Bar Journal*, vol. 80, pp.10,12. See *United States v. Molt*, 599 F.2d 1217 (3d Cir. 1979).

- Rocco (2008) describes that the Lacey Act is somewhat analogous to the better known National Stolen Property Act (18 U.S. CODE § 2311). However, the array of rules and regulations that can serve as predicates for violation under the Lacey Act are much more extensive (p.11).
320. 16 U.S.C. § 3372 (a).
 321. Rocco, V.J. (2008). 'Wildlife Conservation Under the Lacey Act: International cooperation or legal imperialism?', *New York State Bar Journal*, vol. 80, pp.10,12, fn25. See *Maine v. Taylor*, 477 U.S. 131 (1986) and *Gibbs v. Babbitt*, 214 F.3d 483 (4th Cir. 2000).
 322. Anderson, R.S. (1995). 'The Lacey Act: America's premier weapon in the fight against unlawful wildlife trafficking', *Public Land and Resources Law Review*, vol. 16, no. 27, p.77. See *U.S. v. Doyle*, 786 F.2d at 1443 (1986), *Maine v. Taylor*, 477 U.S. 131 (1986), and *Hughes v. Oklahoma*, 441 U.S. 322 (1979).
 323. Rocco, V.J. (2008). 'Wildlife Conservation Under the Lacey Act: International cooperation or legal imperialism?', *New York State Bar Journal*, vol. 80, pp.10,12. See *United States v. McNab*, 331 F.3d 1240-1241 (11th Cir. 2003).
 324. Rocco, V.J. (2008). 'Wildlife Conservation Under the Lacey Act: International cooperation or legal imperialism?', *New York State Bar Journal*, vol. 80, p.12. See *United States v. McNab*, 331 F.3d 1240-1241 (11th Cir. 2003).
 325. Rocco, V.J. (2008). 'Wildlife Conservation Under the Lacey Act: International cooperation or legal imperialism?', *New York State Bar Journal*, vol. 80, p.12.
 326. Rocco, V.J. (2008). 'Wildlife Conservation Under the Lacey Act: International cooperation or legal imperialism?', *New York State Bar Journal*, vol. 80, p.12.
 327. Anderson, R.S. (1995). 'The Lacey Act: America's premier weapon in the fight against unlawful wildlife trafficking', *Public Land and Resources Law Review*, vol. 16, no. 27, p.77.
 328. For some of these challenges, see Rocco, V.J. (2008). 'Wildlife Conservation Under the Lacey Act: International cooperation or legal imperialism?', *New York State Bar Journal*, vol. 80, p.13.
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PART III

NAVIGATING TOWARDS CALMER WATERS



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THE PERFECT STORM

The trade consists of fewer than 20 species supplied to millions of consumers by tens of thousands of fishers, through a complex trade chain controlled by a small number of traders and shippers

The LRFFT remains unregulated and unmonitored

Where regulations are in place, a significant proportion of the LRFFT operates illegally or in the 'shadows'

1.1 The Context – Sustained but Not Sustainable

Our study confirms that the LRFFT continues to be a valuable international trade that has grown in volume, but more significantly in value, over the last two decades, but that aspects of it, in particular wild-capture, are based on biologically unsustainable practices. These results accord with those of other studies and reports which indicate that the fisheries that supply the LRFFT are showing signs of localised depletions, while the demand side is prepared to pay increasingly higher prices for the desirable 'luxury' commodity of live reef food fish. The customer base served by this trade is largely located in Hong Kong and China, as well as in Chinese enclaves elsewhere. The trade predominantly consists of fewer than 20 species, mainly groupers, supplied to millions of consumers by tens of thousands of fishers, through a complex trade chain controlled by a relatively small number of traders and shippers. Some species are hatchery-produced or farmed, but the more valuable species in the trade are predominantly wild-caught. Hong Kong serves as the major international hub for the trade, where substantial volumes of LRFF are imported, transhipped and re-exported, almost exclusively into mainland China.

With few exceptions, government oversight of the LRFFT by both exporting and importing countries has been poor and sometimes entirely lacking. The trade as a whole remains largely unregulated and unmonitored. Even where regulations are in place, a significant proportion of the trade operates illegally or in the 'shadows'. As a result, our true understanding of the volumes and values of live fish traded is minimal at best, particularly for the wild-caught component of the trade. Importantly, substantial economic benefits are being obscured in both source

Concerns over the LRFFT's long-term sustainability were raised as early as the mid-1990s

countries and demand markets, from erosion of the resource base to unpaid taxes and tariffs. To varying degrees, the lack of management controls over source fish populations is compromising the natural reef fish resources that support livelihoods and food security in many coastal communities of, mostly developing, source countries. Aggravating the situation as established fisheries begin to show signs of depletion (i.e. growth and then recruitment overfishing), is the 'boom and bust' nature of the trade. This sees traders fanning out across source countries, e.g. Indonesia and the Philippines, in search of ever new fishing grounds to exploit, as current fishing areas become depleted, in order to fuel the persistent demand for live fish and to continue to benefit from high earnings. These so-called 'small-scale' fisheries are not small-scale in terms of their intensity and need to be managed if they are to be sustained.

Concerns over the LRFFT's long-term sustainability, largely due to overfishing and its impact on LRFF populations and the marine environment, were raised as early as the mid-1990s, when problems of destructive fishing emerged. As the trade continued at rates that exceeded the natural productivity of targeted stocks in most areas, its biological sustainability was increasingly called into question. Similarly, the high and rising values that can be extracted from the trade, combined with a lack of official oversight, have entrenched the corruption, illegality and lack of transparency that plague efforts to implement more effective management and to bring the trade under control. More than two decades later, and after millions of dollars in funding initiatives, significant progress has yet to be made towards addressing most of these concerns. The issue of IUU, including elements of unreported and unregulated catches, has also emerged as a particularly important and challenging issue.

This report describes and assesses the current trends including trade values, volumes, composition, practices (both political and business) and legal framework. It examines the multiple reasons for the ongoing lack of oversight, monitoring, management and legality, and identifies possible ways forward for achieving long-term sustainability, both biologically and economically.

1.2 Swimming Against the Tide

1.2.1 The Fishes and Fisheries – Vulnerable and Largely Unmanaged

Secretive business practices and highly dispersed and remote distribution networks of producers, lack of accountability to, and oversight by, governments, have facilitated corruption

With the exception of Australia, major source areas for wild fish that supply the LRFFT, and which make up the bulk of its value, are in developing countries, mainly in Southeast Asia. These countries are typically ineffectively engaged in the management of their demersal coastal fisheries, and appear to have very little control over much of the trade activities associated with live fish exports.

The often secretive business practices and highly dispersed and sometimes remote distribution networks of producers (fishers and live fish consolidators and buyers), combined with the lucrative nature of the LRFFT, strong trade ties and lack of accountability to, and oversight by, governments, have facilitated corruption and

For the major exporting countries today, most of the problems remain unresolved

resulted in the absence of management and poor documentation of the volumes in trade. This situation has encouraged and enabled overexploitation and the use of unsustainable and destructive fishing practices, from the use of cyanide to the uncontrolled and undesirable levels of capture of juveniles and spawning fish.

Responses to this situation have varied over the years. Some countries have withdrawn from the trade entirely, as in the case of several Island nations, e.g. Palau, Fiji and, to a large extent, PNG. Limited natural resources, social disruption and high transaction costs (e.g. transport and mortality risks) played a significant role in the cessation or suspension of the trade in these countries, in addition to concerns over unsustainable practices. Some countries have tried to manage the exports and/or the fishery itself, with varying degrees of success, as in the case of the Maldives and Australia. For the major exporting countries today (Indonesia, the Philippines and Malaysia), however, most of the problems remain unresolved.

The supply chain has evolved from one that comprised mainly wild-sourced fish in the 1990s and early 2000s, to one that supplies approximately equal volumes of cultured (farmed) and wild-caught fishes today. Wild-caught fishes continue to account for the highest species diversity and the highest economic value (per kg), while cultured fishes comprise mainly low to medium value grouper species (e.g. the Green Grouper) that collectively make up an increasing proportion of the trade. However, there are growing concerns over the condition of the exploited populations of a number of wild-caught species.

Serious concerns are emerging over limited global supplies of fish feed as a major constraint in grouper farming

Wild-Caught Fish – Continued Incentive for Overfishing: Today, wild-caught fishes come mainly from Indonesia, the Philippines and Australia, with some from the Philippines moving through Malaysia. Their volumes, relative to cultured fish as well as overall, are either stable or declining, depending on the species. Due to continued consumer interest, income benefits to fishers and high profit margins for traders, it is expected that wild fishes will continue to appeal as long as they are available and harvesting is economically viable, even as the supply of farmed fishes increases. At the same time, serious concerns are emerging over limited global supplies of fish feed and whether this could be a major constraint, at least in the short term, for future growth in grouper farming.

Extreme depletions will not protect species from localised extirpation as wealthy consumers will pay high prices for rare species

As a result of a mixture of factors, overfishing will continue to generate sustainability concerns unless effective management is introduced. Since fishers in developing countries need to earn a living from their capture fisheries, even if catches decline, they will continue to fish as long as there is demand and as long as they can generate an income that exceeds their costs and/or offers a better return than that offered by other economic pursuits. Since consumers have a particular interest in wild-sourced fish, and several preferred species are only wild-caught, fishers will continue to catch from the wild even as populations decline to levels that pose conservation threats. Extreme depletions will not protect these species from localised extirpation because wealthy consumers are prepared to pay very high prices for rare but desired species.

The biological vulnerability of LRFFT species combined with the lack of fishery management mean overfishing is an ongoing challenge

The natural biological vulnerability of several LRFFT species (late sexual maturation, low productivity, aggregation-spawning, etc.), combined with the lack of fishery management in most source countries, mean that overfishing is an ongoing challenge. This is especially so for the most highly desired and expensive species which are closely associated with the display of status and conspicuous consumption for some diners. This can be seen in practice from the:

- Increasing use of grow-out of wild-caught juveniles of the highly valued Leopard Coralgroupers in the Philippines and the Humphead Wrasse in Indonesia, following declines in adult fish being caught;
- Listing of the high-value Humphead Wrasse on CITES Appendix II (2004), largely as a result of the LRFFT;
- Targeting of spawning aggregations of, and declines in species like, the Flowery Grouper and Squaretail Coralgroupers; and
- Gradual introduction of 'new' species into the trade to meet high demand, i.e. those formerly not commonly traded, such as the (red-coloured) Tomato Hind and a wider diversity of Coral Trout (*Plectropomus*) species. This is paralleled by declines in other species, such as the Flowery Grouper. Even the highly desired Leopard Coralgroupers, although naturally more resilient to fishing than many other groupers, is heavily sourced from the wild as both adults and juveniles and is clearly overexploited in many places.

Farming is helping to fill the demand-supply gap for LRFF, but is not a substitute for the capture of wild stocks

Farmed Fish – Urgent Need to Improve Farming Practices: Farmed/cultured fish in the LRFFT, involving large volumes of a small number of generally lower value species, are increasing in importance relative to wild-caught market-sized fishes. The countries supplying these fishes are predominantly mainland China, Taiwan, Thailand, Malaysia and Indonesia.

While farming is helping to fill the demand-supply gap for LRFF, it is not a substitute for the capture of wild stocks, and may even serve to make LRFF more accessible to a wider group of less affluent consumers, possibly further stimulating demand (as was the case with salmon). Furthermore, growth in this sector has its own challenges. Important among these is the high demand for fish feed, an essential food component for captive carnivorous species like groupers. Indeed, a growing global shortage in fish feed is looming as a major mariculture issue because these species have high fish feed dependency ratios. On the positive side, compound feeds are lowering fishmeal, fish oil content and hence feed conversion ratios for all species. However, the small-scale nature of the numerous enterprises engaged in farming these LRFF species, their remoteness from feed mills and challenges in storing feeds collectively mean that the industry will continue to depend heavily on 'trash fish' for feed, at least in the medium term.

The capture of wild juveniles for grow-out contributes to overfishing and hastens the likelihood of localised extirpation

In addition, the capture of wild juveniles for grow-out not only contributes to overfishing but hastens the likelihood of localised extirpation. The clearest example is that of the Leopard Coralgroupers. In Palawan, a major source area for the species, it is estimated that on some fishing grounds >80% of the fish are caught as juveniles, while adult numbers are now worryingly low in terms of their ability to

Once captured / cultured, LRFF enter an international trade chain driven by demand in Hong Kong and China

A significant volume of live fishes are exported to mainland China

The LRFFT is a low-volume and high-economic-value trade. In 2016, the its retail value in Hong Kong was estimated to be at least US\$1.4 billion

contribute to stock replenishment. There are also emerging issues of intensively farmed fish being exposed to increased incidence of disease and parasites due to poor practices and problematic business models. This, in addition to the emergence of hybrid farmed species, poses potential challenges to maintaining marine ecosystem integrity if not controlled. Evidently, there is an urgent need to improve farming practices, in addition to reducing the use of wild fish in fish feed.

1.2.2 The Trade Hub – Opaque and Poorly Documented

Once captured or cultured, LRFF enter an international trade chain largely driven by demand in Hong Kong and China. Hong Kong, the primary trade hub, is controlled by a relatively small number of traders who bring live seafood into the city, by both sea and air (with each mode of transport accounting for roughly 50% of trade volumes in 2016, although this likely underestimates the relative importance of sea transport due to suspected under-reporting of live seafood cargo). The importers and wholesalers involved supply a handful of medium to high-end restaurants and hotels, as well as thousands of lower-priced seafood restaurants. A significant volume of live fishes is also re-exported over the border, mostly to mainland China.

Due to the city's *laissez-faire* approach to trade and shortcomings in the monitoring of the LRFFT, the imports and re- exports of live fish into and out of Hong Kong are poorly documented and subject to minimal regulatory oversight. In particular, regulations on imports of live fishes by sea are ambiguous and outdated, and have contributed to the pervasive lack of transparency in the trade. This situation has encouraged widespread IUU with the import/re-export of significant, unregulated and partly illegal volumes of LRFF. The secretive trade structure and lack of accountability of traders regarding Hong Kong laws have also facilitated smuggling between the city and mainland China. This practice has been exposed in part by the regular and illegal trade of the CITES-listed Humphead Wrasse in Hong Kong and China. This is in spite of the species being subject to strict international requirements for exports as well as requiring import and possession permits in Hong Kong, which are often not obtained prior to its sale.

1.2.3 Big Business – Low Volume, High Value and an Uncertain Future

The high unitary value of LRFF has resulted in a low-volume and high-value trade. In 2016 alone, the LRFFT's retail value in Hong Kong was estimated to be at least US\$1.1 billion. This was roughly four times the global value of the marine aquarium trade and almost six times the production of Hong Kong's own fishing fleet in 2016. A more striking comparison would be the wholesale value of the LRFFT, which is roughly one-third of the Western and Central Pacific Tuna fisheries, while accounting for less than 2% of the volume of that Tuna trade. Importantly, this value of the LRFFT is considered to be conservative, given the extent of under-reporting that is occurring, such that a more accurate retail value could be around US\$1.4 billion. The LRFFT is clearly big business.

At its best, the LRFFT provides benefits to many coastal fishing communities, as well as to traders and shippers along the supply chain. It brings significant income to tens of thousands of fishermen and fish farmers in the developing countries of

the region, and supports a small but lucrative, and apparently sustainable, fishery in Australia. It can be particularly economically rewarding for traders downstream in the supply chain. For agents at the wholesale and retail levels, profit margins can be substantial for the most desired species such as the Leopard Coralgrouper, High-finned Grouper and Humphead Wrasse, despite risks of financial loss and significant transaction costs. If operated legally and transparently, the trade has much reason to thrive. It would generate tax revenue and tariffs for countries involved, as well as becoming a sustained source of food and income for thousands of coastal fishers. However, given the levels of illegal trade indicated currently, much of this potential revenue and benefit are not being realised. The LRFFT's future, at least in terms of wild-capture, remains highly uncertain.

1.2.4 The Emerging Issues – Traceability, Brand Reputation and Consumer Choice

If operated legally and transparently, the trade has reason to thrive, generating tax revenues and tariffs, and as a sustained source of food and income for thousands of fishers

The lack of transparency, poor traceability and limited accountability associated with much of the LRFFT are serious obstacles to implementing sustainable practices. As noted above, they obscure the economic benefits of the fisheries to source and destination countries, and mask possible losses due to uncollected revenues. Paradoxically, transparency and traceability are increasingly embedded into global supply chain expectations. Given the growing scrutiny of fishing vessels globally and the importance of vessels in transporting live fishes, the clandestine practices of sea-transported live fish cargo are attracting increasing attention. This has the potential to reflect badly on Hong Kong as a seafood trade hub that is largely out of control and apparently unconcerned about the LRFFT's possible negative implications.

Reputational risks will likely escalate for restaurants or transporters associated with unsustainable trade practices

Looking forward, reputational risks will likely escalate for restaurants or transporters associated with unsustainable trade practices, such as selling or transporting threatened species (such as Humphead Wrasse), as consumers become more aware of sustainability issues and come to expect greater business accountability. At the same time, growing Corporate Social Responsibility (CSR) both in Hong Kong and globally is prompting businesses to source more responsibly and to consider certification schemes (e.g. the Marine Stewardship Council (MSC) and Aquaculture Stewardship Council (ASC) for wild-caught and farmed fish respectively) as a means to differentiate environmentally, socially and ethically sourced seafood. However, it is important to realise that achieving MSC certification is highly unlikely in all but a few LRFF fisheries, with more 'responsible' sources of live fish being the more realistic benchmark.

There has been growing interest in chilled/fresh/frozen reef fishes due to acceptance by Chinese buyers

There has been growing interest in chilled/fresh/frozen reef fishes (particularly groupers and the Humphead Wrasse) due to greater acceptance by Chinese buyers, which has led to higher market prices for fish in these forms. In the past, consumer interest was predominantly for live seafood. The inclusion of chilled/fresh/frozen fish also made it possible to market recently dead fishes, which were originally part of the live trade, as well as a wider range of fishes that are typically marketed live. For instance, fishes larger than one kilogram, which are not as prized by the live fish market and tend to attract lower per kg prices when live, can

now be sold for good prices when dead, either whole or as fillets. Unfortunately, the chilled/fresh/frozen reef fish sector is particularly poorly documented, partly because harmonized trade codes for frozen groupers are not frequently used (although there are exceptions in Taiwan and the Maldives), and partly because source countries generally do not document reef fish exports in much detail.

1.3 A Confluence of Factors

A confluence of factors and circumstances surrounding the LRFFT has created a situation analogous to a 'perfect storm'

A confluence, or combination, of factors and circumstances surrounding the LRFFT has created a situation analogous to a 'perfect storm', whereby the trade, because of the way it is structured and conducted, has continued along an increasingly unsustainable trajectory and arrived at a point where it will be extremely difficult to divert it onto a pathway of greater biological sustainability. The multiple elements include: a focus on species that are easy to overfish; fisheries that lack management or monitoring in the absence of government oversight; a trade that is evidently unwilling to engage with sustainable practices and remains highly secretive in many places; poor trade controls and supervision; high returns; higher incomes relative to other livelihood options in coastal communities; organised crime; and a consumer base that has little appetite or interest at present for sustainably sourced fish.

There appears to be little political will or desire to see the LRFFT conducted transparently, sustainably, ethically and legally

Furthermore and importantly, despite its high profile, there appears to be very little political will or desire to see the LRFFT conducted transparently, sustainably, ethically and legally by both source and destination countries. Acknowledgement of the trade's illegal, unregulated and unmonitored status is scant, and limited efforts have been made in understanding and publicizing the LRFFT's long-term economic worth, as well as its potential threats to the region's natural resources in the near future. For all the effort and funding dedicated to the LRFFT over the past two decades, outcomes are decidedly mixed and positive changes few. Many important issues continue to be unresolved, and multiple environmental and socio-economic concerns remain. In the mid-1990s, when issues concerning the trade first gained notice, questions were raised regarding whether it was possible for fisheries supplying internationally traded LRFF to be put on a sustainable footing, and what it would take to achieve this. Most of these questions remain unanswered. While some Pacific Island countries have pulled out of the trade, several major source countries in Southeast Asia continue to struggle with the challenges of sustainability with limited success.

Despite growing interest by numerous retailers in Hong Kong for sustainable supplies, there is still not one certified source of LRFF

Despite growing interest by numerous retailers in Hong Kong for sustainable supplies, there is still not one certified source of LRFF. The absence of certification is partly attributable to a general lack of consumer and trader interest in the region, and to a lack of awareness about biological sustainability. These shortcomings hamper incentives for consumer or trader-driven change, such as through certified seafood programmes. The lack of certification is also attributable to unsustainable fishing practices, examples being the use of destructive fishing techniques, overfishing and the retention of juveniles for grow-out, and their impacts on endangered, threatened or protected species, legality issues and the multi-species

The sum of factors that undermines the LRFFT's sustainability, ultimately, will lead to the extinction of localised species in the wild

nature of the LRFFT. Likewise, the opaque and poorly regulated trade structure makes it very difficult for interested retailers to reliably obtain sustainably sourced fish, or to understand what is happening in the trade in general. Moreover, the standards and costs of implementing most certification systems may be beyond the capability of most fisheries that supply the LRFFT. For most fishers, the 'chain of custody' is a largely unknown concept. Added to these obstacles are issues related to 'live' product forms and the diffuse supply chain.

It is clear that without major changes to the way the trade is conducted, the sum of factors that undermines its sustainability will continue to conspire against its long-term biological and economical viability, at least as far as wild-caught fish are concerned. Ultimately, this will lead to the extinction of localised species in the wild, with implications for the long-term survival of the trade itself. That said, with the identification of several courses of action, some progress has been made for the trade to reach 'calmer waters'.

1.4 Some Cause for Optimism

The CITES-listed Humphead Wrasse has export quotas in both Indonesia and Malaysia, and efforts have resulted in lower numbers of illegally imported fish in Hong Kong

On the positive side, changes and initiatives in both export and import countries in recent years provide some hope for reform, albeit not all or exclusively specific to the LRFFT. The Indonesian government is cracking down on illegal activities by foreign fishing and carrier vessels, and while the emphasis has been more on offshore fishing vessels targeting pelagic species, precedents are being established for tightening regulations on collection and transshipment of live reef fish. From the industry standpoint, one Indonesian trader has voluntarily started to manage his business for fishing effort regulation (limiting the number of fishermen from which fish are purchased) and minimum sizes, while not exporting the Humphead Wrasse. In doing so, the trader is demonstrating that the trade can still be economically viable under such constraints. Closed seasons to protect reproduction are slowly moving towards a reality in Palawan for the Leopard Coral grouper, and similar measures are being discussed for several species in Indonesia. Both Fiji and Pohnpei in Micronesia are about to protect their grouper spawning aggregations.

A recent stock assessment of this species in northern Palawan (currently the stock is overfished) identified the levels of fishing that would support recovery of fish stocks to a sustainable level, so as to guide implementation of appropriate regulations which are being actively discussed by the affected communities and local government. Likewise, the CITES-listed Humphead Wrasse has had export quotas applied in both Indonesia and Malaysia, based on population assessments and efforts have resulted in lower numbers of illegally imported fish in Hong Kong in the last couple of years and more convictions.

Although challenges remain in enforcing these efforts, measures are being introduced to implement some of them. Regarding export quotas, Indonesia introduced air-only shipments and the quotas themselves reduced by more than tenfold the number of this species that can be legally exported, compared to

pre-CITES levels. Moreover, the discussions around this species, the population assessments, workshops conducted, and several policy changes have concurrently drawn attention to reef fishes and the need for sustainable use, the illegal trade of the Humphead Wrasse and conservation issues in general. The Hong Kong government is trialling a novel approach to identifying and tracking legally imported Humphead Wrasse.

In 2016, the Hong Kong government recommended that the Humphead Wrasse and Red/Hong Kong Grouper be excluded from government official functions

Further downstream, in 2016 Hong Kong issued a dining advisory recommending that the Humphead Wrasse and Red/Hong Kong Grouper (among other species) be excluded from government official functions due to ongoing threats to these species. This followed a crackdown in 2012 when the Chinese government banned luxury commodities (including LRFF) in relation to concerns over corruption at state-sponsored banquets. Since 2016, AFCD has been scrutinising the activities of Humphead Wrasse traders much more closely, resulting in several recent prosecutions for illegal possession, fewer re-approvals of possession licences and attempts to identify, at the individual level, imported fish to reduce laundering. Such actions have led to fewer illegal imports of this species into the city since 2015, according to ongoing retail surveys of the species.

The Marine Department inexplicably exempts HK licensed fish carriers from reporting entry/exit to and from Hong Kong waters

Likewise, C&ED has also gradually been improving the harmonized coding of imports, most recently adding Hybrid Groupers, thereby improving understanding of the nature and volumes of the trade. The government's clarification of the remits of licensed fish carriers and fishing vessels in 2007, coupled with its reaffirmation of those categories that need to report cargo to Customs in 2016, should greatly improve understanding of LRFF's sea imports. However, the ability of Customs to enforce such requirements is currently compromised by a Marine Department directive which inexplicably exempts these vessels from reporting entry/exit to and from Hong Kong waters. Discussions on the issue are in progress. It is believed that some vessels would be made more accountable if the definition of 'marine fish' were to encompass live fish.

Finally, increasing consumer awareness of sustainability issues has prompted many businesses to source more sustainably and/or ethically produced food. NGOs and academics have responded by helping to raise the bar on standards for food acquisition, equitable and fair trade, and seafood security. In the case of live seafood, however, challenges remain in tapping into this sentiment, both in terms of verifying sourcing claims and, more importantly, scaling up the demand for 'responsible' live fish, beyond the few global brand hotels and niche supermarkets that are leading initiatives on commitment to sustainable or ethical retailing.

Genuine commitment is needed to move the live seafood fisheries closer toward a sustainable and ethical trade

Whilst such efforts are encouraging, real and genuine commitment is clearly needed to move the live seafood fisheries closer toward a sustainable and ethical trade. Major action is required from all actors in the trade chain, from producers and governments in source countries, to traders, governments in import countries, NGOs, intergovernmental organisations and consumers. ■

ALL HANDS ON DECK

RECOMMENDATIONS

2.1 Operationalising Recommendations

Reviewing recommendations proposed in reports up to 20 years ago to address sustainability concerns around the LRFFT is not only informative but necessary. While relatively few of these recommendations have been addressed, some only in part, the majority remain unresolved. This accounts for the somewhat lengthy list of recommendations highlighted below. Of particular note is the relatively limited focus to date on Hong Kong and the differential policies of the Marine Department, C&ED and AFCD.

It is hoped that this report and the recommendations contained herein will be an important reminder of the inertia that has plagued efforts to reform the LRFFT, but also as a catalyst for a reinvigorated pursuit of several options that will direct the LRFFT towards a sustainable path. In order for this to be achieved, it is intended that this report and its recommendations become a repository for use by the LRFFT 'community of practice' in source and demand countries:

- as source material for conducting, presentations, webinars and seminars targeting a range of interested parties including governments, regional agencies, NGOs, academics and donors.
- to provide a basis to draft proposals for grant funds to target specific recommendations or as part of a renewed LRFF campaign and to galvanise the NGO community;

- as an advocacy tool for reaching out to governments and regional agencies [i.e. APEC, Asia-Pacific Fishery Commission (APFIC), CTI-CFF] to stimulate regional dialogue and solutions
- to inform the necessary dialogue with the Hong Kong Government by highlighting actions needed by the government to address the legislative loopholes identified.

2.2 Source Countries

2.2.1 Key Issues

The LRFFT, though distinctive and clearly important, is perhaps not as easy to identify or understand as other valuable export fisheries

Monitoring and Stock Assessment: LRFFT fisheries are not generally perceived to be highly valuable to national economies, despite their importance to fishing communities. This situation is largely attributable to the lack of attention paid to coastal reef fisheries, of which LRFF are a part, in the Southeast Asian region, as well as poor documentation, inadequate legislation, the secrecy of the trade, the dearth of stock assessments and the relatively small number of players involved. The LRFFT, though distinctive and clearly important, is perhaps not as easy to identify or understand as other valuable export fisheries because it operates in parallel with local food fisheries. The low natural productivity of the traded species and vulnerability to overfishing, as well as the low volumes involved, relative to many other species caught in local fisheries, and the sometimes secretive activities of traders, tend to obscure their high economic value. This is further exacerbated by the complex, often secretive and shifting trade networks. Moreover, fishers often have little idea of market (retail) prices and limited bargaining power to benefit from higher prices; in addition some may be indebted to traders who require loans to be repaid at higher rates when prices rise. If this were not the case, they could be more invested in the value of the resource and maybe less likely to fish in a way that leads to boom-and-bust patterns of exploitation. Hence, the LRFFT differs from other export fisheries in coastal areas of the region in several ways:

Groupers are used for food locally in many producer communities, and hence the live trade can affect food security

- Groupers are also used for food locally in many producer communities (although not exclusively, since some communities prefer pelagic species for local consumption), and hence the live trade (and growing export trade in chilled/fresh/frozen groupers) can affect local food security;
- Several important species in the trade have particularly vulnerable aspects to their biology which are not typically considered or addressed in standard management approaches (such as seasonal or spatial protection of spawning aggregations and sex change), and/or are particularly easy to overfish (e.g. Flowery Grouper, Giant Grouper and Humphead Wrasse);
- Other valued export fisheries from tropical coastal areas, such as sea cucumber and shark fin, which are not typically considered to be important for consumption in source countries, are much easier 'commodities' to identify and distinguish in terms of their economic value, trade routes and volumes (and in the case of shark fin, its cruelty), and hence have attracted much more international and national attention;

Multi-species fisheries that are geographically dispersed, and remote, are notoriously difficult to monitor and assess

- Almost the entire catch retained alive is destined for one market (Hong Kong and mainland China), and that market, unlike export markets for other commodities in North America and Europe, is in its infancy in terms of demanding sustainable seafood. This lack of demand for responsibly sourced seafood makes it difficult to advocate for improved monitoring and traceability;
- Multi-species fisheries that are geographically dispersed, including in remote areas, are notoriously difficult to monitor and assess; and
- Some of the species are also marketed and appreciated locally within a 'culinary tourism' context, such as in the Maldives and Sabah, Malaysia. In the case of chilled groupers, domestic demand for favoured species and declining stocks mean that export demand is competing with local markets and driving up prices within the source country. This is happening in Fiji.

National fisheries departments may not be sufficiently capacitated or tasked with assessing or managing coastal or reef resources

Institutional Capacities: National fisheries departments may not be sufficiently capacitated or tasked with assessing or managing coastal or reef resources. In most LRFF source countries, fisheries departments do not monitor or assess their coastal demersal fisheries and know little of what is exported from reef fish fisheries. Given the cross-sector implications of various aspects of the LRFFT, the fisheries and activities that support them need to be managed simultaneously by various tiers or levels of government (local, provincial and national). However, this can leave gaps in oversight and/or create opportunities for mismanagement and overlap of responsibilities. For example, threatened species/conservation issues are often handled by a different ministry (often Forestry, for historic reasons) from that which deals with fisheries and marine resources, while aquaculture and capture fisheries are typically handled in separate departments or ministries, with live and dead fish being monitored and regulated differently. Quarantine departments may have oversight of export shipments of live fish but do not exercise this effectively, or Customs staff or other enforcement officers, including the police, may be responsible for identification of illegal shipments but are unable to distinguish fish species.

Recent growth in hatchery-based grouper production in source countries involved in the LRFFT, will not replace wild-caught fish

Hatchery-based Mariculture: Despite recent substantial growth in hatchery-based grouper production in source countries involved in the LRFFT, this is insufficient to meet consumer demand and will not replace wild-caught fish before these become further overexploited, for several reasons. These range from the small number of species commercially cultured and consumer preference for wild-caught fish of a range of different species, to increasing constraints in sourcing fish feed for farming carnivorous species, and to the cumulative impacts of expanding maricultural activities on the receiving environment. The latter factor, in particular, is likely to severely limit growth in mariculture in the short term, and may even result in the reduction of current levels of production.

2.2.2 Recommendations

PRIORITY

- **Develop and implement cost-effective monitoring programmes to evaluate grouper stocks (for both live and chilled/fresh/frozen fish trades) and socio-economic indicators, based on simple methods and assessment approaches (e.g. 'rules of thumb' estimates rather than detailed assessments), to determine:**
 - **Target levels of catch of key or indicator species, which could include percentage reduction targets;**
 - **Appropriate range of minimum sizes for retained species allowable for export;**
 - **Biologically appropriate export quotas (required for CITES-listed species to ensure that exports are sustainable); and**
 - **Social and economic importance of exports to the community and all levels of government (through income, taxes and tariffs) to identify opportunities to improve revenue retention and distribution of value along the value chain.**

The challenge of making inroads in geographically dispersed areas leads us to recommend working with industry stakeholders and provincial agencies to trial these approaches in discrete locations in key source countries.

- **Implement controls and incentives to tighten oversight of export volumes and the activities and accountability of export agents, including in relation to tax liabilities, such as by establishing and enforcing designated export hubs. Monitoring and administration costs can be met by nominal increases in export tariffs collected at these hubs.**
- **Monitor and regularly assess the fisheries and trading of threatened and near threatened species or of vulnerable life history stages (such as spawning aggregations and nursery areas), and species undergoing declines in the LRFFT (such as the Flowery Grouper) or taken too heavily in their juvenile size range (such as the Leopard Coral grouper).**
- **For small-scale fish farmers, create partnerships among the public, private and civil society by establishing a livelihood programme designed to:**
 - **Promote cooperative business models and partnerships to unlock barriers to improving productivity, environmental performance, such as access to and promotion of better feeds (e.g. pellets rather than 'trash' fish) and farming practices, in order to reduce mortalities and improve health under culture conditions;**

- Connect farmers to the market, overcome value chain inefficiencies, promote traceability, increase regulatory compliance and boost marketing; and
- Integrate smallholder producers into value chains by improving access to finance, insurance and other risk management solutions.
- Support increased transparency and traceability in LRFFT supply chains through technological and operational requirements and regulations including, but not limited to:
 - Foreign vessels registering in source countries to provide their call sign in the form of an MMSI or IMO number that is fully trackable by AIS, and the AIS to be switched on all the times;
 - Formalize processes liaison between the Hong Kong government and source countries to ensure vessels of concern are inspected on arrival in Hong Kong;
 - Increase customs authorities to inspections of boxes of fish being exported by air; and
 - Consideration should be given to controlling the export of wild-caught fish by only allowing their export by air, with only mariculture-produced fish to be exported by sea, in the case of foreign vessels (as is already the case for Indonesia). This would aim to ensure better control on wild fish exports since vessel movements appear to be more challenging to control.

Fisher cooperatives can be the framework by which to establish licensing systems to better manage fishery access

- Facilitate the establishment of fisher cooperatives and local organisations supported by local governments to improve the price-bargaining power of source communities and to work more equitably with governments and traders on decision-making about resource access and use. Fisher cooperatives can be the framework by which to establish licensing systems to better manage fishery access.
- Fisheries that focus on juvenile phases (e.g. for plate-sized fish or for grow-out) need to be addressed by recognizing the need to manage at lower levels of fishing pressure than for purely adult fisheries to ensure sufficient reproduction including by implementing a system of temporal and spatial closures that complements grow-out times and market demand.
- Convene an inaugural and subsequently biennial 'regional forum' involving national governments, the CTI-CFF and regional agencies (i.e. SEAFDEC) to prioritise and address LRFFT issues, in particular an agreed code of conduct or best-practices management. Country delegates should be appointed to facilitate implementation of the regional LRFFT agenda at national levels.

- Partner with aid agencies to conduct regional audits of institutional capacity and constraints to handle specific challenges arising from the live fish export trade within a broader context of reef fishery management. Audits will need to examine the capacitation of fisheries departments to address threatened species (including CITES-listed species) and the management of overlaps between fisheries and mariculture operations.

2.3 Traders and Retailers

2.3.1 Key Issues

Many traders are opaque or secretive regarding their business practices

Responsible Trade Practices: Many traders are opaque or secretive regarding their business practices. There is strong evidence, for example, that some may not be reporting cargo (volumes/species) moving out of source countries or into import hubs, particularly by sea. This makes the trade difficult to quantify and regulate. A major representative trade group in Hong Kong, the Hong Kong Chamber of Seafood Merchants, remains ambivalent in its commitment to support change, although it does acknowledge some of the problems. In particular, oversight of fish carrier vessels needs to be remedied to ensure that these vessels report their cargo both entering and exiting Hong Kong. Traders should be urged to operate a legal and transparent trade. On the other hand, a growing interest in sourcing sustainably produced live fish, for example by some of the top-end restaurants and supermarkets, currently frustrated by the lack of responsible sourcing options and poor traceability, may ultimately provide the incentive to move towards a more transparent trade.

Wholesalers and retailers have the capability to shift supply chains and bring consumers along

Responsible Retailing: Because retailers often respond to customer preferences, and it is reasonable to assume that most would prefer to buy legally reported and regulated products, there are opportunities to proactively influence customer choices and to ensure that what is sold is legal. In general, however, it is the wholesalers and retailers who have the capability to shift supply chains, if they so desire, and who can bring consumers along. According to the conventional ‘theory of change’, market transformation requires that the key stakeholders account for a significant market share in order to be able to exert influence, in terms of improved practices, both up and down the supply chain. The main limitations for retailers to ‘move the dial’ in terms of mainstreaming responsible sourcing include: i) engaged retailers constitute a very small percentage of the overall market; and ii) the key influencers are the Hong Kong wholesalers who dominate market power in the supply chain. As previously noted, wholesalers in the city have yet to clearly demonstrate a willingness to engage in more responsible practices in relation to this trade.

Transport Sector Engagement: The transport sector plays an integral role in the LRFFT, but instituting policies that may facilitate a more sustainable or responsible trade is not generally on the agenda of sea or air carriers, with the recent noteworthy exception of transport policies on shark fin, ivory and hunting trophies. Furthermore, corporate awareness of the issues surrounding the LRFFT is low. However, as attention is increasingly directed towards seafood trade globally (as it was towards shark fin and ivory) and efforts are made to bring it under better control, those

businesses planning ahead will be in an advantageous position and at less risk of compromising their brand and income streams if they embrace and practise responsible and legal trade. Sea transporters are often also fish traders and, as indicated above, need to submit manifests and declare their live fish cargo as they enter and leave Hong Kong waters.

2.3.2 Recommendations

Importers/Wholesalers/Transporters and Retailers

PRIORITY

- In terms of responsible sourcing of LRFF, there are limited supplies of fish that are produced using best practices. This impediment to accessing better fish will need to be overcome by establishing a pipeline of improvement projects to provide saleable products. The multi-faceted approach will call for:
 - identifying key buyers (i.e. retailers, wholesalers) who are interested in sourcing sustainably produced live reef fish and linking them with suppliers prepared to work according to responsible sourcing principles, i.e. with specific, interested companies. This will need to be done via collaborations with relevant NGOs, donors, local government departments or academics;
 - Developing improvement projects for LRFF fisheries that are benchmarked against internationally recognised standards (e.g. MSC or other certification standards), with support from the industry, governments and NGOs. These projects would establish baseline conditions for the fisheries along with time-bound solutions for demonstrating improvement, leading to improved prices and/or market access; and
 - 'Fair Trade' may be one possible approach to the LRFF as the model has already been implemented with other fisheries in Southeast Asia, with exports to North America and Europe. The challenge, though, will be to locate buyers in Hong Kong and China willing to adopt this model.
- Trade suppliers should develop best practice guidelines to facilitate the adoption of green policies, including procurement policies, and to complement Hong Kong government initiatives on the sustainable use of biological resources. For example, the Hong Kong Chamber of Seafood Merchants could work with its members to support and encourage trade in sustainably, ethically and legally sourced seafood. This would need to be done collaboratively with source countries, for example through a regional forum as proposed above.
- Air carriers could ensure greater transparency by requiring that all international shipment tanks or boxes have a transparent window to facilitate inspection of cargo content. Since it is logistically difficult to open shipments of live fish for inspection, windows could substantially assist verification of container content and further enhance the carriers' ability to 'know what you carry'. This would also assist the Hong Kong government in enforcing its CITES obligations and act as a disincentive for shippers who have been circumventing the rules.

The sustainable seafood movement in Hong Kong and mainland China is at least a decade behind other parts of the world

- Trade suppliers and retailers in Hong Kong should establish a working group to develop and adopt a voluntary industry code of conduct for responsible seafood sourcing and sale (NB: This could include reviewing and revising existing voluntary codes such as the International Standard for the Trade in Live Reef Food Fish).
- It follows that transporters should be encouraged to use moulded transport bins to reduce marine pollution caused by their extensive consumption of disposable Styrofoam boxes. The Hong Kong government should make efforts to enforce this practice as part of its commitment to the Sustainable Development Goals, specifically SDG 14 – Life Below Water.

Retailers, including Restaurants and Supermarkets

The sustainable seafood movement in Hong Kong and mainland China is at least a decade behind other parts of the world, with limited market penetration in relation to recognised certification schemes. The idiosyncrasies of LRFF, particularly their status as a luxury good, make it difficult to influence and fight against cultural tides. In view of this and the small number of outlets currently engaged in sustainable and/or responsible seafood, the following actions are recommended:

PRIORITY

- **The retail sector (restaurants, clubs, supermarkets, hotel outlets, etc.) should increase pressure on suppliers by requesting verification that seafood is sustainably, safely and legally sourced. When selling protected species like the Humphead Wrasse (CITES Appendix II), it should check that its suppliers have valid possession permits for the species. This could include government-mandated public display of a valid possession license in the restaurant, even if the fish are kept for a very brief period on the premises.**
- Hospitality sector should provide information and training to frontline staff, e.g. restaurant managers or waiting staff, regarding seafood provenance, enabling them to assist customers in making sustainable choices through their recommendations.

There is considerable under-reporting and poor documentation of LRFF entering Hong Kong and mainland China

2.4 Destination Country Governments – Hong Kong and China

2.4.1 Key Issues

Oversight and Monitoring of International Trade: A key finding of this study is the considerable under-reporting and poor documentation of LRFF entering Hong Kong and mainland China and associated lack of government oversight of live fish cargo in general. This conclusion was drawn from multiple data sources, including knowledge of illegal ship activity, examination of CITES data and analyses of species reports from source and destination countries. Overall, the

review suggests that despite smuggling activities (by both sea and air), the C&SD data on air imports are generally reliable in terms of identifying trends, but that substantial under-reporting persists regarding sea imports arriving on Hong Kong fish carrier vessels, which are obliged to report their cargo to C&ED but evidently are not always doing so.

A key question is how much under-reporting is actually occurring and how this problem can be resolved. In addition to fish carrier (cargo) vessels, it is likely that many vessels classified as fishing vessels (Class III (c)) are also importing live fish. Class III (c) fishing vessels are currently exempted from reporting to C&ED, and are not required to land their live fish at the FMO (only 'marine fish' are required to be landed at the FMO, and live fish are not considered to be 'marine fish' under the relevant law). Class III (a) vessels must report to Customs but not to FMO.

The Hong Kong and mainland Chinese governments play a key role in the LRFFT and should ensure that imports and re-exports are documented and legal

The Hong Kong and mainland Chinese governments play a key role in the LRFFT and should, together, exercise sufficient oversight to ensure that imports and re-exports (in that case of movement from Hong Kong to mainland China) are documented and legal. Achieving this requires better monitoring of imports, particularly live seafood on Hong Kong fish carriers, and improved and updated (Harmonized) coding for common species (including chilled/fresh/frozen reef fishes) in international trade. Oversight could also be improved by updating and addressing ambiguities and shortcomings in several laws that apply to the trade, which relate directly to its monitoring and safety (for example in relation to reducing the risks of importing diseased or ciguatoxic fishes, regarding the definition of 'marine fish', and the ability to understand better the movements of cargo vessels into and out of the city).

Communications between trading nations (i.e. between Hong Kong and source country governments and between Hong Kong and mainland China governments) in respect of vessels known or suspected to be operating illegally, including in relation to CITES-listed species (the Humphead Wrasse), need to be considerably improved in order to facilitate exchange of intelligence. In the case of mainland China, attention is needed in border areas with Hong Kong (such as Sha Tau Kok), where regular and significant illegal, unmonitored and undocumented trade is ongoing, largely to avoid import tariffs.

Around the world, developed countries are increasingly labelling the seafood they retail in more detail

Consumer Information: There is increasing expectation and obligation for governments to ensure that consumers are made more aware of the identity and provenance of their seafood in support of attempts to improve traceability and assist consumer choice. Around the world, developed countries are increasingly labelling the seafood they retail, often including information on species, country of origin and mode of production. In Hong Kong, the recently completed Sustainable Development Consultation concluded¹ that a long-term strategy is needed to help induce behavioural change towards more sustainable consumption of biological resources through, among other things: (1) formulating promotion plans and publicising promotional messages through social media and electronic devices; (2) inviting the Environmental Campaign Committee² to launch a campaign to further promote sustainable consumption of biological resources;

and (3) facilitating NGOs and schools to initiate and implement education and community engagement programmes and activities to promote the concept and importance of sustainable consumption of biological resources. While the Hong Kong government is creating leeway for greater consumer awareness and choice, labelling, particularly for commodities such as live seafood, must be underpinned by assurances that the product is legally sourced, traceable along the supply chain and, in some cases, meets environmental criteria. As acknowledged in this report, meeting such expectations in the LRFFT is challenging, and while labelling of live reef fish may be achievable in the long term, in the short to medium term more work is needed to engage consumers.

Hong Kong has local and international commitments in relation to safeguarding biodiversity

Commitment to Sustainability and International Obligations: Hong Kong has local and international commitments in relation to safeguarding biodiversity, which call for action in order to be effective. Examples include ensuring that imports and sales of CITES-listed Humphead Wrasses are all legal, that laundering is minimised, and that the CITES-linked Possession Permit system is effectively applied. The recently released Biodiversity Strategic Action Plan (developed as part of Hong Kong's commitment to the Convention on Biological Diversity) highlights the need to reign in illegal wildlife trade in general, including in relation to international trade in seafood, and to reduce the city's negative impact on global biodiversity, as well as the negative image poor practices gives the city. Ongoing government consultations on the consumption of biologically renewable resources by the government are also relevant.

2.4.2 Recommendations

Monitoring and Reporting of Reef Fish Cargo and Related Enforcement Issues

PRIORITY

- The Hong Kong government should amend the exemption of 'fishing craft' to submit customs declarations under the Import and Export (Registration) Regulations (Cap 60E) Regulation 3. The amendment is required to require Class III (a) fish carriers, who obtain live marine fishes and invertebrates, by means other than fishing, from the waters of other countries' to submit declarations. The amendment is a potentially powerful tool due to its comparative ease of coming into effect whereby it does not need to go through the usual lengthier legislative process.
- The Marine Department should lift its entry/exit reporting exemption for Class III (a) carrier vessels by removing the exemption granted by the Department Director, such that Hong Kong carrier vessels must report their entry/exit to Hong Kong's Marine Department. This will enable Customs to identify vessels entering and leaving Hong Kong, thereby facilitating customs inspections and checking of manifests. The exemption removal can be readily done (see Communication and Coordination below).

- C&ED should enforce customs manifest requirements, and C&SD should maintain the HKLFV manifest data and make the country of origin, volume and species data publically accessible, in the same manner as data derived from import declarations within the C&SD database. The level of detail, however, would need to be enhanced to provide as much species-specific data as is practical, as well as country of origin.
 - In Hong Kong, C&SD should consider adding commodity codes to identify chilled/fresh/frozen reef fishes (e.g. ‘frozen grouper or grouper fillets’, ‘frozen wrasses, other than Humphead Wrasse, or fillets’ and ‘frozen snapper or snapper fillets’) as well as update the commodity coding to include species that are increasingly being traded such as the Tomato Hind and several of the Coral Trouts.
 - Customs guidelines should be amended to strongly recommend both sea and airline carriers carrying LRFF to provide descriptions of their cargo in 8-digits, according to the HKHS.
 - Introduction of specific landing areas for live seafood being brought into Hong Kong for both quarantine and enforcement and monitoring purposes (as is currently required for ‘marine fish’ into FMOs).
-
- Inclusion of Class III (a) vessels into Cap 548G s.80A, such that vessels over 300 GT travelling in international waters are required to install and use an AIS.
 - Inclusion of live fish as ‘marine fish’ under the Fish Marketing Ordinance, which would then require reporting of live fish coming in on fishing vessels (Class III (c)).
 - Current legislation should be amended to enable Cap 586 to trigger the enhanced enforcement powers of Cap 455, the **Organized and Serious Crimes Ordinance**, such that there is enhanced sentencing and investigative powers.

Communication and Coordination

PRIORITY

- C&ED should facilitate the legality of live seafood imports. Given that documenting imports is their responsibility and that they are hampered in their work by the Marine Department’s exemption for carrier vessels to report their entry/exit into/from Hong Kong, C&ED should make a formal request to the Marine Department that the exemption be lifted.

- AFCD and C&ED should increase communication with source country governments to better monitor/understand Hong Kong vessel activities and reduce IUU. This includes communication in relation to cross-border trade between Hong Kong and mainland China.
- To ensure that AFCD meets its obligations under BSAP, the department should establish an inter-departmental task force on wildlife crime (beyond its current wildlife crime unit), including in relation to seafood trade, and strengthen collaboration and intelligence exchange. Recommendations to the government from the Sustainable Development Consultation in relation to the sustainable use of biological resources should be taken up. In addition, seafood needs to be considered one of the 'green targets' for sustainable sourcing (currently it is not considered).

Health and Safety Issues

- AFCD should implement steps to require inspection of live seafood entering the city, with particular attention paid to its provenance to reduce the risk of diseases being introduced that could affect local mariculture operations. For example, some live seafood is placed in 'fish hotels' in open coastal waters after import and prior to sale; if these come from areas where there is fish disease, this could be transmitted to local fish farms (as happened with groupers imported from Thailand in 1998).
- The Code of Practice on the Import and Sale of Live Marine Fish for Human Consumption: For Prevention and Control of Ciguatera Fish Poisoning (published in 15 December 2004 and now no longer in force) should be re-introduced by FEHD on a mandatory basis. This should reduce the risk of ciguatoxic fishes entering the Hong Kong market.
- Amendment of legislation pursuant to Cap 132, the Public Health and Municipal Services Ordinance, so as to mandate signage accompanying the sale of LRFF detailing: commercial name and/or scientific species designation; country, region or place of origin; method of catch; name of company or other party responsible for catch/farming etc.; and any genetic modifications. Any signage that does not comply with all of the above requirements would constitute an offence. Likewise, including any false or misleading statement on signage as to the environmental or ethical circumstances of any part of its production or supply chain would be an offence. Signage should be considered unsatisfactory unless it is clearly legible and arranged, placed or otherwise positioned so that it is easily identifiable as relating to the relevant LRFF.

Commitment to Sustainability and International Obligations

PRIORITY

- Given the current loopholes, AFCD should further enhance enforcement of existing regulations for the trade of the Humphead Wrasse, and to ensure that legally imported fish are individually tagged/identified to reduce laundering through retail outlets by replacement with illegally sourced fish.
 - As a major international port, with responsibility to assist global effort in reducing illegal marine traffic and operations, Hong Kong should consider being a Port State and implementing the measures of and signing onto the PSMA. Hong Kong could consider being a pilot for the implementation of PSMA as regards China's possible accession. Mainland China also needs to better control vessel activities through this mechanism.
 - Increased advocacy efforts toward relevant Chinese agencies around the government's 13th 5-year plan and Eco-Civilization, to secure stronger commitments to a more responsible seafood trade, particularly transparency and IUU issues around imports of live fish.
- AFCD should implement relevant actions identified under the BSAP, including engaging the public and developing relevant measures to promote sustainable consumption of biological resources.
 - Hong Kong should consider developing a law akin to the United States' Lacey Act to permit the seizure and forfeiture of illegally procured wildlife being shipped through the US, as well as to allow for seizures at the time of entry, rather than waiting until wildlife quarantined or held under bond is released and thus 'imported' according to customs law.³ There is no such law in Hong Kong, but its introduction would be an important advancement towards bringing illegal wildlife trade under better control. This is particularly relevant to the LRFFT, given that Hong Kong is freely importing LRFF from the Philippines, despite the latter's national prohibition on these exports. An immediate first step would be to review legal options for such an approach.

2.5 Inter- and Non-Government Sectors

2.5.1 Key Issues

There remain many unresolved and persistent challenges for the LRFFT

While some progress has been made in providing opportunities to make sustainable seafood choices in Hong Kong compared to two decades ago (when attention was first drawn to issues of destructive fishing and the urgent need for documentation of the trade), there remain many unresolved and persistent challenges for the LRFFT. Inter- and non-government sectors and academics play an important role in addressing some of these issues.

Intergovernmental organisations such as the FAO are tasked with important regional functions. As the major intergovernmental organisation on global fisheries, the FAO periodically produces country profiles on fisheries and aquaculture. However, these typically place little focus on tropical coastal fisheries, the international trade and, in particular, species-level identification of reef fisheries. It is suggested that in addition to the usual sections on pelagic fisheries and a number of valuable export species (such as sea cucumber, pelagic fishes and *Trochus spp.*), these profiles could include a separate section on groupers as a valuable commodity, in order to cover reef fish exports and to draw much needed attention to this resource.

There are opportunities for engaging regional intergovernmental organisations or forums on LRFFT practices

There are opportunities for engaging regional intergovernmental organisations or forums on LRFFT practices, such as the Asia-Pacific Fishery Commission (APFIC), APEC and ASEAN, some of which have been previously explored, without progress to date. These organisations have relevant mandates for fostering and coordinating regional initiatives in relation to safeguarding regional food security, reducing IUU, promoting good fishing and farming practices and harmonising international and regional trade. Most have acknowledged the need to address IUU and the sustainable use of marine resources, or supported projects to that effect, although few have endorsed LRFFT-specific programmes. Nonetheless, many of these regional organisations, as well as others like SEAFDEC, remain relevant for reef fisheries in terms of providing policy direction, organising in-country training and capacity building, and helping to broker multinational initiatives for LRFFT-related fisheries.

APFIC, as a regional FAO body, is currently tasked to: ‘promote, among other things, the full and proper utilisation of living aquatic resources through the development and management of fishing and culture operation’. As a Regional Consultative Forum, APFIC raises awareness among member countries and fisheries organisations, and provides advice and coordinates activities among others. All major LRFF-producing countries and China, as the prominent demand economy, are members of APFIC. The Commission could be lobbied through the Secretariat to include reef-based fisheries and the LRFFT, possibly within a livelihoods context, as a consultative workshop theme. ASEAN is a relevant forum for the LRFFT, but it places higher priority on economic growth and social progress through trade cooperation, as opposed to the underlying fisheries resource. APEC, on the other hand, has set objectives to address IUU and to promote the sustainable use of fisheries, aquaculture and marine ecosystem resources. APEC has supported several projects through its Ocean and Fisheries Working Group, including market-based improvements to the LRFFT, small-scale and artisanal fisheries, sustainable aquaculture and IUU.

Advocacy by local and international NGOs, backed by member-based regional bodies, may help push for progress

While organisations such as APEC and APFIC are tasked with acting as information brokers to improve knowledge for better decision-making, challenges remain in translating members’ decisions from these regional forums into tangible, funded projects implemented at the country or regional level. That said, advocacy by local and international NGOs, backed by member-based regional bodies, may help push for progress.

Local and international NGOs and academics play an equally important role in moving the LRFFT to move towards a more sustainable trajectory

Local and international NGOs and academics play an equally important role in creating an enabling environment for the LRFFT to move towards a more sustainable trajectory. Such entities can contribute by raising awareness on key issues, producing focused social, economic and biological studies, working with affected communities, acting as conveners and neutral platforms, and gathering stakeholders at national and international forums. They could also add much-needed resources and capacity to government efforts. They can help highlight key issues to the public through the media and other advocacy means. They can also act as watchdogs and prompt governments to stay on track with existing commitments, and support and assist governments in executing new initiatives to address some of the challenges that governments cannot currently address. Specific examples include training Customs officials in species identification, engaging academic support in DNA testing (Wildlife Forensics Laboratory at the University of Hong Kong) or trialling novel methods for tracking individuals (such as the use of facial markings to identify imported Humphead Wrasses by AFCD and HKU).

Other initiatives by these sectors have included drafting best practice standards for production and trade of LRFF, convening multi-stakeholder regional meetings, working with the industry to promote improved practices and responsible production, compiling site-specific catch data for provincial governments to implement management policies, and initiating fishery improvement projects linked to specific buyers (in Hong Kong).

2.5.2 Recommendations

PRIORITY

- **FAO should ensure that coastal resources in Southeast Asia are documented in the periodic national fishery profiles that they produce. This would bring attention to these sectors and prompt governments to collect and provide the necessary data.**
- **NGOs and academics should work with exporting countries in developing simple methods and training for monitoring and conducting stock assessments, including for NDFs (in relation to CITES listings), and in education and awareness in relation to conservation and management agendas that highlight the importance and economic value of reef resources to the country and its communities.**
- **NGOs and academics should facilitate public-private partnerships to implement and support LRFFT-specific Improvement Projects in key source countries, benchmarked against existing certification schemes (e.g. MSC, Fair Trade).**

- As part of its objectives to promote full and proper utilisation of living aquatic resources, APFIC should incorporate a coral reef fisheries theme, including the LRFFT, into their consultative calendar. This thematic workshop could focus on reviewing the state of resources and dependent industries, formulating and recommending measures, identifying programmes to maintain sustainable productivity of fisheries and aquaculture, and conserving and managing resources.
- As part of its identified objectives in relation to sustainable use, good practices and addressing IUU, APEC's Oceans and Fisheries Working Group should sponsor projects in support of critical LRFFT issues such as low-cost data collection and small-scale fisheries traceability.
- NGOs should revive and/or intensify their work with the trade sector to promote and advise on sustainable and legal sourcing, why these are important and how to achieve them. NGOs also need to articulate in a more culturally effective way the benefits of improved practices and certification in the long term. This would build on the current initiatives by WWF and ADM Capital Foundation on sustainable seafood.
- NGOs and academic institutions should assist importing governments in enhancing their capacity in the collection and analysis of trade data, trade control and oversight, such as through trade investigations, public education, monitoring (i.e. applying appropriate trade categories under the harmonized code), reviews, training in species identification and development of novel enforcement measures. ■

Endnotes:

1. Council for Sustainable Development. (2017). *Report on the Public Engagement on Promotion of Sustainable Consumption of Biological Resources*. Environment Bureau, Hong Kong.
2. The Environmental Campaign Committee (ECC) has been set up since 1990 to promote public awareness of environmental issues and to encourage the public to contribute actively towards a better environment. Committee members are appointed by the Hong Kong Chief Executive. Representatives of relevant government departments, including the Environmental Protection Department, also sit on the Committee. Since its establishment, the ECC has planned and organised many environmental events and activities for different sectors of the community.
3. Anderson, R.S. (1995). 'The Lacey Act: America's premier weapon in the fight against unlawful wildlife trafficking', *Public Land and Resources Law Review*, vol. 16, no. 27, p.67.



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