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No commercial Fishing in Marine Parks can benefit fisheries, wildlife, and Hong Kong's economy if proper measures are in place to regulate fishing and provide alternative livelihoods

A. Why marine protected areas, not restriction of gear types?

1. The use of marine protected areas is a common and recognized practice in countries with well-managed fisheries. Use of marine no-take zones will result not only on the protection and conservation of the environment but also on direct benefits to fishery stocks and hence to the fishing community. Numerous overseas studies have demonstrated the benefits of no-take zones include significant increases in the number, size and value of commercially valuable species. They also enhance the production of eggs/larvae and the growth of populations of commercially valuable species.

The effectiveness of no-take zones in bringing the abovementioned fishery benefits has been shown worldwide. About 80% of reviewed no-take zones have higher biomass, density and sizes of commercially valuable species than nearby fished areas.

Case Study: In one of the no-take zones in New Zealand, a valuable sea bream species has densities gone up by nine times within 20 years. While in Florida, the density of a valuable snapper species within no-take zone increased by more than 15 times in only four years.

2. The “spillover effect” of no-take zone will benefit the fisheries and livelihood of fishermen fishing around the zone because the increased number of larger sizes fish and their eggs/larvae will move in and out of the zone, increasing fishermen's catches in the surrounding areas.

Case Study: In one of the 20-year old no-take zones in the Philippines, fishermen practicing near the zone have had catches increase by 10 times over the period. While in the Georges Bank in the U.S., the establishment of no-take zone facilitates fishery recovery and allows fishermen to travel less distance to catch more and larger valuable cod in only five years.

Notably, protection of the whole ecosystem is superior to the protection of habitat alone. The shift to less environmentally destructive fishing methods does not necessarily result in effective fishery management. Heavy fishing effort can still deplete valuable fishery resources irrespective of the fishing methods involved. The establishment of no-take zone is considered the most effective strategy, and is also far more straightforward to enforce.

B. Fishing Regulation and Enforcement

WWF views that all types of fishing should be regulated, including both commercial and recreational fishing, in order to achieve the most effective management of the local fishery resources. Hong Kong is one of the last places in Asia without any fishing licensing scheme, lagging behind mainland China and almost if not all Southeast Asian countries.

Without proper and effective management to prevent illegal fishing activities, which could be even more extractive and damaging to the local marine habitats, notably from mainland Chinese fishing boats, the implementation of marine protection area can hardly serve its true purpose. It will only prohibit local fishers from fishing in the protected zones while encouraging illegal fishers to freely exploit the local resources due to the inadequate enforcement currently in place.

C. Benefit to the Hong Kong Economy

In Hong Kong, management scenarios with a territory-wide ban on trawling and no-take marine parks would result in the highest net benefits to society (about **HK\$ 2.8 billion** more than the *status quo*). The *status quo* is not an option neither for the fishing community, for the environment nor for Hong Kong's society. Significant economic gains are expected from a well-managed fishery and these gains will have an impact on a variety of sectors of society.

D. WWF's Alternative Livelihoods Recommendations

In the Appendix below, WWF has laid out our recommendations to achieve sustainable fisheries and opportunities for the fishing industry as well as the broader Hong Kong economy. This broad plan remains to be further studied to identify the most feasible and acceptable solutions and benefits for the key stakeholders including fishers and other sea users, as well as every one of us who has the right to appreciate our fantastically diverse local marine life.

Appendix – Hong Kong’s Roadmap for Sustainable Fisheries and Opportunities

Alternative Livelihood for Local Fishers

Create alternative livelihoods and job opportunities for local fishers and fresh economic activities that can also stimulate Hong Kong’s economy

Shipping:

There are more than 35 shipping companies in Hong Kong that do shipping as well as loading and unloading of ships and repairing and assessment of vessels (Marine Department 2007a). Because many of the ships that come into Hong Kong are too large, cargo is transferred to smaller boats which then transfer it to land (Marine Department 2007b). Fishers could drive these boats as well as work as deck hands. These boats use cranes similar to those used in fishing vessels and the vessels are of similar size therefore the transition should be relatively easy. In addition, international vessels require crew members to travel overseas (Brooks et al. 2008).

Another possible source of work is servicing and maintaining vessels that arrive in Hong Kong. The ships need to be cleaned, repaired and stocked for further trips (Marine Department 2007c), jobs that fishermen can do with minimal training.

Pollution Control Unit:

This group is responsible for cleaning the waters in Victoria Harbour. Annually it collects ca. 16,000 tons of waste from the waters and surrounding land (Marine Department 2007d). In addition, it inspects vehicles and tanks for leaks of oil into the sea. The cleaning boats are approximately of the same size as fishing boats which can help fishers make the transition. There is great potential for expansion of this fleet considering that now it only operates in Victoria Harbour. Many other areas are in dire need of continuous cleanup of plastics and other debris that comes from Hong Kong and mainland China. Outlying islands, for example, suffer from chronic problems of plastic and other refuse littering the beaches and waters that surround them. In addition to providing extra jobs, this option would have a very positive effect on tourism and the environment.

Transforming conventional but illegal eco-tourism practices into legal practices:

Currently, fishers are using fish farms as BBQ sites and use fishing boats for eco-tours. We also understand that a number of sites along the coastlines have been frequently used as dropping points for tours. However, many of these operations have failed to match the Government’s regulations and safety standards.

WWF will consider supporting proposals that help change the existing situation and help legalise such practices so that some fishers can embark on a new industry – eco-tourism. There are huge potentials for the Government and investors in Hong Kong to invest in the associated facilities to enhance the attractiveness of such tourism activities.

Using facilities at WWF’s Marine Life Centre (MLC) to perform education programmes:

Short Term

Type	Content	Role of Fishers
Activities to be carried within the MLC	1. The story of fishermen: fishermen are employed to share the stories of their everyday life as fishers and demonstrate how some fishing gears are used to fish	Sharing and Talk
	2. Assistant Coxswain	Full-time employment
Outdoor Activities	3. Fish Farming: a half-day or full-day education activity to be carried out within the Centre and outside, such as visiting the floating rafts in fish farms to understand the operation of fish farming	Sharing and Talk
	4. Delivery : Provide delivery service for the MLC to carry goods back and forth between the MLC and the Wong Shek Pier.	Contractor

Long-term

1. WWF will provide training for local fishers and co-organise with them a “Tap Mun Hoi Ha One-Day Tour” (including visiting the MLC and fish farming rafts in Tap Mun. The fishers will be responsible for the operation and guiding talks while WWF will coordinate with them the arrangement for visiting the MLC.
2. Introduce new mariculture species. WWF will assist fishers to change to the new mariculture industry and promote high-quality and environmentally-friendly products for local consumption. WWF can consider supporting the training required.

Dive Shops:

If the objectives of the WWF’s SOS campaign are reached, dive shop owners felt that they would see an increase in business as no-take marine parks would attract more tourists (Sumaila et al. 2007). 55% of dive shops were willing to hire fishers to hold the new jobs which would be created by this new demand. Jobs would include boat operators for dives or fishing guides for tourists. Dive shop owners were reluctant to put fishers in other positions citing poor skills in sales and customer relations. Most dive shop owners (73%) said they expected to provide training for the fishers (Sumaila et al. 2007)

Fisherman’s Wharf:

The Tourism Commission proposed the Aberdeen Fisherman’s Wharf which includes the redevelopment of Aberdeen harbour and the use of traditional sampans to connect Aberdeen and Ap Lei Chau, and provide a link with Ocean Park. It also suggested

building thematic architecture on Aberdeen and Ap Lei Chau seafronts featuring Chinese and Western seafood restaurants and retail shops, as well as open space for *al fresco* dining and festive and cultural activities. Transport on traditional sampans would logically be a job for fishers who know the area well. Other retail opportunities include selling locally produced sea products and cultural/educational activities for visitors.

Aquaculture:

Although seaweed farming is not deemed economically feasible on its own (Brooks et al. 2008), WWF proposes a multi-trophic aquaculture system where animals and plants from various trophic levels are cultured together so the waste of one becomes the food of the other level. Current practices in Hong Kong concentrate on expensive marine fishes but there is the possibility of rearing bivalves, sea cucumbers and other species to supply a limited but exclusive market. Although there is scepticism about aquaculture in Hong Kong, most detractors have only considered expensive marine fish (Brooks et al. 2008) but other options exist. This is a possibility worth exploring further particularly along the eastern coast of Hong Kong where water quality is sufficient to warrant its development. Philippines has an interesting model that could be applied to Hong Kong in the form of a Mariculture Park, an area reserved for mariculture and where all forms of extractive activities are prohibited thus acting as a *de facto* no-take zone:

WWF proposes to develop livelihood alternatives (aquaculture) for members of the fishing community and at the same time encourage the development of a sustainable and environmentally-friendly aquaculture industry through the use of species that do not require feeding and can help to clean the pollution produced by other reared species. A prerequisite for participation on any alternative livelihood programme should be registration as a fisher through the license scheme.

Aquaculture development should aim to train fishers displaced by poor conditions in the fishing industry and to develop a sustainable and environmentally-friendly aquaculture industry based on species that filter-feed (bivalves) and others (sea cucumbers) that clean their waste. This livelihood alternative should:

- i. provide alternatives to part of the fishing community displaced by poor fishing conditions or loss of fishing grounds in Hong Kong
- ii. help reduce fishing effort currently encountered in Hong Kong waters by offering fishers an alternative
- iii. improve the marine environment in Hong Kong through the use of sustainable, environmentally-friendly methodologies in the field of aquaculture
- iv. help reduce the amount of pollution under existing fish and future shellfish rearing areas to acceptable levels with the use of sea cucumbers as cleaners
- v. provide Hong Kong with responsible aquaculture practices where environmental and trade labels become the norm thus forcing the already existing industry to adopt these new measures



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- vi. improve conditions in the marine environment to indirectly help species of concern like Chinese white dolphin, finless porpoise and others to recover and become sustainable

Case Study: Mariculture Park (Philippines)

1. *Enhanced technical capacities in sea farming among fishers.* From an initial target of 6, some 24 fisher communities have been organized with a total membership trained in fish cage farming. Local Government Unit (LGU) personnel have acquired skills in managing a mariculture park.
2. *More livelihood opportunities.* Some 2000 jobs have been created as a result of the project. Trained fishers have shifted from fishing to farming, either as hired technicians of private operators in the Mariculture Park, or have started their own fish cage culture operations and cooperative stores.
3. Others have been hired as workers in the construction of the park or have gone into production of necessary equipment such as cages, fishnets, or became suppliers of fingerlings. Still others have been hired to provide caretaker or maintenance services.
4. While men focused on mariculture, women participated in fishnet production and processing activities like de-boning, smoking, marinating and drying of seaweeds.
5. *Fully functioning mariculture park.* Inside the park itself, 20 fish cage operators have leased areas; more than 30 lease applications are also being processed. BFAR estimates that at full capacity, the park can create 20,000 jobs, generate investments in excess of Php 200 million and raise the country's fish production by at least 50,000 metric tons.
6. Since mid-2001, the Park has already generated some Php 7- million worth of investments on direct fish cage operations alone, which translate to increased revenue for the LGU.

Other activities that have been used in various countries and that can be modified to Hong Kong's specific situation include:

Boat trips to proposed geo-parks
Patrolling, monitoring and enforcement in marine parks
Boat trips to other areas of cultural, religious, or natural significance
Dolphin watching trips
Student conservation volunteer holidays
Snorkelling and scuba diving trips
Barbecues on the beach
Barbecues on existing or new fish rearing platforms
Glass-bottomed boat trips to coral areas
Production of artisanal work
Day trips to islands
Demonstration of aquaculture activities to tourists
Village tourism
Modification of large trawlers as at-sea schools
Participation in research projects (eg. the use of fishing boats to tag sharks)



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Designating Marine Protected Areas

1. Marine Parks – 2% of Hong Kong waters as no-take zone

Depletion of fish stocks results from uncontrolled fishing activities by local and illegal fishers from mainland China, compounded by sea reclamation, infrastructure works and water pollution. Marine protection is an essential measure needed to prevent the collapse of the marine ecosystem and the long-term survival of marine mammals in local waters, including the iconic Chinese white dolphin and the finless porpoise.

Many tourism and educational activities as listed above, if properly regulated, can be performed within and around marine parks to provide jobs for local fishers and opportunities for local residents to appreciate the natural marine life and the beautiful coastlines in Hong Kong.

In addition, no-take zones are known to help on the recovery of fish stocks by providing areas where they can grow and reproduce. Setting aside marine parks as no-take zones will result in the recovery of fisheries in Hong Kong if they form part of a larger, more comprehensive management plan.

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