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Food Security in Southeast Asia: Fish Stocks in Peril

Food security has become one of the key policy concerns for many states as the sharp rise in the price of global food commodities has been a significant blow to the pockets – and in some cases the survival – of many people worldwide. Fish stocks constitute an area which deserves greater attention since they contribute significantly to the world's diet and socioeconomic well-being, in particular of the less endowed people in the developing region. Using Southeast Asia as a case study, this edition of NTS Alert will examine the dangers that declining regional fish stocks pose to the long term food security of states and communities.

Fish and Food Security in Southeast Asia

Food security, as defined by the UN's Food and Agricultural Organization (FAO), is "a condition when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". This encompasses not only issues of food production and distribution but also social, economic and institutional dimensions of food security.

According to FAO statistics, fish provides an estimated 15 percent of the annual protein intake for approximately three billion people. The proportion of global fish production used for direct human consumption rose from 71 percent in 1990 to 76 percent by 2002. Besides offshore fisheries, inland fishery products constituted 25 percent of the total fish catch in 2003 alone. The fishery industry contributes significantly to food security by providing a relatively cheap protein source to millions, especially the rural poor. In light of fluctuating food prices, which could potentially be affected by the ongoing global financial crisis, the demand for fish will continue to increase. Fisheries also provide a means of economic security, for instance via small-scale commercial and subsistence fishing, allowing the poor within a society to earn an income which could meet their basic requirements, including food security. In addition, fish not used for direct human consumption are processed into livestock feed, which indirectly contributes to food security. In this regard, the relationship between the sustainability of fish stocks and food security in Southeast Asia warrants due attention.

In this edition:-

Table 1: Fisheries contribution to the GDP of seven Southeast Asian countries in 2004.

Country	**Fish Catch** (Value in %GDP)	**Country**	**Aquaculture** (Value in % GDP)
Cambodia	7.884	Lao PDR	6.330
Vietnam	3.897	Vietnam	5.166
Philippines	2.217	Myanmar	1.241
Indonesia	1.835	Thailand	1.020
Myanmar	1.721	Cambodia	0.914
Thailand	1.590	Indonesia	0.842
Lao PDR	1.163	Philippines	0.769

(***Source:*** *Status and potential of fisheries and aquaculture in Asia and the Pacific 2006*, FAO Regional Office for Asia and the Pacific, Bangkok)

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With its rich marine biodiversity, Southeast Asia is home to one of the world's most vibrant offshore fishery industries. Most countries in the region also possess an active inland fishery industry that rears wild stocks of primarily freshwater fish, including migratory species that move between fresh water and the oceans. The importance of fishery to the regional economy is reflected in Table 1. Southeast Asia is not only a major producer of fish products in the world but also a hefty consumer of aquatic food products, with fish constituting an important part of most people's diets and accounting for about half of the region's protein intake. Since the avian flu outbreak in the region in 2005, fowl consumption has given way to increased demand for fish as an alternative protein food source.

According to a US-Canadian report titled "Impact of Biodiversity Loss on Ocean Ecosystem Services" published in 2006, 29 percent of 8,000 fished species had faced a decline by 90 percent or more in 2003. This has prompted environmentalists in Southeast Asia – which had witnessed an estimated 10-percent dip in its natural fish stocks from 1990s levels – to advocate immediate measures to prevent further depletion. Moreover, the World Resources Institute (WRI) notes that 88 percent of Southeast Asia's coral reefs face destruction from overfishing and pollution, with the Philippines and Indonesia – home to 77 percent of the region's nearly 100,000 square kilometres of reefs – being the most exposed to the impact of declining stocks of commercially viable fish species.

Saving Southeast Asia's Coral Reefs

According to a 2002 WRI report, more than 90 percent of the coral reefs in Cambodia, Singapore, Taiwan, the Philippines, Vietnam, China, and the Spratly Islands are threatened, along with more than 85 percent of the reefs of Malaysia and Indonesia. Indonesia and the Philippines hold 77 percent of the region's coral reefs and nearly 80 percent of all the threatened reefs. The WRI report also concludes that overfishing threatens about 64 percent of reefs. The figure in Cambodia, Japan and the Philippines exceeds 70 percent. The March 2002 WRI report recommends:

1) Expanding the protected areas network for coral reefs. Currently, only eight percent of the region's reefs are in marine protected areas.

2) Reducing overfishing through improved management and the development of alternative livelihoods.

3) Regulating the international trade in live reef organisms. The total value of the trade in live reef fish exceeds one billion dollars a year, with Southeast Asia supplying up to 85 percent of the fish in the aquarium trade and nearly all of the live reef food fish.

4) Improving the management of existing marine protected areas, which will require political and financial commitments from governments, private organizations, and the tourism industry.There are 646 marine protected areas in the region, but of the 332 whose management status could be determined, only 14 percent were rated as effectively managed.

The report finds that although management requires additional investments, the cost of inaction is even higher. Over a 20-year period, current levels of blast fishing, overfishing, and sedimentation could cost Indonesia and the Philippines more than USD 2.5 billion each.

Source:
"Southeast Asia's coral reefs 'most threatened in world'", *Agence France Presse*, 28th March 2002.

Vanishing Fish – What Is The Cause?

The causes of declining fish stocks in Southeast Asia are both natural and man-made. Man-made causes include overfishing – including legal and illegal unregulated fishing – and the use of destructive fishing methods and inadequate fisheries management. The spike in ocean acidity levels has been identified as a cause of the decline in fish stocks worldwide, not just in Southeast Asia.

Overfishing

According to a study published by Australia's Lowy Institute for International Policy, intense overfishing – legal or illegal – in Southeast Asian waters threatens to wipe out the region's marine products within 10 years. In the Philippines, for instance, catches are now as low as 10 percent of the usual catch. Illegal fishing is an increasing problem as a single fishing licence typically issued by Southeast Asian governments may be used by four different boats. The study notes that there is an "increase in the incursion of illegal boats from non-Southeast Asian countries like China and Taiwan into the traditional waters of the region," further depleting resources. According to a report by the World Wide Fund for Nature (WWF) in October 2008, key tuna species in the Coral Triangle – containing the world's richest marine biodiversity – are under threat from overfishing, highlighting that fishing

The Mekong River – A Case Study

The Mekong River is home to the largest riverine fish diversity after the Amazon River. The river supports the livelihood of about 53 million people in Indochina, in particular in its lower basin, as a source of staple food and income. On average, the consumption of aquatic products from the lower Mekong Basin was expected to hit 71 kilograms (kg) per capita per year, as compared to 56kg in 2002, especially in high-yield fishing areas such as the Tonle Sap Lake in Cambodia. Fishery earnings, valued at USD 2 billion by the Mekong River Commission (MRC) in 2005, directly contributed to the socioeconomic growth of the sub-region. Notwithstanding its economic value, the Mekong fishery is now endangered, with declining fish stocks attributed solely to human activities:

1) Overfishing: Catches declined by about 44% between the 1940s and 1995 owing to the population explosion. The use of destructive fishing methods had also adversely affected fisheries.

2) Socioeconomic Development: The increased demand for water to support non-fishery sectors such as agriculture and energy, led to the construction of dams across the Mekong, alongside urban and industrial development. In the last decade of agricultural expansion had led to increased water diversion, negatively impacting on Mekong fisheries.

The reduced fish catches have taken a toll on the income, health and overall livelihood of the rural communities. Fish stocks are projected to continue declining for the next couple of decades, leading to increased socioeconomic problems.

Decisions on water management in Mekong River which seldom take into account the impact on fisheries and rural welfare could be mitigated by strengthening the MRC. However, mitigation prospects encountered conflicting views among countries in the sub-region. China, for instance, is of the view that the Mekong River is a source of hydropower. Such differing point of views would therefore necessitate governments to adopt a common approach towards sustainable development of the Mekong River and ultimately for the food and economic security of the rural communities.

Sources:

For information on the Mekong River Commission and its publication, please visit www.mrcmekong.org
UNDP Human Development Report 1994, available at http://hdr.undp.org/en/media/hdr_1994_en.pdf
Values of Inland Fisheries in the Mekong River Basin, WorldFish Centre Publications, Phnom Penh, 2007

fleets from depleted fishing grounds in other parts of the world could endanger Southeast Asian tuna stocks.

Coastal communities are not the only ones affected by depleting fish stocks as the phenomenon is also experienced by inland communities. In Indochina, for instance, the increase in rural population has resulted in an increased demand for fish. This has therefore strained the Mekong River's fish stocks and leading to an over-exploitation of resources.

Destructive Fishing Techniques

A recent US-based Nature Conservancy report warned that Indonesian reef fish stocks would be seriously depleted by destructive fishing techniques such as the use of cyanide. Cyanide also destroys corals, which are spawning sites for commercially viable fish. However, its easy use means that cyanide fishing would remain popular with fishermen. Other unorthodox fishing methods, as reported in a June 2004 issue of the South China Morning Post, include spear- and blast-fishing which could contribute to a gradual decline in fish stocks. The muroami fishing technique, using an encircling net together with pounding devices, is also commonly employed in Southeast Asia but the 'crushing effect' of the pounding process utilized to scare fish out of their habitats could also cause long-lasting coral destruction. Other inadequate fishing practices, such as bottom trawling, electrical methods and fine-mesh net inland fishing – as has been used in the Mekong River – could also create negative long-term effects for the sustainability of the marine environment.

Inadequate Resource Management

Inadequate fishery management is another factor contributing to the decline of fish stocks in the region. This has been the result of the lack of licensing and catch limits (i.e. limits on the amount of fish caught).

According to Andy Cornish, Director of conservation at the Hong Kong office of the WWF, many Southeast Asian countries do not have effective sustainable fisheries management practices in place. Indonesia, for instance – where about 50 percent of Southeast Asia's coral reefs are located and 30 percent of which are in critical condition due to destructive fishing practices – has allegedly failed to implement adequate fishery management measures. Illegal fishing in Indonesia has led to a loss of about USD3.2 billion each year. Yet, poaching still continues with the suspected backing of powerful parties, compounded by the lack of manpower and resources for maritime law enforcement of an archipelagic country made up of 17,000 islands.

In the case of the Mekong River, the increased competition for water from non-fishery sectors has resulted in poor water management practices. This could result in a decline of fish stocks in the long run, and thereby pose critical adverse consequences to the rural communities that dependent on the river for their livelihood and survival.

Rising Acidity of Oceans

The implications of climate change on marine health have received scant attention except from a few marine scientists. The ocean is known to be a major sink for atmospheric carbon dioxide and has absorbed about 48 percent of the carbon dioxide emitted by human activities since the pre-industrial age. However, a recent report from the Antarctic Climate and Ecosystems Co-operative Research Centre claims that atmospheric carbon dioxide is at its highest level in 650,000 years, possibly 23 million years, and half of it is dissolved in the oceans, making them more acidic. This could potentially create a profound impact on Southeast Asian marine industries and present strategic and humanitarian challenges for the region. Increasing ocean acidification will cause the deterioration of large parts of the oceans, making them uninhabitable for certain types of plankton which are central to the ocean food chain, and coral structures.

Putting Fish on the Dinner Table

With repeated warnings from experts and environmental conservation groups, Southeast Asian governments have begun to pay more attention to the problem of declining fish stocks, which adversely affect not only food security, but also socioeconomic development, especially at the local levels. As such, various methods to mitigate the issue have been studied and even practised at the national level.

Aquaculture

While Southeast Asians will still be able to consume fish in the future, they will have to rely increasingly on aquaculture as an alternative if the trend of declining wild fish stocks persists. Indeed, Asia - Southeast Asia and China in particular – has been touted as the 'world's powerhouse' for aquaculture. Vietnam, for instance, has established an aquaculture project extending to 2020 to boost output by 30 percent. However, the transition from fishing to cultivating is not easy as it entails radical adjustments in consumption patterns, given the preference for wild fish, which is considered fresher and more savoury than cultivated fish. Moreover, given the high costs and competition for feed ingredients, more cost-effective feed and improved feeding strategies will be required in order to enhance production efficiency through aquaculture.

Catch Shares

A joint study undertaken by the Universities of California and Hawaii suggests that catch share programs, which replace complex rules dictating fishing practices by holding fishermen directly accountable for meeting scientifically-determined catch limits, could help mitigate overfishing in the long run. A 2007 Environmental Defence Fund study shows that catch share systems could dramatically increase safety and revenue per vessel and yet significantly improve conservation efforts. As long as fishermen do not exceed their share, they have greater flexibility to fish when weather and market conditions are best. Their shares grow in value as the overall fishery improves, providing them a greater financial stake in sound resource management. This method could also be applicable to inland fishing in Southeast Asia.

Proper & Adequate Governance

At the national and regional levels, improved monitoring could help in regulating fish catches. Illegal fishing, in particular, could be monitored and controlled via methods such as the vessel monitoring system (VMS), which could be part of an integrated fishery management framework of laws, policies and practices for maximum effectiveness. Indonesia, for instance, has begun cracking down on illegal fishing by revoking licenses for vessels allegedly linked to foreign companies, with licenses of some 1713 ships being revoked for the first 8 months of 2008. Fish tagging, as performed by 8 Southeast Asian states since July 2008 to monitor the migratory patterns of commercially vital pelagic fish species, could help in devising suitable fishery management plans to sustain stocks. Regulatory limits via size quotas, such as the one implemented by the Philippines with respect to tuna stocks, could be introduced to prohibit the catching of small, young fish in order to facilitate spawning and sustainability of fish stocks.

Proper governance with respect to inland socioeconomic development is also necessary in order to prevent the further decline of freshwater fish stocks. However, this requires prudent prioritization of national preferences. There is a need to strike a balance between developing rural regions and conserving vital sources of food and livelihood for the people living in the surrounding area.

Curbing Destructive Fishing Techniques

Providing alternative fishing techniques would not only help conserve fish stocks and preserve the aquatic environment but also safeguard fishermen's lives. In 2007, the United Nations Environment Programme supported research and development of dynamite-fishing detection technology which could be useful in checking on dynamite fishing, a chronic problem in Southeast Asia. Malaysia since 2003 had introduced the use of the mid-water trawl which would drift instead of scouring the seabed that caused coral reef damage and depletion of marine resources.

Ocean Fertilization

Some researchers have proposed ocean fertilisation, which is the deliberate addition of nutrients to the sea in order to stimulate phytoplankton growth. If this is done, carbon dioxide can be absorbed by the marine organisms and then transferred deeper into the ocean, where it will be stored, possibly for centuries. However, neither the environmental safety standards nor the efficacy of ocean fertilisation has been adequately assessed. Furthermore, ocean fertilization could also result in such as artificially-induced phytoplankton blooms. These phytoplankton blooms may have adverse transnational effects which could spread and degrade the marine environments of neighbouring states.

Collective Regional Effort Needed

Apart from the variety of methods proposed to mitigate declining fish stocks, regional cooperation is essential. The Mekong River Commission, whose predecessor organizations have been operating since 1957, involved the participation of countries congregated in the river vicinity and helped to develop policies, management models, and in the near future planning tools for the proper management of water resources in the Mekong River region. The Southeast Asian Fisheries Development Centre (SEAFDEC) is another example of regional cooperation, having served since 1967 to promote fisheries development. There is also a regional working group studying cooperation in fisheries management. However, a fishery integration initiative proposed by the Association of Southeast Asian Nations (ASEAN) in 2006 has been criticized by environmentalists as not being instrumental enough in sustaining fish production alongside its primary stated aim of free trade and competitiveness.

The latest breakthrough in the area of regional cooperation to mitigate further decline of fish stocks is manifested in the Manila Draft of the Regional Coral Triangle Initiative (CTI) Plan of Action adopted by delegates from the Philippines, Indonesia, Malaysia, Timor Leste, Papua New Guinea, and Solomon Islands during the Third CTI and Second Senior Officials' Meeting in Manila in late October 2008. As specified under the Manila Resolution on the CTI on coral reefs, fisheries, and food security, the final action plan is to be presented and adopted by heads of state at

What is the Coral Triangle?

The Coral Triangle covers a total of 5.7 million sq km and is the source of livelihood and life support for 150 million people including 2.25 million fishermen in the 6 signatory countries namely, the Philippines, Papua New Guinea, Solomon Islands, Timor Leste and parts of Malaysia and Indonesia. It is home to 75 per cent of known coral species, 30 per cent of the world's coral reefs, over 3,000 fish species, including 50 per cent of tuna-spawning areas for yellow fin, big eye and skipjack, 6 out of 8 species of marine turtle, 45 per cent of the world's sea-grass species, and 75 per cent of mangrove species.

Source:
"Home to thousands of species", *Straits Times*, 25th October 2008.

the World Oceans Conference in Manado, Indonesia in May 2009 and aims to address the restoration of damage wrought by decades of overfishing, destructive fishing practices, pollution, and coastal habitat conversions, aggravated by the new threats to climate change that threaten what is considered to be the world's richest marine region.

Tapping on a USD 1.5-million grant provided by the Asian Development Bank (ADB), environmentalists could start work to protect the Coral Triangle. Before this, the Global Environment Facility (GEF) committed US$63 million to fund conservation of this area, known as "the Amazon of the seas", helping it adapt to climate change. Under the leadership of the ADB, the GEF contribution will catalyze at least US$425 million of co-financing for the Coral Triangle Initiative (CTI), launched in December 2007, bringing together governments, international non-governmental agencies and the private sector to introduce sustainable fisheries management and conserve coral ecosystems while reducing poverty. Prior to the signing of the Manila Draft, the U.S. Agency for International Development (USAID) pledged nearly USD 40 million to support international effort to save the Coral Triangle.

Overfishing and destructive fishing methods, including the use of cyanide and dynamite, as well as ill-managed socioeconomic development programmes, have adversely affected the Southeast Asian inland and marine environment, contributing to depleting fishery productivity, the effects of which will be keenly felt in the long term. The lack of proper governance at the national or sub-regional level could arguably be the overarching reason for concern, where long-term food security is concerned in Southeast Asia. The economic losses for the wider society resulting from permanent damage to the aquatic environment and fish stocks far outweigh the short-term gains obtained from profiteering using unorthodox fishing methods and grandiose developmental programs instituted without sound planning. The impact of global warming, such as sea level rise and increases in ocean temperatures and acidity levels, may further hasten the damage. This aspect, tightly linked to the perennial issue of carbon emissions created by human activity, requires not merely national efforts but also wider, broader and more holistic participation by the regional and global community, bearing in mind also that Southeast Asia is not only an important source of fish and other aquatic products for regional countries themselves, but also for the world at large. In light of these considerations and the gloomy prospects of food security issues impacted upon by the ongoing global financial crisis, concrete and decisive regional action is needed. Without such action, the consequences for Southeast Asian food security would be devastating as a result of continuing trends in declining fish stocks. Nevertheless, some steps taken to date, such as the Regional CTI Plan of Action, represent grounds for some optimism.

References

Meryl J. Williams, "Enmeshed: Australia and Southeast Asia's Fisheries", *Lowy Institute Paper 20* (Lowy Institute for International Policy: 2007).

"Regional action plan for Coral Triangle adopted", *Manila Bulletin*, 25th October 2008.

"ADB Funds Environmental Plan to Save 'Coral Triangle' and 'Heart of Borneo'", *ENP Newswire*, 27th March 2008.

"GEF commits US$63 million to help preserve Asia's Coral Triangle", *BVV Business Report*, 6th May 2008.

"USAID and Partners Support Coral Triangle Initiative to Protect Six Nations' Marine and Coastal Ecosystems", *States News Service*, 23rd October 2008.

"Premium on price of fish in Coral Triangle urged", *The Philippine Star*, 25th October 2008.

"No credit as oceans turn sour – THE GARNAUT REPORT", *The Australian*, 5th July 2008.

"Cyanide fishery depleting stocks; Indonesian efforts to supply live-fish delicacy also endangering workers, report warns", *The Globe and Mail*, 5th September 2000.

"Murky methods unleash underwater carnage; Divers say a combination of spear fishing and the indiscriminate use of blasting has destroyed marine life off a remote South China Sea Island", *South China Morning Post*, 6th June 2004.

"Rampant illegal fishing", *The Jakarta Post*, 6th March 2008.

"Over-fishing in Southeast Asia threatens favourite seafood", *Indo-Asian News Service*, 8th November 2007.
"Asia: Asia's oceans threatened by over-fishing", *Thai News Service*, 9th June 2008.
"Asian demand for live fish causing Pacific concern", *Agence France Presse*, 10th July 2002.
"Consumers turn from the fowl to the fish", *Vietnam Investment Review*, 14th November 2005.
"Increasing appetite for live fish stripping Asian reefs bare", *Associated Press Newswires*, 24th January 2007.
"Govt blamed for declining marine resources", *The Jakarta Post*, 26th June 2006.
"Fish vanishing from Southeast Asian oceans – report", *Reuters News*, 7th November 2007.
"Tuna under threat in key SE Asia ecosystem: WWF", *Agence France Presse*, 21st October 2008.
Food and Agriculture Organization, United Nations, accessed at www.fao.org/fishery/.
Amir Neori, Chopin Max, Charles Yarish and Charles et al, "The Need for a Balanced Ecosystem Approach to Blue Revolution Aquaculture", *Environment*, Vol. 49, Issue 3, 1st April 2007.
"Viet Nam aims to catch up with region in aquaculture", *Organisation of Asia-Pacific News Agencies*, 5th July 2007.
"Experts urge action on fish stocks after stark warning", *Agence France Presse*, 3rd November 2006.
"New Study Offers Viable Solution to Overfishing", *PR Newswire (US)*, 19th September 2008.
"Indonesia cracks down on illegal fishing", *BBC Monitoring Asia Pacific*, 5th September 2008.
"RP among countries to begin tagging fish in Asian waters", *Philippines News Agency*, 28th July 2008.
"Dynamite use on fish rife, test suggests World's first detector of fishermen's use of explosives is deployed in Mirs Bay", *South China Morning Post*, 15th March 2007.
"DA bans fishing, trading of small tuna", *Manila Bulletin*, 2nd September 2008.
"New trawling net helps save corals, fish resources", *The New Straits Times*, 8th December 2001.
"ASEAN road map for fisheries integration", *The Jakarta Post*, 11th December 2006.
"South-east Asia's falling fish stocks; Experts call for coordinated response to stop the problem", *TODAY (Singapore)*, 9th March 2007.

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