

Supporting Documentation and Rationale

Coastal Zone Management

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At present, coastal zone management in Cambodia is fragmented among the following entities:

- 1) The National Committee for Land Management, Urbanization and Construction – this commission regulates construction based on zoning plans;
- 2) The National Coastal Steering Committee (NCSC) – this committee is responsible for the sustainable use and development of the coastal zone, while at the same time protecting natural resources and environment;
- 3) The Coastal Coordination Unit – this is a subordinate group to the NCSC which coordinates activities affecting the coastal zone and makes recommendations to the NCSC for actions;
- 4) The Commission on Monitoring and Assessing for Suppressing Encroachment into Mangrove Land and Coastal Reclamation – this group was established in 2005 to stem the accelerating loss of mangroves.

All of the above groups appear to be to some extent subordinate to the Council for the Development of Cambodia (CDC), which is housed in the Office of the Prime Minister, and makes most major decisions in regard to approval of developments in the coastal zone and elsewhere. The CDC contains representation from ministries with a widely disparate set of missions, including MOE, MAFF, the Ministry of Industry, Mines and Energy, the Ministry of Rural Development, and the Ministry of Tourism.

Given the above, it seems logical to propose that authority for management of the Cambodian Coastal Zone be centralized within one particular ministry, which can also have the authority to coordinate with other branches of the central and provincial governments.

The Coastal Zone per se has apparently never been strictly defined in Cambodian law. In the United States, Section 304 of the Coastal Zone Management Act of 1972 defines the “coastal zone” as “the coastal waters (including lands therein and thereunder) and the adjacent shorelands (including waters therein and thereunder), strongly influenced by each other and in proximity to shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands and beaches.” Under this Act, the term “coastal waters” was defined as “those waters, adjacent to shorelines, which contain a measureable quantity or percentage of sea water, including but not limited to, sounds, bays, lagoons, bayous, ponds, and estuaries.” The term “estuary” was defined as “that part of a river or stream or other body of water having unimpaired connection to the open sea, where the sea water is measurably diluted with fresh water derived from land drainage.” The term “shoreline” is not defined in this Act.

It is also important to note that the spatial extent of the coastal zone is not specified in this law, with this definition being left to the individual states. On islands within U. S. jurisdiction in the Pacific region, the coastal zone is variously circumscribed for regulatory purposes, and there is no consistency of definition. In the Commonwealth of the Northern Mariana Islands, special restrictions are applied to any development in a zone within 150 feet of the shoreline. On Guam, the coastal zone is defined as offshore waters from the shoreline out to a depth of 10 fathoms. In American Samoa, the coastal zone is defined as

the “...coastal waters...transitional and intertidal areas, salt marshes, wetlands and beaches. The coastal zone extends inland from the shorelines to the extent necessary to control the shore...”

Because the various definitions of “coastal zone” involve lands or waters extending some distance from the shoreline, it is also critical to have an unambiguous definition of what “shoreline” means. In the United States regulatory scheme, shorelines are often defined in relation to reference levels related to a long-term mean of the daily high and low tidal stages. Because most areas have two tides a day, one of greater amplitude than the other, the level of the highest high tide of the day is referred to as Higher High Water, and the second, somewhat lower high tide of the day is Lower High Water. Similarly, the low tides of the day are referred to as Lower Low Water (the lowest tide of the day) and Higher Low Water (see figure below).

Because these tidal extremes change each day depending on the monthly moon cycle and local oceanographic conditions, it is more practical to use a long-term mean value. Therefore, the average highest extent of the tide at any particular location is referred to as Mean Higher High Water, or MHHW. The period of record for determining this mean value in the United States is a 19-year period from 1983-2001, called National Tidal Datum Epoch. Clearly, as sea level rises, MHHW will gradually rise as well, but for most localities it has not been revised to reflect current sea states, and the older calibration period still prevails.

All emergent lands inland from the MHHW line are considered Normally Dry Ground in a regulatory context, therefore MHHW is a useful way of defining the shoreline in an unambiguous and scientific way. It is also intuitively comprehensible to local people, because it is often marked by other indicators, such as the debris stranding line and the limit of vegetation. In addition, it is a critically useful tool for providing warnings of potential storm surge inundation to local coastal communities, because it provides an easily understood baseline upon which to base vulnerability assessments related to future permanent rises in sea level due to global climate change.

By contrast, for navigational purposes, where minimum water depth is critical to vessel passage, Mean Lower Low Water, or MLLW, is used to define channel depths, and is the minimum depth that will prevail at any tidal stage at any time of the year.

In official Cambodian government documents, the concept of “coastal zone” varies widely. In the National Biodiversity Status Report, issued by MOE in February, 2016, it is noted that the seaward boundary of the coastal zone has been in the past treated as the outer limit of the Cambodian EEZ, lying 200 nautical miles offshore. This clearly seems too expansive a definition for the purposes of the current law. Instead, the present draft proposes a zone of Coastal Waters extending from the shoreline to 5 km offshore. This is also congruent with the definition of the same zone also proposed in the draft section on marine fishery regulation, and therefore provides consistency across these portions of the draft Environmental Code.

The above report further notes of the Coastal Zone that “...the landward boundary has not been adequately defined, although for working purposes it is assumed to be 5 km from the shoreline.” The

above interpretation is supported by the fact that the 3rd State of the Coastal Environment, Climate Change and Socio-Economy Report 2013, although dealing extensively with the coastal environment, does not provide a definition of the coastal zone. Similarly, the very useful Report of Shoreline Assessment issued by MOE in 2014 also does not provide any definition of either shoreline or coastal zone. The current Law on Fisheries, does make reference to “average higher high tide”, which is the equivalent of MHHW discussed previously, and therefore at least provides some Cambodian precedent for defining and delineating the shoreline.

Given the above considerations, the current document suggests that the term “shoreline” along the Cambodian coast be defined on the basis of MHHW. In the absence of a long term record (the nearest active tide gauging stations are at Klong Yai, Thailand and Vung Tao, Vietnam), the upper bound of the daily high tide can suffice. In the context of land management in the coastal zone, and for purposes of current discussion, the term “coastal lands” has been arbitrarily defined as the normally dry ground extending 5 km inland from the shoreline. The width of this zone can be adjusted to a greater or lesser extent to fit with Cambodian circumstances, but the initially proposed value should be sufficient to encompass environmental effects from construction and development activities that might directly affect coastal waters. In addition, because there are daily tidal fluctuations up the Mekong River as far as Phnom Penh, which does not logically fall in the Coastal Zone, the definition has been further refined to reflect MHHW along shorelines bordering waters with some detectable degree of salinity, which is similar to the approach embodied in the Coastal Zone Management Act of United States law.

In discussions with senior staff at the MOE, it has become clear that they have adopted a concept of the “coastal zone” as including the entirety of the watersheds draining to the Gulf of Thailand, from ridge to shoreline and to some extent beyond. Although this broad concept of the Coastal Zone is commendable in terms of a systems and landscape-level approach to natural resource management, it is impractical in the context of regulating development, given that development pressures are higher immediately adjacent to the shoreline, and the impacts of any given individual development commensurately greater. Therefore, the current draft text draws a distinction between the “coastal lands” and the “coastal watershed”, the latter being congruent with the current MOE concept of the “coastal zone.”

In this draft, coral reefs, sea grass and mangroves have been singled out as particularly high value coastal zone resources that receive default protection unless otherwise specified in a permit. Mangroves in particular have suffered significant losses from construction of charcoal kilns, coastal aquaculture farms (primarily for shrimp), and salt pans. MOE has taken steps to limit all these activities, and their current regulations will fit consistently into the authorities proposed here.

Marine Fisheries

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The management of marine fisheries should be handled in a chapter separate from that pertaining to inland freshwater fisheries, because there are significant differences between the two fishery sectors. First, the marine fishery domain contains certain unique types of habitats and associated fishery resources, such as coral reefs, seagrass beds, and mangroves that either do not exist in freshwater fisheries, or do not have good analogs there. Second, there are many gear types used in marine fisheries (trawling, SCUBA)

that are not utilized in freshwater, and vice versa. Third, there are issues with international incursions into the Cambodian marine fishery domain that do not prevail in freshwater systems.

Current marine catch reporting in Cambodia appears to be all but non-existent. According to the National Biodiversity Status Report issued by MOE in February, 2016, marine fishery catches are estimated based on uses of taxable fishing gear types. Therefore, the estimates are based on effort rather than actual catch, and are also influenced by the degree to which such taxation is effectively levied. Rudimentary marine catch statistics, presumably derived by the above method, can be extracted from 3rd State of the Coastal Environment, Climate Change and Socio-Economy Report 2013, issued by MOE, and from the Strategic Planning Framework for Fisheries: 2010-2019, issued by the Fisheries Administration of MAFF. These indicate that the major catch components in 2011 can be approximated as follows: fin fish 83%, shrimp 8%, mollusks 5%, and squid 4%. Based on these same numbers, overall landings of all fishery stocks combined from Cambodian marine waters increased by 2.6 times in the period from 2000 to 2011. Over this period fin fish and shrimp landings showed a steady increase, squid landings peaked and then declined, and mollusk landings were flat. The default working assumption is that these trends have continued. Given the substantial increase in harvest and effort over the past 15 years, some improved form of data collection for marine fisheries is clearly needed.

Overall, licensing and vessel registration requirements will have many similarities across both fishery sectors, and some level of underlying regulatory consistency is probably desirable at this level. Such licensing and registration requirements are already present in the current fisheries law, and they provide some initial indication of participation in the marine fishery, since they apply to individual persons and vessels.

By contrast, data on landings is likely to be easier to obtain at the wholesale level in the marine sector, because there are likely fewer individual businesses involved. The daily logbook requirement in the current fisheries law is both impractical and not enforced, and as such should be repealed. The one exception is that it should be applied to any foreign vessel which purchases rights to fish in the Cambodian EEZ. The sale of fishing rights to foreign vessels should be pursued, because they are already utilizing the Cambodian EEZ with no current benefit to the country, and because there is no locally competing fleet operating in the pelagic offshore waters.

In order to eliminate conflicts with artisanal fishers, larger vessels using large-scale fishing gears as defined in Article 31 of the current fisheries law should be subject to a nearshore exclusion zone, and limited to waters beyond 25 km offshore. This prohibition should also apply to any foreign vessels that purchase fishery rights. Similarly, community-based limited entry fisheries should be restricted to the nearshore zone from 0 to 5 km offshore. The definition of the nearshore zone in the current fisheries law, based on a 20 m depth contour, is completely impractical, since it varies in distance from the shoreline depending on submarine contours, and for the most part cannot be unambiguously determined. Therefore, this criterion for defining nearshore waters should be abandoned, and superseded by the 5 km offshore distance, which can be accurately determined using available maps, or GPS units. This will also aid in allowing more effective enforcement of community fishery zones.

Specifically listing approved conservation and management measures is considered useful because it provides the appropriate ministry with explicit authority to implement varying approaches for different

stocks, including both input and output controls. It may also cause the appropriate ministry to consider options it might otherwise have overlooked.

Traditional output controls, such as bag and size limits, will be challenging to implement at the present time in the absence of adequate fishery enforcement personnel to undertake the necessary inspections. Instead, for most Cambodian marine fisheries, input controls such as seasons, area closures and gear restrictions are likely to be the management tools of choice.

The community fishery law essentially allows the creation of limited entry schemes, although they are not referred to as such, in that it allows participation in a given fishery in a given marine zone to be confined to a particular pool of entrants from a particular community. As with all limited entry fisheries, strictly defining the criteria for participation will be critical.

Although the current draft contains authorization for discretionary use of quotas in relation to particular stocks, such an option should be used with care. In particular, quotas if implemented need to be non-transferable, so as to preclude quota consolidation by large business interests who otherwise buy out shares from individual fishermen over time. In addition, such output controls are often data-intensive to monitor, although they are a way of equitably sharing the benefits of high value stocks, such as groupers and lobsters. In general, quotas must also be combined with a total allowable annual catch limit and good monitoring of individual landings in order to work properly, so are unlikely to be a near-term solution in Cambodia, except in for a few particular stocks as noted.

There is currently no regional fishery management organization with a mandate for coordinated international management of pelagic (far off-shore) fisheries or associated conservation measures in the Gulf of Thailand, or the South China Sea as a whole. The South East Asian Fisheries Development Centre does provide a forum where ASEAN member states can address fishery issues of common interest and seek consensus in regard to consistent management policies, but it serves a purely advisory role. Even so, Cambodian participation in this forum is deemed desirable, particularly if Cambodia wishes to credibly enforce conservation measures within its own EEZ.

The section listing the types of marine managed areas (MMAs) provides the appropriate ministry with a range of options to address biodiversity protection, tourism, and fishery management. It seems that strict no-take Marine National Parks (MNPs) are unlikely to be established to any great degree by MAFF, since such protected areas would technically fall under the oversight of the Ministry of Environment in the context of current Cambodian law relating to protected areas. By contrast, MOE has indicated some interest in pursuing such designations. The Marine Life Conservation Area (MLCA) category as proposed here is likely to be a more useful tool for setting aside high value coral reef, seagrass, mangrove and estuarine areas, which are also often important recruitment zones for commercially harvested marine stocks. Such areas can also be a significant draw for the tourist industry. Oversight of MLCAs could be allocated to either MOE or MAFF, but one ministry or the other should be given unambiguous authority to avoid competing area designations under this category. The current fisheries law has provision for areas analogous to MLCAs, under the name “Fishery Conservation Areas”, but that latter term seems too narrow since such areas can clearly be used to protect more than just fishery stocks *per se*, and the terminology is also confusingly similar to Fishery Management Areas, which are also provided for under the current fishery law but have different rules and functions.

The Fishery Management Area (FMA) category is defined confusingly in Article 12 of the current fishery law, and it seems more logical to clarify it here as a particular type of MMA with a fishery management (versus protection) focus. Oversight of FMAs would clearly seem to fall to MAFF under the current Cambodian law. Therefore, it could make sense to allow MOE to set up MPAs and MLCAs in key conservation areas, and then allow MAFF to designate FMAs in other marine waters, as this would be a means of partitioning conservation versus utilization functions between the two ministries, and between different marine spatial sectors.

In regard to marine fisheries data reporting, Article 45 of the current fisheries law, pertaining to daily logbooks, is utterly impractical, and has never been enforced; as such, it should be repealed and initially replaced with a monthly dealer reporting scheme. As time goes on, and if institutions become more mature, such a monthly reporting scheme can be extended to the commune level, and perhaps someday to the individual fisher level, although this will be far in the future. For non-commercial fishery harvests, it will be necessary to undertake some type of consumption study, similar to those that have been conducted in the Mekong River freshwater fishery, and then statistically expand this to arrive at an estimate of the total non-commercial subsistence catch. Acquisition of such fishery-dependent data at both the commercial and non-commercial level would be a worthwhile priority for funding by international aid organizations or NGOs. At the current time, it seems very unlikely that the resources exist to obtain adequate fishery-independent data for Cambodian marine stocks, although building capacity for such research fishing and associated data analysis would be a good investment at the MAFF level.

The sections of the current fishery law pertaining to aquaculture (Articles 53-58), community fisheries (Articles 59-63), import and export of fishery products (Articles 64-69), enforcement (Articles 72-85) and penalties and fines (Articles 86-104) can probably be used as is for now, and simply rolled into the Code, unless local legal scholars have suggestions for their modification.

Throughout this section an attempt has been made to use terms already reflected in the Cambodian law on fisheries, for the sake of consistency, but in some cases language has been modified to reflect more widespread international terminology. A large number of definitions have been provided in an attempt to avoid ambiguity.