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Fisheries and Global Strategy:

Integration of Fisheries and Aquaculture into the NSDS

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The Global Strategy provides a framework to integrate statistics of various domains into one comparable system. In the application of the Strategy, aquaculture and fishery domains should be treated differently. The Strategy can be applied to aquaculture statistics in the same way as the other agriculture domain with minimal modification. The expansion of land-based concepts to include water bodies may be needed to link aquaculture and capture fishery domains with others in consistent way. Population census provides the best option to collect master frame information for capture fishery and those country with substantive capture production is strongly encouraged to modify census to be able to identify fishers as separate occupation.

Introduction:

In 2006, capture fisheries and aquaculture supplied the world with about 110 million tonnes of food fish. Overall, fish provided more than 2.9 billion people with at least 15 percent of their average per capita animal protein intake. Notwithstanding the contribution of fish to total animal protein intake in low-income-food-deficit countries was significant, at 18.5 percent in 2005, and is probably higher in view of the under-recorded contribution of small scale and subsistence fisheries. An estimated 43.5 million people were directly engaged in fisheries and aquaculture productions and a further 4 million people were engaged on an occasional basis. Taking account of employment in the secondary sector (including fish processing, marketing and service industries) and dependants, over 500 million people could be dependent on the sector.

Regardless of such a significant contribution to food security and poverty alleviation, the fisheries and aquaculture domains have been in general placed outside the scope of national statistics and agricultural statistics. It is often the case that the specialized agencies separated from the national statistical offices collect, collate and disseminate statistics and other relevant information required for policy making, independent from national statistics office.

One of key achievement of the Global Strategy is to define the scope of agriculture to include aspects of fisheries, forestry, and rural households and to provide a framework to achieve integration not only between different components within agriculture statistics but also integration of whole agriculture statistics into the National Strategies for the Development of Statistics (NSDS).

Fishery and aquaculture managements increasingly place its emphasis in securing long-term sustainability of whole integrated system, including communities themselves together with the natural environments (including fishery resources) supporting communities, as one whole ecosystem. At the same time, fishery and aquaculture sectors do not exist in isolation. They also have many interactions with other sectors, e.g. competition over natural resources such as land and water, economic and social dependencies, etc, especially within the shared local areas. Integration of agriculture statistics into NSDS, key concept of the Global Strategy, is in accordance with emerging data requirement to support this ecosystem approach of management.

Fishery statistics is used to concentrate on monitoring detailed production data that in turn would provide an indicator of fishery resource conditions and have paid less attention on social and economic aspects of the fishery and aquaculture domains. The Global Strategy provides a framework to enhance comparability among different domain data by sharing master sample frame. Still, another strategy is needed to consider the best way to implement the Strategy to enhance monitoring capacities in weak and gap areas without jeopardizing the strength and without increasing overall cost. This is the first attempt of such consideration, specifically for fishery and aquaculture components.

Integration of Aquaculture component:

Although aquaculture and capture fishery domains are classified into one category in the context of agricultural statistical systems, those two domains are quite different in their nature of activities and accordingly require different tactics for monitoring.

Aquaculture indicates the “farming” of aquatic living organisms, e.g. fish, mollusks, crustaceans, aquatic plants, crocodiles, alligators, turtles, and amphibians. “Farming” implies some form of intervention in the rearing process to enhance production, with individual or corporate ownership of organisms being cultivated. Although taking variety forms (e.g. using land-based facilities; artificial ponds and raceways; cages rafts, ropes etc set in open and/or running waters; enclosures of water bodies with artificial and/or natural features; keeping fish in rice paddies/backyard ponds etc), aquaculture is considered as the equivalent of livestock or poultry domain in many ways. Therefore, most of the strategy appropriate for the livestock or poultry domain can be applied to aquaculture without too much difficulty, when standard concepts and codes for “land use” and “land cover” to be expand and modified to accommodate to utilization by aquaculture both land and water bodies.

Currently, the “land use” and “land cover” classification treated whole water body as one category. However, just like land, water bodies are owned, used and managed in a quite similar way. The boundary areas between land and water bodies (e.g. flood land, inter-tidal zones, river banks etc) are especially important area for production in fisheries and aquaculture sector. Most of aquaculture farm own land unit and water unit, operating really on a boundary between and land and waters. Seasonal rotations between agriculture and aquaculture/fishery are commonly observed in flood areas.

Therefore, it is preferable to establish standard concepts and codes covering both land and water bodies in a consistent and continuous way, which may also help to develop a more consolidated view to cover whole spectrum of environmental impacts and rural activities. If this is not possible, at least for fishery and aquaculture viewpoint, it is essential to establish more detailed classification of water cover and water use.

In the same context, the concept of national territory should be expanded to include marine waters to cover the Exclusive Economic Zone, to enable to incorporate marine fisheries into national environmental account.

Integration of fishery component:

The Global Strategy defines the farm as an economic unit, the household as a social unit, and the land they occupy in the natural environment. However, fishery domains in general are not based on household but based on boat/gears holding units, though households and boat/gear holdings do often match in a case of small scale operations along coastal and inland waters. Fishers in many cases are landless and could be easily dropped if survey are based on land. Also, especially small scale fishing activities are often conducted in conjunction with other agricultural activities as a household (e.g. gender differentiated roles such as males being fishers and females farming backyard for subsistence or fish processing purposes, aquaculture-agriculture combined activities such as cultivation using rice-pad, etc). In the other words, fishing activity is more based on individual person that household and much less bound with land comparing to agriculture.

Taking on this into account, in the case of fishery component, the population census seems to provide the best option in collecting basic frame information of the domain. To make it possible, it becomes prerequisite that a full population census include questions to identify engagement in capture fishery domain regardless scale of activities, whether part-time or full-time, employed or in own-account, rural or urban, and land-based or landless. China first incorporated fishery and aquaculture related questions in its population census of 2006 and succeeded to adjust its production statistics based on frame information collected through the census.

Collecting fishery frame information by population census has another benefits of effectively identifying small scale and subsistent fishers, especially those operating in inland waters which are largely under-recorded in the current system. Currently the majority of population census aggregates whole agriculture into one category and does not provide breakdown to separate fisheries. However, probably the population census may be only effective tool to collect frame information in the case of capture fishery sector. One addition of category “fishery” in occupation list in the population census would be the initial most important step of implementation of the Strategy for those country with substantial amount of fishery production especially by artisanal fishers.

In addition, many countries require licensing or a register in order to own boats, to establish aquaculture facilities, and/or to engage a certain type of fishing operations. Though these tend to focus on middle to large scale operations, this information when combined with census data may provide a good basis in developing a sampling framework.

Capture fisheries is a hunting activity that directly harvests natural living resources. One of main roles of fisheries management is to maintain the impact of fishing pressure (i.e. measured by number of fishers, number of boats, number of days fishing etc – this can be referred as “fishing effort”) within a level to allow the stock to reproduce next generations in sustainable way. Since each species reacts to fishing pressure differently, some very sensitive and some relatively robust, data requirements in catch

and effort statistics (a measure of fishing pressure) for monitoring purpose is generally at individual species level. This level of details is essential to monitor the impacts of fishing activities on relevant ecosystems and is accepted as a minimum standard by many of inter-governmental Regional Fishing Bodies. The role of the Strategy is to assist improving inter-comparability among statistics collected by different domains. It should not be used as an excuse to reduce the monitoring efforts essential for a fishery stock monitoring and resource management.

Survey Framework

As mentioned above, one of key objectives of capture fishery production data is to monitor and manage natural aquatic living resources which support capture fisheries. Because of this, capture fisheries require far more detailed information on their production and fishing operations. Those are usually collected through sampling at landing sites by specialized enumerators, often together with reporting from fishers. The Strategy for Improving Information on Status and Trends of Capture Fisheries (Strategy-STF) was developed and adopted at the FAO Committee on Fishery in 2003 and since then capacity building efforts have specifically focused on small scale fisheries have been vigorously pursued.

The practice of sample-based surveys at landing sites is a well established technique that was proven to be effective in grasping the dynamic nature of capture fisheries at a required level of detail for catch composition and fishing activities with relatively limited resources. We strongly believe that this part of the sampling scheme should not be altered even within the new framework under the draft Global Strategy.

The Global Strategy identifies (land-based) geographic reference as one of key axes to formulate master sampling frame. This sampling frame, even not appropriate for monitoring of fishery production and activities, may be useful in social and economic statistics surveys within the capture fishery domain. Relatively rich administrative data including boat registers and fishing licenses, and/or full records of holdings sampled for catch and effort survey could provide a basis to develop a link between two sample frames, i.e. more specifically, a connection between person related to a holding, and holdings to landing sites. All of this process may require careful handling of personal information in accordance with any applicable confidentiality policy.

Again, the aquaculture domain should not cause any particular difficulty in applying the same master sample frame as appropriate to the livestock domain.