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Matrix for the Characterisation of Fishing Activities

Glossary

Fishery: an activity leading to the harvesting of fish, within the boundaries of a defined area. The fishery concept fundamentally gathers indication of human fishing activity, including from economic, management, biological/environmental and technological viewpoints.

Fishing unit: a unit determined by an authority or other entity that is engaged in harvesting fish, with reference to the following: target fish species or stock (including its geographic area); fishing method, gear, and/or vessel type; the fishing fleet/groups of vessels or individual fishing operators pursuing the fishing operation(s).

Fleet: the total number of entities of any discrete type of fishing activity utilizing a specific resource. Hence, for example, a fleet may be all the purse seine vessels in a specific sardine fishery, or all the fishers setting nets from the shore in a tropical multispecies fishery.

Fishing vessel: Any vessel, boat, ship, or other craft that is equipped and used for fishing or in support of such activity.

Why a matrix?

There is increasing interest in trying to characterize small-scale and large-scale fisheries for a variety of reasons, spanning across governance (policy, legislation, access and tenure), economic (taxation, subsidies, special preference) and management (regulation, gears, zoning) considerations. At the global level, the endorsement of the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines)¹ is part of an ongoing process to recognize small-scale fisheries as an identifiable segment of fisheries that is important enough to warrant special consideration. Several regional instruments, policies and strategies also refer to the small-scale fisheries sector.

In reality, there is no one, simple cut-off for distinguishing between small-scale or large-scale fishing activity and therefore advancing a universal definition is not considered appropriate. Nonetheless,

¹ <http://www.fao.org/fishery/ssf/guidelines/en> (FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication)

characterizing the scale of fishing activity is often useful, and even necessary, for informing fisheries management, policies, research and governance. Thus, there is a need for methods that assess scale without imposing a narrow definition and, in line with the SSF Guidelines, also allow for a participatory characterization process².

The matrix presented here provides one such approach, which covers all activities up to first landing. The matrix aims to support fisheries management, policy and research where there is a need to characterize different types of fishing activities within a fishery, and when it is desirable to aggregate or segregate fishing units in a transparent and objective manner.

How the matrix works

The matrix provides users with a tool to describe a fishing unit across multiple dimensions or characteristics of scale. The flexible nature of the matrix means that the fishing unit being assessed can either be an entire fishery/fleet, a part of it, or an individual vessel/ fisher. This flexibility allows the matrix to be applied to diverse types of fishing activity around the world. Applying the matrix generates an aggregate score for the given unit under assessment, with relevance for discussions of scale. A given fishing unit may have characteristics typically associated with both smaller-scale and larger-scale fisheries, so many will receive lower scores in some categories and higher scores in others. Scoring allows for an objective characterization of the fishing unit, indicating whether it tends towards small-scale or large-scale. It is important to highlight that this characterization carries no value judgement of the nature of the fishing operation (no implication of a ‘good or bad’ activity). However, once scores from all the categories are aggregated, an overall picture emerges that facilitates differentiation between larger- and smaller-scale fisheries. By analyzing different scores for different fishing units, it is possible to determine if there is a clear cut off between distinctly small-scale fisheries and distinctly large-scale fisheries. In theory, if the matrix is working well, it should highlight those fisheries which may be on the edge of small-scale and large-scale (i.e. a small vessel with a high-powered engine and large-scale level of fishing effort), assigning them their own category. Furthermore, by incorporating multiple dimensions, the matrix approach seeks to avoid misleading or inappropriate characterizations of fisheries as small-scale or large-scale, which can sometimes occur when a single criterion, such as vessel length, is emphasized.

How to apply the matrix

Step 1: Determine the fishing unit

To effectively use the matrix, users should score a fishing unit. This unit may be defined differently depending on local needs and available information. For example, the fishing unit may be:

- An individual fisher or vessel
- A relatively homogenous group of fishing activity
 - *For example, the user may choose to score all 'pole and line' vessels as a unit.*
 - *If large groups of vessels within a single fishing unit display distinct different characteristics (for example vessel size), this may indicate the need for further subdivision into distinct groups – smaller and more homogenous fishing units - for scoring purposes.*

² “These Guidelines recognize the great diversity of small-scale fisheries and that there is no single, agreed definition of the subsector. Accordingly, the Guidelines do not prescribe a standard definition of small-scale fisheries nor do they prescribe how the Guidelines should be applied in a national context. These Guidelines are especially relevant to subsistence small-scale fisheries and vulnerable fisheries people. To ensure transparency and accountability in the application of the Guidelines, it is important to ascertain which activities and operators are considered small-scale, and to identify vulnerable and marginalized groups needing greater attention. This should be undertaken at a regional, subregional or national level and according to the particular context in which they are to be applied. States should ensure that such identification and application are guided by meaningful and substantive participatory, consultative, multilevel and objective-oriented processes so that the voices of both men and women are heard. All parties should support and participate, as appropriate and relevant, in such processes.” (Par 2.4. p.1-2, Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication, FAO 2015)

It is important to note that for the successful completion of a comparative analysis, more than one fishing unit should be assessed, and ideally all fishing units in a country/region for which information is available.

Step 2: Assess each individual fishing unit through application of the matrix

For each category (row) within the matrix, select the option which most closely describes the fishing unit, selecting only one option per category.

Step 3: Calculate the total assessment score

Assign a value from 0-3 for each response given according to the column heading. Calculate the total assessment score for each fishing unit by adding up all responses. The total assessment score should be between 0 and 39.

Step 4: Compare results

Compare the total assessment score of each fishing unit assessed and determine if there is a clear cut-off between small-scale and large-scale fishing activity.

The matrix is currently in an early stage of testing and, as such, may require future adjustments pending initial results. For example, after applying the matrix to a series of fishing units, should the cut off between small-scale and large-scale fisheries be messy, the value in the scoring matrix may need some adjustment. Furthermore, in initial testing, should the matrix not pick up on those fisheries which fall somewhere between small and large-scale and assign them a distinct category, then certain characteristics may need to be tweaked. In a more advanced stage of testing of the matrix, one may consider adding weighting to some of the characteristics in order to achieve more sensitive distinctions between categories.

The matrix **is** a tool which ...

- Describes fishing units across multiple dimensions related to scale
- Picks up on quantitative characteristics without a quantitative cutoff
- Provides flexibility within the scoring range by not standardizing the scoring categories
- Is designed to be inclusive enough to be applied to diverse fisheries throughout the world

The matrix **isn't** a tool which...

- Serves the purpose of a questionnaire, in particular not a research questionnaire
- Considers characteristics only pertinent to one type of fishery, but rather considers sliding features of small-scale to large-scale fishing operations around the globe
- Has pre-determined definitions and with fixed scoring categories
- Is designed to fit the fishing characteristics of one specific region/sub-region

Description of fishing unit assessed³

Name of fishing unit: _____

Number of vessels/fishers: _____

Target specie(s): _____

Location (country and province/county/district, etc.): _____

Location of landing site: _____

Please select ONE option per row:

When assessing a fleet/fishery fishing unit (rather than a fisher/vessel fishing unit), select the option that most closely matches the majority of the group or majority of activities.

	0	1	2	3
Size of fishing vessel	<input type="checkbox"/> No vessel	<input type="checkbox"/> <12m, <10GT	<input type="checkbox"/> ≤24m, <50GT	<input type="checkbox"/> >24m, >50GT
<i>Comments: Although vessel size isn't necessarily an indicator of fishing scale and intensity, it is an important characteristic when paired with variables such as motorization and mechanisation. The four categories give a range of sizes which cover the majority of vessels (including shore-based activities) which occur globally.</i>				
Motorization	<input type="checkbox"/> no engine	<input type="checkbox"/> outboard engine/ inboard engine ≤100hp	<input type="checkbox"/> inboard engine <400hp	<input type="checkbox"/> inboard >400hp
<i>Comments: Indicates the presence of an engine on board, its horse power (hp) and whether it is outboard or inboard. In the case of multiple engines, consider the main one only.</i>				
Mechanization	<input type="checkbox"/> No mechanization	<input type="checkbox"/> Small power winch/hauler powered off engine	<input type="checkbox"/> Independently powered gear deployment/hauling	<input type="checkbox"/> Fully mechanized gear deployment & hauling
<i>Comments: Indicates what type of mechanisation, if any, is used to deploy gear during the fishing operation.</i>				
Fishing gear	<input type="checkbox"/> Labour intensive gear	<input type="checkbox"/> Passive gear	<input type="checkbox"/> Gear with aggregating devices	<input type="checkbox"/> Highly active gear
<i>Comments: Labour intensive gear includes mostly small gear handled manually by the fisher (e.g. hand hauled nets, pole and line, crab pots); Passive gears includes larger gear sets that are deployed passively (e.g. longlines, trap sets, gillnets/driftnets); gear with aggregating devices includes larger gear sets which use aggregating and attracting methods such as light attraction and FADs; Highly active gear include gears that require vessel power to encircle, chase, deploy and retrieve fish.</i>				
Refrigeration/Storage on board	<input type="checkbox"/> no storage	<input type="checkbox"/> ice box (i.e. on deck)	<input type="checkbox"/> ice hold (i.e. below deck)	<input type="checkbox"/> refrigerated hold
<i>Comments: An ice box is a free-standing container filled with ice for the purpose of chilling fish (above or below deck); an ice hold is a structure below deck containing ice for the purpose of chilling fish; a refrigerated hold is part of boat structure and is mechanically refrigerated for the purpose of freezing fish.</i>				
Labour/Crew	<input type="checkbox"/> Individual and/or family members	<input type="checkbox"/> Cooperative group	<input type="checkbox"/> ≤2 paid crew	<input type="checkbox"/> >2 paid crew

³ Please insert a short description of the fishing unit assessed, including all information available, with particular reference to the terminology defined in the document glossary.

<i>Comments: The term cooperative group refers to any arrangement in which individuals, other than family members or paid crew, work together to carry out the fishing operation. The two paid crew categories refer to fishers paid either in monetary or non-monetary (e.g. part of the catch) terms.</i>				
Ownership	<input type="checkbox"/> Owner/operator	<input type="checkbox"/> Leased arrangement	<input type="checkbox"/> Owner	<input type="checkbox"/> Corporate business
<i>Comments: Owner/operator refers to a fisher who operates their own vessel/gear owned; Leased arrangement refers to fishers who operate from a rented vessel/rent gear; Owner refers to a respondent who owns the vessel/gear but does not carry out the fishing operations first hand; Corporate business refers to a company or group of people that carry out fishing activities as a single legal entity (usually own multiple vessels/gear and employ multiple crew).</i>				
Time commitment	<input type="checkbox"/> Occasional	<input type="checkbox"/> Full-time, but seasonal	<input type="checkbox"/> Part-time all year	<input type="checkbox"/> Full time
<i>Comments: Occasional fishers receive under 30% of their livelihood from fishing or spend under 30% of their working time in that occupation; Part-time fishers receive at least 30% but less than 90% of their livelihood from fishing or spend at least 30% but less than 90% of their working time in that occupation. Full-time fishers receive at least 90% of their livelihood from fishing or spend at least 90% of their working time in that occupation. The Full-time but seasonal category refers to fishers who are occupied with other full time seasonal activities when not fishing (such as farming), or where the fishing "season" may be adapted so that it does not coincide with the peak tourist period from which earnings might well be higher.</i>				
Daily trip/multiday	<input type="checkbox"/> <6 hours	<input type="checkbox"/> day trip (< 24 hours)	<input type="checkbox"/> <4 days	<input type="checkbox"/> > 4 days
<i>Comments: Depending on the type of gear, this category could refer to a detailed unit of measure, i.e. hours fished; to "number of days fished", i.e., the number of days on which fishing took place (for those fisheries in which searching is a substantial part of the fishing operation, days in which searching but no fishing took place should be included); or to "number of days on ground", which in addition to days fishing and searching also includes all other days while the vessel was on the ground.</i>				
Fishing grounds/zone/ distance from shore	<input type="checkbox"/> <100 metres from shoreline/baselines/ high-water mark	<input type="checkbox"/> <10 km from shoreline	<input type="checkbox"/> <20km	<input type="checkbox"/> >20km from shoreline/ baselines
<i>Comments: Indicates at what distance from shore/baseline/high water mark the fishing activity is carried out.</i>				
Disposal of catch	<input type="checkbox"/> Household consumption/barter (exchange for payment in goods or services)	<input type="checkbox"/> Local direct sale (exchange for monetary payment)	<input type="checkbox"/> Sale to traders	<input type="checkbox"/> Onboard processing and/or delivery to processors
<i>Comments: Household consumption or barter applies to fisheries catch mainly consumed in the household or informally exchanged for goods or services. Local direct sale applies in the case of sales to individuals, restaurants or small local businesses, often close to landing sites. Sale to traders applies when one or multiple traders operate in the value chain between producer and consumer. On-board processing and/or delivery to processors applies when catch is processed for value-addition or preservation before being traded into the value chain.</i>				
Utilization of catch, Value adding/ preservation	<input type="checkbox"/> For direct human consumption	<input type="checkbox"/> Chilled/ locally processed/ cured	<input type="checkbox"/> Frozen	<input type="checkbox"/> Frozen/chilled for factory processing (for human consumption or fishmeal)
<i>Comments: Direct human consumption applies when fish is consumed fresh, with minimal to no processing. The other three categories indicate varying degrees of sophistication and durability of the preservation and value-adding methods. Chilled/locally processed/ cured includes smoking and salting.</i>				
Integration into economy and/or management system	<input type="checkbox"/> Informal not integrated (no fees)	<input type="checkbox"/> Integrated (registered, untaxed)	<input type="checkbox"/> Formal integrated (licensed, landing fees)	<input type="checkbox"/> Formal, integrated (licensed, taxed)
<i>Comments: This category provides a description of the level at which the fishing operation is integrated into formal economic and management systems. Informal/not integrated fishing operations lack any form of license or registration and are not subject to license or landing fees or taxation. Integrated fishing operations are formally registered however they are not taxed or charged a fee for their activities. Formal integrated operations are licensed and subject to license and/or landing fees, however they are not taxed as a commercial concern. Formal integrated fisheries are licensed and taxed as a commercial concern.</i>				

Follow-up questions (Optional):

Answers to the optional follow-up questions will be useful when testing the matrix in order to better understand if categories need to be further refined. If responding on behalf of a fishery or homogenous group of fishers, please respond with approximate averages. If the fishing unit assessed displays a range of values, please indicate them in the appropriate sections below.

VESSEL CHARACTERISTICS

Please indicate the vessel length (LOA) in metres:

Please indicate the vessel GT:

Please indicate the vessel's engine power (if applicable) in HP:

Please indicate the vessel's age (in years):

FISHING GEARS

Please indicate the specific fishing gear(s) used and, when applicable, indicate the approximate number of hooks or net length:

FISHING GROUNDS

Within what distance from the shore does your fishing activity typically take place?

ACCESS TO CAPITAL

Please describe whether the fisher has access to financial services (i.e. informal credit arrangements (including pre-financing of fishing trips), access to borrowing and small loans, access to formal large-scale credit and investment opportunities, etc.)

