Training and Implementation of the Fishery Performance Indicators within Areas Beyond National Jurisdiction

Final Report

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Background

The World Bank's Ocean Partnerships for Sustainable Fisheries and Biodiversity Conservation-Models for Innovation and Reform (OPP) is structured around four regional projects, each piloting regionally sourced ideas for improving management of fisheries with a component in areas beyond national jurisdiction (ABNJ). Each project will develop a sustainable fishery investment business plan, which will be used to attract additional funds to implement many of the proposed measures after the OPP project period. In the Eastern Pacific Ocean (EPO), the regional project is seeking to improve profitability of tuna fleets through implementation of alternative conservation measures. In the Caribbean, the project is exploring shifting billfish mortality from a low-value domestic seafood market to a high-value, high-impact market for anglers. In India, the project is hoping to capture more of the potential value in yellowfin tuna landings by improving handling and processing. In the Western Central Pacific Ocean (WCPO), the project is focusing on allowing coastal states to capture more benefits from their tuna fisheries.

The activity in this report is designed to support the regional projects in their baseline performance and ongoing monitoring assessments, through application of the Fishery Performance Indicators (FPIs) (Anderson et al. 2015). Specifically, we inform and support (1) OPP-related pilot application of the Fishery Performance Indicator methodology and (2) FPI-related inputs to the development of the monitoring and evaluation (M&E) framework for the OPP-supported sustainable fishery investment business plans. The FPI inputs support two goals that are integral to OPP project objectives. First, this project will assess the performance of the fisheries that are the subject of the business plans at the outset of the project. Second, it will develop capacity within each region to do project evaluation and monitoring, supporting the constructively critical perspectives that monitoring encourages. It will accomplish this goal by directly involving project technical personnel in doing initial assessments, and applying the insights of the assessment structure to project design.

The FPIs, developed with support from the global fishing industry, the World Bank, and several foundations, are a rapid assessment instrument for capturing fishery performance on the pillars of the triple bottom line of community, economic, and ecological sustainability, and for relating a range of management, governance and macro enabling conditions to those outcomes. The instrument includes 68 measures to assess wealth accumulation on 11 dimensions of stock, harvest industry performance, and post-harvest industry performance; and 54 measures of enabling factors--including management and governance—to associate with variation in outcomes. Each measure is scored—accurately, but with low precision—on a one-to-five scale using data where possible, but relying primarily on non-quantitative factors that can be scored by experts in any fishery or fishery sector. This feature makes it particularly well suited to applications in data-poor countries or industry sectors. They have been applied to over 100 fisheries globally, including highly industrialized catcher-processor fleets to small scale fisheries pursued with minimal

gear. In addition, they have been applied to major tuna fisheries, at the regional fishery management organization (RFMO) level.

Since the FPIs were designed to be broadly applicable but also tractable, they do not capture every possible feature of every fishery with high resolution. For the OPP project, it was clear that many of the fisheries under consideration had beneficiaries in addition to those actively involved in the harvesting and processing the fish that the FPIs capture: the residents of the coastal states that lease access rights through agreements with harvesting nations. The form and extent of these benefits varies, and the FPIs can capture a more comprehensive picture of the fishery with a supplement that captures these benefits.

The next section of the report describes the training process, run by Professor Christopher Anderson of the FPI core team, that was used to empower the project staff to score their fisheries using the FPIs. The following section reflects on the lessons learned through this training. The development of the leased access agreement supplement, done by Professor Anderson in collaboration with Professor Santiago Bucaram, is then described. The scores executed through this activity are then presented: FPIs for several EPO fleets and one in India, and compared with comparable fleets globally from the FPI database; and two EPO fleets using the new leased access agreements supplement. Guidance on using these scores in the EPO, India and the other regional projects is then presented, along with some discussion of the project process.

Description of Training

Previous training in the FPI methodology have emphasized either an "apprenticeship" approach—where trainees work directly with one of the FPI development team and learn through that experience—or a "team" approach—where all trainees are familiar with the same set of fisheries and collaborate to develop scores, under the supervision of a member of the FPI development team. In the OPP project, the training plan centered around a workshop where people familiar with the project's different fisheries will learn about the instrument in general, then apply it to the individual fisheries for which they are responsible.

Step 1: Introduction to the FPIs

Once projects identified their personnel, training took place in three phases, culminating the workshop. First, each team had 60-90 minute Skype introduction to the FPIs, led by Professor Chris Anderson. Professor Anderson's introductory Powerpoint slides are included in Appendix A. This training provided an introduction to the structure and philosophy of the FPIs, and covered:

- An overview of the stages of the ABNJ training process
- A recounting of the FPI development process
- A description of the difference audiences for the FPIs
- A review of the structure of the FPI instrument

- A description of the difference between the outcome indicators and the enabling factor measures, and the relationship between them
- A discussion of the structure of the metrics, including the 1-5 scoring system and the scorer's score quality assessment
- Different notions of a "fishery" used in different evaluation frames, and the definition used for FPI case studies
- Suggested approaches for the scorers to acquire the information needed to make their best judgments about metric scores
- An introduction to the manual and worksheet used for applying the instrument

At the end of the session, each trainee discussed a specific fishery that he would score in preparation for the workshop. This second phase of the training was designed to focus trainees on each individual measure, and the types of information that were available to score it. In this process, trainees would identify challenges, confusion, or interpretational difficulties at a measure-level, and these could be addressed during the workshop.

Step 2: Training Workshop

The training workshop was convened June 21-24, 2016 in Guayquil, Ecuador. It was organized by Professor Santiago Bucaram and Ana Maria Trujillo. Professor Chris Anderson led the FPI training component of the workshop, and Professor Bucaram moderated the informational exchange. Other attendees included Vishwanie Maharaj (WWF), Manuel Perez Moreno (FAO), and two representatives of the Ecuadorian tuna industry. FPI scorers-in-training included Professor Bucaram (for the EPO project), Vivek Elayaperumal, Rajdeep Mukherjee (representing India), and Freddy Arocha and Ramon Carcamo (representing the Caribbean).
The trainee's test cases were consolidated and used as the basis for discussion. The EPO scored Ecuador's EPO Bluefin and yellowfin tuna fleets; India scored the Kerala mechanized longline and motorized handline yellowfin tuna fleets; and the Caribbean scored the Artisanal drift-gillnet billfish fishery of Playa Verde (Catia la Mar, Venezuela). To introduce some diversity, Professor Anderson included a small scale snapper/grouper reef fishery in Indonesia that he recently completed.

The Powerpoint slides for this discussion are in Appendix B.

Approximately six workshop hours were then spent walking through the FPI instrument measure-by-measure. For each measure, what it was trying to capture and good sources of information were mentioned, and difficulties each group team had were discussed and resolved.

The training concluded with a discussion of how FPIs would be used in the exercise of developing compelling case studies. Several roles were discussed in detail. First, with industry attendees, it was discussed how firms and private partners could use FPIs to illuminate and isolate performance gaps which might be closed with non-

governmental organization or development investment support. This is a key role of the FPIs in the GEF Coastal Fisheries Initiative (CFI) Challenge Fund draft document that was provided to attendees.[1] Second, scores below three were identified as offering potential opportunities to improve, and average performance from all fisheries, or similar fisheries, in the FPI database would provide an alternative basis for comparison.

Third, and perhaps most significantly, the FPIs can help structure the narrative within the business plan so that it is compelling. In particular, the business plans can identify particular input metrics they will alter, and target scores, and then argue how each of those changes will support improvements in the desired outcome metrics (and maybe reduce performance in others). Then, the FPI database can be drawn on to support the link between the changed enabling conditions and the desired outputs, by showing other case studies, or sets of case studies, where the enabling condition improves outcomes. This will provide empirical evidence of the story for why the proposed intervention should work, distinguishing it within competitive capital markets.

The final day concluded with ensuring the trainees who were ready to begin scoring knew how to scope the fisheries for scoring, based on preliminary work conducted as part of the project.

Step 3: Post-Case Study Review

After the workshop, trainees applied the FPIs to fisheries that are part of their projects. These draft scores were submitted to Professor Anderson, who drew on his knowledge of similar fisheries and the structure of each measure to identify surprises or inconsistencies for further discussion with the scorers. In each case, measure level comments and questions were provided, with a follow-up Skype call to discuss the questions that were raised. In most cases, scores were maintained but clarified with better explanation; in other cases, scores or score qualities were adjusted after discussion about the details of the fishery and/or the intent of the measure.

Lessons Learned from Workshop Training

Based on current project status, it is difficult to compare the efficacy of this training to other methods of training that have been used. Professor Anderson had previously visited India to conduct FPI studies with one of the India participants, and since the Caribbean has not yet scored any fisheries, it is only Professor

[1] GEF is supporting a complementary project on improving coastal fisheries, the Coastal Fisheries Initiative (CFI). One component of that project, implemented by The World Bank, is a fund to which regional projects can apply for funds to close specific gaps necessary to recruit private capital. The application criteria, developed by Wilderness Markets, require a recent set of FPI scores and identify threshold score levels on particular measures—indicating baseline readiness for private investment—that must be met for eligibility. These focus on measures of current stock status, and management enabling conditions such as access rights that reflect secure tenure.

Bucaram who has applied the instrument with knowledge based primarily based on this training.

The FPIs are broad and require making a number of interpretative decisions, and it is unrealistic to expect that a single training session is going to be able to anticipate all circumstances or misunderstandings that might arise (or that a trainee could retain them if it did!), so the apprenticeship model offers some advantages. Consistency in these interpretations critical to ensure comparability across FPI case studies. However, Professor Bucaram was able to internalize the most important perspectives of the instrument, and the other issues were able to be resolved through additional correspondence and rescoring some measures in initial case studies, though a few persistent misunderstandings that crept into the final report in discussing strengths and limitations of the instrument. These were resolved through the FPI team's review of the final report.

One lesson is that FPIs can play several roles within a project, and it is important to understand what a training can do well, and what roles require broader experience with using the instrument. First, the broadest need for training is for staff who can gather and encode information in the FPI instrument, and to then stand back and assess whether the picture captured by the FPIs is an accurate depiction of the fishery. This requires primarily familiarity with the fisheries being studied, or at least an ability to connect with people who are draw information out of them. Second is the interpretation and use of the scores to guide and monitor a project, which requires additional skills in project design and implementation. Third is drawing in scores from similar case studies to share knowledge and experience about performance and management across case studies, which requires some familiarity with fisheries globally. Finally, there is reflecting on the structure of the instrument and designing supplements, which requires a very broad experience with the variations in fisheries and fisheries management globally.

The training task in this project focused on the first two methods of engagement. These are methods the FPI designers hoped would be broadly accessible to project staff of varying backgrounds, with brief training which would involve an introduction to the instrument and review of draft scores by the FPI core team. Through the activities in this project, trainees seemed able to fulfill these objectives quite well; the case studies seem to capture the narrative of the fisheries studied well. Issues that came up in score review had to do with fishery scoping; evaluating the quality if proxy data or poor information when there were multiple sources that suggested different scores; and ensuring impressions were scaled to the global range (in contrast to the range of fisheries with which the scorers were familiar). The training did not focus on the third or fourth roles, and where trainees were drawn on for those applications, misunderstandings were more likely. Such misunderstandings may not affect scoring so much as presentation of the information; if this is critical to a particular project, additional coordination with the FPI development team may be preferable to relying solely on trainees.

Within the structure of this training, two elements were critical. First, it was essential to have the scorers actually try to apply the instrument to a fishery with which they were familiar prior to the training workshop; those who were active in the pre-scoring activity were more engaged in the discussion and better internalized the philosophy of the instrument than those for whom the scoring was an abstract exercise. Second, working in close coordination with the core FPI team, to ensure consistency in the application of the measures and providing for a modest amount of review post score review was important. This identified several residual inconsistencies in how the instrument was applied. The FPI core team is developing a standard protocol for review of case studies by regionally expert peers, to ensure a comparable database of case studies. In the future, reviews should explicitly include a process of asking the scorer to identify gaps between the reality of the case studies and the corresponding FPI pictures. In some cases, these were raised as issues with the FPIs, but were in fact misunderstandings of the intent or interpretation of parts of the instrument; either is important to identify, to adjust the scores or interpretation of the case study, or put on the revision list for future versions of the FPIs.

This training suggested two additional sets of tools which may be useful in the future. First, a guideline to indicate the types of people who are able to provide the best information. For example, processing plant managers are good sources of certain types of information, while their quality control managers are best for others because they are closer to both the standards and staff on the line. Second, because trainees may not be familiar with collecting information from people, it would be useful to develop prompts for each type of person on which scorers might draw information, in order to help the scorers structure a narrative about fishery performance. This would encode knowledge the FPI team as acquired through repeated application of the instrument around the world.

Development of FPI Supplements

Concurrent with the training process, the projects were identifying the fisheries on which their business plans are to be focused. To be an effective tool, the FPIs have to capture the outcomes of beneficiaries of the selected fisheries, and the enabling conditions presented affected by project activities. During training, projects assessing how effectively the FPIs captured the benefits to affected stakeholder groups, and the types of enabling conditions targeted by the projects. The FPIs were explicitly designed to be able to draw inferences across fisheries of different scales—industrial, semi-industrial, small scale or artisanal. Measures capture how participants who invest in harvest capital or work in harvesting, participants who work in the post-harvest sector or invest in post-harvest capital receive benefits from participating in the fishery. However, some ABNJ fisheries have significant beneficiaries, or potential beneficiaries, who are not directly involved in commercial harvesting or processing.

The EPO and WCPO fisheries both have participants who derive significant benefits from coastal rights leasing arrangements (e.g., access payments or auctioning of fishing quota). In the EPO, fishing capacity rights are mostly held by individual or companies to whom they are assigned by coastal states. These capacities are contracted to active harvesters who are associated with other coastal states, in exchange for payment. In the WCPO, capacity rights are held by the coastal states, where they are contracted through auction or treaty to distant water harvesting vessels, who pay the coastal state governments, creating benefits of a type not captured in the base FPI instrument. The development of this Leased Access Agreements supplement is described below.

The second supplement required for the ABNJ projects is a version of the FPIs for recreational fisheries, which will support the Caribbean in evaluating the benefits from recreational fishing flowing from their business plans. It is effectively a different version of the FPI instrument—the sectors and parties to which benefits accrue, and mechanisms for generating those benefits are much different than in commercial fisheries. It has been developed by the FPI team and piloted in three fisheries under separate funding (from Environmental Defense Fund). The instrument will be ready for use when the Caribbean project completes its contracting, in January 2017. Development of this supplement is not discussed here, but slides briefly describing it are included as an appendix.

Development Process

To develop the Leased Access Agreement supplement, Professor Anderson drew on experience with access leasing, in particular in the WCPO and West Africa, and collaborated with Professor Bucaram to understand agreements in the EPO. This breadth of experience and knowledge of the global range of access agreements is essential to ensure the supplement is not overly-specialized to one project or the issues of one region; a major benefit of the FPI approach is to be able to compare different access arrangements.

The first step in the process was to develop the structure of the supplement. Since this is a supplement, but while the base FPI is to be scored from the perspective of the businesses that participate in using the access rights (through harvesting and processing), the supplement is to be scored from the perspective of the states who hold the access rights and subsequently lease them. The right owning individuals and states involve both new benefits or beneficiaries, and new factors that affect those outcomes, the supplement has the same basic structure of the FPI instrument: a set of measures to assess outcome performance, and a separate set to capture levels of different enabling conditions.

Key dimensions of the outcomes were then identified. First, information about the scale of the payment and its use was identified as important. Second, the extent to which the lessor state captured benefits other than the payment under the terms of

the agreement was identified. Third, the level to which the lessees' activity reduces the value of domestic fisheries was included.

The supplement will draw on the enabling conditions of the businesses participating in the base FPI scores, so there is a need to capture factors that determine the success of the access agreement from the perspective of the lessor right owner. First, the scope of agreement in terms of how it limits resource exploitation may affect outcomes. Second, the governance of both the lessor and lessee countries may affect the terms of the agreement, or adherence to it. Third, the management and enforcement resources drawn through the agreement may affect outcomes. Finally, the nature of the right conferred through the lease may present incentives for stewardship and investment on the part of the lessee harvester, and thus influence outcomes.

This draft, at the level of dimensions and components, was presented and discussed at the in-person training workshop, so trainees could reflect on its applicability to their fisheries. There was consensus that this captured the most important aspects of access agreements, so Professor Anderson drafted specific measures to capture each dimension or component. This draft was shared with Professor Bucaram, and through discussion refined to ensure it was scoreable. This constituted an "alpha" version that was ready for piloting.

Professor Bucaram then led the pilot of the supplement, scoring it for access leased by Ecuador and Columbia, in consultation with fishery industry participants and local experts. Several challenges are encountered, and measures, scalings and measure descriptions were refined in response. Specifically:

- The initial description of the output measure comparing the payment value to the value the local industry would capture if it could only be accessed by the domestic fleet was challenging to apply, so the description was revised. An industry suggestion from the EPO was to consider their benefits from unloading in a foreign country, was too region specific.
- An initial description of an input measure capturing whether the agreement was a standard multilateral agreement or highly idiosyncratic (and more likely to be disadvantageous for one party or another) was interpreted as transparency, and the description was refined.
- The EPO experts highlighted differences in enforcement among countries, including different penalties for foreign boats than domestic, and different rules for whether the boat captain and crew or the boat owners are responsible for violations. This was considered too detailed and region specific for a global rapid assessment instrument, given the presence of a general enforcement measure.

Following these and a handful of other refinements, the beta-version supplement was set and ready for broader application. The measure descriptions and scoring rubrics are presented in Appendix C.

Supplement Contents

Table 1 shows the measures capturing the outputs of the Leased Access Agreement supplement. The *Payment* dimension captures several perspectives on the values of the payment. The first measure compares the value of the payment to the lessor to the ex-vessel value received by the lessee, to gauge whether the negotiated price is reasonable division of fishery benefits. The lease payment is also compared to the value that could be captured by the right holding coastal state if they did not lease the right. Finally, in cases where the payment is received by the government, the coastal state benefits then depend on how the payment is used.

The rest of the outcomes capture how the foreign harvesting activity affects the lessor state. The *Lessor State Industry* captures lessor state benefits from how much lessors state crew is employed (this is often a condition of access agreements), how much of the fish caught under leased access ends up in lessor state processing facilities (allowing the lessor state to recapture value in the post-harvest sector), and how much of the used processing capacity is owned by the lessor state. On the other hand, the *Domestic Fleets* captures how the value to domestic fishing is decreased by activity under the access agreement, either through competition for resource or through costly conflict.

Measure scoring rubrics are in Appendix C.

Table 1: Leased Access Agreement Supplement Outputs

Dimension	**Measure**
Payment	Size of Payment to Value Received
	Size of Payment to Local Value
	Use of Payment
Lessor State Industry	Lessor State Crew Employment
	Lessor State Processing
	Lessor State Processing Ownership
Domestic Fleets	Competition with Domestic Fleets
	Conflict with Domestic Fleets

Table 2 shows the measures used for each component of the enabling conditions. *Agreement Scope* considers how the access agreement limits the amount of resource that can be taken, and whether the agreement framework is widely applied or highly idiosyncratic, a proxy for how likely it is to be asymmetric. *Governance* measures complement the base FPI economic and governance measures with corruption indexes, which reflect how benefits are distributed, and whether the country has a reputation for balanced participation in international agreements, which likely reflect the symmetry of the access agreement itself. *Management and Enforcement* measures capture the information on their fishing activities the lessees are required to report to management, their financial contribution to management,

and the capacity to enforce fishing activity under the access agreement. Finally, the *Rights Properties of Leased Access* component measures of the elements of the rights fascia that are captured in the base FPI are scored for the right conferred to the lessee.

Table 2: Leased Access Agreement Supplement Enabling Conditions

Component	**Measure**
Agreement Scope	Resource Use Restrictions
	Parties to Agreement Structure
Lessor Governance	Corruption Index
	Good Country Index
Lessee Governance	Corruption Index
	Good Country Index
Management and Enforcement	Lessee Reporting
	Lessee Management Contribution
	Enforcement
Rights Properties of Leased Access	Transferability Index
	Security Index
	Durability Index
	Flexibility Index
	Exclusivity Index

ABNJ Fishery Scores

As part of this project, the EPO and India regions each produced scores of target fisheries. These scores, and summary calculations to produce the comparison graphs below, are included in the worksheet whose link is provided at the end of this report. The next section compares the baseline FPI scores among the scored fleets, and against average scores of tuna fisheries around the world. The following section presents the scores from the beta-version of the Leased Access Agreements supplement.

Fishery Performance Comparisons

Under the aegis of this project, six fleets were scored. This includes the purse seine fleets from Ecuador, Mexico, Columbia and Panama, and line fleets including the EPO distant water Asian longline fleet and the Indian longline fleet. The Ecuadorian and Panamanian purse seiners fleets use a FAD-based fishing strategy, which captures predominantly skipjack with some (smaller) yellowfin and bigeye, while the Mexican and Columbian fleets use a dolphin set harvest strategy, which captures almost entirely (adult) yellowfin. However. Columbia processes a little less than half their catch domestically, and Mexico primarily domestically, while the rest of the catch uses the processing hubs in Ecuador.

The EPO fleet-level scores reported here are averaged composites of the species-specific scores provided by Professor Bucaram. The species level scoring captures differences in ecological outcomes, and differences in the management systems used for the different species, in particular a hard quota on bigeye catch. The fleet-level scores average, by weight, the species level scores, and present a more comprehensive picture of the overall performance of the fleet, whose overall benefits are derived from multiple species—managed by different methods—but that comprise a participation portfolio. The fleet level scores are presented here to complement the EPO report, and to enable comparisons with other FPI case studies.

An advantage of using a common rapid assessment instrument for baseline assessment is the potential to compare the focus fisheries to other, similar fisheries to identify opportunities for, or structural barriers to, improvement. The FPIs facilitate this, and we draw on previously conducted global case studies of tuna fisheries for a basis for comparison. Specifically, previous work has scored 11 canned (purse seine) tuna fleets and 10 sashimi (longline and handline) tuna fleets from around the world, each scored from the perspective of the managing RFMO.

Fishery Performance Indicator Scores

Figure 1a summarizes the outcome scores for the purse seine fleets, compared to the global average for canned tuna. The most striking aspect is that EPO tuna fisheries are performing slightly better than their global peers on almost all dimensions. This is largely attributable to the value captured for all participants by the Ecuadorian processing hub, which us utilized by most EPO fleets. This industry provides substantial local economic and community benefits through local employment, and enjoys good trade relationships with US markets. This is in comparison to predominantly distant water catch in the Indian Ocean and West-Central Pacific, where processing is predominantly done by Thai companies whose labor practices have fallen under international scrutiny and brought tariffs.

Mexico, which does its own processing, provides relatively good jobs for its citizens, and as a middle income country, provides a reasonable local market. However, its performance is hindered by the US ban of Mexican tuna associated with dolphin bycatch; this is a market barrier, as US markets demand dolphin-safe tuna, which has been politically institutionalized.

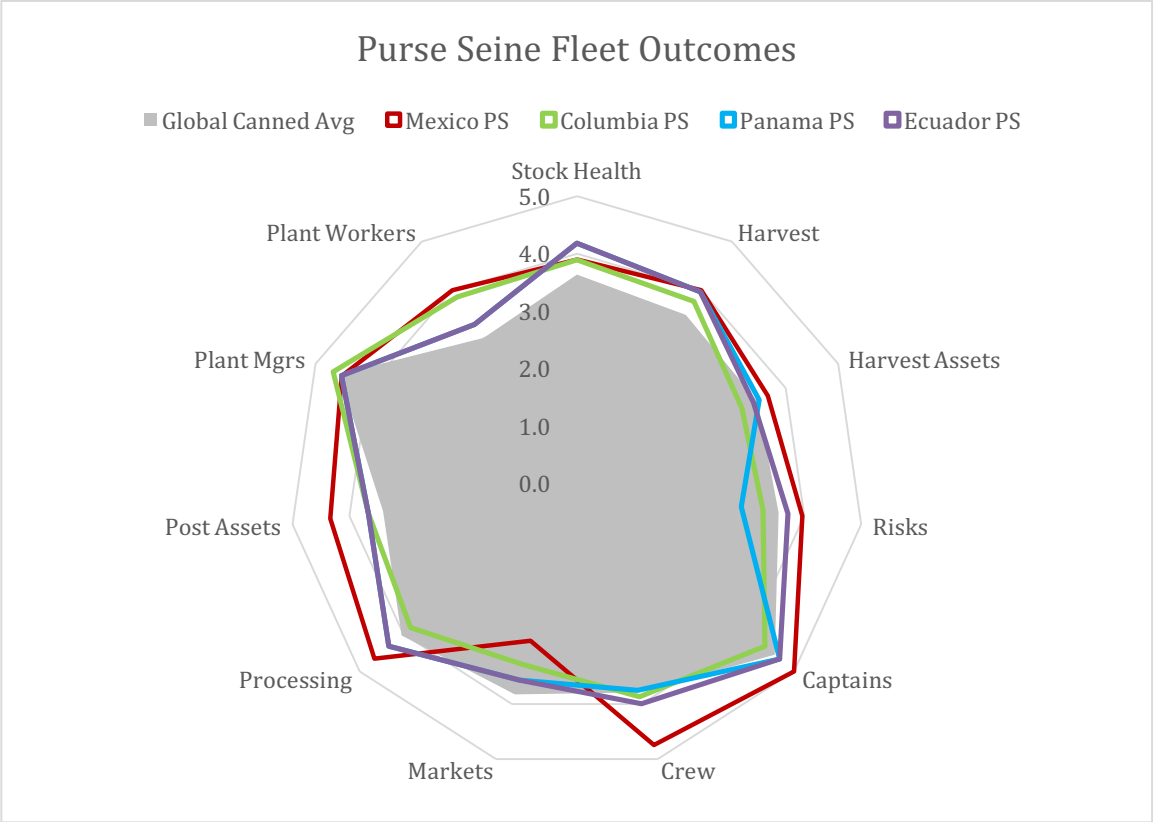

Figure 1a: Purse seine fleet output scores, compared with the average of global purse seine fleets.

Figure 1b shows the enabling conditions of the EPO purse seine fleets, compared with global canned fleet averages. The EPO fisheries generally have higher levels of enabling conditions than the global fishery. They enjoy higher levels of infrastructure and trade conditions, better national economies for the fishing fleets, and the industry participates in management at a higher level. Access rights scores are higher than average due to the strong capacity rights allocated by the RFMO, but harvest rights are lower because the only harvest-based quota is for bigeye.

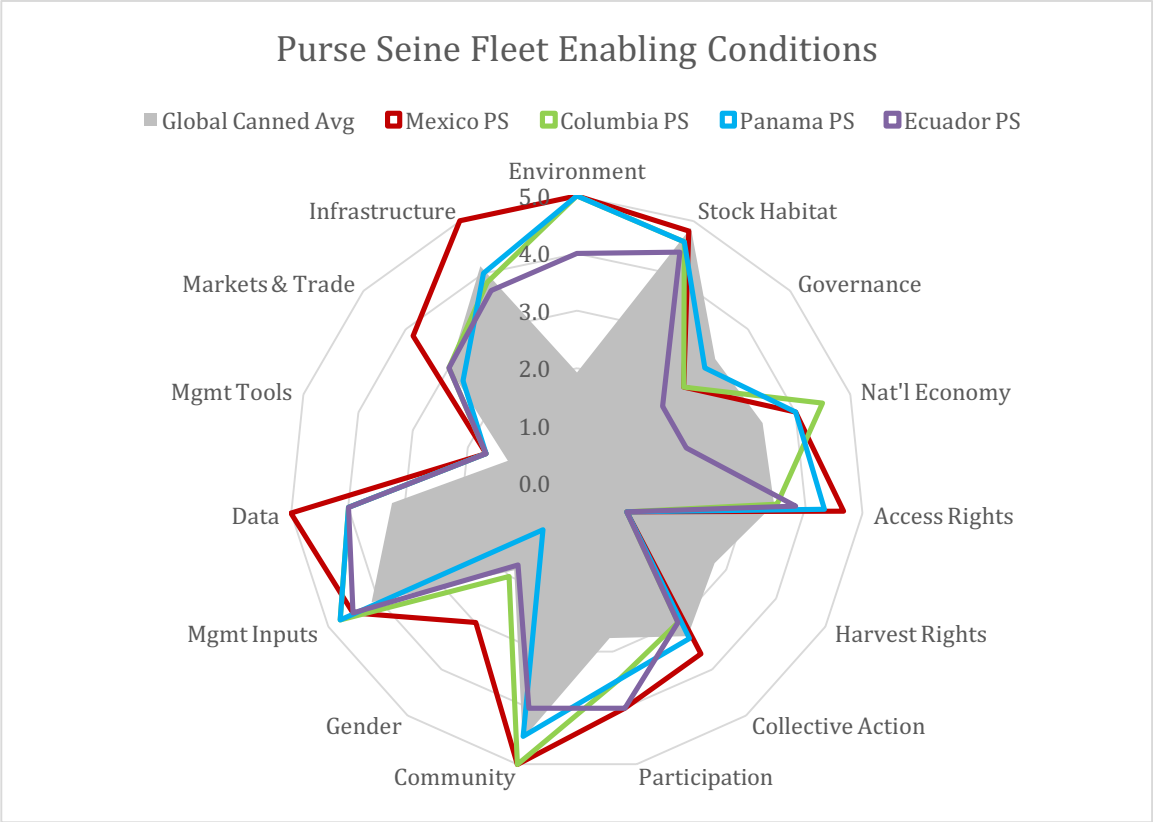

Figure 1b: Purse Seine fleet Enabling Conditions

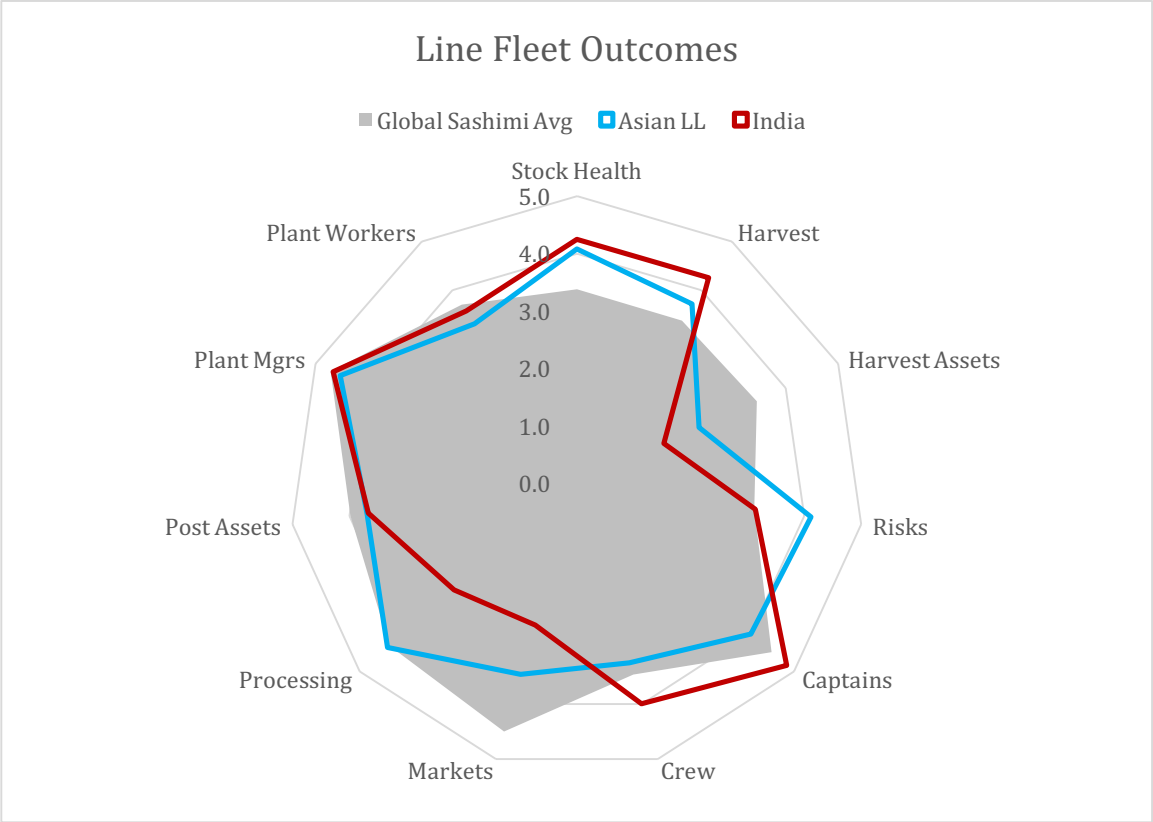

Figure 2a: Purse seine fleet output scores, compared with the average of global purse seine fleets.

Figure 2a shows the performance outcomes of the longline fleets, including the Asian distant water longline fleet in the EPO and the Bay of Bengal fleet. Both fleets have slightly better Stock and Harvest performance than comparable fisheries, but have lower scores on Harvest Asset scores because harvest rights are not strong and capital is in only moderate condition. Vessels owners, captains and crew perform similarly to similar fleets. Both fisheries also have benefits to workers and owners in the processing sector that are comparable to line fleets globally.

However, the fisheries are different from each other, and global peers, with respect to processing performance and markets. The Indian fishery has difficulty preserving product quality in the supply chain, and hence potential sashimi market fish ends up being exported for canning, reducing scores for markets and the processing sector. This represents a significant opportunity for improvement. The Asian longline fleet suffers from lower market performance due to falling ex vessel prices and a lower ability to command a premium in Asian markets than similar products from other regions, partly because most of the product is frozen rather than shipped fresh.

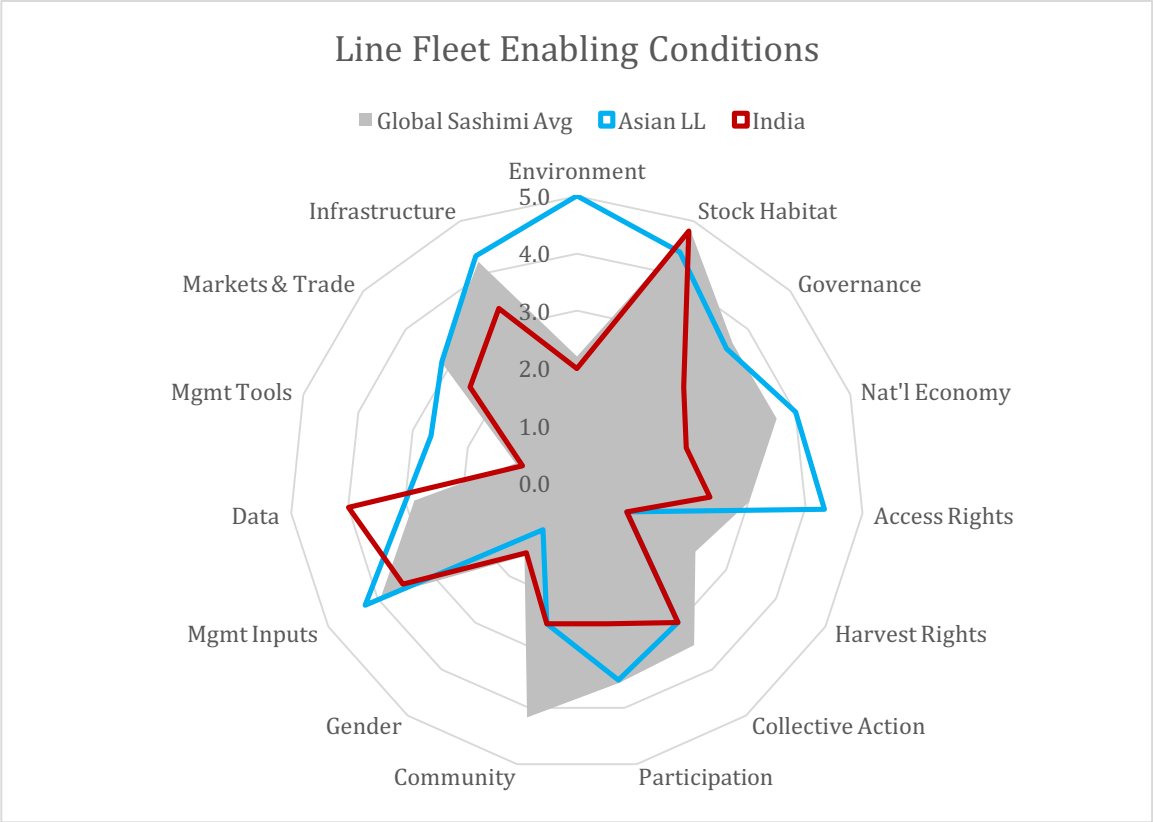

Figure 2b: Enabling Conditions for Line Fleets

Figure 2b shows the enabling conditions for the Asian and Indian line fleets, compared to global line fleets supplying sashimi markets. The Indian line fishery has overall lower levels of enabling conditions than the Asian EPO fleet, associated with its development status. In particular, the national conditions have lower scores, as do elements of community; the Asian EPO fleet is comparable to global averages (because Asian distant water longlining is a significant component of these fisheries globally). Access rights are well defined for the EPO, but both fisheries have lower Harvest Rights scores than the global line fleet average. Despite higher collective action through local fishermen's associations designed to convey subsidies, the Indian fleet has lower participation and community factors in management; they do collect and process data in management, though there are institutional obstacles to using that information in management. Low market and infrastructure levels are consistent with supply chain issues in India, suggesting this as an opportunity for improvement. Capacity management and the use of hard total allowable catch management for bigeye are reflected in higher scores for Access Rights and Management Tools in the EPO.

Leased Access Agreements Scores

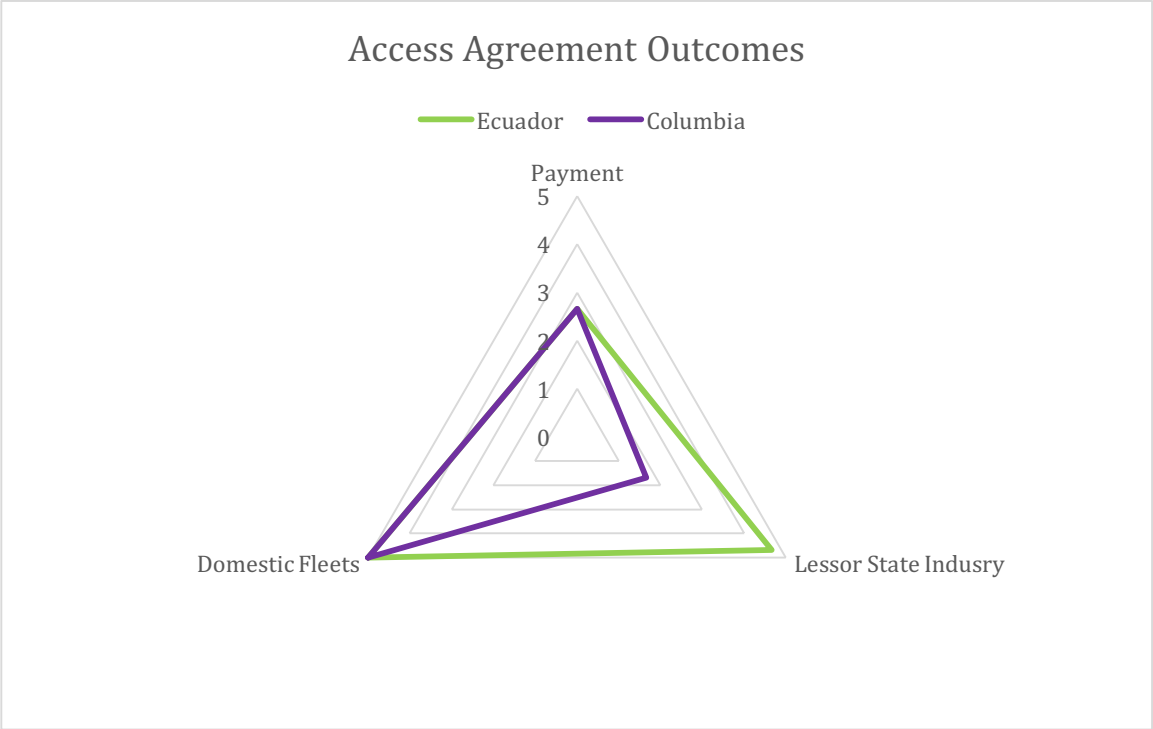

Figure 3a: Access Agreement Outcomes.

The Leased Access Agreement supplement captures how the leasing arrangement benefits the coastal state with the right being leased. This study compares the agreements for leasing Columbian rights with those of leased Ecuadorian rights. The scores paint a clear picture with one difference between the two, the extent to which the lessor state industry benefits from the leasing arrangement: Ecuadorian leases are processed in Ecuador, capturing that value, while most Columbian leases are processed in Ecuador, not benefitting the Columbian supply chain. Both fisheries score well because the fleets fishing leased rights do not come into conflict with domestic fleets (in Ecuador, they are the domestic fleets), and the payments are providing modest value relative to the value of the fish if held domestically.

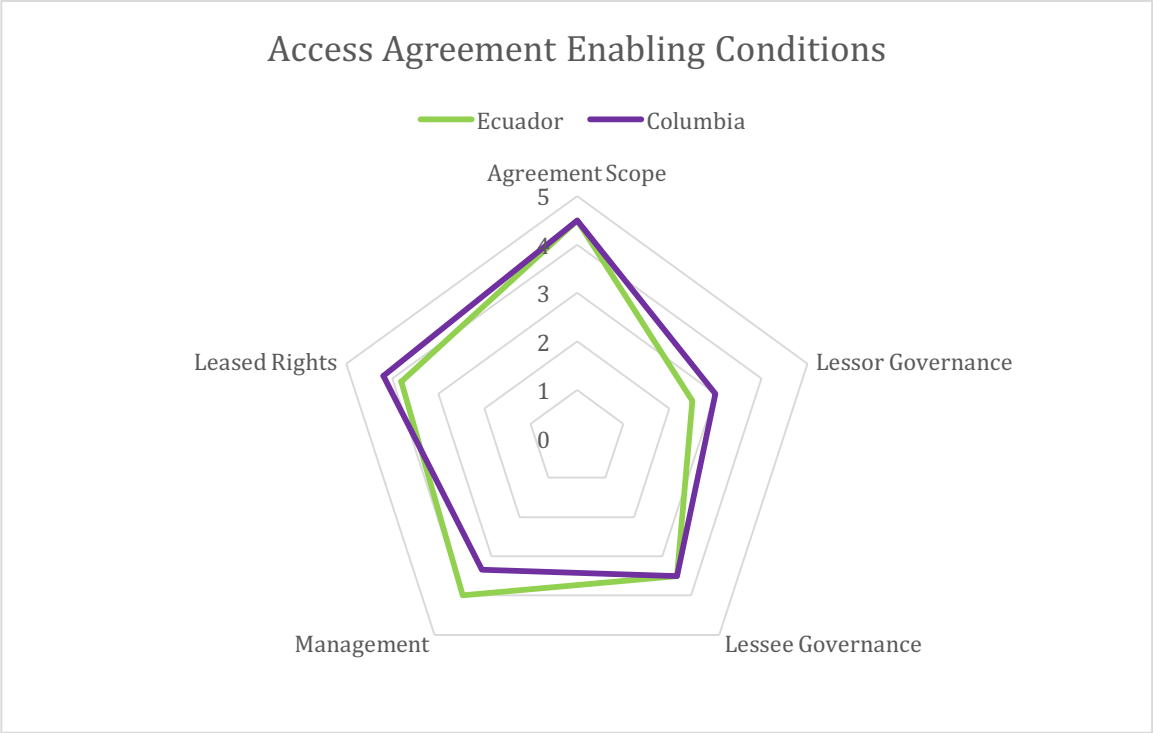

Figure 3b: Leased Access Agreement Enabling Conditions

Figure 3b shows the enabling conditions for the access leasing arrangement. Thw two fleets are comparable. Columbia has slightly higher Governance scores than Ecuador, because it is better rated for corruption. Ecuador has slightly stronger management institutions, reflecting on-dock observers for landings in Ecuador.

Applying the Scores

The comparison of the scores to the global averages for similar fleets helps the regional project to identify opportunities for improvement, and suggests pathways for realizing those improvements.

Next Steps for the Projects

The four projects under the ABNJ umbrella are at different stages, and have engaged with the FPIs to differing degrees. The WCPO engaged only in initial consultations on this element of the project and did not participate in training. The Access Agreement supplement would be highly applicable to the WCPO. In general, the FPIs would support their efforts to benchmark, identify opportunities for investment, and develop their theory of change.

The Caribbean project participated in FPI training, but contracting difficulties delayed scoring past the end of 2016. The Caribbean project includes both coastal commercial fisheries and recreational fisheries, and thus both the commercial FPIs and a pilot-phase version of the FPIs for recreational fisheries (under development

with separate funding) are part of the scoring plan to capture both of the major user groups affected by the proposed business plans.

The EPO and India regions have scored FPIs for some or all of their focus fisheries, and thus have a baseline that can be leveraged in the project going forward. The next section describes how these baseline scores can guide the design and monitoring of these projects.

Using the FPI Scores in Project Design and Implementation

In the early stages of project design, scoring the FPIs present a concise, but high level, broad-based picture of the fishery. This process introduces project personnel to key stakeholders, and alerts stakeholders to the presence of goals of the project. It also provides a baseline document that project personnel can use to familiarize themselves with the full fishery supply chain.

In addition to supporting the process of introducing people to the project and the fishery, the scores enable project personnel to identify strengths, and opportunities for improvement. For example, the EPO can identify that the strong performance of their in-region processing sector provides advantages relative to producers of comparable products globally. The only outcome where the purse seine fleets are all underperforming the global average is in markets: the FPIs let them identify this area, drill down on why performance is lower, and consider whether there are opportunities for improvements. In this capacity, the FPIs complement the priorities and goals of each project; they do not generate explicit recommendations, but elucidate dimensions with potential for improvement.

Similarly, projects can use the enabling factors to consider how their environment is similar or different than that of comparison fisheries. Identifying differences in enabling factors will influence what strategies the project undertakes in pursuit of improving outcomes. Importantly, not all enabling factors are within control of the project (e.g., broader environmental policy, national-level governance). A contextual understanding of the fishery can help understand whether those factors are essential to the performance of the comparison fisheries, or are necessary conditions for the project's theory of change. Conversely, many enabling factors can be influenced at the project scale, and identifying those that differ from aspirational comparison fisheries can suggest potentially productive project activities.

These processes can support developing a stronger project by helping identify the project's theory of change. First, the project should identify the specific measures or dimensions it aims to change. Second, it should identify the specific enabling conditions that will be changed through the project. Third, it should construct a narrative that persuasively argues the changes in the enabling conditions will lead to the desired change in the outcome measures. An effective narrative helps entrain stakeholders and potential funders, and provides a structure around which

monitoring and evaluation can be built as it suggests a specific set of observable changes to be tracked through project implementation.

Using the FPIs in structuring the narrative imposes empirical discipline on the narrative, strengthening it by drawing on other FPI case studies to either argue that a targeted outcome should be improved because similar fisheries perform better, or to provide evidence that changing the targeted enabling conditions consistently leads to improvements in the targeted outcome measures. This strategy can be useful in distinguishing approaches that work from those that do not: if the approach has been tried elsewhere and been unsuccessful, then the project plan should include a rationale for why the approach did not work in previous cases, but will work in the current project.

As the project is implemented, the FPIs can be reapplied as to tool for broad-based monitoring. As identified in the EPO report, the FPI strategy sacrifices precision in order to achieve the instrument's breadth. The resulting measures are not sufficiently precise to support within-project monitoring and evaluation of the project's major goals; projects should invest their M&E budgets in developing data processes that support more precise measurement of their target enabling factors and outcomes. However, the FPIs can continue to be useful to monitor aspects of the fishery beyond those specific project goals, either for (possibly unintended) changes arising from project activity, or for exogenous changes which may affect the project priorities of the narrative supporting the theory of change.

A final niche for the FPIs, as a rapid assessment tool, is for ex-post project evaluation. One of the challenges of development project evaluation is that it is not feasible to observe outcome changes during the project period. For example, the ABNJ Project is helping fisheries develop business plans, which may or may not be produced in time to attract funding. However, the funding for the plans, and changes in enabling conditions, may or may not arrive before current funding expires; there is little likelihood of observing outcome change during the project. This inability to observe the long-term results during the project's active phase hampers sharing experiences across projects, or helping large funders evaluate their investment strategy. The FPI are feasible to apply in the years following a project, with modest separate funding after the project has expired, to highlight the successes and failures of the project, and organize those experiences to make them available as a knowledge base on which future projects can draw.

Discussion

The Fishery Performance Indicators can contribute to benchmarking, design, implementation, monitoring and short- and long-term evaluation of investment projects designed to improve commercial fisheries. This project demonstrated the potential for training project personnel in the methods used to score the instrument, a necessary step for baseline scoring and monitoring. While some review by highly experienced scorers was required to ensure comparability with existing case

studies, this is normal; the FPI core team is establishing a process to do this for all case studies.

The major challenge that was encountered was one of timing: different projects were in different phases of their planning and contracting as different times. The relatively small spread between the EPO and India still allowed for productive engagement, though the Caribbean and WCPO projects were further off cycle and were able to make less use of the support available through this contract. When designing synchronous training across multiple regions in the future, this may have implications for how budgets are structured. For example, FPI training and baseline scoring activities and personnel could be in the same central budget, to ensure all personnel requiring training are contracted for it at the time training is offered.

These timing differences are likely to be amplified as the scores are put to use in the project design. Although discussed abstractly in the scoring training, these applications will likely require additional consultation with the FPI core team, use data FPI to evaluate and critique arguments about the likely effects likely pathways through which the projects' business plans will improve outcomes. With projects in different phases of plan development, it will be challenging to do this in a single shared workshop. If projects were better synchronized, there would also be the potential to use the FPIs as a common language to share experiences with one-another, but experience suggests such level of coordination across regions, cultures and bureaucracies is challenging.

References

Anderson, J., C. Anderson, J. Chu, J. Meredith, F. Asche et al. 2015. The Fishery Performance Indicators: A Management Tool for Triple Bottom Line Outcomes. *PLoS ONE* 10(5): e0122809. doi:10.1371/journal.pone.0122809

Final Score Worksheet

https://www.dropbox.com/s/kczu7kfulidqvdo/ABNJMasterDataFINAL.xlsx?dl=0

Appendix A: Online Training Slides

Scoring the Fishery Performance Indicators

Christopher M. Anderson
University of Washington
School of Aquatic and Fishery Sciences

Training Process

- Today
  - Review structure of FPIs
  - Discuss fisheries of interest, defining a fishery
- After reviewing materials
  - Call to walk through measures, address questions
- Develop draft scores
  - Call/workshop to review scores, address questions
- Finalize scores
  - Call to review scores, discuss reporting and application

What are the FPIs?

- Rapid assessment instrument for economic, community and ecological outcomes in fishery management systems
  - Designed to evaluate and compare the world's fisheries management systems – both in developed and developing regions.
  - Designed to evaluate the effectiveness of investment, reforms and interventions in fishery management systems.


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RESEARCH ARTICLE

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Abstract

Pursuit of the triple bottom line of economic, community and ecological sustainability has increased the complexity of fishery management; fisheries assessments require new types of data and analysis to guide science-based policy in addition to traditional biological information and modeling. We introduce the Fishery Performance Indicators (FPIs), a broadly

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Development Process

- Initial Funding by ICFA
  - Additional by ICFA, World Bank, USAID, Walton, NOAA, Packard
- Three major workshops: London, Hawaii, Florida
  - 40 experts
  - 15 universities and research institutions
  - 6 Government organizations
  - 6 Private firms
  - IIFET Tanzania Special Session (2012)
- Three rounds of pilot testing by PIs and cooperating fishery economists
- Peer reviewed (PLoS ONE 2015)

Audiences

- Development and aid agencies
  - Rapid assessment instrument can be use to establish social and economic benchmarks before and after projects
  - Off-the-shelf instrument can be applied by existing staff
- Academic and research community
  - Test hypotheses relating enabling factors to outcome measures across a wide range of fisheries
- Governments and fishery managers
  - Establish a set of economic and community performance benchmarks for fisheries in different types of economies around the world
    - Underperforming communities can apply political pressure for reform in data standards and management

What is a Fishery?

- Biological Perspective
  - Identifiable breeding population of a species
- Harvesting Business Perspective
  - Groups of populations that are harvested by identifiable fleets using comparable technologies and serving similar markets
- Management Perspective
  - One management body provides a common set of rules for access and harvest
- TBL effects of management is at the intersection of these perspectives
  - “Fishery” is the fleets that harvest a collection of identifiable populations, and supply similar markets, under a common set of rules for access and harvest

What is Performance?

- ***Current*** levels of success of ***management systems*** in generating ***outcomes*** from different perspectives
  - Feasible
    - Affordable for, or accessible to, a wide range of fisheries
  - Readily available
    - Precludes extensive primary data collection
  - Accurate
  - Quantifiable
  - Understandable
- Robust to data poor fisheries, and sectors
  - Lack of data in post-harvest sector in almost all fisheries
- 30,000-foot view; approach of the country doctor
  - Individual metrics are imprecise, but using multiple metrics for each performance dimension leads to an accurate impression of what is and is not working

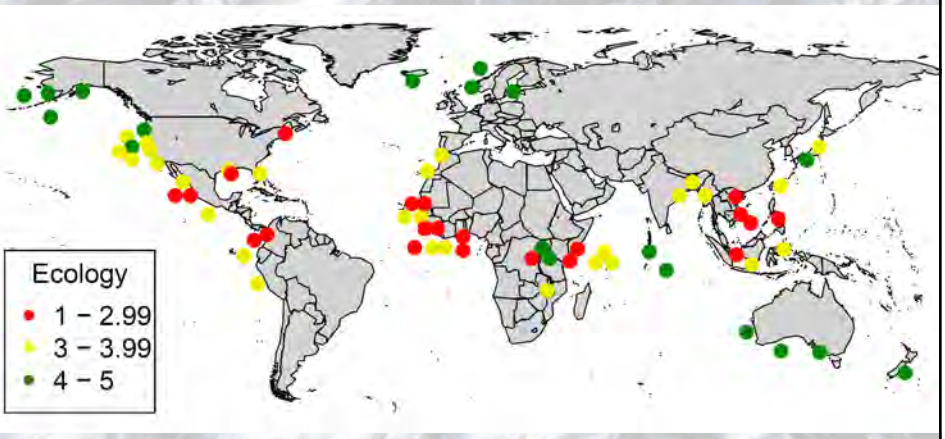
What is an Indicator?

- Reflection of performance on pillar of the Triple Bottom Line
  - Ecology
  - Economics
  - Community
- Reflection of performance in a Sector
  - Ecosystem
  - Harvest sector
  - Post-Harvest sector
    - Often neglect, but half of fishery rents and critical for determining how fishery benefits manifest in community

Broad Applicability

70 Case Studies (including many developing country fisheries)

Ecological Outcomes



FPI Rapid Assessment: Outputs

- Each Dimension scored with several metrics (68 Output measures)

	Dimensions
Ecology	Fish Stock Health & Environment
Economics	Harvest Performance
	Harvest Asset Performance
	Risk
	Trade
	Product Form
	Post-Harvest Asset Performance
Community	Managerial Returns
	Labor Returns
	Community Services
	Health and Sanitation
	Local Ownership
	Local Labor
	Career

FPI Enabling Factors: Inputs

54 simple metrics covering 15 dimensions, 5 components:

Components	Dimensions
Macro Conditions	Environmental Performance
	Exogenous Environmental Factors
	Governance (National)
	Economic Conditions
Property Rights & Responsibility	Fishing Access Rights
	Harvest Rights
Co-Management	Collective Action
	Participation
	Community
	Gender
Management	Management Inputs
	Data
	Management Methods
Post-Harvest	Markets & Market Institutions
	Infrastructure

Indicators: Outputs

- Each Dimension scored with several metrics (68 Outputs)

	Dimensions
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Multiplicity is a strategy for managing both complexity of fisheries and triangulation for low information measurement

Metrics
Captains' Earnings Relative to Region
Captains' Opportunity Cost
Captains' Social Status
Processing Owners' Earnings Relative to …
Processing Owners' Opportunity Cost
Processing Owners' Social Status

Perspectives on Scoring

- FPIs capture the scorer's estimate of performance on individual measures
  - Scorer selects best source of information available
    - Own experience
    - Exactly the right data
    - Data proxies
    - Information gathered from experts, participants in industry
  - Not a survey or tool for primary data collection

Metrics

Earnings of Crew (depending others for access)

Score	Description
5	More than 50% above regional average wage
4	Between 10% and 50% above regional average wage
3	Within 10% of average regional wage
2	Between 50% and 90% of the regional average wage
1	Below 50% of regional average wage

- 1-5 categories make accurate scoring possible in the absence of precise data or great expense
  - Bins generally chosen to reflect the quintiles of performance on the metric globally

Score quality

All measures

Score	Description
A	Scorer is highly confident in 1-5 score, greater than 95% chance the score is correct. This can be based on precise data, reliable sources of information, or bin boundaries that make a different bin very unlikely
B	Scorer believes score is accurate, but reality could fall within one bin on either side of the reported score
C	Score is a best guess

- Should not capture scorer's uncertainty about measure interpretation

Scoring Materials to Review

- Scoring Worksheet
  - Organized by sector, grouping information from different types of experts
  - Bin descriptions, with summaries of description
  - Record scores, quality, scoring notes
- Manual
  - Introduction to philosophy of FPIs
  - Description of rationale for each metric
    - Important for enabling factors, which are motivated by specific causal hypotheses
  - More detailed score descriptions
  - Interpretation guidance for complex cases
  - Examples from the database

Defining the Fisheries to Score

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Scoring the Fishery Performance Indicators

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Audiences

- Development and aid agencies
  - Rapid assessment instrument can be use to establish social and economic benchmarks before and after projects
  - Off-the-shelf instrument can be applied by existing staff
- Academic and research community
  - Test hypotheses relating enabling factors to outcome measures across a wide range of fisheries
- Governments and fishery managers
  - Establish a set of economic and community performance benchmarks for fisheries in different types of economies around the world
    - Underperforming communities can apply political pressure for reform in data standards and management

Roles within Investment Projects

- Provides broad-based monitoring process
  - Baseline evaluation
  - Measuring enabling factor improvement
  - Measuring outcome improvement
- Encouraging Triple Bottom Line thinking
- Facilitating knowledge sharing
- Identifying theory of change
  - Linking specific inputs to specific outcomes
  - Draw on database for empirical support

Baseline Evaluation

- Off-the-shelf evaluation tool for evaluation of current performance
- Rapid assessment conducted with little data useful for scoping
  - Can be scored prior to project-funded data collection
    - Identify specific data needs and gaps
  - Useful for site identification and selection
- Customization for individual projects
  - Identify the fisheries for evaluation
  - Identify additional stakeholders not in FPI structure

Encouraging TBL Thinking

- Project team participants have disciplinary training
  - Often disproportionately natural science
    - Focus on ecological outcomes
    - Sometimes at expense of human outcomes
  - Social scientists disproportionately gather individual qualitative data
  - Target harvester outcomes, and institutions translating fishery outcomes into community outcomes, disproportionately economic
- FPIs provide framework and structure for interdisciplinary communication

Facilitating Knowledge Sharing

- Within investment programs, sites have different specific goals and interventions
  - FPIs provide common descriptions of fisheries
    - Sites can understand how other sites—with different emphases—compare and contrast with their site
  - Enhance ability to learn from one-another
    - Common vocabulary, interpretation
    - Easily accessible representation
- Contribute experiences to international database so others may learn from experience

Identifying A Theory of Change

- Projects sometimes conflate creating enabling factors with project goals for outcomes
  - Contractors paid to implement enabling factors
- At outset, identify pathways about which specific outcomes will be supported by which specific project activities
- Draw on database to identify key interactions with other enabling factors
  - Add empirical evidence that proposed theory of change works
  - Example: Access rights and physical infrastructure

Contrasts with Monitoring & Evaluation

- M&E needs precise measurement of goals
- M&E needs to measure changes that occur during project period
  - Projects too short to see effects of changes
  - M&E frequently focuses on doing activities, not outcomes
- Highlights need for low-cost assessment
  - For small budget, can return after project period to gather information on long-term effects, learn "what works" in fishery management

Fishery Scoring System Comparison

- Different emphases in TBL
  - Environmental Sustainability is more often
  - Different emphases in precision of measurement
  - Where is there data to support measures; not applicable to developing country
- Different ideas about how gathered information will catalyze change
  - Market: MSC and Fair Trade target consumers who want to buy sustainable products
  - Politics: "name and shame" instruments OHI, EPI, SSFG draw attention to low performance
  - Fishery projects: Context-specific management interventions affect outcomes in specific ways
- FPIs envision last approach

Comparison of Fishery Scoring Systems

	Market		Government			Fishery Project		
	MSC	Fair Trade	OHI	EPI	SSFG	SocMon	FSA	FPI
Ecology	Stock & Ecosystem	Harvest & processing	Stock & Ecosystem	Few; odd			Stock	
Economics	C. of cust, not outcome		Place, food security				Harvest	Harvest & Processing
Community								
Enabling Conditions	Mgmt capacity				Conflated w/outcomes	No clear structure	Management & Ecological	Many; clear
Data Poor	Very demanding	Binary measures	Data-based			Primary collection	Stock assessments	
Cost				Only a couple measures	Not indicators		Easy if data exists	
Comparable Data			OHI+ customized					
Scope of Analysis	Fleet	Fleet	Country/ region	Country	Community	Community	Stock	Fleet

Note: There is variation in precision and scope within each cell

Training Process

- Skype Introduction
  - Review structure of FPIs
  - Discuss fisheries of interest, defining a fishery
- After reviewing materials
  - Call to walk through measures, address questions
- Develop draft scores
  - Today's workshop to review scores, address questions
- Finalize scores
  - Call to review scores, discuss reporting and application

Training Regional Leaders

- Build capacity in understanding TBL assessment
  - Develop familiarity with notions of performance outside core disciplines
  - Focus local capacity on broad objectives of projects
  - Strengthen connection between actions and measurable outcomes within region
- FPI team is looking to develop global network of "captains" to score more fisheries (with funding)

Example: Africa Small-scale

- World Bank project supporting community-based management in small scale fisheries in Africa
  - Scoring carried out by project personnel
  - Reported to FPI Team (Chu)
  - Refined with FPI Team at project workshop in Africa
  - Reported, discussed, synthesized at final project workshop at Bank HQ

Breaking New Ground

- Most training "apprenticing"
- Previous efforts brought together teams of people to collaborate scoring fisheries with which they were all familiar

Ensuring Consistency, Quality

- FPI team establishing a review panel
  - 8-10 experts with FPI experience and either wide or highly specialized familiarity with types of fisheries
  - Submit draft scores to panel
    - At least two members will review, asking for explanation, clarification
  - Review is required to be added to database
  - Reciprocity expected to draw on database

Outline

- Philosophy reminder
- Introduction to "Homework" fisheries
  - Sulawesi snapper/grouper
  - EPO YFT and BET
  - Kerala longline and handline YFT
  - …
- Discuss fishery definition; general issues
- Proceed through scores on individual measures
- Supplements
- Scoring Plans

Perspectives on Scoring

- FPIs capture the scorer's estimate of performance on individual measures
  - Scorer selects best source of information available
    - Own experience
    - Exactly the right data
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Sulawesi Snapper/Grouper

- Very small scale bottom longliners around Luwuk
- Target ~14 species of snapper grouper, and octopus in season
- Implementing FIP with exporter, WWF
- Strong system of collectors that control market access, credit

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- Each Dimension scored with several metrics (68 Output measures)

	Dimensions
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	Product Form
	Post-Harvest Asset Performance
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	Labor Returns
	Community Services
	Health and Sanitation
	Local Ownership
	Local Labor
	Career

Score Methodology Questions

- Measure interpretation
  - Who or what "counts" for different measures
- Best sources of information/expertise
  - What types of people know tend to know this information
  - Resolution of different sources of information
    - [Scorer's job is not to record opinion, but use best source of information on each measure to capture what that measure represents]
- Calibration

FPI Enabling Factors: Inputs

54 simple metrics covering 15 dimensions, 5 components:

Components	Dimensions
Macro Conditions	Environmental Performance
	Exogenous Environmental Factors
	Governance (National)
	Economic Conditions
Property Rights & Responsibility	Fishing Access Rights
	Harvest Rights
Co-Management	Collective Action
	Participation
	Community
	Gender
Management	Management Inputs
	Data
	Management Methods
Post-Harvest	Markets & Market Institutions
	Infrastructure

Use in Business Plans

[Discussion Summary]

- Baseline score levels help identify areas for improvement
  - Scores below 3 generally indication of opportunity to improve
  - Can compare to peer fisheries in FPI database
- Use structure to explain mechanism for business plan
  - Identify the enabling condition component/measures the business plan will change; state target measure level?
  - Identify the outcome dimension/measures that will change as a result of the change in enabling condition
    - Broad-based effects (some of which may be unintended) in addition to primary goals
- Draw on database for empirical support for link between changed enabling condition and desired change in outcome
  - A compelling business plan will present a detailed, logical, evidence-based story for why the change in enabling condition will lead to the stated change in outcome
  - Previous cases in similar fisheries is compelling
  - Help identify whether other enabling conditions increase the likelihood of change (e.g., infrastructure is associated with improving rights outcomes)
- Firms and private partners can use FPI scores
  - Illustrate gaps in performance, which might opportunities for improvement with private or development investment partners

Baseline provides information to position for investment and partnership

Supplements

- FPIs developed for coastal commercial fisheries
  - Capture benefits that accrue to those who work in fishing industry
- EPO and WCP have significant revenue from fishing access agreements
  - Benefits and restrictions associated with these payments not comprehensively captured
- Caribbean has recreational fisheries as part of business plan development

Access Agreements

- Outcomes
  - Size of payment relative to fish value
    - Relative to that which would be obtained by locals?
  - Use of payment
    - Management; coastal communities; general fund; personal use
  - Coastal state crew employment
  - Coastal state processing ownership/labor
  - Competition/conflict with local fleets
    - Cultural displacement

Inputs

- Degree of responsibility on foreign vessel/government imposed by access agreement
  - (Limitations on fishing captured in core FPI)
  - Foreign investment in management
  - Attributes of rights granted under access agreement

Recreational Fisheries-Outputs

- Angler Sector
  - Trips and catch rather than landings
  - Trophy, competition, catch quality
  - Social metrics on private and for-hire anglers
- For-hire Sector
  - Trip prices and revenue
  - Sources of capital & asset values
  - Social metrics on for-hire owners/crew
- Ancillary businesses (hotels, restaurants etc.)
  - Angler expenditures & trip time
  - Local labor, expenditures

Recreational-Enabling Factors

- Access, harvest rights for private, for-hire
- Management
  - Co-management: private, for-hire
  - Data: Stock and effort
  - Fisheries enhancement
- Non-fishing trip attributes
- Fishing attributes
  - Gear, guided, commercial competition, tournaments
- Angler attributes
  - Consumption, fishing lifestyle, skill

Appendix C: Leased Access Agreements Supplement (Beta)

Purpose: This supplement is meant to score rights leasing arrangements, including access payments, quota acutioning and reflagging arrangements that provide access to fish in the EEZ of, or otherwise allocated to, another country. The base FPI case study should be scored from the perspective of the businesses that actually invest capital in harvesting, processing and selling the fish. This omits the benefit from the payments received within the non-harvesting country endowed with the rights. Thus, this supplement should be scored from the perspective of the country with the right to the fish being leased; many of these Output scores may be characteristics of the fishery that are enabling conditions for the primary FPI case study.

Outcomes	Payment	Size of Payment to Value Received	• **5**: More than 25% • **4**: More than 15% • **3**: More than 5% • **2**: Payment less than 5% • **1**: 0; no payment is made	The value of the lease payment as a percentage of the value of the harvesting entities' ex vessel revenues for the fish cause under the lease; this is a measure of how much of the value is transferred to the coastal state. The payment considered here is that transferred as part of the leaes agreement, and other cash or in-kind side payments that are clearly linked primarily to the lease agreement.
		Size of Payment to Local Value	• **5**: More than 200% • **4**: More than 100% • **3**: More than 50% (or no local market) • **2**: Less than 50% • **1**: 0; no payment is made	The value of the lease payment as a percentage of the value of landing the same fish locally. This is intended to capture if the fish is being "sold out from under" the local fishing community for less than it is worth, or if it is being leased to harvesters who can get much more value for it and transfer more value to the coastal state. If the quantity leased would overwhelm the local market, then it is appropriate to reduce the score one or two levels. 50% is chosen as the 3 value toa ccount for the fact that economic return would be about half if the country incurred the risk and cost of harvesting itself.
		Use of Payment	• **5**: Designated for fisheries and coastal communities • **4**: More than half transparently directed to coastal communities • **3**: More than 25% transparently directed to coastal communities • **2**: General government expenditures • **1**: Payment to private entity or officials personally	Portion of payment revenue directed to support the coastal communities that might benefit from a deomstic fishery, if the fish were harvestered domeestically. If it is not well known how the money is spent, then general expenditures are most likely. Payments directly to fishing companies or rights owners are considered to benefit fisheries and coastal communities.
	Lessor State Industry	Lessor State Crew Employment	• **5**: Virtually all • **4**: More than 30% • **3**: More than 10% • **2**: Less than 10% • **1**: Virtually None	Portion of crew on harvesting vessels who are from the lessor country. Score actual level of employment, not the level required in the agreement.
		Lessor State Processing	• **5**: Virtually all • **4**: 75-95% • **3**: 25-75% • **2**: 5-25% • **1**: Virtually none	Proportion of catch harvested under the leasing arrangement that is processed in the lessor state. If processing occurs on board and only transshipment occurs in the leasing country, score 2.
		Lessor State Processing Ownership	• **5**: Virtually all • **4**: 75-95% • **3**: 25-75% • **2**: 5-25% • **1**: Virtually none	Proportion of catch harvested under the leasing arrangement that is processed by capital owned by residents of the lessor state. Score 2 if only processing activity is transhipment.

	Domestic Fleets	Competition with Domestic Fleets	• **5**: Domestic fleets do not exist or are not affected • **4**: Domestic fleets slightly affected • **3**: Domestic harvest value reduced more than 10% • **2**: Domestic harvest value reduced more than 25% • **1**: Domestic harvest value reduced to below half, or completely eliminated due to stock depletion	Reduction in harvest (or value of harvest) by estblished domestic fleets of the lessor state associated with harvest by the lessee state. Reduction in value may be from depletion, or at-sea or onshore competition that affects fish value.
		Conflict with Domestic Fleets	• **5**: No signs of conflict • **4**: Domestic fleet complains about lessee activity • **3**: Curtailing lessee fleet activity substituted otherwise possible management of the domestic fleet • **2**: Physical confrontation resulting in property damage • **1**: Phsyical confrontation resulting in bolidly harm or death	On water or political arena conflict between established domestic fleets of the lessor state and the leasee fleets.
	Agreement Scope	Resource Use Restrictions	• **5**: Specified quantities are harvested under agreement • **4**: Agreement refers to target harvests or capacity that are intended to prevent overfishing • **3**: Agreement provides access with gear or time restrictions expected to ensure sustainability • **2**: Agreement provides access with general gear or time restrictions not realistically calibrated to prevent overfishing • **1**: Agreement provides access with few restrictions	Because of the many forms these agreements take, scorer will need to evaluate how effective the agreement restrictions are at preventing overfishing of key species. In flag leasing agreements, this refers to the standards to which vessels harvesting under the leased flag are held.
		Parties to Agreement Structure	• **5**: Established open structure lessees can enter or exit • **4**: Balanced multilateral negotiated framework for access • **3**: Multilateral framework with a clear imbalance of power among lessees • **2**: Multiple bilateral agreements • **1**: Single Bilateral agreement	Number of parties engaging under the same basic agreement structure can indicate the structure's fairness and robustness; multiple customized, highly idiosyncratic agreements leave room for difficult to detect abuse. Parties can sign a single multilateral agreement, or multiple bilateral agreements with the same structure and terms.
	Lessor Governance	Corruption Index	• **5**: Percentile 80-100 • **4**: 60-80 • **3**: 40-60 • **2**: 20-40 • **1**: 0-20	World Bank Control of Corruption Index of lessor. http://info.worldbank.org/governance/wgi/index.aspx#reports; select the Control of Corruption checkbox, appropriate year and country
		Good Country Index	• **5**: Rank 1-32 • **4**: 33-65 • **3**: 66-98 • **2**: 99-131 • **1**: 132-163	Multilateral reputation of lessor Use the quintile score (5 is highest ranking country) of the World Order subindex of the Good Country Index. .https://goodcountry.org/index/overall-rankings (Version 1.1)
	Lessee Governance	Corruption Index	• **5**: Percentile 80-100 • **4**: 60-80 • **3**: 40-60 • **2**: 20-40 • **1**: 0-20	World Bank Control of Corruption Index of lessee http://info.worldbank.org/governance/wgi/index.aspx#reports; select the Control of Corruption checkbox, appropriate year and country
		Good Country Index	• **5**: Rank 1-32 • **4**: 33-65 • **3**: 66-98 • **2**: 99-131 • **1**: 132-163	Multilateral reputation of lessee. Use the quintile score (5 is highest ranking country) of the World Order subindex of the Good Country Index. .https://goodcountry.org/index/overall-rankings

Enabling Conditions	Management and Enforcement	Lessee Reporting	• **5**: Lessee reports harvest levels to Lessor or other management body • **4**: Lessee reports harvest levels for key species • **3**: Lessor has good estimate of lessee harvests • **2**: Management forumlates rough estimates of lessee harvests • **1**: Lessee harvests are effecitvely unknown	Proportion of landings that are reported for purposes of management. Good estimates can arise when generally compliant lessor is assumed to meet a quantity-based cap.
		Lessee Management Contribution	• **5**: Lessee provides resources or expertise adequate for sustainable management • **4**: Lessee provides resources or expertise in insufficient quantity • **3**: Lessee contributes data on harvests • **2**: Lessee does not contribute to management of harvested	Lessee country involvement in Mmnagement (directly or through RFMO), either through proviind scientific expertise or money to support management, either directly or through designated use of the payment.
		Enforcement	• **5**: Lessor can enforce all key terms of agreement • **4**: Lessor can monitor and enforce harvest levels • **3**: Lessor can monitor and enforce capacity levels • **2**: Lessor has some weak controls • **1**: Lessor lacks resources and processes to enforce terms of agreement	Ability of the lessor country to limit the activity of the lessee to abide by the relevant fishing regulations and restrictions on fishing included within the terms of the agreement. The agreement terms may be the same or different than those applied to the domestic fleet. Score 1 if there are no restrictions in the agreement.
	Rights Properties of Leased Access	Transferability Index	• **5**: Very Strong: Fully transferable through well-established, efficient market institutions; • **4**: Strong: Fully transferable, but institutions are poor or illiquid; • **3**: Moderate: Transferable, but with severe restrictions on who can hold, or how much; • **2**: Weak: Transferable only under highly restricted and limited condition; • **1**: Access rights not transferable	Refers to the ability of the lessee to re-transfer (sub-lease) aspects of the right. NA if no limited access but can be scored if there is even a nominal system for granting access rights.
		Security Index	• **5**: Very Strong: Access rights are completely respected by the government; • **4**: Strong: Rights are mostly respected by the government; generally survive changes in government administration; • **3**: Moderate: Rights are at risk of retraction with changes in administration; • **2**: Weak: Rights are highly threatened or there is high political uncertainty; • **1**: None: Access rights are not protected	Extent to which the government reduces or threatens to change the access rights. Even if no limited access, can be scored to reflect the extent of other restrictions that ensure the security of access right (though probably low).
		Durability Index	• **5**: Very Strong: > 10 years to perpetuity; • **4**: Strong: 6 to 10 years; • **3**: Moderate: 1 to 5 years; • **2**: Weak: Seasonal; • **1**: None: None/daily	Duration of the property right. Even if no limited access, can be scored to reflect lessee's expectations of continued access. If the access rights are renewable with reapplication and the harvesters expect to be able to continue to access then score based on these expectations.
		Flexibility Index	• **5**: Very Strong: All decisions on time of harvest, gear used and handling practices are in the owner's control; • **4**: Strong: Minimal restrictions on time of harvest and technology; • **3**: Moderate: Modest restrictions on time of harvest and technology; • **2**: Weak: Significant restrictions on time of harvest and technology; • **1**: Time of harvest, gear used and handling practices are not in the owner's control	Ability of right holders to be flexible in the timing and production technology employed. Low scores will reflect restrictions that force inefficiencies. Even without limited access, there may still be scorable restrictions (gear, seasons, areas) that limit access flexibility.

	Exclusivity Index	• **5**: Very Strong: All decisions and access to the property are controlled by the right's owner. There are a limited amount of access rights granted and no intrusion from tose without rights such as recreational or bycatch fisheries; • **4**: Strong: Little intrusion on resource by those without rights and there are a limited amount of access rights granted; • **3**: Moderate: Modest intrusion on resource by those without rights. There is some effort to restrict the amount of access rights distributed; • **2**: Weak: Significant intrusion on resource by those without rights or little limit on the amount of access rights distributed; • **1**: None: Completely unrestricted open access, despite putative right. No limit on the amount of access rights distributed.	Ability of right holders to exclude those who do not have the right from affecting the resource or market. Can still be scored to capture extent of de facto intrusion if access is not limited. This measure is meant to measure both illegal intrusion by outsiders through illegal fishing, bycatch, or subsistence and recreational fishing (see manual for exactly when subsistence/recreational fisheries affect this score). It is also meant to capture whether access rights are distributed with or without limits. If a management authority controls access yet chooses not to limit the number of harvesters or frequently increases the number permitted (diluting existing access rights) then the exclusivity score should be very low.
Note that certain characteristics, like IEF of Lesees and management strategies will be scored in the primary FPI			