tBrief Edition #6

INVISIBLE, UNDERVALUED AND UNDERAPPRECIATED?

Transparency for small-scale fisheries

Key messages:

1 Transparency is often associated with improving information on the activities of governments and companies. Yet transparency also involves increasing visibility for parts of society that may be neglected and marginalised. This applies in many places to small-scale and artisanal fisheries, as well as the recreational fishing sector.

2 Frequently however, data on fisheries fails to capture their importance for livelihoods and food security, or social and environmental concerns for the small-scale sector. Fisheries are typically valued in terms of contribution to national GDP, with data mainly gathered on catches and the workforce.

3 Government authorities often miss opportunities, like national census studies or technological solutions, to collate information on small-scale fisheries. Positive examples of data-gathering are being piloted, but such initiatives may not always be generating the type of data that is empowering and beneficial for people in small-scale fisheries.

Fisheries Transparency Initiative

This publication is funded by the Gordon and Betty Moore Foundation.

Introduction

A central theme explored in our tBrief series has been that government transparency in the fisheries sector is more complicated, with wider implications, than is often assumed. Transparency is often equated with shining a spotlight on the activities of governments, or companies, in order to enhance public oversight and improve systems of public accountability.[1] It is often synonymous with addressing illegal fishing or corruption. However, this is too narrow a view.

This tBrief looks at a relatively underappreciated aspect of government transparency – increasing the visibility of parts of the fisheries sector that have been ignored or neglected, how this can be achieved and the consequences this may bring.

Government transparency matters for small-scale fisheries. For example, transparency can help ensure that government decisions, such as when licensing industrial fisheries, are not taken without prior, informed consent of small-scale fisheries. However, those working in small-scale fisheries assert that governments often hold only limited information on their sector. The lack of information is likely to be emphasised in 2022, designated by the UN General Assembly as the year of artisanal fishing and aquaculture.

However, transparency for otherwise marginalised groups can be a double-edged sword. In some cases, increased visibility and attention are worse than being ignored.[2] There is a slippery slope between transparency to support marginalised groups, and surveillance to keep them under control. Furthermore, increasing visibility may not have a straightforward positive outcome if the spotlight is shone only on selected aspects (like how much revenue is generated) but keeps other, potentially more important features (such as contributions to rural food security) in the dark.

All this suggests that if transparency is to help marginalised groups through visibility, then understanding which information is made more transparent and why, is of critical importance.

1 This perspective is evident in a recent series of articles on transparency in fisheries; see for example: Guggisberg, S., Jaeckel, A. and Stephens, T. (2021) 'Transparency in fisheries governance: Achievements to date and challenges ahead,' Marine Policy.

2 Ganesh, M.I., Deutch, J. and Schulte, J. (2016) 'Privacy, anonymity, visibility: dilemmas in tech use by marginalised communities', Brighton: Institute of Development Studies

Neglect of small-scale fishing in official government data

A lack of government information has been identified as a huge barrier to responsible fisheries management. In particular, information on the small-scale sector is often inconsistent, outdated and of poor quality. The flow of information from small-scale fisheries to public authorities is far less abundant than that from the large-scale sector. Efforts to document the activities of the small-scale sector can be enormously challenging. By contrast, the large-scale sector is far easier to measure and gather information from, despite problems of under-reporting or not reporting on activities. Government information on large-scale commercial fisheries is typically more comprehensive.

Large-scale fisheries…	vs.	Small-scale fisheries…
• consist of a relatively small number of firms.		• are often made up of thousands of individuals, some of whom are active on a part-time or seasonal basis.
• use one or a few prominent ports for landings.		• use a myriad of beaches and sites for landings.
• target specific fish species		• target a wide range of fish species[3].
• are increasingly regulated, through licensing, quotas and by-catch regulations.		• often lack clear tenure arrangements (e.g. licensing) – in many countries, fishing in coastal waters is considered 'open access'.
• are obligated to collate and produce large amounts of (nowadays digitalised) information.		
• use structured supply chains, often concentrated around a few prominent processors and retailers.		• have a widely dispersed post-harvest sector (where people clean and prepare fish for consumption), often involving enormous numbers of people working independently or in small groups.
• use well-organised and resourced representative bodies.		• are organised through co-operatives or associations – although many exist without such support and representation.
• interact with government agencies at a national level.		• interact with government agencies at a local level, if at all.

3 In particular in tropical developing countries.

Beyond these practical realities, a lack of official data on small-scale fisheries can stem from discrimination and neglect. Large-scale fisheries tend to provide more substantial and easily accessible government revenues. As a more prominent source of government income, large-scale fisheries are likely to receive more attention in statistical accounting. For example, gross domestic product (GDP) remains a standard measurement for expressing value in fisheries, but that is a contentious measure for the small-scale sector (see below).

Another cause of neglect may be public authorities' ambivalent or even negative regard for the sector. For a long time, attitudes towards fisheries reforms have been dominated by 'modernising' principles. Small-scale fisheries have often been considered 'backward', unproductive and inefficient. Many international organisations, such as the UN Food and Agriculture Organization (FAO), recognise that this was once a common attitude among both developing country governments and multilateral and bi-lateral donor organisations.[4] In this context, it is hardly surprising that government agencies working on fisheries have failed to develop resources and expertise for documenting the activities and contributions of small-scale fisheries.

The negative view towards small-scale fisheries is changing. **Small-scale fisheries are now more widely considered to be vital for people's livelihoods, food security and culture.** The social and ecological benefits of small-scale fisheries, compared to industrial fishing, are increasingly acknowledged. Academics specialising in fisheries report that, worldwide, there has been progress to implement participatory forms of governance involving the small-scale sector, and this has brought greater collaboration between small-scale fishers and public authorities.[5] The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries demonstrates this evolving international view. FAO has recently reported considerable evidence of international advocacy campaigns for the guidelines, which suggests that positive momentum is building.[6] Yet many argue that progress remains slow and marginalisation persists in too many places.

4 FAO/RAP/FIPL (2004) 'A research agenda for small-scale fisheries'. Bangkok, Thailand: FAO Regional Office for Asia and the Pacific

5 Jentoft, S. and Chuenpagdee, R. (eds) (2015) 'Interactive Governance for Small-scale Fisheries: Global Reflections', Switzerland: Springer.

6 See the report by the Committee on Fisheries, February 2021, 'Small-scale and artisanal fisheries: Progress on implementing the SSF Guidelines since the Thirty-Third session of COFI in 2018'.

The extent of data deficiency

For decades, public data on small-scale fisheries has been considered inadequate and therefore misleading. FAO, which has the mandate to collate information on the fisheries sector from national governments, has frequently drawn attention to this, and has published statistics about the fishing industry with the caveat that they are incomplete. In their regular State of World Fisheries and Aquaculture (SOFIA) Reports, data on the small-scale fisheries sector is adjusted through considerable estimates. A report commissioned by FAO on fisheries in the Pacific concluded that for coastal fisheries,

"the quality of fishery statistics furnished to FAO by national governments is generally not very good. In fact, the estimation of the production of coastal fisheries by government fishery officers in about half of the Pacific Island countries is largely guesswork." [7]

The report also described how periodically improved data has been generated through donor-financed projects, but once this support is withdrawn, statistical systems on coastal fisheries typically degenerate and eventually become dysfunctional: 'Despite the importance of data on coastal fisheries, the reality is that in the prioritization of scarce government funding, the ongoing routine collection of fisheries data has not received much priority.'

Academic research on small-scale fisheries has been growing. In 2012, the World Bank, FAO and WorldFish undertook a ground-breaking study entitled **Hidden Harvest** that tried to systematically improve knowledge on a global scale about the size and importance of small-scale fisheries.[8] The study estimated that there were 120 million people directly dependent on fisheries for their livelihoods, 97 per cent of whom were in developing countries. The analysis showed that more than 90 per cent of people working in fisheries could be classified as being in the small-scale and subsistence sector. Nevertheless, the report acknowledged that its research was incomplete and the actual harvests of fish by small-scale fisheries, and the numbers of people involved, could be higher.

7 Gillett, R. (2010) 'Marine fishery resources of the Pacific Islands', FAO Fisheries and Aquaculture Technical Paper. No. 537. Rome: FAO

8 World Bank (2012) 'Hidden harvest; the global contribution of capture fisheries', Washington DC: World Bank

Numerous other country-based case studies have sought to reveal the extent to which official data on small-scale fisheries is widely off the mark. For example:

- **in Mozambique**, research showed that levels of catches by the small-scale sector were six times higher than the levels that the government was reporting to FAO;[9]
- **in the Pacific Islands** actual catches of marine fish were thought to be 1.7 times higher than reported by governments, when unreported catches from the small-scale sector were included;[10]
- **in the Canary Islands**, research led by the University of Las Palmas estimated that catches by the non-industrial fishing sector between 2006 and 2010 were seven times higher than the data reported by the Government of Spain to FAO;[11]
- **in 22 West African countries**, a study led by the University of British Columbia, estimated that catches made by small-scale fisheries were almost double what was being reported by governments.[12]

Public data on fisheries is particularly poor when it comes to capturing women's roles in the sector, as well as recreational fisheries. Such scarce information is clearly a problem for managing fisheries sustainably.

9 Jacquet, J. et al. (2010) ,Few data but many fish: Marine small-scale fisheries catches for Mozambique and Tanzania', African Journal of Marine Science 32(2)

10 Zeller, D. et al. (2015) 'Synthesis of underreported small-scale fisheries catch in Pacific island waters', Coral Reefs 34

11 Castro J. et al. (2019) 'Reconstruction of marine small-scale fisheries captures in the Canary Islands (NE Atlantic Ocean) from 1950 to 2010', Sci. Mar. 83(1): 7–17

12 Belhabib, D. et al. (2015) 'Feeding the poor: Contribution of West African fisheries to employment and food security', Ocean & Coastal Management 111

WOMEN IN FISHERIES

Public data on fisheries is particularly poor when it comes to capturing the role of women in the sector. Fisheries are typically (and incorrectly) associated with being a male-dominated industry. Official statistics on fisheries are often not disaggregated by gender. Historically, literature on fisheries has tended to characterise women as largely 'invisible' in the industry.

FAO's 2016 SOFIA report described that national governments were slowly improving their efforts at capturing data on the role of women in fisheries, but that large problems remained. During the period 2009–2014, only 27 per cent of countries worldwide reported sex-disaggregated employment data for the fishery sector to FAO.[13] Extrapolating from what was reported, the suggestion is that 19 per cent of people engaged in primary production in fisheries – catching fish and producing farmed fish – were women.

Worldwide, it is generally the case that men are disproportionately involved in fishing from vessels at sea. But a substantial amount of seafood is also harvested from 'gleaning' – the collection by hand of food from shallow inter-tidal areas – often by women, providing vital food and income for local consumption. This part of subsistence and small-scale fisheries is routinely under-reported in official statistics. In **Timor Leste**, for example, recent research combining data on all forms of fish harvesting including gleaning has shown that women catch more seafood than men. However, fishing is seen nationally as a male-dominated part of the economy and therefore fishers continue to be described as 'fishermen'.[14]

In occupations such as fish processing and selling, women play the most significant role. Throughout **West Africa**, for example, the post-harvest sector is predominantly managed by women, who account for up to 90 per cent of fish traders in certain countries.[15] But official data on women's role in the post-harvest sector is widely unreported.

This problem is not exclusive to developing countries but is also described to be the case in **North America** and **Europe**.[16] In fact, while FAO undertakes research on the role of women in the fisheries sector – and has done much to draw attention to the paucity of official data – its own requests for statistical information from countries on fisheries does not even cover the post-harvest sector.

13 Gee, J. and Bacher, K. (2017) 'Engendering statistics for fisheries and aquaculture', Asian Fisheries Science Special Issue 30S

14 Tilley, A., Burgos, A., Duarte, A. et al. (2021) 'Contribution of women's fisheries substantial, but overlooked, in Timor-Leste', Ambio 50: 113–124

15 Ke´be´, M. (2009) 'Taking the contribution of fisheries into account in development policy', in: H. Ackefors (ed.) 'Fisheries, sustainability and development: fifty-two authors on coexistence and development of fisheries and aquaculture in developing countries'. Stockholm: Royal Swedish Academy of Agriculture and Forestry

16 Szmkowiak, M. and Rhodes-Reese, M. (2020) 'Addressing the Gender Gap: Using Quantitative and Qualitative Methods to Illuminate Women's Fisheries Participation', Front.Mar.Sci. 7

RECREATIONAL FISHING

Marine recreational fisheries (MRF) often occupy an ambiguous space. They are a component of small-scale fisheries in some definitions, yet separate and distinct in others. In many countries, people involved in MRF outnumber the total employed in commercial fisheries, and they can generate substantial revenues and catches of fish. In 2016, authorities in the **United States** ran the first comprehensive survey of MRF. It found that 8.3 million people fished regularly for recreation in the oceans, and that recreational fishing was responsible for adding almost $36.1 billion to the US economy during that year. That represented more than one-third of the value-added by all forms of marine fisheries. The size of MRF in many countries also puts it in competition with other fishing sectors.

In **Malta**, for example, a lack of regulation on the growth of high-end sports fishing has increased competition for fish between recreational fishers and traditional fishing communities.[17] In the **Bahamas**, in 2016 recreational catches by tourists were independently estimated to be 662,000 tonnes, which is about three-quarters of the volume landed by commercial fisheries.[18] Examples like this make it clear that recreational catch is likely to be having a tremendous impact on fish populations and on local markets of fish caught by artisanal fishers. Yet MRF remain largely unregulated.

Surprisingly, data on MRF is largely missing from FAO's statistics on global fisheries. In 2012, FAO published guidelines for rectifying this,[19] but still today the vast majority of countries are not collating and sending this information.[20] In the **European Union**, this has become a sensitive topic. In 2001, the European Commission introduced the Data Collection Framework, which placed a legal obligation for member states to collate and report information on catches from all fishing sectors, including catches of recreational fisheries for commercially important fish. However, in 2017, a consortium of leading fisheries scientists in Europe published a study that showed official data from EU member states was largely missing. Their re-estimate of recreational fisheries suggested that recreational fishers were catching up to 27 per cent of some commercially important species in Europe.[21] Other research elaborates on the problem. In **Croatia**, for example, a research team from the University of Split estimated that MRF had an expenditure of about €94 million a year and directly employed at least 3,000 people in full-time jobs. The employment and economic impacts of MRF were nearly as much as those of commercial fisheries, but this data was entirely left out of national government statistics and reports on the fisheries sector.[22]

17 Said, A. et al. (2018) 'The Contested Commons: The Failure of EU Fisheries Policy and Governance in the Mediterranean and the Crisis Enveloping the Small-Scale Fisheries of Malta', Front.Mar.Sci.

18 Smith, N.S. and Zeller, D. (2016) 'Unreported catch and tourist demand on local fisheries of small island states: the case of The Bahamas', 1950–2010. Fishery Bulletin 114(1): 117–32.

19 FAO (2012) 'Recreational Fisheries, FAO Technical Guidelines for Responsible Fisheries No. 13'. Rome: FAO

20 Freire, K.M.F. et al. (2020) 'Estimating Global Catches of Marine Recreational Fisheries', Front. Mar. Sci. 7(12). doi: 10.3389/fmars.2020.00012

21 Hyder, K.H. et al. (2018) 'Recreational sea fishing in Europe in a global context—Participation rates, fishing effort, expenditure, and implications for monitoring and assessment', Fish and Fisheries 19(2)

22 Soldo, A. et al. (2018) 'Economic and social impact of marine sport and recreational fisheries in Croatia', Croatian Journal of Fisheries 76: 154-163. DOI: 10.2478/cjf-2018-0019.

Independent research on small-scale fisheries is improving and helping to fill the data gap. Since at least the mid-2000s, there has been a clear increase in academic research on small-scale fisheries. Over the past few years, a global coalition of researchers working on small-scale fisheries has collaborated on the **Too Big To Ignore** campaign. This has played a highly positive role in deepening understanding around small-scale fisheries and raising their visibility. More recently, FAO, the Duke University and WorldFish have been working to update and strengthen the Hidden Harvest report, in what has been called the 'illuminating the Hidden Harvest' study. With primary research in 54 countries, it represents an ambitious and thorough effort to improve the reliability of public information, and it includes a gendered analysis. The results of this work are planned for publication by the end of 2021. They should serve as a substantial catalyst for national fishing authorities to prioritise small-scale fisheries, including strengthening mechanisms to measure and publicise information relevant to them.

From demonstrating importance to revealing vulnerability

Although small-scale fisheries make important (but under-reported) social, cultural and food security contributions, many people involved in the sector are also highly vulnerable. In fact, in some parts of the world fisheries can be perceived – or stigmatised – as being the work of the poorest of rural communities. Low levels of income for fishers and fish workers can arise from disproportionate and unfair payments going to brokers or exporters, for example. Research on gender dynamics in fisheries value chains also routinely exposes considerable disparities between women's and men's incomes in the sector, while there are concerning reports of sexual harassment and abuse suffered by women fish traders in many countries.[23]

Additional vulnerabilities experienced by small-scale fisheries are caused by frequent exposure to health and safety threats. Fishing at sea is one of the most hazardous occupations in the world, in terms of injuries and deaths. In many places, those engaged in the post-harvest industry are exposed to poor working conditions, with inadequate access to clean water and basic sanitation. In what is perhaps an underappreciated subject, people engaged in fisheries appear to be more at risk of mental health illnesses, indicated by higher rates of suicides in some fishing communities.[24] These multiple vulnerabilities and sources of insecurity are amplified by the climate crisis. Small-scale fisheries are one of the groups most at risk from increasingly violent and unpredictable weather. Tropical cyclones, which are rising in severity and frequency, have a disproportionate effect on fishing communities, which are generally poorly equipped to respond and rebuild.

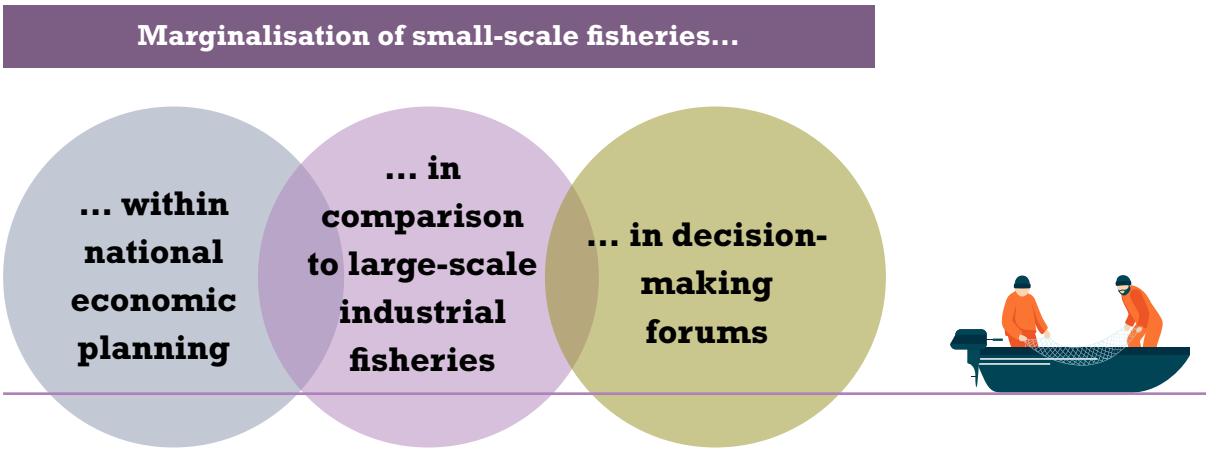
In the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries, **the prioritisation of small-scale fisheries is therefore not only about understanding the hidden values of the sector; it is equally about providing support to improve the lives of people engaged in it**, including those who are most marginalised and precarious. Again, however, this objective is thought to be hampered by insufficient visibility. A growing amount of academic and anecdotal literature is documenting vulnerabilities in the fisheries sector, but this information is regularly absent from official reports and statistics. National fisheries policies set by governments often include the objective of strengthening the contribution of fishing to development – yet measuring and monitoring indicators of poverty and insecurity within the small-scale sector is not undertaken in a systematic or detailed way. This makes it extremely difficult to know if stated policies for the improvement of livelihoods in fisheries are actually being achieved.

23 WFinkbeiner, E., J. Fitzpatrick & W. Yadao-Evans (2021) 'A call for protection of women's rights and economic, social, cultural (ESC) rights in seafood value chains', Marine Policy, Volume 128

24 Woodhead, A. et al. (2018) 'Health in fishing communities: A global perspective', Fish and Fisheries 19(5)

The costs of neglect

The Hidden Harvest report helped to emphasise that inadequate official data is likely to be both the cause and effect of neglect.[25] There are several dimensions to this.



First, low levels of data visibility can contribute to **marginalisation within national economic planning**. This may cause fishing communities to be neglected in terms of receiving social services and government support. In 2005 FAO produced the 'Technical Guidelines for Increasing the Contribution of Small-Scale Fisheries to Poverty Alleviation and Food Security'. This highlighted that coastal fishing communities are typically not included in national poverty reduction strategies – although they should be. This is likely due to a failure to fully appreciate their importance to poverty reduction in rural communities. Other research has shown that social services offered to fishers and fish workers are often disproportionately given to men and not to women, arising from a lack of formal recognition for much of women's contributions to the sector.[26]

Second, inadequate public information on small-scale fisheries can perpetuate their **marginalisation in comparison to large-scale industrial fisheries**. In 2015, for instance, research commissioned by the Secretariat of the Pacific Community (SPC) highlighted that, although foreign industrial fisheries generated the majority of government revenues from fisheries, domestic coastal fisheries accounted for at least half of the fisheries' contribution to GDP, employed far more people and supplied the vast majority of fish for local consumption.[27] Despite this, resources and budgets for fisheries management in the **Pacific Island states** have been heavily skewed in favour of industrial offshore fisheries. In 2015, the SPC found that out of the 22 island states and territories of the Pacific Community, only three had coastal fisheries policies (another four were being developed).

25 Mill. D. et al. (2011) 'Under-reported and Undervalued: Small-scale Fisheries in the Developing World', in R. Pomeroy and N. Andrew 'Small-scale Fisheries Management', CAB International

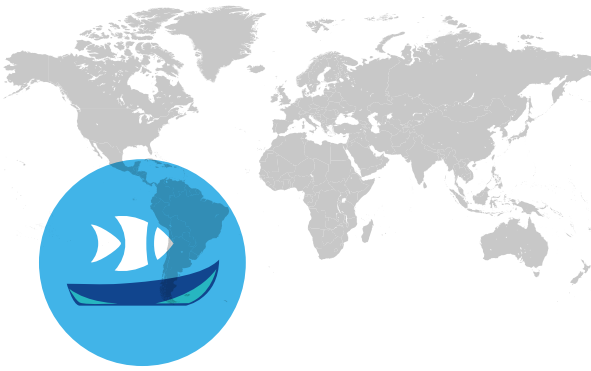
26 Harper, S. et al. (2013) 'Women and fisheries: Contribution to food security and local economies', Marine Policy 39.

27 Govan, H. (2015) 'Preliminary review of public expenditures of the Fisheries Agencies of Pacific Island Countries and territories'. Report to the SPC Division of Fisheries Aquaculture and Marine Ecosystems.

In **Peru**, marine fisheries are world famous for the huge quantities of anchovies caught by the industrial sector and which are predominantly reduced into fishmeal and fish oil. For many years it has been the single largest fishery, by volume, in the world. It is also considered one of the primary sectors of the Peruvian economy, contributing to national economic growth. At a national level, the industrial anchovy fishery is thought to be the main focus of fisheries management. Fisheries policies have tended to elevate the importance of this sector over others, including above artisanal fishers who target a range of fish species for local markets and for direct human consumption. An estimated 70 per cent of the artisanal fishers in Peru remain categorised as part of the 'informal sector'. Yet analysis of the economic contribution of different fisheries to the national economy showed that the anchovy industry was less important than is often assumed; 70 per cent of the contribution from fisheries to Peru's GDP, as well as more than 75 per cent of employment, came from other fish species.[28]

Third, a lack of visibility of the value of small-scale fisheries is also likely to be a contributing factor to the **marginalised position of the sector in decision-making forums**. For example, although women play a substantial role in the fisheries sector, often more so than men, women's representation in policy-making forums is usually highly limited. Another manifestation lies with representation of small-scale fisheries within multi-sectoral processes. Marine spatial planning, for instance, is the common name given to multi-stakeholder processes that consider the interactions between different public and private sectors in coastal and oceans areas. Yet many people working on fisheries argue that small-scale fisheries are often at a disadvantage in these multi-stakeholder processes, partly because official data on their activities is so unreliable.[29] Marine spatial planning can require proof of historical activities in order to stake claims over scarce resources, and the corporate sector has far better resources to prove what they have been doing and where.

A lack of verified historical data can also undermine the position of the small-scale sector in social and environmental impact assessments (SEIA). These reports are mandated throughout the world to identify risks and levels of compensation for projects that may develop parts of coastal and ocean habitats. Yet SEIAs rely exclusively on official data for the small-scale sector. This can create a false impression of the full scale of impacts and potential damages, as seen in a dispute over a proposed offshore mineral mining venture in **Papua New Guinea**. Civil society organisations representing the interests of fishing communities provided a critique of the SEIA commissioned by the Australian mining company, Nautilus Minerals, after it failed to adequately reflect the extent of artisanal fishing in the region of the mine.[30]



28 Christensen, V. et al. (2014) 'Valuing seafood: the Peruvian fisheries sector', Marine Policy 44.

29 Jentoft, S. (2017) ,Small-scale fisheries within maritime spatial planning: knowledge integration and power', Journal of Environmental Policy & Planning 19(3): 266–278, DOI: 10.1080/1523908X.2017.1304210

30 Earth Works (2017) 'Accountability Zero; A critique of the Nautilus minerals environmental and social benchmarking analysis of the Solwara 1 project'

Small-scale fisheries and the problem of GDP

The value of the fisheries sector is most commonly described in terms of its contribution to GDP. A number of reports have drawn attention to how small-scale fisheries' contributions to national economies are often missing from such calculations. This was a key message of the Hidden Harvest report; if more accurately measured, these fisheries would be shown to make a higher contribution to national GDP estimates. This is not only because the harvests of small-scale and recreational fishing are underestimated, but also because a large part of the value added to national economies comes from the formal pre- and post-harvest as well as the informal sector. This part of fisheries is usually absent from national calculations on the economic contribution of the sector.[31] Several other attempts have been made to re-estimate the contribution of fisheries to GDP based on the inclusion of otherwise missing data on the small-scale sector.[32]

The observation that small-scale fisheries are missing or under-represented in national estimates of GDP opens up a critical debate on how the value of the fisheries sector is measured and communicated in the first place. Indicators are of course critical to avoid 'information overload' and to help people understand what is happening in sectors such as fisheries at a glance.

It is well known, however, that measuring GDP contributions is a highly limited and often misleading way of thinking about value. GDP is an aggregate measure of economic productivity, but it is not (and was never intended to be) a proxy for wellbeing or for a country's 'success'. Although producing monetary wealth is an important element of a sector, the extent to which this is beneficial depends on how that wealth is distributed and the various social and environmental costs that have been produced as a consequence. An activity that does not produce substantial economic profits, such as subsistence fishing, can have enormous value to society in other ways.

Because of these wider considerations, **relying on GDP as a proxy of societal progress can be detrimental for many sectors of the economy**. Small-scale farming and food production systems can have enormous value, but are modest contributors to GDP scores in comparison to other parts of the economy.

31 The Standardised Systems for National Accounts, as established by the UN includes processing and marketing of seafood products under manufacturing. Estimates of the contribution of fisheries to national accounts therefore typically focus on the 'fishing' part, but without the inclusion of related pre- and post-harvest activities.

32 Zeller, D. et al. (2006) 'Fisheries Contributions to GDP: Underestimating Small-scale Fisheries in the Pacific', Marine Resources Economics 21(4)

The quest for alternative measurements to GDP has spawned a large number of proposals. The United Nations Environment Programme, for instance, has argued that GDP fails to adequately account for the environmental costs of economic activities. It has therefore developed a 'System for Environmental and Ecosystem Accounting' that adjusts conventional GDP scores with costs of natural resource losses and depreciation in ecosystem services. A different approach was developed through an EU-funded initiative 'Beyond GDP', launched in 2007. This builds on work by organisations such as the OECD and countries including Bhutan that measures a broader set of indicators on societal wellbeing. It includes measurements of economic productivity alongside measures of education, health, equality and the state of the environment. Emerging from such initiatives is the proposal to use the UN's Sustainable Development Goals as a comprehensive framework to measure national progress.

None of the alternatives have so far succeeded in replacing the popularity of GDP. An enormous challenge for fisheries – as with other sectors – is to draw on these alternatives to GDP to develop indicators that are applicable to the fishing sector itself. Measurements on the quantity of production and the profits involved would need to be replaced with information on the quality of production and the distribution of costs and benefits. Unfortunately we seem to be a long way from meeting this challenge.

Improving the visibility of small-scale fisheries

The momentum achieved through the Voluntary Guidelines on Securing Sustainable Small-Scale Fisheries has meant that the challenge of improving data on the small-scale sector is now receiving genuine support. The publication of the 'Illuminating Hidden Harvest' report will hopefully provide an additional substantial boost for the visibility of the sector. Yet, these achievements will require further support and effort at national levels. This is needed to ensure that processes of collating and publicising official data on fisheries is more inclusive of fishers and fish workers and the resulting data is enduring and visible in national policy debates.

An obstacle here is the ongoing view that collating information on small-scale fisheries is too expensive and time-consuming. Typically, large-scale commercial fisheries have a competitive advantage, as they provide more direct income to government agencies, and are thus likely to receive more public resources for research. Industrial fishing also has considerable resources to contribute directly to research programmes. As public knowledge about and visibility of small-scale fisheries increase, this could bring greater scrutiny about how public research funds are used in the fisheries sector.

In discussing the financial constraints for public research on small-scale fisheries, the SPC highlighted the missed opportunities from failing to draw on Household Income and Expenditure Surveys (HIES). These surveys, although undertaken sporadically in some countries, could capture significant information on the importance of fisheries employment, expenditures on fisheries activities and on the consumption of fish, which can be fed back into analysis of the fisheries sector. But the data from HIES is often overlooked by fisheries agencies and is not included in the annual reports of fisheries ministries. The SPC argued that there is also considerable opportunity for fisheries ministries to contribute to the design of such surveys to ensure the addition of questions that capture greater details of fisheries-related subjects. In the Cooke Islands, for instance, the last HIES put fisheries information under a more general category of fisheries and agriculture, so it was impossible to extract specific information on the sector.

Additionally, the SPC highlighted that information on the post-harvest sector can be collated by government statistical departments, as well as by ministries responsible for trade and manufacturing. Yet collaboration does not regularly occur. The same point can be expanded to other thematic areas. In the United States, researchers working on health and safety in fisheries have highlighted the opportunities for increased official data and publicity if fisheries organisations collaborate with agencies undertaking public health surveys.[33] Thus, rather than framing the challenge of generating data on small-scale fisheries as one of resource constraints, substantial improvements may be available through information-sharing and collaboration between different government agencies. As the SPC report argued:

"...if a fisheries agency cannot afford some type of snapshot fisheries survey, consideration should be given to obtaining information from studies outside the fisheries sector: e.g. a HIES, agriculture census or national census. The key to assure relevance of those surveys to fisheries is cooperation between fisheries and statistics agencies."

In 2017, FAO developed specific guidelines for improving statistical knowledge on small-scale fisheries through a household survey approach.[34] This forms part of a wider global strategy to improve agricultural and rural statistics. It also drew attention to methodological challenges, such as capturing information on informal fishing activities, given that interviewees may be reluctant to divulge this information. Equally many household surveys target the 'head of the household', which in many countries means such surveys rely largely on men as the respondents. This can limit the capture of information on women's role in the sector.

33 Speir, C. et al. (2020) 'Measuring health conditions and behaviours in fishing industry participants and fishing communities using the Behavioral Risk Factor Surveillance Survey (BRFSS)', ICES Journal of Marine Science 77(5)

34 See FAO (2017) 'Guidelines to enhance small-scale fisheries and aquaculture statistics through a household approach', FAO: Rome

A digital solution?

In addition to the recommendation that fisheries departments cast their net wider to obtain more government information on the sector, some argue that substantial information can be generated through innovative information communication technologies (ICTs). In fact, for the past decade or so, the use of ICTs has become one of the 'hot topics' in fisheries reforms. The accessibility of ICTs is vastly improving as a greater proportion of those involved in small-scale fisheries own smartphones and tablets. Additionally, several organisations are developing relatively low-cost hardware aimed at small-scale fishing vessels that integrate GPS and onboard video. For example, US-based Pelagic Data Systems has created a solar-powered vessel monitoring system marketed for small-scale fisheries in developing countries, with a per unit cost of $150. Similarly, FlyWire is an onboard camera that captures images of fish that are then run through artificial intelligence to identify species and quantities. Pilot programmes using the Flywire computers have recently been funded in small-scale fisheries in Mexico, Peru and Indonesia.

The spread of ICT projects, developed through NGOs, start-up 'for-profit' companies and also governments and intergovernmental organisations, cover a wide range of objectives. Predominantly, digital innovations focus on vessel monitoring as well as the identification and traceability of seafood products. However, some are designed to assist with collating information to expand official data on the small-scale sector. Through financial support provided by Norway and WorldFish, the government of **Timor Leste** launched a digitised programme to understand the social and economic importance of small-scale fisheries in 2018. This collects data from two sources. One is information gathered by enumerators stationed at landing sites, which is entered onto a dedicated app that runs on a tablet or smartphone. A second source of information is through the onboard solar-powered tracking devices, supplied by Pelagic Data Systems. These have been fitted on several hundred vessels. The resulting information is presented in real time online through a government dashboard. This allows results to be filtered through variables, such as the location of fishing activities, gear type, and the habitat where fish were caught. Timor Leste now has one of the most sophisticated and detailed national monitoring systems for small-scale fisheries in the world.[35]

35 Tilley, A., Dos Reis Lopes, J. and Wilkinson, S.P. (2020) 'PeskAAS: A near-real-time, open-source monitoring and analytics system for small-scale fisheries', PloS one 15(11): e0234760.

A similar initiative has been launched in the **Solomon Islands** with support from USAID. This is a mobile phone app known as 'Happy Fish Happy People' that enables surveyors to collect a range of data from fish landing sites and fish markets on the species and sizes of fish being caught and sold, as well as other information such as prices, sales and operating costs of fish vendors. This information is then transferred to a public online information bulletin.[36]

The use of ICTs has also been introduced to help fishers formally register with authorities. In 2014 the National Program for Municipal Fisherfolk Registration (FishR) in the **Philippines** introduced a digitised online system, available through mobile phones, for vessel registration. This replaced the previous paper-based approach to registration that required fishers to visit government offices in person. It had been estimated that only 5 per cent of fishing vessels were formerly registered with the authorities under the old system. Within two years of the FishR, registration had increased to an estimated 80 per cent. This suggests that official data on the scale of small-scale fisheries has vastly improved and is far more accessible in the public domain.

Taiwan is another example. In 2007, the government financed a national effort to install Voyage Data Recorders (VDR) on small-scale fishing vessels operating in the country, with approximately 5,600 being installed by 2015. The data from the VDR has been used in combination with information on fish landings and sales to increase official information on small-scale fisheries.[37] How far this has improved the position of small-scale fisheries in national policy debates is unclear. However, a positive outcome was reported in 2016, when an oil tanker capsized in a coastal area. The data captured through the VDR was used to establish which fishing operators were negatively impacted by the resulting oil spill and helped to inform levels of reparations to be paid by the oil company.[38]

36 Gorospe, K. et al. (2016) 'The mobilization of science and technology fisheries innovations: towards an ecosystem approach to fisheries management in the Coral Triangle and Southeast Asia', Marine Policy 74

37 Chang, S.-K. (2016) 'From subsidy evaluation to effort estimation: Advancing the function of voyage data recorders for offshore trawl fishery management', Marine Policy 74

38 Chia-Nan, L. (2018) 'Fishers demand oil spill reparation as deadline looms', Taipei Times, 6 February.

INCENTIVES AND TWO-WAY INFORMATION FLOWS

Despite the hype surrounding it, expanding ICTs in fisheries is not straightforward. People working in fisheries have limited time to continuously upload lengthy information into mobile apps. Equally, there is an understandable concern among people engaged in small-scale fisheries that sharing detailed information on their activities with external organisations might lead to adverse outcomes, including the control and restriction of their activities.

Many of the new ICT initiatives are therefore designed to have benefits for users, such as to help fishers demonstrate to buyers their commitment to responsible fishing and to communicate that their catch is not illegal. The organisation 'Abalobi' based in **South Africa** is an example of an organisation that has used ICT tools specifically to promote small-scale fisheries incomes. Part of its online app allows information on fish caught by participating fishers to be available to people buying fish at restaurants. This includes information on where the fish was caught, what fishing gear was used, the ecological status of the fish species and how much the fisher has been paid. The app therefore helps fishers to differentiate their products from those that are caught through large-scale fisheries or are imported from foreign suppliers; it also facilitates the sale of fish directly to users – bypassing brokers – which leads to a significant price premium.

Other incentives have been introduced to encourage participation in ICT programmes.[39] In the case of **Taiwan**'s effort to install VDRs, the scheme was linked to a fuel subsidy programme. Changes in access to fuel subsidies were made to ensure that those with VDRs fitted to their vessels had preferential subsidies compared to those that did not. Similarly, in the **Cook Islands**, in 2017, with European funding through a Sustainable Fisheries Partnership Agreement, fuel subsidies were offered to small-scale fishers that submitted fisheries data through a new mobile app called TAILS.[40] In the **Philippines**, the remarkable progress in the digitised vessel registry was achieved largely because the government made access to various social services, including health insurance, conditional to those who actively participated in the programme.

Another form of incentive for user participation is achieved where users of mobile apps are provided services in return. Several small-scale fisher apps that are designed to capture data on their activities also provide subscribers with regular updates on government information, training, market information as well as weather and safety reports. This 'two-way' process is a feature of a pilot programme called Starfish-4, being funded by the EU in **Mauritania** and **Greece**. This involves selected numbers of small-scale fishing vessels installing onboard solar-powered vessel monitoring systems in conjunction with a mobile app that collates data on catches. This device also provides fishers with an emergency call button in case of distress at sea, weather warnings and GPS navigation maps that allow them to mark points of good fishing. The project is also intended to help the participants with credible proof that their catches are legal and from sustainably managed fisheries.

39 For further discussion, see the 'Summary Report' for the Seafood and Fisheries Emerging Technologies (SAFET) Conference, 13–16 February 2019, Bangkok, Thailand.

40 Western and Central Pacific Fisheries Commission (2020) 'Cook Islands annual report'

LIMITATIONS OF ICT TOOLS FOR ACHIEVING VISIBILITY

The potential for ICT tools to work positively for small-scale fisheries is widely recognised. They provide an opportunity to collate unprecedented information on a sector that has historically been neglected. If carefully designed, ICT tools can deliver meaningful benefits to small-scale fisheries, including improving safety at sea and increasing incomes. However a handbook produced by FAO and WorldFish on how ICTs can help the realisation of the Voluntary Guidelines has raised several concerns.[41] This includes the potential for unfair discrimination, such as for those who may be less confident in using new technologies or those residing in areas with limited internet connectivity. Furthermore, 'carrots' offered for user participation have the potential to turn into 'sticks'. While many of the initiatives that have introduced digitised information-sharing for the small-scale sector have been based on a voluntary approach, the use of ICT tools may become more formalised and mandatory, with penalties for non-compliance.[42]

Furthermore, despite the widespread recommendation that fishing communities ought to be partners in the design and use of data, this is not happening in many places. FAO and WorldFish analysis on this describe that many initiatives have been introduced through 'top-down' processes and are highly dependent on donor funding, which is not sustainable in the long term. Also, the vast majority of ICT tools aimed at small-scale fisheries are focused on the sustainable management of fish populations. In comparison, there has been far less support and innovation for the development of ICTs that capture gendered social, cultural and economic data through participatory methods. This sort of data is critical to promote the interests of fishers and fish workers in decision-making processes and to support the realisation of the Voluntary Guidelines. The problem, as the FAO and WorldFish handbook argues, is that ICT tools can be developed to solve problems that are prioritised by external organisations, rather than to meet the needs of those that are otherwise marginalised and neglected.

The data produced through innovative ICT tools may therefore genuinely help to improve the granularity and publicity of information on the sector, but the power of ICTs for improved transparency may be limited by selectively capturing information that does not reflect the priorities of small-scale fishers themselves.

41 FAO and WorldFish (2020) 'Information and communication technologies for small-scale fisheries (ICT4SSF): A handbook for fisheries stakeholders in support of the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication'

42 Fujita, R., Cusack, C., Karasik, R., Takade-Heumacher, H. and Baker, C. (2018) 'Technologies for Improving Fisheries Monitoring', San Francisco: Environmental Defense Fund

Conclusion

Improving transparency in the fisheries sector has been recognised as a critical theme in fisheries reforms. Transparency is often understood as a means to reveal information on government and corporate activities and decisions, to help increase downward accountability to citizens. Transparency has often been associated with negative elements of the fisheries sector, such as illegal fishing and corruption. However, transparency in the fisheries sector includes the need to increase the visibility of elements of the sector that may be obscured from public view through neglect.

Research on small-scale fisheries, as well as on recreational fishing, has consistently found that official data tends to underestimate their scale and importance. This not only concerns catches but also their economic and social contributions. In many places fisheries have an important but underappreciated role in poverty alleviation and food security. In particular women's role in fisheries is so often 'hidden'. Such underestimates create a myriad of problems, including marginalisation of small-scale fisheries in policy-making processes as well as inequitable flows of government support.

Organisations working on government transparency in fisheries must therefore work to improve official data on all sectors. Yet this raises other considerations. Transparency for small-scale fisheries may be of limited value if it only focuses on numbers of people involved, the catches or the significance for GDP. This data is important, but information is also needed to help reveal the vulnerabilities in the sector as well, such as levels of poverty, health and access to education. If transparency can be empowering, then it needs to be approached with careful consideration on how this information contributes to improving sustainable and equitable fisheries.

Outlook for next tBrief

Over the past 30 years or so, an enormous number of organisations have produced indexes that attempt to score countries (or companies) in relation to elements such as good governance, environmental sustainability, and human rights. As the FiTI is about to launch its first ***TAKING STOCK: Online Transparency of Fisheries Management Information*** assessments, our seventh edition of the tBrief series will look at the **benefits, methodological challenges and criticism of such transparency indexes**.

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