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SAMUDRA

REPORT

THE TRIANNUAL JOURNAL OF THE INTERNATIONAL COLLECTIVE IN SUPPORT OF FISHWORKERS



South African Fishers vs Blue Economy

Traditional Fisheries Knowledge in Japan

Sri Lanka's Oil Spill Disaster

ICSF Statement on Biodiversity

Fishing Gear Conflicts in South India

International Year of Artisanal Fisheries and Aquaculture



ICSF is an international NGO working on issues that concern fishworkers the world over. It is in status with the Economic and Social Council of the UN and is on ILO's Special List of Non-governmental International Organizations. It also has Liaison Status with FAO.

As a global network of community organizers, teachers, technicians, researchers and scientists, ICSF's activities encompass monitoring and research, exchange and training, campaigns

and action, as well as communications. *SAMUDRA Report* invites contributions and responses. Correspondence should be addressed to Chennai, India.

The opinions and positions expressed in the articles are those of the authors concerned and do not necessarily represent the official views of ICSF.

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TJABELJAN / A woman dries fish in Kayar, Senegal

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JUAN CARLOS HUAYLLAPUMA / CIFOR

FRONT COVER



Pescadores de Acapulco
Painting by Diego Rivera
1956, oil on canvas
Courtesy mdenoya

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The service often features exclusive, original stories on small-scale and artisanal fisheries, particularly in the regions of the South, as well as issues that deal with women in fisheries and safety at sea. Apart from news and stories on fisheries, the service also focuses on environmental and oceans issues. Please visit <http://www.icsf.net> to subscribe to SAMUDRA News Alerts.

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A Watershed Year

In this International Year of Artisanal Fisheries and Aquaculture, the focus should now turn to developing coherent and meaningful policies and legislation for small-scale artisanal fisheries

The International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022) provides a great opportunity to proclaim to the world the diversity and richness of the small-scale artisanal fisheries subsector—both marine and inland—and its contribution to food security and poverty alleviation. Women and men in the sector work with an amazing repertoire of knowledge, skills and practices in fishing, processing and marketing, and are engaged in every link in the complex fisheries value chain.

IYAFA 2022 is also an occasion to celebrate the culture and traditions of small-scale artisanal fishers, fishworkers and their communities who often live and work in remote and challenging environments. In spite of being hit hard by COVID-19, the inland and marine small-scale fisheries subsector has thus far been reasonably resilient in supplying fish to the domestic market. It has also reinforced its role in providing food security to the local people during a crisis.

It is opportune now to recognize the vital role of this subsector and to create conditions to retain and attract youth to it through decent employment and income along the value chain, together with effective fisheries management and social-protection measures. Small-scale fisheries face many threats, such as loss of access to the coast/shore and fishing grounds. Combined with their vulnerability to climate change and extreme weather events, these threats place the subsector and its workers in a very precarious situation.

The Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (the


SSF Guidelines) offer pathways to address many of the threats and other persistent problems facing small-scale fisheries. Considering that the SSF Guidelines were unanimously endorsed by the members of the FAO Committee on Fisheries (COFI), governments and civil society should redouble their efforts to apply the Guidelines to help fishing communities thrive.

The SSF Guidelines promote a human rights-based approach, which makes it necessary for different arms of the government to work

together towards common outcomes such as conservation and sustainable use of aquatic living resources, food security, and the social development and well-being of fishing communities. These communities and their organizations should

be active participants in making decisions that are relevant to the sector. Women, indigenous peoples and vulnerable groups such as migrants should have access to resources, decent work and dignified livelihoods appropriate to their cultures.

By the end of this year, collective and collaborative actions of all stakeholders, we hope, should create greater awareness among the larger public about the role of small-scale fisheries and aquaculture in food production, and about the traditional knowledge and rich cultural diversity of fishing communities.

As we need to move toward a carbon-neutral, equitable and sustainable future, IYAFA 2022 should provide the right impetus to develop coherent and meaningful policies and legislation at various levels. Let us hope it becomes a historic watershed for small-scale artisanal fisheries and dependent communities. 



A Seismic Shift

A coalition of fishing communities, activists and lawyers has come together to keep the coasts and oceans of South Africa free of the destructive Blue Economy agenda

To Hell with Shell!" This was the rallying call of small-scale fishing communities and indigenous coastal communities in South Africa as they mobilized support for their struggle against illegal oil and gas exploration over the past few months.

In November 2021, the indigenous amaXhosa communities and small-scale fishers living along the eastern seaboard of South Africa became aware that the international petroleum giant Shell and its local business partner, Impact Africa, intended to commence seismic blasting of a large section of the Indian Ocean. Living on their ancestral lands along a beautiful coastline, these communities have fished sustainably and cared for their natural resources since time immemorial.

The identities and culture of the coastal amaXhosa are closely entwined with this ocean. It is a sacred place,

South Africa have been concerned about how the Blue Economy agenda is being implemented. In the past decade, since the Rio+20 Development Conference, the country has prioritized the economic exploitation of the ocean, fast-tracking oil and gas exploration, industrial aquaculture, marine shipping and transport. Plans for the building of new ports, the expansion of existing harbours and the building of sub-sea gas pipelines have been approved, while tenders for floating gas platforms and powerships are currently being considered.

Simultaneously, there has been an explosion of applications for off- and on-shore prospecting for heavy minerals. Large tracts of the coastline on the western seaboard are already wall-to-wall with mining operations that leave little, if any, space for the small-scale fisheries sector to access this coast. Purportedly to balance this economic exploitation with environmental protection, the Department of Fisheries, Forestry and Environment (DFFE) adopted a Marine Spatial Planning Act, which came into effect in 2021. However, this Act is yet to be implemented. In this policy gap, the DFFE has expanded the coverage of marine protected areas, while the Department of Minerals and Energy is awarding permits for offshore and coastal prospecting and mining at a fast pace.

Operation Phakisa has enabled the cutting of policy red tape and the fast-tracking of environmental authorizations. This contradicts the country's climate change and carbon emissions policy commitments, its environmental practices and the principles of equality and social justice underpinning the Bill of Rights in the Constitution.

Ocean grabbing

Against this backdrop of ocean and coastal grabbing, small-scale artisanal fishers have been fighting for the

... the national government has allocated exploration permits in 98 per cent of the country's exclusive economic zone...

the great home of their ancestors; it represents the material basis of their livelihoods; and is a source of spiritual healing and well-being. Yet, unbeknown to them, under the auspices of the South African version of the 'Blue Economy'—known locally as 'Operation Phakisa', meaning 'hurry up' in one of the indigenous languages—the national government has allocated exploration permits in 98 per cent of the country's exclusive economic zone (EEZ). This application for an exploration permit by Impact Africa in 2013, subsequently renewed twice, is just one of many applications granted with little or no public participation and consultation.

As is the case in many countries, small-scale fishing communities in

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JACKIE SUNDE



A protest against the seismic survey outside the court in Cape Town, South Africa. For the first time, the country's courts recognized the intangible cultural beliefs of small-scale fishing communities that the ocean is the sacred home of their ancestors

5

recognition of their fishing rights since the first democratic elections in 1994. Despite the introduction of a human-rights-based policy for small-scale fisheries in 2012 and a legal framework that recognizes the rights of small-scale fishing communities in 2014, most small-scale artisanal fishers in South Africa are still struggling for the full and effective enjoyment of their rights. This is evidenced in the fact that despite the recognition of small-scale fishing rights, Shell and Impact Africa failed to inform and consult the small-scale fishers as part of the mandatory environmental planning and public participation process. This process is a must for the environmental authorization for exploration or prospecting activities.

While the United Nations climate change summit was wrapping up in Scotland in November 2021 and the call to end all fossil fuel extraction was sounding around the world, Shell and Impact Africa announced their intention to start seismic blasting in order to ascertain the potential for oil and gas extraction on this coast. According to the application for this exploration right, the seismic survey proposed would involve extremely loud (220 decibels) underwater explosions or discharges at intervals of 10-20 seconds. These explosions would

continue 24 hours per day for four to five months. The approved application indicated that a vessel would tow an airgun array with 12 or more lines of hydrophones spaced 5-10 m apart and 3-25 m below the water surface. In this instance, the array could be upwards of 12,000 m long and 1,200 m wide.

Small-scale fishers along this coastline immediately joined other coastal communities, a local environmental organization, activists, academics, researchers and South African citizens in calling on the Minister of Minerals and Energy and the Minister of Fisheries, Forestry and the Environment to suspend the seismic survey, but to no avail. Within an exceptionally short period of time, with support from the Legal Resources Centre, an NGO working on human rights, together with a leading human rights law firm, two of the local indigenous coastal communities and small-scale fishers launched an application for an urgent interdict to stop the seismic survey.

The applicants indicated their intention to also lodge a review of the decision by the Minister of Minerals and Energy on the grounds that Shell had been granted this exploration right without undertaking an Environmental Impact Assessment (EIA). Instead, the company had

developed an Environmental Management Plan (EMP), which included mitigation measures that were considered outdated and they had failed to consult the applicant communities adequately.

This application garnered support from a wide range of social movements, civil society organizations, research institutions, academics and users of the ocean. Initially expressed as a call for ocean environmental protection, a vibrant campaign soon emerged that combined concerns about the environment and climate justice with the livelihoods and human rights of the small-scale fishing communities. Privileged middle-class surfers, recreational fishers and ocean lovers calling to save the whales, turtles, fish and other marine creatures of special concern joined in support of the marginalized, and Black rural communities that stand to be most impacted by this seismic survey. Assistance came from several organizations including Natural Justice, the One Ocean Hub Coastal Justice Network, Masifundise and Coastal Links.

The human rights lawyers crafted their case based on the lack of adequate consultation of the communities living along this coastline. They argued that these communities have customary rights. The authorization to the

the plethora of scientific papers cited. The legal material included an expert affidavit with embedded links to three transdisciplinary artistic media. These highlight the intangible heritage, eco-cultural values and the deep emotional and spiritual connections that span the near-shore and off-shore ocean environment.

At the heart of the court papers was the call for an ecosystem-based approach to ocean governance, respecting the human rights of local communities and adopting a precautionary approach, given the paucity of scientific data on the impact of seismic blasting on ocean life. Due to the COVID-19 restrictions, the court proceedings were held online. This enabled a wider audience to observe the court proceedings. On 28 December 2021, the court decided in favour of the coastal communities and small-scale fisher applicants. It ordered the seismic survey be stopped.

The judge ruled that the consultation process was inadequate and “substantially flawed”. For the first time in South Africa, the court recognized the small-scale fishing communities’ intangible cultural beliefs that the ocean is the sacred home of their ancestors. The judge made special mention of the constitutional obligation to respect the cultural beliefs and practices of the applicant fisher communities. Both the Minister of Minerals and Energy and Shell appealed against this order. After their appeal failed, they have subsequently launched their review of the minister’s decision to grant this exploration permit. This matter will be argued in court in two months’ time.

A week after this High Court judgement, a notice circulated on social media drew attention to the fact that a company called Searcher Geodata intended to commence a 2D and 3D seismic survey off a large section of South Africa’s west coast along the Atlantic Ocean. Like Shell, this company had been awarded an exploration permit but had not conducted an EIA. The proposed survey area overlaps with the prime fishing grounds of the small-scale and commercial fishing industry and lies adjacent to 30 small-scale fishing communities. These communities had no knowledge of such a survey. It subsequently emerged that while the commercial fishing sector had been consulted, the small-scale fishing communities had not.

At the heart of the court papers was the call for an ecosystem-based approach to ocean governance, respecting the human rights of local communities and adopting a precautionary approach...

companies had failed to consider these rights, including to their intangible culture. Moreover, it had not adequately considered the evidence of the impacts of the seismic surveys on fisheries and the marine environment, according to the petitioners.

Ten leading experts in marine science supported the struggle; the latest scientific evidence on the impact of seismic blasting was put before the court, together with affidavits from these communities and social science experts, attesting to the significance of the ocean for their spiritual and cultural identity and their livelihoods. The activists ensured that the voices of the small-scale fishers are heard across



Fishers land their catch at Lamberts Bay on the West Coast, South Africa. Ordinary citizens are becoming aware of how small-scale fishers are the soul of vibrant, healthy coastal communities, providing food and defending the oceans

Solidarity protests

As happened in the Eastern Cape, protests erupted across the coastline. Ocean activists and supporters mobilized themselves across major socioeconomic and geographical differences. They stood in solidarity with the local small-scale fishing communities. Once again the same group of lawyers, legal activists and NGOs supported the communities.

Small-scale fishing communities on the West Coast mobilized and began working with scientists and academics to develop affidavits demanding that the survey be stopped immediately. In this case, they argued that their right to be consulted had been violated. They insisted their rights to adequate food, work and livelihoods had been undermined, along with their rights to their culture; and that the survey would inflict irreparable harm on the marine environment. They launched an application for an urgent interim interdict to stop the survey and review the authorization of this permit.

On 24 February 2022, small-scale fishers from up and down the coast stood side-by-side with environmental justice activists and other supporters outside the High Court in Cape Town, demanding the recognition of their

human rights and their right to protect and defend the ocean. On 1 March, the judge ruled in favour of the small-scale fishing communities and noted that the company had failed to consult them adequately. The court prohibited Searcher Geodata from continuing with the seismic survey, pending the outcome of a review of the Minister's decision to grant the company a permit without an EIA.

Although the immediate danger of the oil and gas prospecting has diminished, the threats presented by these planned seismic surveys have revealed the pitfalls in South Africa's Blue Economy policy. A powerful wave of social solidarity is moving across the South African coastline, bringing with it a new understanding of the centrality of the ocean in sustaining life on this planet. For the first time in South Africa, ordinary citizens are becoming aware of the importance of small-scale, artisanal fishers as defenders of our ocean environment; as providers of food; and as the soul of vibrant, healthy coastal communities. The International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022) has started on a very powerful note, ushering in the potential for a seismic shift in ocean and coastal governance in South Africa.

For more



Court judgement for the Shell case

<https://cer.org.za/virtual-library/case-watch/challenges-to-shells-seismic-blasting-on-south-africas-wild-coast-december-2021>

Court judgement for the Searcher Geodata case

<https://cer.org.za/virtual-library/judgments/high-courts/christian-john-adams-others-v-minister-of-mineral-resources-and-energy-others-west-coast-seismic-blasting-part-a-interdict-march-2022>

Reaffirming Rights

<https://www.icsf.net/samudra/reaffirming-rights/>

Policy for the Small Scale Fisheries Sector in South Africa

https://www.gov.za/sites/default/files/gcis_document/201409/35455gon474.pdf

The Past Lives On

The management of small-scale fishing in Hime-shima in Oita Prefecture in western Japan shows how collaboration on traditional knowledge and practices can help overcome external threats

Japan's traditional ways for fishery resource management were developed more than 200 years ago. A document written in 1816, called the 'Edo-Bay Protocol' (Edo is the ancient name for Tokyo), indicates that 44 coastal communities in the Tokyo Bay agreed that (i) conferences of the fishers shall be held annually, with a host community being assigned on a yearly rotation; (ii) no new fishing method or equipment shall be permitted other than the existing 38 methods in the area; and (iii) all parties shall abide by this agreement.

Coastal communities in Japan have thus long adopted a bottom-up approach for fisheries management. Neighbouring communities agreed upon the borders of fishing grounds so that they could exclusively manage the water area in their locale. This

periods. To support a relatively densely populated territory, food resources from the ocean have historically been utilized. Hence the demand for seafood has been high throughout Japan's history.

Changing habits

A new government was established in 1868. National borders were opened up for the United States, Russia and European countries. Before this, direct commercial trade with foreign countries was not permitted, with the exception of China, Korea and the Netherlands. The non-Samurai Meiji government abolished several customary practices in Japan, including traditional clothes, hairstyles and food habits. Then, Japanese people began to accept Western cultures and habits, including a pragmatic and utilitarian attitude to eating cattle.

Although the consumption of fish and fishery products in Japan had been greater than meat consumption until recently, the situation was reversed in the early 21st century. Recent data from the Ministry of Agriculture, Forestry and Fisheries (MAFF) shows that per capita yearly consumption of fish and fishery products was 40.2 kg in 2001, but this steadily decreased to 23.8 kg in 2019.

Further, per capita yearly consumption of meat products continuously increased and, in 2011, it exceeded that of fish and fishery products. The current per capita consumption of meat is around 30 kg per year. Several reasons are attributed for this. The most common explanation is that meat, which is easier to cook than fish, better suits the busy lifestyles of city dwellers.

Production decrease

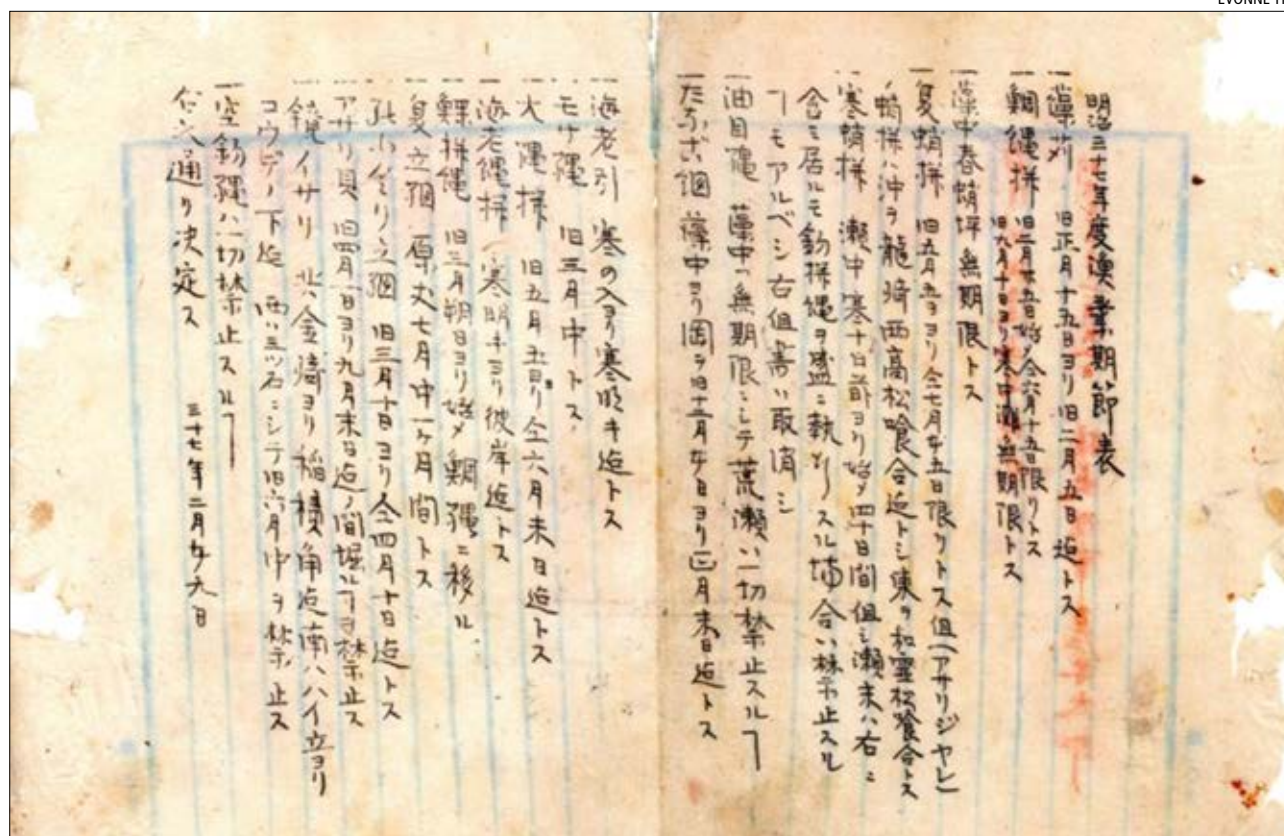
Simultaneously, Japanese production and import of fish and fishery products have decreased in the first two decades of the 21st century. The number of fishers has decreased from 400,000 in

... although a strong Samurai government ruled Japan in the 19th century—the so-called Edo Era—local communities took a bottom-up approach to fishery management

deterred outsiders from accessing fishery resources and thus provided an avoidance mechanism against the 'free rider' problem of resource management. These agreements also contributed to mitigating conflicts among communities on access to the fishing areas. Interestingly, although a strong Samurai government ruled Japan in the 19th century—the so-called Edo Era—local communities took a bottom-up approach to fishery management.

At the time, this had a necessary social function too. Japan is a mountainous archipelago with narrow arable lands. Killing and eating cattle had been a religious taboo for many generations during the Samurai

This article is by Nobuyuki Yagi (yagi@g.ecc.u-tokyo.ac.jp), professor at the University of Tokyo and Member of the Science Council of Japan



A 120-year-old document titled 'Gyogyo-Kisetsu' (Seasonal Fishery Regulation Table) records fishers' agreements on how the fishing season is managed by species and by gear. The document can be found at the Hime-shima co-operative, which manages the fishery even today

the 1970s to 150,000 in recent years, according to MAFF data. This coincides with a decrease in the population of agricultural and fishery villages. This is because many young people prefer to leave the fishing or agricultural communities to live in cities. Japan's total population has been decreasing since 2016, due to low birth rates.

Keeping tradition alive

The country did not give up on its traditions. The Food and Agriculture Organization of the United Nations (FAO) designates 'Globally Important Agricultural Heritage Systems' (GIAHS), which are unique sites of ecological, social and cultural diversity, and traditional knowledge. Fishery is included as a category in Agriculture. Some fishing communities in Japan are designated as GIAHS sites. One such area is Hime-shima in Oita Prefecture in western Japan.

The Oita GIAHS site is a combined agriculture-and-fishery rural area. Hime-shima (meaning Princess Island) is included in this designated area. It is a small island 7 sq km in size, with a population of 1,600 people. The island's

small-scale fishery is one of the most important sources of income for its people.

They, too, have developed a traditional bottom-up fishing management practice. There exists a 120-year-old document titled 'Gyogyo-Kisetsu' or the Seasonal Fishery Regulation Tables. It records the fishers' agreements since 1904, with details of how the fishing season is managed by species and by gear. This document can be found at the office of the local co-operative, which manages the fishery and sells its products even today. The seasonal regulation table for the year 1904 says: Seaweed gathering starts on 15 January (on the lunar calendar) and ends on 5 February. Longline fishing for seabream (red snapper) starts on 25 February and ends on 25 June. This fishing is also permitted again from 10 September until the winter sets in and the fishery is closed. When it is spring, the octopus fishery using traps and pots is permitted in the seaweed areas. In summer, the octopus fishery starts on 5 May and ends on 25 July. The document also lists other regulations, including the starting and closing days to fish bottom-



A "fox dancing" performance by school children in Hime-shima. The promotion of tourism and branding strategies may help revitalize fishing communities and their livelihoods in Japan

dwelling species, shrimp, bivalve shellfish species, and so on.

Documented priorities

The first and the most prioritized item of the regulation was seaweed gathering. Seaweed was used as fertilizer in farms at that time. Its monetary value could have been lower than those of seabream, octopus, shrimp or other fish species for direct human consumption. Nonetheless, fisherfolk in 1904 gave the highest priority for the management of seaweed. Local people at the time most likely knew that seaweed was an important habitat for juveniles of several fish species. It needed careful management to sustain commercially important fish species.

This author visited Hime-shima several times before the COVID-19 pandemic. At the local fishery co-operative, which has representatives from each of the seven fishing villages on the island, officials said that since 1904, the seasonal regulation tables have been kept recorded for the year-end general assembly meeting of its members. The procedures for building a consensus and making rules have not changed for more than 100 years. A copy of the notes of a meeting to decide on Gyogyo-Kisetsu in the year 1900 was also found among the records. It suggests that before the official implementation in 1904, similar practices to record agreements among fisherfolk were already in place.

In addition to the seasonal regulation tables, fisherfolk have long implemented area-based regulations

such as setting up marine protected areas and conserving forest areas. The fisherfolk's efforts to conserve forest areas were intentional: Clean water originating from the forest usually contains nutrients such as nitrogen, phosphorus and organic iron. These facilitate seaweed growth. Conversely, without the forest, soil erosion accelerates and the silt or mud flowing into the water harms the seaweed by blocking out sunlight.

The GIAHS designation for Oita in 2013 has boosted collaboration among people in the area to keep their traditions alive. They have implemented product branding strategies for several local agricultural products. The GIAHS tag is also a vehicle for green or blue tourism. Efforts have been made to revitalize these depopulated remote areas, utilizing distinctive tourist attractions.

Collaborating to conserve

Small-scale fisherfolk in Japan are facing serious challenges such as depopulation of their communities, dwindling fish consumption, rising competition from imported fish products, and increased threats to the ocean environments due to climate change. Some are exogenous and fisherfolk are not capable of resolving these issues on their own.

Revitalization of local fishing communities may need additional measures such as the promotion of tourism, and branding strategies for local livelihoods. Collaborations, both local and international, are ongoing. One such example is FAO's GIAHS. The livelihoods of these Japanese fishing communities would be greatly enhanced by communicating and raising awareness about their unique ways of life. This would also help keep alive their traditional knowledge and practices to manage natural resources, giving them the strength to overcome serious external threats.

For more

Globally Important Agricultural Heritage Systems (GIAHS)

<https://www.fao.org/giahs/en/>
<https://www.kunisaki-usa-giahs.com>

Humans and the Sea

<https://base.d-p-h.info/en/fiches/dph/fiche-dph-8786.html>

The Rage of a Perfect Storm

Months after a container ship carrying toxic chemicals caught fire off the west coast of Sri Lanka, fisherfolk still suffer from the dreadful aftereffects of the country's worst marine ecological disaster

A 186-m-long container ship called X-Press Pearl, registered in Singapore, arrived in Colombo, Sri Lanka, on the night of 19 May 2021, carrying 1,486 containers. The next day, it was reported that the ship caught fire. At that time, it was located 9.5 nautical miles northwest of the Colombo port. Five days later, a large explosion occurred inside the vessel; by late afternoon, containers were dropping off the vessel into the sea. On 2 June, the ship finally sank.

The incident was deemed the worst marine ecological disaster in Sri Lankan history. The ship's cargo included, among others, 12,085 metric tonnes (MT) of plastics and polymers, 8,252 MT of chemicals and 3,081 MT of metals. After the ship caught fire, its debris, burnt goods and plastic pellets washed ashore in large quantities. Dead fish, turtles, whales and dolphins were found along the western coast. Fish appeared with plastic pellets trapped in their gills. Initially noticed along the coast of Negombo, ship debris, and dead fish and turtles, washed up in other locations hundreds of kilometres to the north and south, indicating the widespread nature of the damage.

Blindsided

A day after the ship caught fire, the Department of Fisheries banned fishing in the coastal strip between Kalutara district and Negombo district. The disaster affected 12,731 fishers engaged on 4,612 coastal craft—both skippers and crew. Apart from those directly involved in fishing, this event also afflicted large numbers of stakeholders in the fisheries value chain, including those in ancillary services. Overall,

63,563 people have been affected by the accident, based on calculations by civil society organizations.

The enforcement on 21 May of the fishing ban resulted, overnight, in a series of shocks to the fishing community. Families lost their main source of income; the supplementary income from women workers was also curtailed; and demand for fish consumption dropped suddenly in response to fears of contamination. Since the ban put the entire local economy into a collective shock, traditional sources of insurance disappeared at once, leaving fishing families with no community assistance. Fishers lost assets like fishing gear. The combined effect was a dramatic loss of well-being.

The devil in the details

The fishing community's immediate response was to tighten the belt, reducing consumption. Such measures put additional pressure on women, traditionally accustomed to shoulder the burden of household-consumption shortfalls. Nevertheless, food insecurity leads to nutritional insecurity, which has a tumble-down effect on children's nutrition. It is difficult to imagine how the affected households managed to pay regular bills—house rent, electricity, water and goods taken on instalment, among other things—that amount to a monthly average of about Sri Lankan Rupees (SLR) 20,000 (US\$ 100).

Parental care has suffered, too. In Sri Lankan society, parents usually live with their children in their old age. Expenses related to such care-giving can be excessively high. In a time of distress, entire families get cut off from leisure

*This article is by **Oscar Amarasinghe** (oamarasinghe@yahoo.com), chancellor of the Ocean University of Sri Lanka, and president of the Sri Lanka Forum for Small Scale Fisheries (SLFSSF)*

HEMANTHA WITHANAGE



The ship's cargo included over 20,000 metric tonnes of plastics and polymers, chemicals and metals. The debris, dead fish and wildlife washed up along hundreds of kilometres of the west coast of Sri Lanka

12

activities, films, pleasure trips, and social and religious obligations. This snowballs into increased psychological stress on all members of the family. All of this cannot be quantified in value terms.

In the absence of insurance markets for fishing-related risks, people resort to credit. In fishing societies, exchange

Since the ban put the entire local economy into a collective shock, traditional sources of insurance disappeared at once, leaving fishing families with no community assistance

of small loans is very common. However, the ship disaster hit everyone equally; the fishing community lost its insurance function. In such conditions, people tend to mortgage jewellery, liquidate assets or borrow from moneylenders who charge exorbitant rates of interest, as high as 180 per cent per year.

Since the day the fishing ban was imposed, the debt of fishing households began accumulating. Defaults on instalments for repayment added to the pressure on households, exacerbating suffering and misery.

COVID-19 and bluwashing

A ship disaster of this scale is a calamity at any time for vulnerable fishing communities. The timing of this particular one in Sri Lanka, however, could not have been worse. The fishing community on the western coast had already been reeling under the broad-spectrum destruction of COVID-19. The pandemic's first wave jolted all the links in the fish value chain, dismantling almost all of them. Curfews to prevent new infections, lowered demand for fish, falling prices and disruption in the markets had all hit fishing activities seriously. Operations got downsized by 45-65 per cent.

The second wave of the pandemic hit the country in October 2020. A

garment factory and the fish market of the western town of Peliyagoda became the eye of the storm, reporting a large number of COVID-19 cases. Rumours began to circulate that fish was a carrier of the new coronavirus; consumers stopped eating fish. Just as the affected population began to recover, the third wave of COVID-19 arrived in late-April 2021. While the weakening economy and stagnant incomes hit everybody, the poorer groups were struck particularly badly. Fishing restrictions and poor demand for fish meant poor income for fishers, leaving their livelihoods hanging by a thread. Particularly hit were the small-scale fishers catering to local markets.

It was in this situation that the Xpress Pearl ship disaster occurred. The new-fangled attempt to marry economic growth with a narrow environmental agenda in the 'Blue Economy' paradigm excludes artisanal and small-scale fishers from development decisions that affect them and their future directly.

The absence of any public consultation in the implementation of development projects, coastal land grabs by tourism and other interests, and the marginalization of fishing communities—these are among the complaints most often heard from around the country. Many fishers have lost their beach-seining, craft anchorage and fish-drying sites. These new injustices emerge from the unregulated and undemocratic growth of the Blue Economy.

Fishing households face untold suffering. Food and nutritional insecurity are on the rise; lowered consumption and expenditure on fish are causing misery, families are struggling to care for their old and their young, and debts are accumulating. The fishing ban will continue until the debris is cleared from the seabed by the responsible party. The agony and misery will continue to grow. Besides giving compensation for lost wages, those held accountable for the disaster must be made to pay a premium to cover the numerous economic and social costs suffered by the affected communities.



Fish killed by plastic pellets from the X-Press Pearl. The timing of the disaster could not have been worse for fishing communities affected by successive waves of the COVID-19 pandemic

Importantly, development strategies should be designed to improve the resilience of fishers to external shocks. This requires, among other things, the strengthening of community sources of insurance through, for example, co-operatives; promoting self-insurance strategies like savings, alternative livelihoods and more employment for women; and addressing the social injustices caused by the Blue Economy agenda. ♣

For more



A Beacon of Trust

<https://www.icsf.net/samudra/sri-lanka-covid-19-a-beacon-of-trust/>

Oil, acid, plastic

<https://www.unep.org/news-and-stories/story/oil-acid-plastic-inside-shipping-disaster-gripping-sri-lanka>

X-Press Pearl sinking shines a light on seafood safety

<https://www.icsf.net/newss/sri-lanka-x-press-pearl-sinking-shines-a-light-on-seafood-safety/>

Fate Snatched Away

Political turmoil following a military coup has robbed small-scale fisherfolk in Myanmar of their decade-long success in making democracy work for them

The governance of Myanmar's inland and coastal fisheries underwent reforms in favour of small-scale fisheries (SSF) and fishing communities in the period between 2010 and 2020. This happened through the promulgation of supportive laws, regulations and policies. Institutional mechanisms recognized the importance of SSF in the development of communities and in poverty reduction.

In line with the 2008 Constitution, management of freshwater fisheries and legislative power over them were decentralized to the sub-national levels of government. This resulted in significant changes in freshwater fisheries governance in several states and regions. There is a wider recognition of the SSF associations and

and aquaculture laws had departed from the framework of previous laws; they now included community co-management and the ecosystem-based approach to fisheries and aquaculture.

This positive course changed direction radically following the military coup of 1 February 2021. Local administrations have become dysfunctional, and there is now a polarization of views along political lines. This has undermined the community-based resource management mechanism. On 7 September 2021, the military-controlled State Administration Council (SAC) announced the abolition of community-based fisheries in the Ayeyarwaddy region. It removed Chapter 8 of the Ayeyarwaddy Region Fishery Law, 2018, which dealt with community fisheries. Following this announcement, fishing lots in Ayeyarwaddy were quickly sold through the older system of auctions that have historically favoured rural elites and cronies.

There are two types of fishery licences: one for lakes, ponds, and floodplain areas, and another for the use of fence nets and stow nets in demarcated areas in rivers. To date, more than 80 per cent of Ayeyarwaddy's community fisheries, accessed and managed by SSF associations and groups, have lost their tenure rights.

Telephone interviews with key village informants in October 2021 unveiled several theories for this policy change. One blamed it on the authorities reverting to the pre-democratic policies that focused on increasing revenue from natural resources, including fisheries. This led to a cascading effect: people have protested by not paying electricity bills and municipal taxes, and by boycotting products from companies related to the

The momentum created to reform state and regional fisheries governance, in turn, accelerated the reform of the central marine fishery and aquaculture laws

community-based management. A 2015 amendment to the Constitution added coastal fisheries governance to the list of decentralized government services.

Between 2014 and 2018, the coastal states and regions, including Ayeyarwaddy, Rakhine, Bago and Mon, all enacted fisheries laws that included a dedicated section on community-based fisheries, giving legal recognition to small-scale fisheries and fisher organizations.

The momentum created to reform state and regional fisheries governance, in turn, accelerated the reform of the central marine fishery and aquaculture laws. By 2020, the draft marine fishery



Father and son fishing in Mon state. Between 2014 and 2018, several coastal regions enacted fisheries laws that recognized community-based management by small-scale fishers and their organizations

military. This has resulted in declining income from tax collections for the de facto authorities after the coup.

Power and pelf

Other survey respondents mentioned that the Ayeyarwaddy fisheries law was amended in September 2021 with the support of private-sector fish collectors and large-scale operators, called *inn thar gyi*, in collaboration with the Department of Fisheries. It is reported that large-scale operators and traders have bought this year's fishing rights at a high price, even though half of the production season has already passed. In some areas, the *inn thar gyi* paid twice or thrice the annual price paid by SSF associations.

An SSF leader of Ayeyarwaddy gave an example: a leased fishery under community-based co-management paid Myanmar Kyat (MMK) 1.7 mn or US\$960 to the government last year. This year, the same fishing ground was auctioned halfway through the fishing season; the winning bid was over MMK 8 mn (US\$4,500), more than four times the cost of the previous lease. The *inn*

thar gyi are willing to pay such a high price for only half a season because, it is suspected, they expect to get a longer-term lease at a preferential rate in the future.

Prior to 2012, fishery tenure rights depended on influential players—those within the communities with the power to control fishery market chains. Once an

It is reported that large-scale operators and traders have bought this year's fishing rights at a high price, even though half of the production season has already passed

inn thar gyi had control over tenure and access rights, small-scale fishers looking to continue fishing had no choice but to purchase an informal sub-licence created by the influential operator. These sub-licences were commonly paid for in kind; the SSF had to sell the catch to the *inn thar gyi* at a rate below its market value. The large-scale fishing operators and traders dominated access to fishery, value chains and market

terms through such means, to the great disadvantage of SSF.

The interviewed SSF leaders confirmed that community-based co-management had reduced the strength of the bonded fishery value chain, even if it did not replace it entirely. Communities gained direct access to the fishing grounds through co-management, with reasonable and transparent taxation. With these access rights came the power to bargain for better market prices and terms. The leaders hold the view that SSF associations created a collective bargaining power for fishing communities. Further, security of tenure and access rights influenced the legal reform process.

The inconvenience of democracy

The cancellation of the legal basis for community rights in Ayeyarwaddy has angered the SSF. “The Department of Fisheries and the *inn thar gyi* never liked the emergence of SSF associations and community-based fisheries co-management. They always felt that SSF associations were challenging their power. And so now they have taken advantage of the political chaos to change the regulations, and are attempting to eliminate the SSF associations,” said an SSF leader.

Without tenure rights and a functioning community resource co-management mechanism, SSF organizations in Ayeyarwaddy will no longer be able to get the support of the communities from which they were formed. The reforms of the 2010s were shaped largely by emerging SSF associations, supported by non-governmental organizations (NGOs) and civil society organizations (CSOs) that actively lobbied for change. Without a strong network of SSF associations, it will be impossible to reshape fishery governance in the same way again.

Political polarization at the community level is also limiting SSF association engagement with their communities. The SSF associations related closely with the ousted government need to be careful in any community engagement or mobilization efforts; there is the risk of their leaders getting detained—or worse. In contrast, the associations

close to the new authorities may have managed to retain their access rights; but the wider community and other SSF associations might not trust them any longer.

SSF leaders in Rakhine, Bago and Mon are watching the situation in Ayeyarwaddy closely, concerned that the changes might intrude into their state or region. Rakhine leaders are hopeful. Given how critical fisheries is to Rakhine, and the large number of people dependent on the sector, the SAC may not push through legislative changes favouring businessmen—at least not until they have full control over other parts of the country. Given that Rakhine has recognized numerous traditional fishery norms and practices, the leaders believe that it may not be so easy to push through the changes as in Ayeyarwaddy.

Political churn, economic downturn

The changes in fisheries governance come at a time when SSF communities across the country are reporting reduced incomes due to the COVID-19 pandemic and political unrest. Since early 2020, the fisheries value chain has stagnated due to limited demand from export markets and the closure of border trade. Business is further constrained by limitations on money transfers and cash withdrawals after the coup. Advance payments and credit along the value chain have declined since the coup; most microfinance institutions have stopped new loans for fishing communities.

As a result, the value chain is severely disrupted, with higher logistical costs, especially for fuel prices, and travel restrictions and informal payment collections at checkpoints. SSF communities are getting lower market prices or poorer terms, which impacts incomes and livelihoods. Petty crime is said to be increasing and may be a consequence of unemployment or hardship. In Ayeyarwaddy, it is believed that the loss of fishing rights or reduced access will drive many SSFs to opt for other livelihoods or migrate due to distress.

Around Yangon city, most industries are still operating, including fish-processing plants. However, improved



Kyarr Phong fishery workers in Patheingyi district. These raft fisheries in Ayeyarwaddy and Mon states are notorious for labour exploitation, lack of safety measures and the confinement of workers at sea

labour standards, including maximum working hours, minimum wages, and work-safety measures, negotiated over the previous 10 years, are being discarded. The breakdown of the rule of law and an excess labour supply are providing opportunities for some private-sector businesses to neglect labour standards. Labour unions are no longer functioning in the absence of many of their leaders; some have been arrested, while others have gone into hiding.

The excess labour supply has hit the raft fisheries in Ayeyarwaddy and Mon states. This sub-sector is notorious for labour exploitation, lack of safety measures, confinement of workers and their isolation at sea. It is reported that the basic salary for the raft workers remains unchanged at about MMK50,000 (US\$29) per month. The bonus on fish catches, however, has been reduced by 50 per cent. In the current context, the raft owner associations have set new payment rates and standards; the political chaos has freed them to exploit the workforce.

Shrinking incomes and livelihood hardships for SSF families are also

affecting the social development and education of children. Many respondents noted that the school dropout rate is very likely to increase in the future, especially among SSF communities. The recent changes in fishery governance in Ayeyarwaddy are undermining SSF communities as they struggle through this double crisis. In the coming months, many are expected to face food shortages. Therefore, humanitarian response and fisheries projects may soon need to address the issue of food security in SSF communities.

Short shift, shortchanged

The hard-fought gains in SSF rights over the past decade are disintegrating quickly and quietly in the Ayeyarwaddy state. The pattern may well get repeated soon in other states and regions. These changes signal a portentous return to the old system of allocating fishing grounds to influential persons, with the SSF seen merely as cheap and exploitable labour.

For the time being, there is not much to do to prevent this deterioration. As and when external

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Fishing in the Ayeyarwaddy River. Protesting the junta's policies, people have stopped paying electricity bills and municipal taxes, and boycotted products from companies related to the military

projects restart at the community level, they should do their best to protect and resuscitate community organizations supporting SSF fishers. Development programmes and projects in the future will need a high degree of adaptability to re-engage SSF communities. A flexible engagement will bring the best outcomes for SSF communities, addressing not only the immediate problems like food insecurity but also contributing to the sustainability of SSF organizations. This will retain the scope for re-shaping fisheries governance along democratic lines.

Even in 2018, the contradictory roles and responsibilities of Myanmar's Department of Fisheries, tasked with revenue collection from fisheries concessions as well as providing support and service to fisheries stakeholders, were a cause for worry. At the time, it was evident that the success of the community co-management experiment would determine the long-term fate of Ayeyarwaddy's small-scale fishers. Policy changes since February 2021 suggest that this experiment has unravelled, and revenue collection is now the more important role of

the Fisheries Department. Despite the significant gains SSF have made in organizing themselves to participate effectively in fisheries co-management over the past decade, their fate has been snatched away from their hands. For the time being at least, they have lost agency. 3

For more



Confusion, Uncertainty

<https://www.icsf.net/samudra/confusion-uncertainty/>

The Tiger's Mouth

<https://www.icsf.net/samudra/the-tigers-mouth/>

Labour conditions in Myanmar's Kyar Phoung fishery

http://toobigtoignore.net/wp-content/uploads/2020/07/Yin-Nyein-et-al_Blue-Justice_final.pdf

No COP for fishers

As climate change continues to impact fishing communities, the international climate regime needs to do more to safeguard the community. At COP 26, it did not

Last November, 120 world leaders and over 40,000 participants gathered in Glasgow for two weeks of meetings of the United Nations Framework Convention on Climate Change (UNFCCC), a crucial opportunity to address the threats of global warming. Yet, even as representatives from shrinking island nations facing rising sea levels and countries where cyclonic disasters are becoming routine were taking centre stage at official negotiations and events, the global political community still seemed reluctant to take decisive action. Mia Mottley, prime minister of Barbados, laid down the situation clearly when she said in the first few days of the 26th session of the UNFCCC Conference of the Parties (COP 26): “A 2° Celsius rise in temperature would be a ‘death sentence’ for island nations. We can work with whoever is ready to go, because the train is ready to leave.”

Advisory groups and scientists have made it clear that immediate action to reduce emissions and improve adaptation methods is the need of the hour. A case in point is the recent assessment report (AR6) of the Intergovernmental Panel on Climate Change (IPCC), released on 28 February 2022. It states that fishers are among the most vulnerable communities affected by climate-driven changes in marine resources and ecosystem services.

The report observes that rising sea levels, increases in sea-surface temperatures, ocean acidification and changes in the distribution of fish stocks are all having an extremely adverse impact on fishers, especially small-scale fishers. The jury is still out on whether the global political community is taking these warnings as seriously as it should.

Business as usual

Even though the issue of fishers, let alone small-scale fishers, was not explicitly addressed, the climate summit in Glasgow did provide a stage for announcements of funding, mitigation and adaptation targets, especially emissions reduction pledges by nations and groups of countries. If acted on, these can potentially control global warming, to an extent.

Several key decisions were made at the summit. All parties to the UNFCCC are expected to provide improved Nationally Determined Contributions (NDCs) later this year at the 27th summit in Egypt. It was ultimately acknowledged in the final COP decision that fossil fuels are a cause of global warming. Even though this is apparent, it was the first time that fossil fuels were named in a COP decision since the signing of the Kyoto Protocol in 1997. The proportion of climate finance

... the climate summit in Glasgow did provide a stage for announcements of funding, mitigation and adaptation targets, especially emissions reduction pledges by nations and groups of countries

is set to be doubled by 2025, and 104 countries promised to cut their methane emissions by signing a ‘methane pledge’. (Methane is a powerful greenhouse gas that traps heat 28 times more effectively than carbon dioxide in the short term. Agriculture—mainly livestock farming—the energy sector and landfills are the largest emitters.)

Despite the few successes at COP 26, on the whole, it was a missed opportunity. At the end of the summit, the planet remained on a path to warm by 2.4° Celsius on average this

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SIBI ARASU



Plenary session at COP 26 in Glasgow. Rising sea levels, increases in sea-surface temperatures, ocean acidification and changes in the distribution of fish stocks are all having an extremely adverse impact on fishers, especially small-scale fishers

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century. This dissonance between the ground reality of climate-change impacts on fishing and other vulnerable communities, and the general tenor of multilateral negotiations is by no means unique to the Glasgow summit. Marine-conservation agendas that overemphasize unsustainable fisheries over other threats to the health of ocean and coastal communities have made the world's fishers invisible in the eyes of the powers that decide on global climate action.

Vatasoa Rakotondrazaf is the president of the board of trustees of Madagascar's Mihari network, which empowers small-scale fishers to undertake fisheries co-management and community-led conservation measures. "I think fishers are not much represented," she said at the summit in Glasgow. "I saw some indigenous people but I don't

think coastal communities are well represented here, even though they are affected quite badly by climate change." Madagascar has been at the forefront of climate change-driven impacts in recent years, witnessing record droughts as well as increasing number of flooding events and severe tropical cyclones. The country has also been in the news because the UN has been warning that Madagascar is on the brink of the world's first 'climate change-induced famine', stating that more than 1.3 mn people could be in a food-security crisis as a result.

Rakotondrazaf is seeing this unfold in her country. "I would say fishers are afraid of the climate crisis. They are afraid for their future generations. They are vulnerable and they don't have the capacity to tackle it. We need to train them on climate adaptation and involve them in mitigation activities. The effect

of climate change on the world's fishers should be acknowledged," she said.

After an eventful conference that saw many ups and downs and dramatic (though non-binding) announcements from heads of state, the Glasgow Climate Pact was finally passed. In one of the final sessions of the COP, before the main decisions were finalized, a delegate from New Zealand said: "The text we have here in front of us is far from satisfying and it does not go far enough. Having said that, this is the least worst outcome since not having an outcome at all would mean that there is complete inaction against climate change for one more year."

In this 'least worst' text of the Glasgow Climate Pact, the oceans find mention four times. The text notes the "importance of ensuring the integrity of all ecosystems, including in forests, the ocean and the cryosphere". The text also welcomed the UNFCCC's scientific and technological body's reports on the ocean, climate change and how to strengthen adaptation and mitigation action. It also invited appropriate bodies within the UNFCCC system to strengthen ocean-based action in their existing mandates. Finally, the text asked for the UNFCCC's scientific and technological body to strengthen ocean-based action.

As can be seen, the decisions at Glasgow do not adequately address the impacts of climate change on ocean health or fishing communities, or how these communities can be included in the fight against anthropogenic climate change. Often, marine-conservation measures have tended to marginalize traditional fishing communities, citing the impacts of destructive fishing on ecosystems and species.

"I think activism around oceans in the North has been driven for a long time by this neat separation between humanity and the ocean. A lot of contemporary activism is also moving towards marine protected areas (MPAs), not eating seafood, etc.," said Siddharth Chakravarty, associated with the National Platform for Small-Scale Fish Workers (NPSSF), India. He was in Glasgow to attend the People's Summit for Climate Justice, a gathering of civil society alongside the COP meetings.

"That is the viewpoint coming through at events like the COP," he added.

Talking fisheries AND climate change

In international fisheries and environmental processes, such as in the Food and Agriculture Organization of the United Nations (FAO) and in the Convention on Biological Diversity (CBD), climate-change impacts are increasingly recognized for their interlinked effects on biodiversity loss, food security and fisheries livelihoods.

Regardless of their representation in global climate talks, fishers—especially small-scale fishers—face catastrophic impacts from the climate crisis in the marine environment. "Rises in temperature and ocean acidification are leading to a collapse of fisheries in many regions. Both these phenomena affect fish metabolism," said Soumya Dutta, co-convenor of South Asian Peoples Action on Climate Crisis (SAPACC) and a member of advisory board of the UN Climate Technology Centre and Network. Dutta and Chakravarty were panellists in what was probably the only event in Glasgow connecting fishers and climate change. Even this was at the People's Summit for Climate Justice, not in the official summit.

For the next UN climate summit in 2022, which is set to be an 'Africa COP', civil society organizations are hoping that governments negotiate some serious action to protect the most vulnerable populations, keeping climate justice at the forefront. Climate change could have devastating consequences for fishing communities, as is true for all livelihoods that depend extensively on natural resources. The further that concerted action to deal with global warming is delayed, the greater the challenges will be for fishers and fishworkers, particularly in the global South, to continue practicing their traditional livelihoods.

For more



COP26: Together for our planet

<https://www.un.org/en/climatechange/cop26>

The IPCC Sixth Assessment Report Impacts, Adaptation and Vulnerability

<https://www.ipcc.ch/report/ar6/wg2/>

The Glasgow Climate Pact

https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf

A Hard Rain's Gonna Fall

The IPCC's sixth assessment report says small-scale fishers are among the people on the planet most vulnerable to the effects of climate change

An estimated 90 per cent of all people directly dependent on marine and inland capture fisheries work in the small-scale fisheries sub-sector. They are largely rooted in local communities, catching fish using traditional knowledge, and labour- and skill-intensive methods. Their lives—along coastal and riparian areas—and their livelihoods, closely linked to the health of ecosystems and biodiversity, make them uniquely vulnerable to the impacts of climate change.

The Working Group II (WG II) of the Intergovernmental Panel on Climate Change (IPCC) released its sixth Assessment Report (AR6) on 28 February 2022. Its findings state that small-scale fisheries livelihoods and jobs are the most vulnerable to climate-

small-scale fishing communities and the aquatic ecosystems they depend on. How exactly are small-scale fisheries likely to be affected?

Pandora's box

To most people living in coastal areas, climate change is mainly associated with rising sea levels, increased intensity of storms and associated sea surges. Significant proportions of people who practise small-scale fisheries and aquaculture live close to the shore; they have been experiencing more frequent inundation and exposure to storms that destroy homes and livelihoods.

They are also increasingly prone to potable water shortages as rising sea levels and stronger storm surges result in saline intrusion into groundwater. Rising sea levels have resulted in stronger waves and tidal surges encroaching on coastal settlements; coastal erosion puts thousands of families living close to the shoreline at risk, forcing many of them to relocate inland.

In addition to these risks, a major worry for small-scale fisheries is the very availability of fish. The productivity of our oceans relies on phytoplankton, mostly single-celled plants suspended in the water. Spawning of fish is intricately connected with plankton blooms, fed by nutrients that, in turn, are regulated by the seasonal 'overturn' and mixing in the water column. While the previous IPCC reports warned about increase in sea surface temperature (SST), this report goes further; it talks about the increased likelihood of marine heatwaves (MHW). Such heatwaves cause strong surface water stratification, reduction in nutrient supply and consequent changes in primary production timings.

This results in mismatches between seasons when plankton blooms and fish

... coastal erosion puts thousands of families living close to the shoreline at risk, forcing many of them to relocate inland

driven changes in marine resources and ecosystem services. This is because the abundance of fish depends mainly on suitable environmental conditions. For the fisheries, the catch composition depends on indigenous or local knowledge developed over generations.

In general, the report focuses on climate-change impacts, adaptation and vulnerability. It has highlighted that efforts to mitigate these risks are clearly not sufficient, despite increasing attention to climate-related risks. The impacts will be hardest on those populations and ecosystems with low coping abilities, including some

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Men return from fishing in Madagascar. Significant proportions of small-scale fishing communities living close to the shore have been experiencing more frequent inundation and exposure to storms that destroy homes and livelihoods

spawn, increasing the risk of failure in fish recruitment (the process by which new individuals are added to a population) for species with restricted spawning locations. Cascading effects include rapid shifts in geographic distribution of important fish species. This may persist for years, leading to collapse of fisheries and aquaculture in some regions. The report also says that there is very high confidence that coastal eutrophication (overloading of nutrients in the water) and the formation of 'dead zones' are worsened by warming. These drive severe impacts on coastal and shelf-sea ecosystems. Ocean acidification especially threatens ecosystems such as coral reefs, and single-species fisheries such as lobster, oyster and clam.

Marine displacement

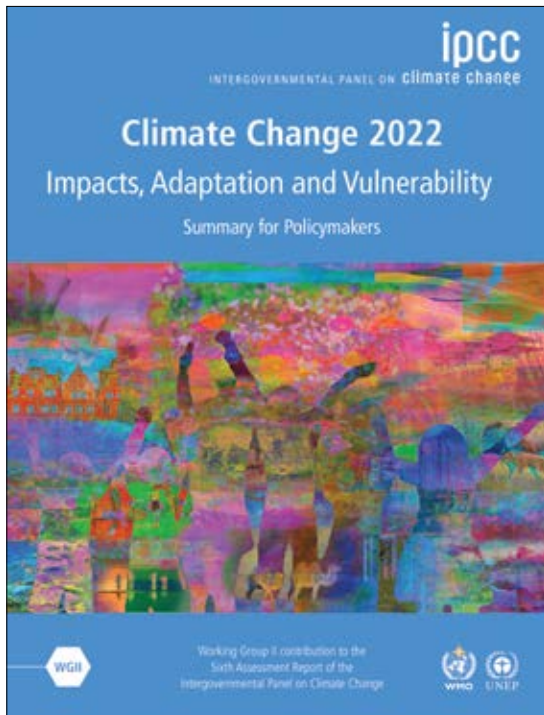
There is also reliable evidence that climate-driven movement of fish stocks

is forcing fishers to shift polewards and diversify harvests. While large-scale fishers have already started responding to this by increasing their mobility and diversifying their catch, small-scale

Ocean acidification especially threatens ecosystems such as coral reefs, and single-species fisheries such as lobster, oyster and clam

fishers may not be able to do so easily as their input costs will increase. This will also have an impact on the post-harvest component that sustains a sizeable portion of women in the fisheries sector.

Redistribution of marine fish stocks will increase the risk of transboundary conflicts between fishers. As fish stocks shift from lower to higher latitude regions, the need for well-



informed transboundary management and co-operation will be crucial to ensure food security and the equitable distribution of resources. Shifts in the distribution of species and changes in ecosystem structure will also have implications on the design and demarcation of protected areas.

Is it out of hand?

How can we reduce the risks from climate change to fishing communities? The report says that immediate actions to prevent acceleration of sea-level rise beyond 2050 will play a key role in our ability to adapt to current coastal impacts. Decreasing risk

also calls for developing early-warning systems and public education about environmental change, adapting them to local cultural contexts. The report suggests that indigenous and local knowledge, combined with scientific knowledge to manage resources sustainably, shows the most promise for decreasing human vulnerability to projected changes in ocean and coastal ecosystem services.

activity in low-lying areas and further expose communities to hazards.

The focus has to be on ecosystem-based management, climate-adaptive fisheries and conservation, and coastal habitat restoration. Ecologically and socially appropriate adaptive measures are the best way forward, supported by international and regional co-operation to ensure good governance. **3**

The report suggests that indigenous and local knowledge, combined with scientific knowledge to manage resources sustainably, shows the most promise for decreasing human vulnerability to projected changes in ocean and coastal ecosystem services

Extreme events and climate variability are already drivers of migration, displacement and deteriorating livelihoods in agriculture, fisheries and forestry. Relocations by governments of settlements and populations exposed to climatic hazards are not presently commonplace. Relocation has been documented to cause significant financial and emotional distress as social and cultural bonds to place and livelihoods are disrupted. Maladaptation can worsen climate vulnerabilities. Sea walls, for instance, can intensify development

For more



**IPCC Sixth Assessment Report:
Impacts, Adaptation and
Vulnerability**

<https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/>

A Platform for Action

Meeting in Mumbai, women fishworkers of the coastal districts of the Indian State of Maharashtra drew up an agenda to advocate for their rights and livelihoods

In December 2021, a dozen women from the coastal districts of the western Indian State of Maharashtra assembled in the capital, Mumbai. All experienced fishworker leaders—most of them representing the Maharashtra Machhimar Kruti Samiti (MMKS)—they had gathered to learn from one another and discuss strategies to address the challenges faced by fisherwomen and coastal fishing communities. Organized by the International Collective in Support of Fishworkers (ICSF) Trust the meeting was hosted by the Central Institute of Fisheries Education (ICAR-CIFE) from 3 to 4 December.

Purnima Meher, vice president of MMKS and the National Fishworkers' Forum (NFF), and Nalini Nayak, ICSF Trustee, welcomed the participants and explained the purpose and structure of the workshop. Thereafter, the discussion proceeded to the impacts of the COVID-19 pandemic on the sector and its workers. The aim of the meeting was to understand how the women's livelihoods had been sustained, despite new and existing challenges. At the same time, it was important to connect their experiences in India to global trends in fisheries, the acceleration in the ocean and coastal economy, and the climate and biodiversity agenda. The outcomes of this meeting will feed into ICSF's national workshop on the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines), and women in fisheries, to be held in Chennai in April 2021.

The first session kicked off with the identification of women fishworkers' concerns in the State. Participants from its five coastal districts presented accounts of the day-to-day working conditions of women in the sector, their

livelihood issues and the programmes of their organizations. The leaders largely represent women in post-harvest fisheries—ranging from fish sorting, salting, drying and processing, to auctioning and vending activities. (An estimated 77,000 women work along the fisheries value chain in the state, 70 per cent in fish marketing.) As the presentations drew out details of their fish chains, the women noted both similarities and differences in their experiences. Contexts varied greatly—from the big harbours and markets of bustling Mumbai to the distant village landing centres of the Konkan coast; and from the organized and vocal women in formal markets to the dispersed and vulnerable dry-fish vendors.

Despite their diversity, the women identified a few key issues that were relevant to a majority of fishworkers and communities. They noted the

The aim of the meeting was to understand how the women's livelihoods had been sustained, despite new and existing challenges

marginalization of women's livelihoods as a result of rapid changes in the value chain. When traditional fish landing centres were replaced by new harbours, along with the bigger boats fish merchants with deep pockets arrived on the scene. Women, if they are not organized, lose out in the auctions. In a discussion on women's access to credit and finance, the women noted the community's hardships with indebtedness. They said that large lending institutions are not the answer, instead highlighting more equitable

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A fish processor at Mumbai's Sassoon Docks. An estimated 77,000 women work along the fisheries value chain in the state of Maharashtra, 70 per cent of those in fish marketing

financial models, including through self-help groups and co-operatives, which could help fishing communities break out of the cycle of debt and poverty.

The changes in the fisheries value chain mirrored those on the coast. Discussing the tenure rights of coastal communities, the women pointed out several instances when they had lost

... fishworkers conducted a mapping of formal and informal street markets in Mumbai to demand that the city administration protect them from eviction

access to community commons, fishing grounds and livelihoods. In Mumbai and other areas, urban development has often excluded and marginalized fishing communities, as they are displaced by other more powerful economic interests, or their livelihoods are slowly choked by pollution and environmental degradation.

Customary rights are rarely recorded or recognized, including to market spaces. Although the Koli fishing communities of Mumbai have had some success in garnering visibility for the rights over their *koliwadas* (fishing hamlets), the women continue to struggle with municipal authorities to recognize their livelihoods. Their demands to improve their working conditions in formal city markets are rarely met. Similarly, they face the constant threat of being displaced from their street vending sites. In an inspiring case of the women mobilizing to safeguard their rights in 2012, fishworkers conducted a mapping of formal and informal street markets in Mumbai to demand that the city administration protect them from eviction. Discussing the mapping exercise, the women noted that now they have the aid of a national legislation for street vendors and they should ensure its implementation.

The second day opened with a Koli song describing boats going out



Participants at the Mumbai meeting in December, 2021. At the end of the meeting, the women drew up a series of demands to be addressed by their organizations at the national and sub-national levels

fishing on moonlit nights. The day's programme was split into two parts. The first was a discussion of strategies to strengthen fishworker organizations, particularly to enable women's participation in decisionmaking at the State and national levels. In the next session, the women identified the main issues that connected their struggles with the international and national legal instruments that offer pathways to redress their problems.

At the international level, they noted the SSF Guidelines, endorsed in 2014 by the Committee on Fisheries (COFI) of the Food and Agriculture Organization of the United Nations (FAO), and, at the national level, the National Policy for Marine Fisheries (NPMF), 2017.

At the end of the meeting, the women drew up a series of demands to be addressed by their organizations at various levels. They demanded that women have the right of first sale of the fish landed at their beaches and harbours. This would protect their access to markets. They pointed out the urgent need to record and protect their customary use of coastal village lands for housing, fisheries livelihoods and community infrastructure. Women's access to clean and well-equipped market spaces to sell their fish should also be improved. The women discussed the importance of the Street Vendors

Act, 2014 in regulating street vendors in public areas. Highlighting the impacts of industrial pollution on the health of fishing communities and the marine environment, they noted the ongoing struggles of their organizations to draw attention to existing and emerging threats on the coast.

As the meeting concluded, the women looked to the future with resolve and decided to build on these discussions at the national level, with their partners and collaborators from India's other coastal States.

For more

Report of the National Workshop: The SSF Guidelines and Mainstreaming Gender into Fisheries Policies and Legislation, Tamil Nadu, India, 2019

<https://www.icsf.net/wp-content/uploads/2022/03/930.ICSF214.docx>

Report of the Brainstorming Session for the National Workshop on Enhancing Capacities of Women Fishworkers in India for the Implementation of the SSF Guidelines, Kerala, 2019

<https://www.icsf.net/wp-content/uploads/2022/03/930.ICSF212.pdf>

Report on workshop on enhancing capacities of women fishworkers in India for the implementation of the SSF Guidelines, Tamil Nadu, 2016

<https://www.icsf.net/wp-content/uploads/2017/08/930.ICSF158.pdf>

Recognizing Green Leaders

Across the world, small-scale fishers have set examples of leadership to meet the environmental challenge. Now, a university initiative documents such exemplary efforts

Small-scale fishers (SSF) have a long history of environmental stewardship and conservation of their local environments, safeguarding natural resources and local livelihoods. Such efforts need greater recognition and support. It is in pursuit of this goal that the SSF-Stewardship initiative is engaging with small-scale fisher organizations and fishing communities around the world, highlighting their experiences in environmental conservation and stewardship.

understand the barriers they face and the good practices that promise success. SSF-Stewardship identifies the kinds of support they need.

The stewardship experiences of small-scale fishers

With a high level of engagement by small-scale fishing communities and organizations, the initiative has assembled a wide range of stewardship experiences. It covers several kinds of activities, carried out across varied political, economic and social contexts, and in a broad range of fisheries and ecosystems.

Some examples of the locations and stewardship activities are Greece, where SSF are promoting sustainable harvests of endangered crayfish in an artificial reservoir; Russia, where Indigenous Peoples are managing river and lake fisheries in the North; and Bolivia, where Indigenous fishing communities are improving monitoring and reduction of bycatch in the catfish fishery of the Upper Amazon. In Ghana, Costa Rica and India, SSF are harvesting crabs, oysters and small fishes sustainably, all the while conserving mangrove forests. In Indonesia, SSF actions are promoting the sustainability of octopus fisheries. Fishing communities are also fighting external threats, for example in South Africa, where SSF are protecting nearshore fisheries from the impacts of industrial activities.

Many of these examples highlight the role of traditional knowledge in the practices of SSF communities. In Hawai'i, United States, one case study links traditional knowledge and science in community-managed subsistence fisheries. Community-based monitoring of marine protected areas in Turkey is a positive example of

By bringing together the voices of small-scale fishers and fishing organizations, the project is seeking to support their work in protecting and caring for the natural environment, fishery resources and fishing livelihoods

Saint Mary's University in Canada is leading the initiative, along with the Food and Agriculture Organization of the United Nations (FAO) and global fisher organizations. It connects with the implementation of the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines).

An interactive global map on the SSF-Stewardship website provides a showcase for the many varied experiences and allows us to see how small-scale fisher organizations and fishing communities are working on similar and different challenges, with many shared interests and concerns, and common and unique experiences. By bringing together the voices of small-scale fishers and fishing organizations, the project is seeking to support their work in protecting and caring for the natural environment, fishery resources and fishing livelihoods. It tries to

This article is by Alison Macnaughton (aemacnaughton@gmail.com), Shannon Hicks (Shannon.Hicks@dal.ca) and Anthony Charles (tony.charles@smu.ca), members of the SSF-Stewardship team at Saint Mary's University in Halifax, Canada.

A MACNAUGHTON



A fishing boat on the banks of the Ichilo River, Bolivia. Indigenous communities are improving monitoring and reduction of bycatch in the catfish fishery of the Upper Amazon

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participatory conservation measures. In more examples of participatory management, small producer co-operatives in the Galapagos sustainably manage their fisheries, while in St. Vincent and the Grenadines, SSF participate in building governance capacity.

Multiple challenges limit the efforts to conserve and manage ecosystems that sustain fisheries. At the same time, there are common elements in these varied situations.

For the most part, stewardship is expressed as a perspective and a practice, a way of engaging with the natural world and the local environment. Most fishing communities and organizations sharing experiences on SSF-Stewardship are engaged in long-standing work, which involves several types of activities that have evolved over time. Some have positive, supportive relationships with the government. Others engage

the government, and advocate for recognition of their rights as fishers, together with their right to participate in conserving the resources that their livelihoods depend on.

For the most part, stewardship is expressed as a perspective and a practice, a way of engaging with the natural world and the local environment

For example, on behalf of the Federation of Thai Fisherfolk Associations, Sama ae Jahmudor shared some of their experiences at the recent SSF-Stewardship webinar: “Our life and survival depend very much on an abundant and rich biodiversity ecosystem.... Small-scale fishers see it as our responsibility to protect and conserve coastal resources in our community as well as networking among

coastal communities to collectively look after coastal resources. We fight for stopping use of destructive fishing gear and to collect mainly mature marine resources. Our fisherfolk movement advocates to supermarkets to stop selling small fishery products, and advocates to consumers to buy quality fish products.”

Similar to Jeohmodor’s experience, several initiatives involve a combination of strategies. This sometimes starts with physical stewardship—protecting and restoring spaces in freshwater and marine environments, then adding new activities in time.

Oyster harvesters from the Densu Estuary in Ghana shared their story at the recent SSF-Stewardship webinar. Lydia Sasu of Development Action Association said when fishers recognized the local mangroves were over-harvested and depleted and the catch was lower, they started to work on mangrove restoration. Subsequently, they supplemented their efforts by installing natural barriers to protect the riverbank from erosion. Most

also addressing climate-change impacts and steps to improve livelihoods. These included promoting changes in building practices to eliminate the removal of coral and sands; new infrastructure to protect the association’s landing site from storm surges; working to improve fishing practices; protecting sea turtles; and organizing municipal waste collection to reduce the impact of household trash on sensitive reef ecosystems.

Climate change is a recurring theme. Many SSF representatives related their efforts to address multiple ongoing challenges that are often compounded by impacts of climate change and, more recently, by the COVID-19 pandemic. For example, Omar Ortuno of the Association of Cochabamba Fishers in Bolivia, raised concerns around dealing with changes in the hydrological cycle along the Ichilo River in the country’s Amazon region: “There are extended, very hot dry seasons, and then when it rains, it rains a lot, and with force. It sweeps a lot of mud down from the banks, and the water becomes very turbid, and this starts to kill the small fish... While we have a lot of measures that we can take to contribute to protection, there are these other big problems, like climate change that I don’t know how we will be able to solve... We—those of us who live from fishing—feel that we are dependent on the climate.”

He noted that climate concerns run parallel to their work to improve fishing practices by raising awareness around harmful practices, co-ordinating with all levels of government to improve regulation. This included creating and implementing a ban on fishing for *blanquillo*, a local scavenger catfish species. This is because wild game is used as bait for its harvest; the association recognized that this practice is harmful to the local forests.

Such instances of stewardship by small-scale fishing communities and organizations, fitting within local contexts and priorities, were demonstrated throughout the experiences shared in the initiative. There is much that can be learned from such examples. Fishing communities

Many SSF representatives related their efforts to address multiple ongoing challenges that are often compounded by impacts of climate change and, more recently, by the COVID-19 pandemic

recently, they secured the lease for the oyster harvesting area, implementing a seasonal closure to protect the health of the fishery. Frances Agbeshie, who is active in the initiative and has been collecting oysters since he was a child, said, “I have learned how to plant mangroves, and how to take care of oysters and put them in the river to rebuild it (by protecting the banks). Now we have children, so we are looking at sustainability, making sure we have a supply of oysters that will continue for future generations and remain available.”

Among the speakers at the webinar was Ismail Mahamoudou of the Iconi Fishers Association in Comoros. He described a combination of activities to care for the local environment, while

RICHARD NYBERG / USAID



A fish market in the Solomon Islands. Many of the examples in the SSF Stewardship initiative highlight the role of traditional knowledge in the practices of SSF communities, and the importance of abundant and rich biodiversity and ecosystems for the survival of small-scale fisheries

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and organizations are leading the way in restoring local environments and stewarding resources.

These experiences also indicate that SSF leadership can expand further if fishers' rights, tenure and access are strongly recognized and reinforced. For this to happen, support is needed in the areas of policy, finance and capacity.

Next steps

Small-scale fishing communities and organizations can share their experiences in the interactive SSF-Stewardship collection. To do so, all they need to do is visit the SSF-Stewardship website (<https://ssf-stewardship.net>) and follow the link to 'SSF Participation'.

These stewardship experiences are collected with the aim of stimulating networking and peer-to-peer knowledge exchange. It will also provide an important foundation for a new FAO report highlighting the environmental

leadership of small-scale fishers; the various forms of stewardship activities in small-scale fisheries; the successes and the challenges they experience; and how governments and others can best support and enhance fisher-led environmental stewardship. 3

For more

SSF Stewardship

<https://ssf-stewardship.net/>

SSF-Stewardship Webinar

<https://ssf-stewardship.net/ssf-stewardship-webinar-highlighting-environmental-leadership-by-small-scale-fishers/>

Stewardship in Small-Scale Fisheries Workshop, July 29-30, 2016, St. John's, NL, Canada

http://toobigtoignore.net/wp-content/uploads/2016/12/TBTI_Stewardship-Workshop-Report-final.pdf

Human Rights in Focus

ICSF welcomes the Chair's draft recommendation to the Conference of Parties (CBD/SBSTTA/24/CRP.2). Recognizing the importance of marine and coastal biodiversity in the post-2020 global biodiversity framework will be critical to Parties' efforts to implement the Framework through participatory and equitable conservation, and management measures. As a major contributor to global food security, sustainable livelihoods and well-being, small-scale fisheries and their dependent Indigenous People and Local Communities (IPLC) are fundamental to achieving the post-2020 framework.

Accordingly, actions to conserve and sustainably use marine and coastal biodiversity should be in line with the Sustainable Development Goals (SDG), promoting a human rights-based approach. This should inform the proposed review of the Convention's programme of work on marine and coastal biodiversity, whether in the use of marine spatial planning or steps to mitigate anthropogenic underwater noise, marine debris and litter. This is equally relevant to the identification and modification of ecologically or biologically significant marine areas (EBSA); and the application of area-based conservation measures.

It is important to recognize IPLC traditional knowledge and actions towards conservation and sustainable use of biodiversity that is the basis of their lives and livelihoods. Community-based management and participatory governance, which protect legitimate tenure rights to aquatic and terrestrial resources, will enhance conservation efforts and be an incentive to sustainable practices. To this end, the principle of free, prior, informed consent (FPIC) of IPLCs needs to apply to all relevant traditional knowledge, innovations and practices of these communities.

While unsustainable fishing should be addressed by the CBD, other threats and pressures that undermine the ocean's capacity to support ecosystem services and traditional sustainable use by IPLCs are also to be addressed. This includes the application of ecosystem and precautionary approaches to seabed mining, geo-engineering and other proposed activities in marine areas under national jurisdiction.

The Convention should urge other competent intergovernmental organizations with a mandate to conserve marine biodiversity areas beyond national jurisdiction to apply a precautionary approach to new technologies and industries.

ICSF welcomes the Convention's collaboration with other UN agencies, including the Food and Agriculture Organization of the United Nations (FAO) and regional fishery bodies to support the implementation of the post-2020 framework with respect to marine and coastal biodiversity. To this end, we urge you to reinstate the dedicated target for sustainable management of marine living resources in the post-2020 framework, as suggested by several Parties, so as to continue the work of the Convention to achieve Aichi Target 6. In a spirit of collaboration, the FAO Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines) are a valuable tool for achieving the goals and objectives of the CBD and the SDGs, consistent with a human-rights-based approach.

In this context, the FAO's monitoring of SDG 14.b (provide access of small-scale artisanal fishers to marine resources and markets) will be relevant to the new biodiversity framework. Adopting a human-rights-based approach in the post-2020 Global Biodiversity Framework and in all processes of the Convention will ensure that marine and coastal biodiversity is conserved and small-scale fishery IPLCs—often vulnerable communities—are effectively protected from dispossession, impoverishment and marginalization.

Read the full statement here: <https://www.icsf.net/resources/icsfs-statement-at-sbstta-24-agenda-item-6-marine-and-coastal-biodiversity/>

The following is the text of the ICSF statement submitted to the 24th meeting of the Convention on Biological Diversity (CBD) Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-24) on 23 March 2022 at Geneva, Switzerland

Join Forces for African SSF

The year 2022 has been declared by the United Nations as the International Year of Artisanal Fisheries and Aquaculture. In Africa, artisanal fisheries employ more than ten million men and women, and feed more than 200 million Africans. African fisheries, 75 per cent of which are artisanal, are the largest sector of the blue economy in Africa, whether in terms of contribution to food security, employment or household income generation.

In view of the summit of the European Union and African Union, our organizations call on European and African decision makers to join forces to support sustainable artisanal fisheries in Africa, by implementing, through their respective policies and partnerships, the FAO Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines) and the Policy Framework and Reform Strategy of Fisheries and Aquaculture in Africa (PFRS).

Our organizations propose that the AU and the EU take concrete action in three priority areas:

1. Our first priority, echoing Sustainable Development Goal 14b, is to ensure exclusive access rights to African coastal, inland and riverine areas for artisanal fisheries, and to empower them to manage them sustainably. In Africa, many countries are willing to establish a zone reserved for artisanal fisheries, but these are often not well demarcated, managed or protected from the incursions of industrial fishing and other marine development. In the Common Fisheries Policy (CFP) of the European Union, preferential access rights are granted to artisanal fisheries in the twelve-mile coastal zone. There is therefore a common desire on the part of Europe and Africa to reserve access to the resources of their coastal, inland and riverine zones for the benefit of sustainable artisanal fishing.

2. Valuing the role of women in African artisanal fisheries is key for the future of fishing communities. Women in artisanal fisheries work and live in very harsh conditions. It is not uncommon to see women fish processors working more than ten hours a day smoking fish, sometimes in the presence of children. Despite this, women are bringing in innovations every day to improve their working conditions and the living conditions of their families. The first thing women need is good quality, affordable fish for them to process. We welcome the efforts of the EU and AU, to promote concerted management of artisanal fisheries, especially small pelagics in West Africa; these must continue.

3. Today, African artisanal fishing communities are concerned about competition from other financially and politically more powerful sectors of the 'blue economy', such as oil and gas exploitation, tourism or the development of polluting coastal industries. For us, the precautionary approach should guide the development of the blue economy. Independent and transparent social and environmental impact assessments must be carried out, with the participation of affected coastal and fishing communities.

In all the actions—whether in resource management, fisheries partnerships and projects—transparent mechanisms to involve fishing communities and civil society is essential. The support given to regional and continental non-State fisheries actors' platforms through the FISH GOV I and FISH GOV II projects is a positive example of such participation. This dialogue with artisanal fisheries must be strengthened, in all aspects of Europe-Africa fisheries relations, from bilateral and multilateral fisheries agreements to project programming or the evaluation of their results.

WE ARE READY TO ENGAGE!

Read the full statement here: <https://caopa.org/en/declaration-au-eu-summit-european-and-african-decision-makers-should-join-forces-to-support-sustainable-artisanal-fisheries-in-africa/15/02/2022/news/3949/>

This statement to leaders at the summit of European Union and the African Union in Brussels (17-18 February, 2022) was made by the African Confederation of Artisanal Maritime and Inland Fisheries Professional Organisations (CAOPA); International Collective in Support of Fishworkers (ICSF); AFRIFISH, the continental platform of non-state actors in African fisheries; Coalition for Fair Fisheries Arrangements (CFFA); Brot für die Welt (Bread for the World); and Swedish Society for Nature Conservation (SSNC)

Rings of Fire

Conflicts over fishing gear have again erupted along the Coromandel Coast of India, pointing to the urgent need for effective management

In August, 2021 tensions escalated in the state of Tamil Nadu along India's southeastern coast when an altercation between fishers at sea led one to be hospitalized with serious injuries. A few days later, there was a riot between two fisher hamlets in neighbouring Puducherry (formerly Pondicherry) when ring-seine fishing nets were burnt at sea. The police had to intervene to stop the violence.

The previous month, a section of fishers from two districts in Tamil Nadu blocked a highway to protest against a state government decision to implement a ban on ring seines. Over 1,000 fisherwomen from one of the area's largest fisher settlements protested in front of the district police headquarters for two days.

Despite the raging pandemic, the coastal villages in Tamil Nadu and Puducherry have repeatedly witnessed violence over the past year. Our team of researchers at the French Institute of Pondicherry have been travelling along this strip of the east coast since 2018 to document the lives of local communities as they cope with socioeconomic and environmental changes.

Disputes over fishing gear are not new in this area, but the reason behind the recent tensions seem to be the oil sardine (*sardinella longiceps*). An increase in demand for oil sardine, along with administrative failures to implement existing fishing regulations, have resulted in this protracted conflict, causing widespread anxiety and uncertainty in the community. Over the past two years of the COVID-19 pandemic, we have become concerned about conflicts over this widespread fishing gear that has divided fishers in the region. The disputes have escalated since 2018, peaking in 2021.

The underlying reasons need to be understood before any help or support can be offered to ease tensions.

Oil sardine is not a preferred delicacy in coastal Tamil Nadu. The pride of place afforded to the *kavalai* (*sardinella gibbosa*) does not extend to the *mathi* or the oil sardine. *Kavalai* curry is a favourite dish in the kitchen of any class of people; it costs ₹80-100 per kg (US\$1 = ₹75). The costs of oil sardine can range from ₹20 to ₹100 per kg, depending on the market in the neighbouring State of Kerala, where consumer demand for the species is high. Large quantities of small pelagic species going into the fishmeal industry adds to the value of this fish. The Kerala market absorbs about 90 per cent of the oil sardine catch along the Coromandel Coast.

Oil sardine availability has declined along the west coast for reasons that remain unclear; the changes have been attributed to overfishing and environmental factors, including climate change. Along the eastern coast, they are netted in large quantities like never before. Fish landings data, collected by the Central Marine Fisheries Research Institute (CMFRI), register a huge increase in oil sardine landings in Tamil Nadu in 2019, accounting for 43 per cent of the national total. Anandan, a fisherman from Pudukuppam village in Puducherry, said: "Although the fish was always available, large quantities have been landed throughout the year since 2000. With no real value in the local market, we were reluctant to cast our nets into a shoal of oil sardine; half the catch spoils by the time it is removed from the gill-net. But today fishers go out in search of it. No matter the quantity, vehicles queue up on the shore to move them to Kerala."

This article is by **Dr. Bhagath Singh** (bhagath.singh@ifpindia.org), postdoctoral fellow at the French Institute of Pondicherry



Fishing boats stranded at Sothikuppam in Tamil Nadu. Both its adherents and its opponents—artisanal fishers using selective gear such as gill-nets—have compelling arguments for and against the ring seine gear

Over time the craft and gear for sardine fishing have evolved. These days, the largest quantities are caught by ring seines. The gear is the smallest form of purse seines or encircling nets in many parts of the world. The ring seine, first introduced in Kerala, requires a large 55-ft-long fishing vessel (called *kanna* locally) and seven to 10 small craft. At least 50 workers are required for a ring-seine operation. The large fishing net—handled by a hydraulic winch fitted to the big vessel—encircles the fish shoal. Floaters are attached to the top of the net and a series of rings at the bottom. A long rope threaded through the rings is tightened to close the net at the bottom, forming a purse around the shoal. The catch is loaded on to the small craft. Fishers claim that damage to the catch is minimal, compared to that caught in gill nets.

This technology also targets mackerel, seer, trevally and several species of tuna.

Eventually, as the oil sardine migrated from Kerala to the Coromandel Coast, so did the ring seines, as idle boats were sold cheap. Considerable profits catalyzed the spread of ring-seine fishing. When the ring seine was first introduced in northern Tamil Nadu in 2003, rival fishers from a village called Devanampattinam set fire to the nets. Later, this same group of protesting fishers became the leaders of the new technology, accounting for the largest number of ring seines in one village. A leader of this village explained: “We opposed the technology believing fish stocks should be available to all. But we were sued for our protests. When the government favoured this new

technology, many people bought ring-seine boats to tap into this lucrative business.”

The ring-seine trips take place in two seasons: from January to mid-April, and from mid-June to November, the onset of the northeast monsoon. At the beginning of each season, the district administration and the police seize some ring-seine boats and trucks with netted fish. Despite the action, operations continue for the next few months without any hindrance. But in the past years, disputes over ring seines have started to become more heated and increasingly violent.

In 2000, the Tamil Nadu government banned the gear with the stated reason of conserving fish stocks. Amendments to the State fisheries law were proposed that year. Fishers who had invested millions fought against the ban. After negotiations, the ban was relaxed for a few more years. Up until 2017, more ring-seine units were purchased cheaply from Kerala. Meanwhile, new steel-hulled ring-seine boats were built locally.

Since *kanna* boats can operate only with ring seines, fishers invested in a

had borrowed heavily. The sudden ban was devastating to many fisher families.

Both the adherents of the ring seine and its opponents—artisanal fishers using selective gear such as gill-nets—have compelling arguments for and against the gear. Although the law appears to favour the artisanal fishers at the moment, in practice the bureaucracy treats both sides in an even-handed manner. It is worthwhile trying to understand the arguments of either side.

Ring seines catch entire shoals of fish, including juveniles. They are also highly effective gear whose benefits accrue to a few boat owners and crew. On the other hand, the divisions between these categories and crew are not always clearly defined: Ring-seine fishers operate with small-scale craft and gear in other seasons. They employ large crew sizes, and the earnings from this gear has improved incomes and standards of living. Its supporters also reject the accusation that the nets indiscriminately catch juveniles.

Neither side is without its arguments. “The whole country is developing, moving towards newer technology. Why should we remain paralysed, limited to artisanal technologies,” asked a young fisher from Thirumullaivasal village in Tamil Nadu. “Should a fisherman live only with one piece of cloth hung around his waist in the future, too?”

Fishing conflicts are common around the world. Fisheries authorities and communities have employed various measures to create a level playing field, ranging from traditional rules such as the *Padu* system in Pulicat, Tamil Nadu, to legally authorized controls on inputs (craft, gear and other regulations) and the demarcation of fishing zones for artisanal fishers. Tamil Nadu’s Marine Fishing Regulation Act, 1983 was itself a result of the disputes between artisanal fishers and mechanized trawlers. The Act and its Rules demarcated inshore zones reserved for artisanal fishers, protecting their access from mechanized fishing vessels. But the regulations have not been updated to

... in the past years, disputes over ring seines have started to become more heated and increasingly violent

new type of steel boat, combining ring seining and trawling operations. While rare in parts of the northern coast, such boats number more than 100 at three important fishing harbours in Tamil Nadu. Poompuhar, a large settlement with a new fishing port, reveals the scale of this fishery. Here, fishers built the new boats at a cost of ₹20 mn (US\$264,000), shared among 20 to 40 investors. Then the pandemic struck, followed by successive lockdowns that severely disrupted the fisheries value chain. Since January 2021, the state government has not allowed these newly-built boats to venture into the sea. The investment is earning nothing for the shareholders, many of whom



Small-scale fishers pick oil sardines from their gillnets in Pudukuppam, Puducherry. Although the oil sardine was always available on the East coast, large quantities have been landed since 2000

reflect the changes along the coast, and the Fisheries Department has opted for a blanket ban instead of sound management.

As the dispute simmers, ring seiners have demanded not to be singled out; they say all mechanized boats must be stringently regulated. They have emphasized that provisions in the law for minimum mesh sizes and the length of fishing vessels be followed in letter and spirit. Ring-seine fishers have also demanded that large vessels operate only between 5 a.m. and 6 p.m.

To maintain law and order, district administrations restricted all mechanized boats. Explaining the rationale behind the ring seiners' demands, a fisher leader from Devanampattinam village in Tamil Nadu, said: "This [will] make it clear to the government and the opposition

that it is not prudent to ban fishing methods based on a legislation that has not been modified in light of the latest technological developments." He added: "Since the foreign exchange revenue associated with the oil sardine is low, they can easily block ring seines. They will not do the same to the shrimp industry." He urged the research community to investigate whether policy has kept pace with environmental and technological developments.

Both fishers and scientists agree that the regulation of ring seine units is imperative. They operate within five nautical miles from the shore, which leads to almost daily conflicts with artisanal fishers. However, the present conflict needs to be understood in the wider context of increasing capacity in the fisheries. In Tamil

BHAGATH SINGH A




Oil Sardines iced and ready to load on to trucks going from Tamil Nadu to Kerala. Fishers and governments should together resolve conflicts and ensure a fair distribution of benefits

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Nadu, mechanized vessels (mainly trawlers) account for 83 per cent of the catch. “Why don’t government officials intensify their efforts against the negative impacts of trawling and industrial pollution in the coastal belt, instead of concentrating only on ring-seine fishing?”, asked a fisher from Rasapettai village in Tamil Nadu.

Since 2021, several dozen ring-seine boats have lain stranded on the shore—dead investment for marginalized fishing communities. Both sides are victims in this story. As this episode unfolds, it is important to address the shortcomings in existing fisheries-management measures. “It is the fishers’ fault for investing in a banned gear. On the other hand, the Fisheries Department and the district administration [enforced] the law without understanding the issue on the ground,” said SG Rameshbabu, co-ordinator of the Coastal People’s Right to Life Organization.

Increasing demand for seafood, combined with ecological changes and developments in the value chain, will continue to drive innovation and relentless competition in fisheries. The state government of Tamil Nadu should resolve this conflict and ensure a fair distribution of benefits to fishing communities. It can consider strengthening local governance with the participation of traditional institutions and civil society, and updating its regulations to reflect the reality of the fishery. Tamil Nadu’s fishers need a management system guided by the principles of equity and sustainability. 

For more



The Troubled Ascent of a Marine Ring Seine Fishery in Tamil Nadu

<https://www.epw.in/journal/2020/14/special-articles/troubled-ascent-marine-ring-seine-fishery-tamil.html>

Clash over use of ring nets, group sets fishing boat on fire

<https://timesofindia.indiatimes.com/city/visakhapatnam/vizag-clash-over-use-of-ring-nets-group-sets-fishing-boat-on-fire/articleshow/88687142.cms>

Judgment: M.G. Santhanaraj v. Secretary, Government Of Tamil Nadu And Others

<https://www.casemine.com/judgement/in/600125cc9fca1917ab0f9549>

Bringing Back the Artisanal in Small-scale Fisheries

The future of sustainable fisheries around the world does not lie merely in the scale of operations but in the artisanal attitude and its attendant culture.

This is the International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022). From a quick survey of the website of the Food and Agriculture Organization of the United Nations (FAO) and many other publicity briefs of civil society organizations (CSOs) that are co-celebrating the year, the focus is strongly on small-scale fisheries and aquaculture. 'Small in scale, big in value' is one of the key messages.

But I wonder: What has happened to the 'artisanal' dimension of the celebrations? Why is there no focus on that? Is there today no overlap between small-scale and artisanal? Or was this a relationship of the past? Should we seek to revive it in the future?

Without getting into the detailed etymology of the word, there are three very appealing attributes to any activity that we can call 'artisanal': skill of body and mind; judicious use of human and renewable energy; and freedom of work and expression. These combine to give the activity an artistic overtone. Together, they lead to convivial and sustainable livelihoods.

I had spent a considerable part of my early working life with fishing communities in the state of Kerala in India. They joyfully embodied these three attributes in their daily lives. However, observing their context half a century on, I notice that there is little overlap between how they fish today and the valuable attributes of artisanal activity they possessed earlier.

I have also been a keen observer of their trajectory over the years, studying the manner in which they lost these attributes.

But I am happy to report that some of my recent observations on the coast reveal that there is a slow return to artisanal practices. Let me try to briefly explain this cycle of events, starting with the initial context of the fishery, and restricting my story to the technology of fish harvesting at sea.

We start with the craft called the *kattumaram*. For a deep-sea going marine fishing craft, this is as simple as it can get. The *kattumaram* is just four logs of wood, about 10-15 ft in length, tied together with coir ropes across a cross bow at each end—the ultimate do-it-yourself (DIY) craft. At sea it is unsinkable, though being on it makes you feel like you are sitting or standing on water! The *kattumaram* is initially powered by rowing with a split bamboo

... I am happy to report that some of my recent observations on the coast reveal that there is a slow return to artisanal practices

pole. Later the lateen (triangular) cloth sail can be rigged mid-sea, with bamboo poles and coir ropes, to even gather the swell of winds blowing almost in the opposite direction. This is the ultimate in sailing skills.

The launching of a *kattumaram* is followed by rowing it speedily to get across the rough surf waves. The art of rigging and operating the sails, fishing in deep waters out of sight from the shore, then getting back to the village on the shore, even at night, guided

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Shore-seine operations in Trivandrum, Kerala. Three appealing attributes to any 'artisanal' activity are skill of body and mind, the judicious use of energy, and the freedom of work and expression

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only by the stars... all evidence of the remarkable skill of body and mind, as also the creative ability to harness renewable energy to make a living. This is the artisanal way par excellence, with zero operating cost.

... OBM's relieved the drudgery of physical labour and increased the time available exclusively for fishing

The change began with the introduction of the outboard motors (OBMs) in the early 1980s. Initially, the motor was fitted to one of the cross bows. But, it soon became evident that the centuries-old DIY *kattumaram* and the sleek Japanese-manufactured OBM's are structurally incompatible.

This realization led to design of the plywood *kattumaram*. An unsinkable craft looking much like the original, it better accommodated the OBM. The only downside was that it could not be dismantled.

The propulsion power of the OBM soon led to the obsolescence of the sail. That, in turn, caused the gradual loss of the artisanal skill of understanding the nuance of winds and working in tandem with nature. While OBM's relieved the drudgery of physical labour and increased the time available exclusively for fishing, they also contributed to decline in the fishers' fitness. They also increased accidents on crossing the surf.

On the financial side, the motors added significantly to investment and operating costs. But they changed little in the probability of harvesting more fish. On occasions when fishers harvested more fish, prices dropped

on shore. Their net earnings increased only marginally.

While only a few fishers adopted OBMs of a certain power rating, they stood to have a comparative advantage over those who did not have the motors. They could get to the fishing ground faster, fish for longer periods and get back to the shore earlier, thus getting a higher price. That advantage disappeared when all fishers in a village adopted the same type of motors; everyone reached a lower equilibrium, so to speak. The investment and operating costs increased but the increase in earnings was not commensurate with the expenditure incurred.

A few fishers broke out of this trap by opting for motors with more power. This triggered a vicious cycle of higher capital investment and a race to guzzle fossil fuels. Bigger and more powerful engines, in turn, fuelled the demand for newer types of craft. The modified plywood *kattumaram* was not suitable any longer. Bigger craft, more canoe-shaped, were prized. The new models provided more room for carrying larger nets. This warranted a bigger crew; their total lack of artisanal skills—even knowing how to swim—was not an issue now. Seasonal migrants from non-fishing communities, with no knowledge of the sea, were adequate. You just needed ‘labour’! And the race to the bottom went on and on.

I recently estimated the collective results of this adventure over 50 years. It shows that the individual outcomes have been varied and that inequalities between fishers have increased. The net result has been a rise in the fossil-fuel consumption and in the average investment in craft and gear. The median level of indebtedness has increased at galloping speed. Yet the collective fish harvests began to plateau a decade ago and have now started a downward trend.

Discussions with fishers—all small-scale, beach-landing operators—reveal the realization among them that this Olympic race of adopting larger boats, more fishing gear and more powerful motors is leading to collective catastrophe. They realize that this needs to stop.

But their quandary was who will take the first step?

That was when I discovered a new but raging trend on the coast. Along one stretch of a sandy beach, I noted a new raft-like contraption. It had a flat base of thermocol/polystyrene, about nine ft by four ft, stitched around in black rexine. It looked more like a Brazilian *jungada* than a *kattumaram*! There were over 200 of them in close proximity.

They were steered with a paddle-shaped oar. Each could carry about 10 kg of gillnets and accommodate two fishers. The owner-operators of these rafts were middle-aged fishers; they had not forgotten their skills of rowing and sailing. Fishing was in eyeshot of the coast, from 5 a.m. to 8 a.m. Afterwards, they took their nets with the fish still gilled onto them to the highway and sold the fresh fish, straight off the net, to customers passing by in cars. No fuel costs! A daily income made from five hours of labour, adequate for sustaining their families—and the freedom to engage in other pursuits.

A fisher was close at hand and he spoke into my voice recorder: “There is no meaning in this race we have got ourselves into. Every other fisherman is steeped in debt. We started with 9-hp (horsepower) OBMs. We are now using 45 hp, but still fish the same shoals. When I started fishing 25 years ago everyone got enough fish. Now one unit catches it all. The others come back without even casting their nets, and having to bear the cost of fuel and pay for the food of the crew. The losses accumulate. Many like me have now gotten out of this race. The future is perhaps in stepping back to traditional (artisanal) ways of fishing. Near our homes. Using our knowledge and skills.”

The thermocol rafts are certainly not the answer to the fishery problems of Kerala. They are a calibrated response to the overall crisis facing the fishery. These rafts can only be used in the months when the sea is calm, usually November to February. But such surety about the condition of the sea is also a thing of the past. The rafts do pose crew-safety issues in the event of overturning, particularly for those

CASTLE THERMOCOL BOATS



The new raft-like contraption commonly used by fishers in Kerala. It has a flat base of thermocol/polystyrene, about nine ft by four ft, stitched around in black rexine, looking more like a Brazilian *jungada* than a *kattumaram*

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who may not be expert swimmers. The Fisheries Department is unwilling to provide a registration for these vessels because insurance companies will not cover risks of fishers using such ‘unseaworthy’ structures which do not qualify to be defined as fishing craft.

Yet, these rafts represent some basic, innate and hidden attributes that are worthy of serious consideration. These are attributes historically associated with artisans, and with what we call the ‘artisanal’ way. Let me mention a few: Artisanal fisheries can be decentralized and spatially dispersed. They have a low carbon footprint and near-zero operating costs. They embody freedom and emancipation from indebtedness, owing to the possibility of owner-operatorship. This allows fishers to flexibly combine fishing, at a chosen time of day or night, with other meaningful avocations. The conviviality of labour and work also makes it possible for fishers to revive a healthy and active lifestyle. Artisanal methods can help communities regain the intimate knowledge of the sea and its moods, now lost with fuel-powered propulsion. Finally, the shorter value

chains of these fisheries are more viable, providing fresh products and direct contacts between harvesters and consumers.

As the world celebrates the International Year of Artisanal Fisheries and Aquaculture, can we also ponder over these attributes and issues? 📌

For more



The Human Relationship with Our Ocean Planet

<https://oceanpanel.org/blue-papers/HumanRelationshipwithOurOceanPlanet>

From Individual Rights to Community Commons

<https://www.icsf.net/samudra/from-individual-rights-to-community-commons/>

Involving the People

<https://www.fao.org/voluntary-guidelines-small-scale-fisheries/resources/detail/en/c/1475206/>

A New Dawn, A New Day

Starting their international year on a high note, the African Confederation of Professional Organizations of Artisanal Fisheries (CAOPA) hopes to become a prominent platform

On the eve of the International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022), artisanal fisheries have never been more essential to the survival of coastal communities and local populations across Africa. Speaking at the launch of the World Fisheries Day event organized in Senegal by the African Confederation of Professional Organizations of Artisanal Fisheries (CAOPA) in November 2021, Adama Djalo, CAOPA vice-president, represented the perspective of women fish processors from Guinea Bissau. “During the COVID-19 crisis, despite harsh measures that have severely affected—and continue to affect—our livelihoods, men and women from our sector have shown their resilience and ability to provide essential food to African families,” she said.

The future will be challenging for African fishing communities. Global warming is already aggravating matters, posing challenges such as increasingly difficult navigation conditions at sea, coastal erosion, and migration of fish resources further offshore, to name a few. To make fishing communities more resilient in these difficult times, CAOPA is calling on governments to ensure access to fisheries resources and markets for small-scale fisheries—covered in SDG 14b—through the implementation of the FAO Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines).

This requires reforms, both in policy and in practices; that does not come easily. Dawda Foday Saine of Gambia, general secretary of CAOPA, expressed his pride that the organization, now present in 27 countries, has been successful in “giving our communities

the confidence to claim their rights, and to assert their benefits, in social, economic and cultural terms and as managers of coastal ecosystems.”

But there was also some frustration. “Despite our efforts, all too often, our decisionmakers and their partners do not look at us, do not value us, ignore our needs, and favour others,” he said. “All too often, fishing licences are given out to destructive foreign industrial vessels. And all too often, agreements are signed with companies that destroy our coasts for exploiting gas, oil or for tourism. All too often, polluting industrial units like fishmeal factories, some of which steal our fish, are built at our doorstep. All of this is done in total secrecy. All of this is done at a huge cost to our coastal ecosystems, and to the artisanal fishing communities that depend on them for their livelihood.”

When CAOPA members gathered in Senegal for World Fisheries Day, it was to discuss how to ensure that African States walk the talk on supporting

CAOPA is calling on governments to ensure access to fisheries resources and markets for small-scale fisheries

African fishing communities to thrive.

As the discussions started, they received some good news: CAOPA president Gaoussou Gueye had been elected co-ordinator of the African Continental Non-State Actors Platform, a consultative body set up with the support of the African Union development Agency (AUDA-NEPAD), and the InterAfrican Bureau for Animal Resources, in collaboration with FAO and funded by the European Union.

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CAOPA



Participants at CAOPA's World Fisheries Day event in November 2021 in Senegal. All around the world, fishing communities see young people deserting the sector. In this context, it was remarkable to see the participation of young men and women fishworkers in this gathering

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... these coastal areas should be entirely co-managed by the State and artisanal fishing communities

“This platform has the ambition to mobilize all African fisheries stakeholders, professionals and civil

to artisanal fishers in coastal areas. To ensure the sustainable management of coastal ecosystems and resources, these coastal areas should be entirely co-managed by the State and artisanal fishing communities, including through appropriate conservation tools such as protected marine areas designed and managed by fishery-dependent communities.

society organizations alike, to help the continent meet its commitment to improve nutrition and food security, thanks to fisheries, and support sustainable livelihoods in African fisheries-dependent communities,” said Gueye.

The big three for IYAFA 2022

Based on CAOPA's work over its 10 years of existence, more than 50 participants, from Africa's continental and maritime artisanal fisheries, identified three priority areas for reforms and concrete action. The first one is to secure access to resources for African artisanal fisheries. States are asked to grant exclusive fishing rights

The second priority is safety at sea, which is crucial for SSF's secure access to resources. The participants, therefore, emphasized that African countries should ratify and implement the Work in Fishing Convention (No. 188) of the International Labour Organization (ILO). The implementation of this Convention can help improve some essential elements that include: safety training for pirogue captains and crews; the use of new technologies; and raising awareness of fishers regarding safety issues.

Women are present at all stages of the artisanal fisheries value chain in African countries. They form the essential link that gets the fish to local and regional consumers. They are also the mainstay of families in artisanal

fishing communities. Recognizing their role, giving them equal representation in professional organizations, in decision-making processes, and providing them with appropriate support are the priorities for securing access to resources and markets.

Micheline Dion Somplehi, a fish processor from Ivory Coast and the co-ordinator of the CAOPA women's programme, summed it up: "Without women there will be no sustainable artisanal fisheries in Africa. Women perform miracles every day with small means, always improving the quality of their processed products, always finding new markets and improving the living conditions of their whole community. Their capacity for innovation is infinite. Whether it is to develop new processing techniques or to increase the availability of affordable fish as raw material for processing, supporting innovation in women's activities is the key to the survival of our sector. Our States should give priority attention to supporting this, and also invest in the necessary services and infrastructure that will allow such innovations to be successful."

Women are also involved in artisanal fish farming, a good way to supplement their supply of raw materials and to cope with periods when fishing is stopped (during biological rest, for example). Fatoumata Diallo Sirebara from Mali, whose husband is an artisanal fisherman, is passionate about developing artisanal fish farming in Africa: "I started small, growing vegetables, then growing fish in containers. I got young women to join me in this activity of artisanal aquaculture that everyone thought was reserved for men because people thought it's expensive, and you need big capital to do it. These young women saw that they could do it. Anyone can do it. As I work without pesticides or fertilizers, I use the water from the fish tanks for the vegetable I grow in containers. When the fish are big, we sell them live, at West African CFA Franc (XOF) 2,000 (US\$4) per kg. People come, catch what they want and, if they want, we smoke the fish for them, for an extra XOF 500 (US\$1) per kg. Growing fish and vegetables in containers can be

done anywhere in Africa. Anything can become a productive garden or a fish pond."

Despite all the positivity about the opportunities IYAFA 2022 offers for advancing their agenda, African fishing communities have a big concern: The competition from other sectors included in the Africa 'Blue Economy' strategy—financially and politically powerful sectors such as oil and gas exploration, tourism and fishmeal factories—could jeopardize the future of artisanal fishing. The artisanal fishing communities' interests lie in protecting ocean resources from such predatory sectors.

In their view, the precautionary approach must guide the development of the Blue Economy. They ask African States to carry out independent social and environmental impact assessments, with the utmost transparency and with the participation of affected coastal communities. No new ocean-use activity should be allowed by States, nor supported by donors, if it negatively impacts ecosystems and coastal fishing communities. States should put in place transparent mechanisms for consultation and conflict resolution between users of maritime spaces, allowing for informed and active participation of all affected fishing communities.

The artisanal fishing communities' interests lie in protecting ocean resources from such predatory sectors

A new dawn is rising

All around the world, fishing communities see young people deserting the sector. In this context, it was remarkable to see the participation of young fishers and women in fisheries in this gathering. Take, for example, Angelo Matagili from Tanzania, in charge of the CAOPA youth programme. He talked inexhaustibly about ways to harness solar energy for the benefit of fishing communities. Or Dorcas Malogho from Kenya, representing

YOANN GAUTHIER



Pirogues docked in Ndar (Saint-Louis), Senegal. "With the energy of our youth, with the experience of our elders, we have only one message to decisionmakers: 'Get ready, we're coming!'"

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coastal women in fisheries. Or Nana Kweigyah of the Canoe and Fishing Gear Owners Association of Ghana, who read the final statement, emphasizing the need for fishers to be responsible.

"Our efforts must not be ruined by greed and corruption, which occur mostly in the darkness of offices, but sometimes on our beaches, in the artisanal sector. As the saying goes, when you point a finger at someone, there are three fingers pointing back at you. Our first duty is to be responsible players," said Kweigyah.

He insisted on the responsibilities young CAOPA leaders carry: "Throughout the next year, we, the younger generation of CAOPA leaders, will assist our leaders by relentlessly knocking on the doors of our decisionmakers, at the regional and national African levels, and ask them to entrust us with the co-management of our coastal zones." Kweigyah said that they will request support, in the form of appropriate infrastructure and services, to catalyze innovations in the value chain, especially for women's activities."

With so many opportunities to make IYAFA 2022 a success in Africa, the younger generation of CAOPA leaders has a clear path forward, as Kweigyah concluded: "With the energy of our youth, with the experience of our elders, following in their footsteps, passing through the doors they opened for us, we have only one message to send to our decisionmakers: 'Get ready, we're coming!'"

For more



World Fisheries Day 2021 CAOPA declaration

<https://caopa.org/wp-content/uploads/2022/01/Declaration-WFD-2021-EN.pdf>

For the post-COVID-19 period, CAOPA calls for decent working conditions for artisanal fisheries

<https://www.cffacape.org/news-blog/for-the-post-covid-19-period-caopa-calls-for-decent-working-conditions-for-artisanal-fisheries>

Africa Blue Economy Strategy

<http://repository.au-ibar.org/handle/123456789/421>

Ear to the Ground

How can spaces for dialogue between small-scale fisheries social movements, policymakers and scientists be revived when they remain unlinked in local policy and management?

The COVID-19 pandemic has tested the resilience of increasingly interconnected food systems and actors across the world. During this time, even as hunger increased significantly—including in rural areas of Brazil—the traditional practices of food production and sharing have secured the intake of nutrition among local communities. This, in the International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022), is a chance to recognize the important role of small-scale fisheries (SSF) in food security and socioeconomic wellbeing.

The Food and Agriculture Organization of the United Nations (FAO) has identified seven ‘pillars’ or principles to guide actions in support of SSF communities as part of a Global Action Plan for governments, civil society and other stakeholders: environmental, economic and social sustainability; governance; gender equality and equity; food security and nutrition; and resilience. But the severe disconnect between fisheries social movements, science and policy presents major challenges to the strength of these pillars.

In Brazil, the pandemic somehow enhanced the interface between social movements and scientists in some cases, for example, in building solidarity networks, online debates, and observatories to address COVID-19 impacts on communities. Learning from such examples may help us collaboratively adapt to this unprecedented shock.

However, two factors threaten the future of fisheries livelihoods and the sector’s contributions to food security: overfishing and poor fisheries management, and the failure to establish mechanisms to ensure environmental justice for fishing

communities. In joint programmes between social movements and scientists, there is often a hidden tension between the need to protect fishing communities and to conserve biodiversity. But these actors recognize that novel governance arrangements are needed. It is also clear that investments of financial, social and intellectual capital are critical to meet those challenges.

This is where top-down approaches and institutions need to interact and co-operate with decentralized, community-based and self-organized mechanisms in small-scale fisheries. Brazil used to be at the forefront of community-based alternatives that encouraged local communities to be stewards of the environment and their territories. Can we recreate those

In joint programmes between social movements and scientists, there is often a hidden tension between the need to protect fishing communities and to conserve biodiversity

spaces of dialogue and co-operation, at the interface between science, policy and social movements, which seem to have failed?

There may be differing views as to whether such dialogue should be initiated at the top or from the bottom. In any case, we have an immediate collective goal to revive the conversation. There have been some successes, such as the endorsement of the FAO Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines). Despite Brazil’s engagement in this process, and

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A fisherman rows to his boat at the mouth of the São Mateus River in Espírito Santo. Brazil used to be at the forefront of community-based alternatives that encouraged local communities to be stewards of the environment and their territories

sustained advocacy by civil society for its implementation, we are not taking advantage of the relationships between social movements, scientists and fisheries authorities—and momentum built over this period. Nevertheless, the process contributed to strengthen social movements, aided by scientific forums that tried to promote such integration.

What is clear is that we need to do our ‘homework’ at the national level by formulating our vision for small-scale fisheries policy and management. What is the use in fishers and fishworkers participating in more international discussions if there is no internal debate? Part of that homework is to participate in fisheries management councils; but it is also important to discuss why implementation is still at an impasse eight years after the SSF Guidelines were endorsed.

IYafa 2022 presents a rare opportunity to start this internal debate about the needs and priorities of Brazil’s small-scale fisheries. The roadmap will

need to focus on all seven pillars that support SSF. Spaces of dialogue cannot be allowed to fail if we are to have policies that promote the resilience of the sector and of fishing communities. They will also help us prepare for future shocks, including those anticipated due to climate change.

The urgent task of initiating that dialogue at the national level cannot be swept under the carpet. The celebration may be global, but change has to begin at home. Let’s turn this international year into a local opportunity. 3

For more



The vital role of aquatic foods in food systems transformation

https://prceu.usp.br/wp-content/uploads/2021/11/E-book_Poli%CC%81ticas-Pu%CC%81blicas-para-o-Combate-a%CC%80-Fome.pdf

Revealing small-scale fisheries

http://labpesq.io.usp.br/images/publicacoes/Livreto_pesca_Gasalla.pdf

Seize the Day

The International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022) is a rare opportunity to promote much-needed transdisciplinary research into small-scale fisheries

This is a special year for small-scale fisheries. The International Year for Artisanal Fisheries and Aquaculture (IYAFA 2022) brings more attention to the sector as also to the people who draw their livelihood both from life below and above water. Their well-being depends on healthy ecosystems, sensible government policies and well-functioning communities.

IYAFA 2022 is an opportunity for States to reconfirm the commitment they made in 2014, when they endorsed the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines). There are thus reasons to be hopeful that positive change will come to small-scale fisheries around the world and that they will no longer be ignored or marginalized as in the past. IYAFA 2022 is a window of opportunity for real action in several arenas, not the least of which is research and knowledge production.

Too Big To Ignore

Too Big To Ignore (TBTI) is a global network to conduct research on small-scale fisheries. Like other contributors included as ‘stakeholders’ in the SSF Guidelines, IYAFA 2022 is expected to lead positive change for researchers who devote their time and effort to learning more about small-scale fisheries, and to support their viability and sustainability. Just as small-scale fisheries have been overlooked in the past, research in this field has been similarly disregarded—and for many of the same reasons. If governments see little potential in small-scale fisheries, concluding that the future is in large-scale industrialization, they have few reasons to incentivize research into small-scale fisheries.

That is not how the SSF Guidelines define specific roles for the academic community in Article 11 (Information, research and communication). The SSF Guidelines serve as a marching order for researchers around the world to engage more directly with small-scale fisheries. Without generating knowledge about their strengths and weaknesses, it is not possible to answer questions such as: Why are they so often in a state of poverty and marginalization? What is their contribution to the local economy and food security?

The implementation of the SSF Guidelines may not be as straightforward as one might have hoped; it is likely to meet obstacles on the way to realization at domestic and

Is the Blue Economy what small-scale fisheries have been waiting for, or is it a threat to their survival?

local levels. What are the opportunities and hindrances for bringing about much-needed progress in small-scale fisheries? Is the Blue Economy what small-scale fisheries have been waiting for, or is it a threat to their survival? To answer these important and intriguing research questions would need funding, something the SSF Guidelines also emphasize.

Knowledge is power... and support

The research community is hopeful that States and civil society organizations will deliver on article 11.9 of the SSF Guidelines that says: “States and other

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BERNARD SPRAGG



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A beach seine in operation in Ilocos Norte, the Philippines. The implementation of the SSF Guidelines may not be as straightforward as one might have hoped; it is likely to meet obstacles on the way to realization at domestic and local levels

parties should, to the extent possible, ensure that funds are available for small-scale fisheries research, and collaborative and participatory data collection, analyses and research should be encouraged. States and other parties should endeavour to integrate this research knowledge into their decision-making processes.”

Research priorities should be agreed upon through a consultative process focusing on the role of small-scale fisheries...

It would also be necessary for the research community to fulfil its own role, as further stated in the same article. “Research organizations and institutions should support capacity

development to allow small-scale fishing communities to participate in research and in the utilization of research findings. Research priorities should be agreed upon through a consultative process focusing on the role of small-scale fisheries in sustainable resource utilization, food security and nutrition, poverty eradication, and equitable development.”

Article 11.10 specifies areas requiring more research, such as conditions of work, health, education and decisionmaking. In the context of gender relations, it urges research to capture how interventions have contributed towards social change. Many of these topics and questions speak to the need for comprehensive understanding of small-scale fisheries, in their own contexts and in their relations to the broader society.

Transdisciplinarity

TBTI has stressed the importance of transdisciplinary perspectives; the 2018 book *Transdisciplinarity for Small-Scale Fisheries Governance: Analysis and Practice* gets into the fine grain of the matter. In sum, small-scale fisheries are too rich to fit within a single discipline. We need insights from diverse academic disciplines within the natural sciences, the social sciences and the humanities. They all offer relevant insights and methodologies. The guiding principles of the SSF Guidelines require philosophical reflection about the meaning of human rights, dignity and social justice. What constitutes a good life for small-scale fisheries people is not merely a philosophical question, however. It is our overarching goal.

Transdisciplinarity implies the integration of the experience-based knowledge that people in the industry have built over generations from being on the water and working in the value chain. They have their own understanding of their problems and their causes. They also have their own ideas of what a good life entails for them. Researchers of small-scale fisheries are there to learn, understand and support the sector, not to override and impose their own perspectives and concepts.


The SSF Guidelines talk about “holistic approaches” to small-scale fisheries development. This requires a process of co-production where researchers and fishing communities make the building of knowledge a joint and interactive effort. Let us make that an ambition for IYFA 2022 and beyond.

World Small-Scale Fisheries Congress (WSFC)

As has been done since 2010, researchers, practitioners, and governments gather with small-scale fishers and supporting organizations every four years to share knowledge and discuss current and emerging issues affecting small-scale fisheries. The 4th World Small-Scale Fisheries Congress (4WSFC) coincides with IYFA 2022. It is being organized

as five regional congresses instead of one, to enable better participation and engagement; this also takes into consideration travel restrictions due to the COVID-19 pandemic.

The guiding principles of the SSF Guidelines require philosophical reflection about the meaning of human rights, dignity and social justice

All small-scale fisheries stakeholders are invited to participate at these regional congresses, either in person or virtually, and be part of the global movement to help make small-scale fisheries vibrant and strong. 

For more



Too Big to Ignore

<http://toobigtoignore.net/>

Transdisciplinarity for Small-Scale Fisheries Governance: Analysis and Practice

<https://link.springer.com/book/10.1007/978-3-319-94938-3>

The 4th World Small-Scale Fisheries Congress (4WSFC)

<https://www.4wsfcongress.com/>

Small in Scale, Big in Value

Despite the limitations of the COVID-19 pandemic, the smart use of communication tools can make IYAFa 2022 a success

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This year we celebrate the International Year of Artisanal Fisheries and Aquaculture (IYAFa 2022). One of the objectives of the Year is to enhance global awareness about small-scale fisheries, understanding its role and context, and actions to support the sector's contribution to sustainable development. A pre-condition for achieving this goal is that there is awareness about the Year itself—not only within the global fisheries and aquaculture community but also beyond. This includes the general public and policy domains relevant to fisheries, such as those dealing with food security and nutrition, the environment and gender issues.

The COVID-19 pandemic has made it particularly challenging to raise IYAFa 2022's visibility

The COVID-19 pandemic has made it particularly challenging to raise IYAFa 2022's visibility. The preventive measures have reduced physical contact; this has made travel, access to spaces and actual meetings very difficult. At the same time, new ways of communication have emerged and consolidated during the pandemic. In several ways, they can help us reach more people with fewer resources.

As the lead agency for IYAFa 2022, the Food and Agriculture Organization of the United Nations (FAO) has put together a suite of communication tools, available to all who wish to support the celebrations of the Year.

And the number of those is growing: To date, 32 entities have signed up as official IYAFa 2022 supporters. They help raise awareness and promote action for small-scale artisanal fishers, fish farmers and fishworkers around the world. They come from various sectors: international and regional bodies; fishworker, farmer and producer organizations; academic and research institutions; civil society; governments; the private sector; and more.

They are lending their influence and networks to make IYAFa 2022 an international success by clearly communicating the importance of small-scale fisheries and aquaculture for our food systems and environment. Our supporters are spreading the word through media outlets, public events and campaigns.

In addition, IYAFa 2022 can count on the members of its International Steering Committee, representing seven FAO regions as well as a number of global non-State actors that represent or support small-scale fisheries and aquaculture.

Tools for IYAFa 2022

The set of communication tools for the international year are available on the IYAFa 2022 webpage in English, French, Spanish, Arabic, Russian and Chinese. Here is a snapshot of what is in store:

- * IYAFa 2022 communications handbook: A communications guide with resources and tips, all in one place!
- * IYAFa 2022 visual identity guidelines: How to best place the IYAFa 2022 logo!
- * IYAFa 2022 trello board: Too lazy to prepare social media messages? Use what is ready, and add the official hashtag #IYAFa2022

This article is by Nicole Franz (nicole.franz@fao.org), Equitable Livelihoods Team Leader, Fisheries and Aquaculture Division, FAO



Communication tools showing the IYAFA 2022 logo. The Steering Committee and Supporters are lending their influence and networks to make IYAFA 2022 an international success

- * Global Action Plan: Inspiration for action around seven inter-related pillars
- * Take action page: Learn how various sectors can take action to support IYAFA 2022
- * Join us: Discover outreach activities you can organize to promote IYAFA 2022
- * IYAFA 2022 video playlist: Features the official IYAFA 2022 video in many languages, and a growing number of related videos
- * IYAFA 2022 events list: See what is being organized for the Year and share what you will do!
- * IYAFA 2022 asset bank: Everything from virtual backgrounds, a PowerPoint presentation on IYAFA 2022 with speaking notes, web buttons, video bumpers, specifications for IYAFA 2022 gadgets like T-shirts, water bottles and bags, and much more
- * Monthly IYAFA 2022 newsletter: Subscribe to the newsletter, which has a specific thematic focus each month, for information about IYAFA 2022 events and IYAFA-2022-related resources.

Now let's look at what is already happening or is planned this year. The International Collective in Support of Fishworkers (ICSF) is organizing regional workshops with fishworker organizations, starting with Asia in May. The Too Big To Ignore (TBTI) research partnership is organizing five regional small-scale fisheries

All of these activities reach diverse audiences and all of them are designed to trigger more action—like ripples in water

congresses. The SSF Hub is featuring a series of webinars. The regional organization 'Ministerial Conference on fisheries co-operation among African States bordering the Atlantic Ocean' (ATLAFCO) just concluded a dedicated three-day event on small-scale fisheries and aquaculture in its 22 member countries.

Norway, a 'Friend of the SSF Guidelines', has partnered with others to organize a IYAFA 2022 webinar

series on 'Women and a changing tide: How to break the bias,' starting on International Women's Day (8 March), to promote gender equality and equity in small-scale fisheries and aquaculture. The One Ocean Hub, with the support of the FAO and the UN Office of the High Commissioner for Human Rights (OHCHR), is launching a series of initiatives to raise awareness on the human rights of small-scale fishers, fishworkers and their communities and on the importance of adopting specific legislation, public policies and programmes to enable them to operate in a sustainable manner.


The academic journal *Reviews in Fish Biology and Fisheries* will publish a special issue on IYafa 2022. A private company in Italy has produced a IYafa 2022 calendar with satellite images of small-scale fisheries and aquaculture. The NGO Coalition for Fair Fisheries Arrangements (CFFA-CAPE) has published a video animation for IYafa 2022. In addition, a large number of webinars have been organized or are in the works under the IYafa 2022 umbrella. Articles have been published in magazines and the International Institute for the Environment and Development (IIED) has published the first of a series of infographics to illustrate small-scale fisheries contributions to sustainable development. There is more in the pipeline: A compilation of human-interest stories, as well as a call for photo content. Stay tuned and sign up to the IYafa 2022 newsletter!

All of these activities reach diverse audiences and all of them are designed to trigger more action—like ripples in water. But it will take much more to do justice to small-scale fisheries and aquaculture, which support millions of livelihoods around the world. The FAO Committee on Fisheries will meet in early September 2022, during which a special high-level session will be an important moment to take stock of the achievements of IYafa 2022. Help us to make sure that there will be plenty to report on!

Get involved!

Everyone has a role to play, from governments and private-sector

companies to the general public and youth. Let's work together for a world in which small-scale artisanal fishers, fish farmers and fishworkers are fully recognized and empowered to continue their contributions for human well-being, food security and poverty alleviation through the responsible and sustainable use of fisheries and aquaculture resources.

To make the most of this opportunity, it is time to think creatively, join hands and start making plans for how to make IYafa 2022 a memorable year. Start by using our free material to give small-scale fishers, fish farmers and fishworkers the attention they deserve! 

For more

International Year of Artisanal Fisheries and Aquaculture (IYafa 2022)

<https://www.fao.org/artisanal-fisheries-aquaculture-2022/home/en/>

IYafa 2022 Supporters

<https://www.fao.org/artisanal-fisheries-aquaculture-2022/supporters/en/>

IYafa 2022 International Steering Committee

<https://www.fao.org/artisanal-fisheries-aquaculture-2022/international-steering-committee/en/>

A Life by the Sea

An empathetic biography of Daniel Pauly tells the story of a scientist committed to the study and protection of the oceans

Daniel Pauly and I met on the second day of my marine studies in Kiel, back in late 1969 and we've been friends ever since. Little did I know then about his dramatic, novelistic life up to that point: He had been 'kidnapped' by a Swiss family from his single working mother in Paris after the Second World War and later kept by them as a *domestique* (servant). Some of the details I only discovered when reading David Grémillet's brilliant new book on Daniel's life, translated from French to English by Georgia Lyon Froman.

At the age of 17, Daniel came to Germany to earn a living as a worker. He managed to weather the hardship of four years of evening school, until he achieved the diploma that opened the doors to his extraordinary academic career. Then, at the age of 19, he found his mother, along with her husband and his five siblings, in France. He was in high school when the French army discovered his whereabouts in Germany and wanted to draft him, but then decided he was no good for the army. Two more years of work and study followed. By the end of 1969 he had just come back from his first trip to the United States in search of his biological father, a black American soldier. During his travels in the US, he had discovered what it meant to be black, something he had not experienced in the same way during his upbringing in Europe.

His friendliness and 'big mouth' impressed me very much during my own first venturing far from home, trying to find my feet in the new experience of university studies. The city of Kiel was once a naval base with shipyards and brick buildings

characteristic of Wilhelmenian times. Later on, not everybody would see Daniel in a particularly friendly light because he did not shy away from controversy. But I guess most people who knew him then will agree on the 'big mouth' label and his penchant for 'big ideas'.

It was the time of student protests and we got our share in Kiel as well. Daniel stood out from the rest of us—not only because he was older but also because he was very articulate, had a lot more reading under his belt, and did not suffer fools gladly. He was the glue binding an entire group of socially minded marine biologists; he always went the extra mile to connect, support and stimulate. Readers will find an echo of this attitude in Grémillet's insightful

Daniel stood out from the rest of us—not only because he was older but also because he was very articulate, had a lot more reading under his belt, and did not suffer fools gladly

narration of the later stages in his life, in how he steadfastly supported students and peers, particularly from the Global South. The book is indeed more than a mere biography with a towering character at the centre. Grémillet weaves snapshots of the lives of an entire generation of marine scientists into the story, drawing from his wide-ranging research and interviews.

A lion's share of the narration is devoted to Pauly's extraordinarily productive scientific endeavours (profoundly inspired by Darwin) and his quest to uncover the natural laws and mechanisms that produced

*This article is by **Cornelia E Nauen** (ce.nauen@mundusmaris.org), President of Mundus Maris—Sciences and Arts for Sustainability*

ROGER PULLIN



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Pauly in Anilao, the Philippines, in 1986. "All I see down there is conflict, fish spending their time chasing each other and fighting—I'm swimming through the tragedies of the deep," he said.

the geological formations, plants and animals he observed. Darwin's characteristic willingness to learn from all the people he encountered during his studies and on the voyage of the 'Beagle' enabled this superb natural scientist to formulate a theory that encompasses all of humanity, embedding us within the same natural world.

Sent to Indonesia in 1975 to develop a trawl fishery, under contract with the German Agency for Technical Cooperation (GTZ, at the time), Daniel encountered tropical biodiversity. During a week-long exploratory survey on the *Mutiara 4* research trawler, a typical one-hour haul "would yield 200 kg of fish, and there were 150 different species, of which only 80 were known". This convinced him that the assessment methods developed in the North for targeting one or two dominant species simply wouldn't work. The data required were the identity of the fish, their age, weight at age, abundance and an estimate of natural mortality.

Natural mortality is not provoked by fishing but by predation and other natural processes. Or, to put it differently, managers required detailed information on growth, mortality and the recruitment schedules of fish into the fishery, that is, the time and size when young fish become vulnerable to the fishery. Age was typically determined by reading annual rings in broken-up otoliths examined under the microscope, an "extremely meticulous technique". Otoliths are calcium structures in the inner ear of vertebrates, including us humans, which provide a sense of balance. In the tropics, the seasonality is less pronounced than in cold and temperate waters, so such a time-consuming method for age determination was utterly impossible.

How to find an alternative? In his energetic search for an answer, Daniel developed what became his unique approach throughout his academic life—a systematic search in the scientific and grey literature, up and

down the accessible libraries, for all the information he could find. He was on the hunt for the basic principles of growth and mortality, which would apply to ALL fish. This was spurred by his discovery of the Hungarian theoretician von Bertalanffy's generic growth formula and, building on his research, Beverton and Holt's influential work on the dynamics of exploited fish populations.

In the process, he collected any publication containing fish size at age data and estimates of natural mortality within reach. In those times, without the Internet and portable computers, he developed a card collection, one per fish species, gathering information about 515 species from 978 distinct populations, including 100 estimates of natural mortality. This is why he resented the much-used declaration: "Nothing is known about XYZ, therefore we need an expensive survey." From then on, he also preferred extensive literature research to lengthy field work.

Growth curves

Analyzing the data with the help of a colleague in the physical oceanography department, he saw the known pattern of faster growth of fish in tropical temperatures, and found a strong correlation between their natural mortality, growth rate, maximum size and the average temperature in their distribution range. The publication of his equation and the complete data set for 175 fish species made a big splash. It set the tone for his later work. He went to great lengths in offering open access to the theory and data, to enable others to move the entire field forward, especially in the Global South, where there were fewer opportunities for scientists and library facilities were limited.

Daniel's PhD thesis established the fundamental relationship of gill size and water temperature in limiting fish growth, thus generalizing von Bertalanffy's growth formula. In hindsight, with a lot of additional evidence analyzed and published since, he laid the foundation for understanding why fish spawn and why

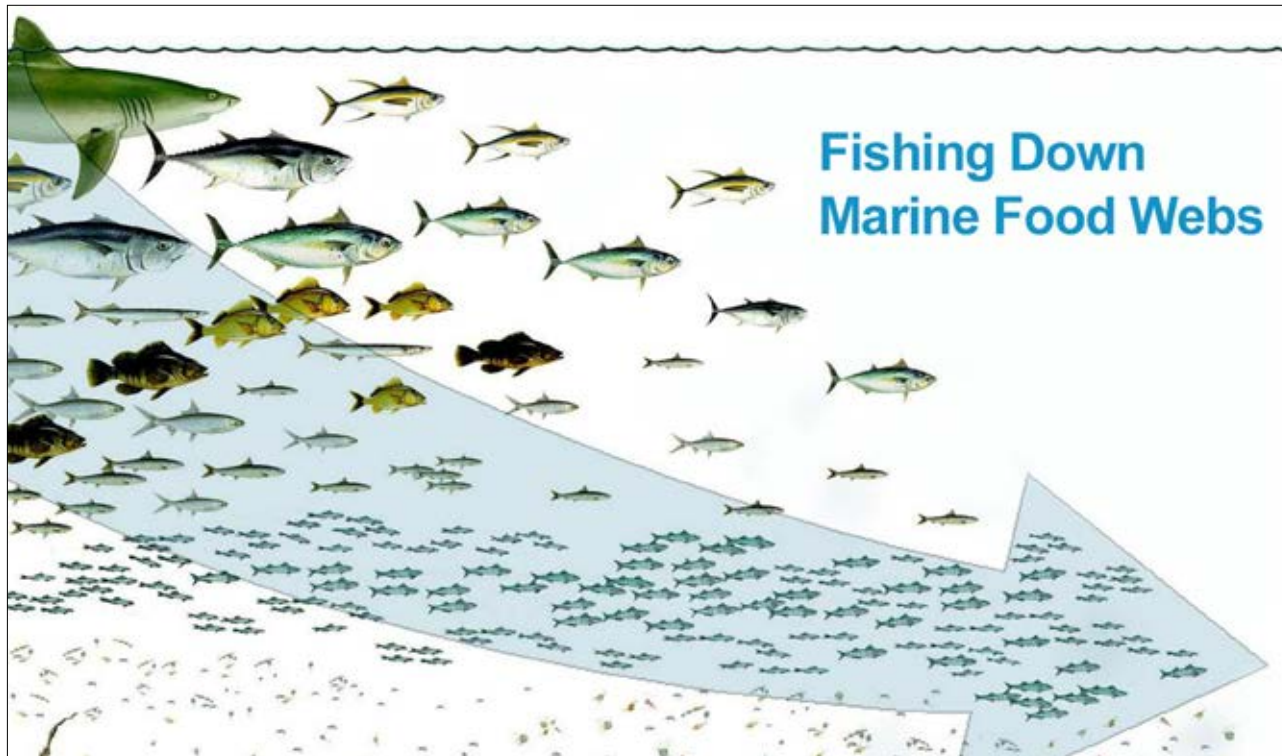
their growth slows down, besides a host of other phenomena. Through this and other work, Daniel was discovering the fundamental mechanism governing the growth of all fish and, more generally, all water-breathing organisms. These explanations can, and should, be used for fisheries management, informing stock recovery and conservation efforts. Such science has the power to help understand not only the specific cases, but to formulate hypotheses and expectations for many unstudied cases and other life cycle parameters.

The publication of his equation and the complete data set for 175 fish species made a big splash. It set the tone for his later work

Grémillet chronologically traces Daniel's career with the International Center for Living Aquatic Resources Management (ICLARM) in the Philippines, where he became the scientific co-manager of the San Miguel Bay project. It opened up a fantastic opportunity for combining ecological work with research into the social dimension of fisheries. Based on the idea of two local students, this multi-dimensional study of the bay fisheries in the Bicol Region, some 200 km southeast of Manila, is probably unsurpassed in its wealth of detail. The evidence-based recommendations included advice to help diversify social and economic activities to make for more robust livelihoods within fisheries and beyond, particularly in a growing population. However, despite the rigour, the message was not taken seriously by those in charge of setting the rules and enforcing them.

It was also the time when Daniel and his colleagues revived and modernized a method of fitting growth curves to chronological size-frequency distributions of fish, first developed at the end of the 19th century by C.G. Johannes Petersen, a Danish marine biologist. The successive versions of the Electronic Length Frequency Analysis (ELEFAN), improved by Daniel's

RACHEL ATANACIO



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Put simply, you cannot have large numbers of top predators without sufficient primary production and prey species.... In the expansion phase of fisheries it could appear as if the index was moving up the food web. But these effects are short-lived

Filipino assistant Maria Lourdes (Deng) Palomares at ICLARM, became a great hit.

And not only in tropical countries where age determination of fish with otoliths was problematic! She remained at his side when he moved to Vancouver, Canada, eventually growing into the role of the scientific project manager of the 'Sea Around Us'.

During the time at ICLARM, Daniel forged a number of lasting friendships and collaborations with the likes of Jay Maclean from Australia and Rainer Froese from Germany. The former was a gifted wordsmith, editing countless scientific reports and writing prose for children and adults as well. The latter turned Daniel's fish card collection into a database: FishBase. It is the most comprehensive public information system of all fish species known to science. In the early 1990s, the European Commission (EC) first financed an initial consolidation of the database, as a sort of proof of principle—it could be done on personal computers that had begun to appear.

Once this was done and more content became available, the EC accepted the request of African, Caribbean and Pacific (ACP) countries for a major development and training programme. Modern fisheries analysis methods and published data would be made available to their understaffed administrations and environmental NGOs. At the time, I was working in the Cooperation Department and I was happy to facilitate the unanimous agreement of EU Member State representatives to fund this programme.

Towards the end of the project, publishing on the Internet was gradually replacing floppy discs, CDs and DVDs that had to be tediously dispatched to hundreds of users in countries around the globe. The creation of a multi-agency FishBase Consortium laid the foundation for the continued development of FishBase beyond the initial project funding. A dedicated team of encoders in the Philippines is the backbone of data entry and is still beavering away at extracting, standardizing and inputting

information on fish biology, inspired and supervised by Daniel, Rainer and Deng.

FishBase now covers 34,700 species, 324,200 common names in more than 300 languages, 61,000 pictures, and information extracted from 58,400 references. It enjoys the support of 2,440 collaborators around the globe. Large numbers of people consult it; it has one million visits per month.

Daniel moved to the University of British Columbia (UBC) in Vancouver in 1994, but he kept his ties to ICLARM. Together with Villy Christensen, a Danish fisheries biologist hailing from a fishing family, he developed a mass-balance ecosystem approach based on earlier efforts of a US colleague, Jeff Polovina. Ecopath—later joined by Ecosim and Ecospace—pulls together many studies, often by specialists of one type of organism. The idea is that the flows of biomass and energy within an ecosystem have to balance out in nature. Put simply, you cannot have large numbers of top predators without sufficient primary production and prey species.

Marine algae, primary producers using the Sun's energy to build up organic matter through photosynthesis, account for about half the oxygen in the atmosphere. They are assigned Level 1. Small crustaceans like copepods and other tiny animals (zooplankton) feeding on plants are included in Level 2. Fish like sardines, anchovies and herring that feed on the phytoplankton and zooplankton are between Levels 2 and 3. A rough-and-tumble transfer rate from one trophic level to the next is 10 per cent, while about 90 per cent of their energy is needed for maintenance of their bodies and growth. That means one million tonnes of primary producers support about 100,000 tonnes of zooplankton, 10,000 tonnes of secondary consumers, but only 100 tonnes of top predators in Level 4, like some of the tunas, big cod or oceanic sharks. It is, therefore, not surprising that some of the biggest marine animals, including the largest mammals and the whale shark (*rhincodon typus*, the largest living fish), are feeding low in the food web

by filtering plankton or eating other small invertebrates and small fish.

Here, Grémillet takes the reader through Daniel's nascent working hypothesis, which triggered yet another major search through literature to understand the various species within their ecosystem, developing a broad classification of such ecosystems. These can then be assessed for their efficiency of channelling energy in the system to the species humans like to consume. Alternatively, heavy fishing may have disrupted the food web at the top and middle layers, directing more energy into jellyfish, bacteria and other non-resource species.

In a landmark paper based on the analysis of country-wise catches, published by the Food and Agriculture Organization of the United Nations (FAO), Daniel called this effect "fishing down the food web". The emblematic

Every generation of professionals tends to take the state of the environment at the beginning of their career as their reference point

picture, by artist Rachel Atanacio in the FishBase team, has been used over and over, appearing in several incarnations. The trend is stronger in those parts of the ocean that have been industrially fished for a long time, like the North Atlantic. It is sometimes masked by fisheries moving on further south from overfished regions and also fishing deeper down. Thus, in the expansion phase of these fisheries, using ever more powerful and more sophisticated gear and fish location equipment, it could appear as if the index was moving up the food web. But these effects were only short-lived and usually not the result of improved management, because the range and reach of industrial fisheries now extended to all parts of the ocean. But, as described in this biography, distinguishing the driving forces again required a massive effort in hypothesis-driven data collection and analysis, which did not advance without controversy.

These gradual changes in ecosystems are not easily discerned even by researchers and managers. Every generation of professionals tends to take the state of the environment at the beginning of their career as their reference point. This way, long-term changes largely go unnoticed, a widespread phenomenon Pauly characterized as “shifting baseline syndrome”, a concept that has been widely taken up. Shifting baseline syndrome is indeed the reason why it can be problematic to refer to sustainable fisheries as an objective today, when we should collectively set our eyes on rebuilding and recovering marine ecosystems so as to restore at least the major part of their earlier size, composition and productivity.

The research in other branches of the food system, notably at the International Rice Research Institute (IRRI) in Los Banos, where ICLARM was based, took a global perspective in the light of the challenges of feeding a growing human population. That inspired Daniel to try something comparable for fisheries. The occasion arose when the Pew Charitable Trusts accepted his idea of building a global information system on the fisheries impact on the ocean and providing management advice.

Based at the UBC Fisheries Centre in Vancouver, the starting point was again the global FAO statistics of nominal catches by country. The core team around Dirk Zeller, Reg Watson and Deng Palomares, among others, together with a large network of collaborators in each and every country, dug up a lot of additional information about extraction from the ocean. A good deal of this data was not reflected in the countries’ official transmission to the FAO. But, as Daniel used to say, “fishing is a social activity; it casts its shadow and leaves many traces.”

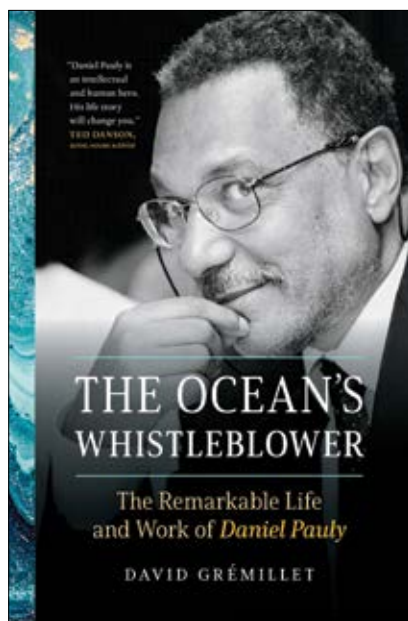
The combined efforts helped to derive more realistic estimates of effective catches, whether they concerned the often poorly recorded artisanal, subsistence and recreational fisheries or the discards at sea, and even illegal, unreported and unregulated (IUU) fishing. The ‘Sea Around Us’

initiative was born, named in honour of Rachel Carson, the author of the prize-winning book by the same title, and a role model of ocean study and protection. Sea Around Us constitutes a gigantic push to put detailed data and estimates (searchable by various criteria) at the disposal of anybody who cares to look.

The discrepancies between official records and what happens on the water can be huge, particularly in countries with under-resourced statistical systems, weak governance and poor law enforcement. The results showed that the reported peak global landings clicked in at 86 mn tonnes, while the real catches were likely to be 130 mn tonnes, 53 per cent higher than officially recorded, and falling since 1996. The study revealed the impacts of bad investments and management decisions, resting on a severe underestimation of the risks of overfishing.

Marine ecosystems are in much poorer state than even many specialists discern. The temperature increase in the upper layers of the ocean due to climate change is exacerbating that sorry state of affairs. What the reader of this review may have expected by now, and what Daniel published together with William Cheung, is that fish move polewards to remain within their preferred temperature range. And that they will shrink in size, something observable already.

This biography is also testimony to an exceptionally large number of training courses and capacity-enhancing activities Daniel invested time and energy into, including supervising droves of MSc and PhD students. That enabled him to build the large and lasting collaborations so important for his ambitious initiatives to drive the development of science-based principles underpinning our understanding of the ocean, its ecosystems and fisheries. Striving for the acceptance of what he calls GOLT or the Gill-Oxygen Limitation Theory, is what is driving Daniel in this last phase of a remarkable scientific career. He banks on its explanatory power for many trends we see in fisheries and



and commented on extensively in his writing and lecture. Restoring marine ecosystems would allow us to stem the current wastage of a few and harvest for the many. The NGO community working on social and environmental issues in fisheries and the oceans can find a huge amount of material to support their causes. This community has a special responsibility to use the science as effectively as possible, given that many citizens now trust NGOs more than governments. 🐟

The Ocean's Whistleblower: The Remarkable Life and Work of Daniel Pauly by David Grémillet, translated from French by Georgia Lyon Froman. David Suzuki Institute and Greystone Books, Vancouver/Berkeley, US. pp 349.

aquaculture. In his trademark style, he is marshalling new evidence to underpin it.

Prolific and influential

Reading David Grémillet's well-researched biography, written with empathy and understanding for the scientific and social processes he covers, the reader will dive deeper into the life and work of this prolific and influential scientist. There are descriptions of many companions and some adversaries. The book will not leave the reader indifferent. Georgia Lyon Froman's translation does not read like one, but exemplifies what Umberto Eco called a negotiation process between two languages and their cultural spheres. With a couple of exceptions, she captures the right terms to transport the superb French original into a native Anglo-Saxon environment. I hope that it inspires many others to follow in her footsteps and weigh up short-term interests against solid scientific evidence. That may help us all to become wiser in our investment and management decisions.

It should also promote the spread of the trust and co-operation we so desperately need to get out of this global crisis of our oceans. The crisis puts the weakest members of our societies, who rely the most on a healthy ocean, at an additional disadvantage, something Daniel Pauly has seen in practice

For more

FishBase

www.fishbase.de / www.fishbase.ca / www.fishbase.org

Sea Around Us

<https://www.seaaroundus.org/>

Anecdotes and the shifting baseline syndrome of fisheries

<https://www.sciencedirect.com/science/article/abs/pii/S0169534700891715?via%3Dihub>

Catch reconstructions reveal that global marine fisheries catches are higher than reported and declining

<https://www.nature.com/articles/ncomms10244>

BIODIVERSITY

Indigenous Peoples and Local Communities reps issue a final plea to world leaders at Post-2020 Framework negotiations

The UN's goal is that by 2050, we will all be 'living in harmony with nature'. Indigenous peoples have been doing this for millennia, and their rights are key to a successful framework. As the UN Convention on Biological Diversity (CBD) negotiations conclude, Indigenous Peoples' and Local Communities' representatives issued a final plea to world leaders:

"A Human Rights approach—including respect and recognition to the land, territories, traditional

knowledge, and the free, prior and informed consent of Indigenous Peoples and Local Communities—is key for the [Global Biodiversity] Framework to succeed. We are concerned with the lack of consensus in negotiations, especially around this language, and we encourage Parties to work together to reach agreement.

If we don't have a framework to protect nature that truly recognizes and respects the rights of Indigenous Peoples and Local Communities (IPLCs)—

those who are actually conserving biodiversity—humanity is going to be in danger," said Co-chair of the International Indigenous Forum on Biodiversity (IIFB), Ramiro Batzin, speaking in Geneva. In any proposal for conservation, land and territory rights for IPLCs are vital for protecting the powerful links of peoples to their land and territories, ensuring the survival of biodiversity, and safeguarding the traditional knowledge of Indigenous Peoples on how to live in harmony with nature."

In its closing statement, the IIFB said:

"IIFB welcomes the work undertaken by the Geneva meetings. Despite the many challenges, there have been some improvements and progress on the GBF,

particularly for Targets of high priority for IPLCs. However, we are concerned with the slow progress and lack of consensus in the negotiations."

Lucy Mulenkei, Co-Chair of IIFB, said: "There is irrefutable evidence that the only way this can be a strong instrument is by incorporating and ensuring a strong human-rights element—respecting the role of IPLCs—into the new global biodiversity framework."

Batzin said: "Now is the time for IPLCs to show the scientific knowledge that we have. Now is the time for Indigenous Peoples to tell the world that we need to take action."

"We all need to have a way of life that has an intrinsic relationship and balance with mother nature,

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ORGANIZATIONAL PROFILE

District Fishermen's Youth Welfare Association (DFYWA), Andhra Pradesh, India

The District Fishermen's Youth Welfare Association (DFYWA) is a community-based NGO that has been working with small-scale fishing communities on the east coast of India since 1992.

Its objectives are to promote access of fishing communities to natural resources and markets, cost-effective technologies and infrastructure, and affordable credit in order to improve their livelihoods. It seeks to do this while discouraging environmentally and socially destructive technologies and practices in fisheries.

In collaboration with several international and national research and

development organizations, DFYWA has undertaken numerous initiatives to disseminate new livelihood technologies, develop skills



and build capacity, both for fishers and post-harvest fishworkers, with positive results. One of DFYWA's core priorities has been to develop sustainable fisheries initiatives to assist fish-vending women, both independently and through collectives.

Such endeavours were frequently followed by the realization that more needs to be done to obtain sustainable outcomes for the fishers and fishworkers. They need research and policy to be made available to them, and policy advocacy efforts to promote more holistic and sustainable support systems. In the long term, DFYWA seeks to develop and strengthen community institutions for more effective participation in policymaking and implementation.

Based in Visakhapatnam, Andhra Pradesh, DFYWA's experienced and well-trained team of field staff help the organization carry out its mission of providing

sustainable livelihood support for small-scale fishing communities.

DFYWA has won several State and national awards for its work on training fishworkers in fish drying, vending and marketing. It conducts awareness raising on fish handling and preservation, and provides support to communities in terms of occupational safety and health, coastal protection and access to markets.

For more: <https://driedfishmatters.org/blog/living-on-the-edge/> and <https://dfywa.wordpress.com/>

Contact:
Arjilli Das (dfywa.ap@gmail.com),
Founder and Executive Secretary,
DFYWA

the human being, and the universe,” said Batzin. “Only then can we truly be seen to be living in harmony with nature.”

In their closing statement at the talks, the IIFB stated the importance of human rights in an agreement to save nature: “It is necessary to recognize, and implement the United Nations Declaration on the Rights of Indigenous Peoples [within the GBF].”

They also pointed out the key requirement for this to be backed up with funding:

“Currently, 1% of the funds available for climate and the environment goes to IPLCs, despite growing evidence that supporting IPLCs directly is one of the most cost-effective measures for conservation. Therefore, it is necessary to increase funds to support our strategies. We require flexibility and specific guarantees to access resources directly, that the allocation of funds prioritizes the recognition and respect for indigenous land, territories and the strengthening of governance.”

“IIFB firmly believes that for this framework to be successful and inclusive, it will require further improvements, and the full and effective participation of [IPLCs] in the process leading up to COP 15 and beyond. [We] are looking at this process with the hope that the GBF will be truly transformative and will recognize the contributions and rights of Indigenous Peoples to protect Mother Nature.”

“A human rights based approach is crucial to a successful Global Biodiversity Framework,” said Lucy Mulenkei, Co-Chair of the IIFB.

“Such an approach would mean that biodiversity policies, governance and management do not violate human rights, and those implementing such policies should actively seek ways to support and promote human rights in their design and implementation,” she said.

The effective implementation of a real human-rights-based approach requires a more holistic approach than currently suggested in the draft of the framework. It requires strengthening and improvements across all aspects of the framework but especially regarding: goals, targets, monitoring framework, enabling conditions, National Biodiversity Strategies and Action Plans (NBSAPs).

“The future of any successful framework requires the integration of human rights across all issues—not just in environmental agreements, but more holistically, in agriculture, fisheries, tourism, and our entire ways of life,” said Mulenkei.

Source: <https://www.scoop.co.nz/stories/WO2203/Soo302/indigenous-peoples-local-community-reps-issue-a-final-plea-to-world-leaders-at-biodiversity-framework-negotiations.htm>

INLAND FISHERIES

Mekong under threat: MRC

The Mekong River Commission (MRC) called for urgent action to protect the river for the benefit of the millions of people

throughout Southeast Asia who depend on it. The Mekong is severely impacted by water infrastructure projects and climate change, it said.

In March, the MRC issued a 174-page report highlighting its major accomplishments and actions taken, and giving key indicators that have raised region-wide awareness of how development and increasingly severe flooding and drought all impact the Lower Mekong River Basin.

“With the vital river now impacted by both water-infrastructure projects and climate change, the new report calls for urgent ‘water diplomacy’ to protect Southeast Asia’s largest river and promote sustainable development for the millions across the region,” the MRC said in a 15 March press release.

The MRC confirmed that these activities have spurred its member countries—Cambodia, Laos, Thailand and Vietnam—to take unprecedented steps along with their two neighbours, upriver China and Myanmar.

The report recommends that accurate data and scientific knowledge should drive planners and policymakers in their decisionmaking and execution.

The press release quoted Prawit Wongsuon, chairperson of the Thai National Mekong Committee, as saying: “In the Lower Mekong River Basin, the impact of climate change presents profound implications for the social and economic well-being of our constituents, and represents an ongoing challenge for policymakers”.

He said that water diplomacy was increasingly important in the region,

particularly with respect to the growing number of hydropower and other water infrastructure projects and development activities.

The report cited the specific example of its Regional Flood and Drought Management Centre, which, in 2017, was expanded to include drought forecasting. This capability to forecast has since helped to save lives and protect property of the people living in the Basin.

According to the report, one thing that is particularly noteworthy is the improved forecasting, which, it said, is the product of deepening regional relationships, especially with Beijing. For the first time, China has agreed to share its dry-season hydrological data.

In 2021, the MRC and ASEAN launched the Water Security Dialogue to promote innovative solutions to emerging water security challenges.

So Sophort, secretary-general of the Cambodian National Mekong Committee, could not be reached for comment on 15 March.

Ro Vannak, co-founder of the Cambodian Institute for Democracy, said the Mekong River is an important source of livelihoods and economic activity in Southeast Asia. The river is home to the world’s largest freshwater fisheries industry, and is critical to food security in the region.

The Mekong River is a huge biodiversity habitat that provides protein for animals and the more than 60 mn people living along it, he said.

Source: <https://www.phnompenhpost.com/national/mekong-under-threat-mrc>

INFOLOG: NEW RESOURCES AT ICSF

Publications and Infographics

Handbook on Convention on Biological Diversity (CBD) for small-scale fishing communities by ICSF and Crocevia

<https://www.icsf.net/resources/handbook-on-convention-on-biological-diversity-cbd-for-small-scale-fishing-communities/>
This Handbook, developed by Ramya Rajagopalan, describes marine and aquatic biodiversity components in the CBD

Video: Why is biodiversity important for small-scale fisheries: New Handbook by ICSF and Crocevia

<https://www.icsf.net/resources/why-is-biodiversity-important-for-small-scale-fisheries/>

This video, developed by Tushar Menon and Basim Abu, introduces the CBD Handbook developed by ICSF and Crocevia.

A review of governance and tenure in inland capture fisheries and aquaculture systems of India by Nachiket Kelkar and Robert I. Arthur

<https://www.icsf.net/resources/governance-of-inland-fisheries-and-aquaculture-in-india-situation-paper-in-the-context-of-india-draft-national-inland-fisheries-and-aquaculture-policy-and-the-fao-ssf-guidelines-2/>

This ICSF-FAO situation paper is a background document that summarizes the diversity, complexity and relevance of tenure systems, rights and the institutional management of inland fisheries in India.

Methodological guide for mapping women's small-scale fishery organizations to assess their capacities and needs—A Handbook in support of the implementation of the SSF Guidelines

<https://www.fao.org/3/cb8235en/cb8235en.pdf>

This methodological guide is a tool that can be used in efforts to implement the SSF Guidelines, particularly in relation to Chapter 8 ("Gender Equality").

The IPCC 6th assessment report assesses the impacts of climate change 2022: Impacts, Adaptation and Vulnerability

<https://www.ipcc.ch/report/ar6/wg2/>

The IPCC Sixth Assessment Report assesses the impacts of climate change, looking at ecosystems, biodiversity, and human communities at global and regional levels.

Blue Justice: Small-Scale Fisheries in a Sustainable Ocean Economy by Svein Jentoft et al.

<https://link.springer.com/book/10.1007/978-3-030-89624-9>

The present copious volume corresponds with international concern (as reflected, for example, in the SDGs) about waxing societal inequalities between and within nations.

Film: What is the value of African artisanal fisheries?

<https://www.youtube.com/watch?v=s81PmzzhOUc>

For thousands of years, artisanal fisheries have been the pillar of coastal communities in Africa.

FLASHBACK

From Rhetoric to Reality

As the implementation of the SSF Guidelines gets under way, it is imperative to lobby for policies and processes that will empower small-scale fishing communities

The Thirty-third Session of the Committee on Fisheries (COFI) of the Food and Agriculture Organization of the United Nations (FAO), held in Rome in July 2018, proved to be a watershed for small-scale fisheries. This COFI discussed, among other things, several exciting initiatives for the implementation of the SSF Guidelines.



These initiatives, focusing on men and women from small-scale artisanal fishing communities and indigenous peoples, were reported by delegates from both developed and developing countries, including Small-Island Developing States (SIDS). It was gratifying to note that some countries that had not been so enthusiastic during the negotiation stage, are now actively promoting the SSF Guidelines at various levels.

Considerable support was expressed for the civil society-initiated SSF Guidelines Global Strategic Framework (SSF GSF) to facilitate interaction between COFI Members and interested State and non-State actors to promote the implementation of the SSF Guidelines at all levels. Significant enthusiasm was shown in celebrating 2022 as the "International Year of Artisanal Fisheries and Aquaculture", as proclaimed by the United Nations General Assembly, and in developing a road map towards it. There was eagerness to meet the Sustainable Development Goal 14.b to provide access for small-scale artisanal fishers to marine resources and markets. In addition, delegates solidly backed the proposal to establish a new sub-committee on fisheries management under COFI, also with a focus on small-scale fisheries.

We hope these initiatives to strengthen small-scale fisheries will transform into policies and processes that will empower small-scale fishing communities and indigenous peoples who are dependent on small-scale fisheries for their life, livelihood and cultural wellbeing, at both the local and, particularly, the national level.

Evidently, now is the time to move from rhetoric to reality. We hope there will be global support to assist small-scale fishing communities and indigenous peoples to address, in a coherent and consistent manner, local and national threats challenging their existence. In this connection we do need to be cautious that the economic, social, cultural and environmental conditions essential for the wellbeing of small-scale fishing communities and indigenous peoples are not forgotten. Prudence is required to ensure that small-scale fishing communities are understood to be integral to small-scale artisanal fisheries, and that the SSF Guidelines implementation process protects their interests in all time frames across the world.

—from SAMUDRA Report, No. 79, August 2018

ANNOUNCEMENTS

MEETINGS

ICSF's Bangkok workshop:
International Workshop "IYAFA 2022-Celebrating Sustainable and Equitable Small-scale Fisheries: Asia", from 5 to 8 May 2022
www.icsf.net

The workshop is an opportunity to take stock of how the SSF Guidelines are being implemented across the world to eradicate poverty, ensure food security and nutrition, and promote the tenure rights of small-scale fishing communities. The

workshop will include 30 participants from community-based organizations, national and international fishworkers' organizations, women in fisheries networks, and civil society organizations from 12 South and Southeast Asian countries - including Thailand, Sri Lanka, India, Myanmar, Bangladesh, Indonesia, Malaysia, Pakistan, Philippines, Cambodia, Laos and Vietnam.

4th World Small-Scale Fisheries Congress (4WSFC)-Asia Pacific: Building forward better, 10 to 13 May 2022

<https://www.4wsfccongress.com/asia-pacific-may-2022>

Under the theme 'Building Forward Better,' the congress aims to discuss bold, innovative ideas and strategies needed for SSF to rebalance, rebuild and revitalize.

WEBSITES

ICSF's Digital Archive

<http://icsfarchives.net/>

ICSF's Archive/ Digital library contains collections of more than three decades,

built up since ICSF's Documentation Centre was set up in Chennai in 1999 with the twin objectives of gathering all kinds of information pertinent to small-scale fisheries and making it available to all stakeholders in an easy and rapid-access format. Currently, the digital archive has over 2,000 original documents and more than 12,000 curated links.

ICSF's website

<https://www.icsf.net/>

ICSF's redesigned website is now live online.



Endquote

The Fish

*Although you hide in the ebb and flow
Of the pale tide when the moon has set,
The people of coming days will know
About the casting out of my net,
And how you have leaped times out of mind
Over the little silver cords,
And think that you were hard and unkind,
And blame you with many bitter words.*

— William Butler Yeats

