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A Situational Analysis of Small-Scale Fisheries in Indonesia: From Vulnerability to Viability

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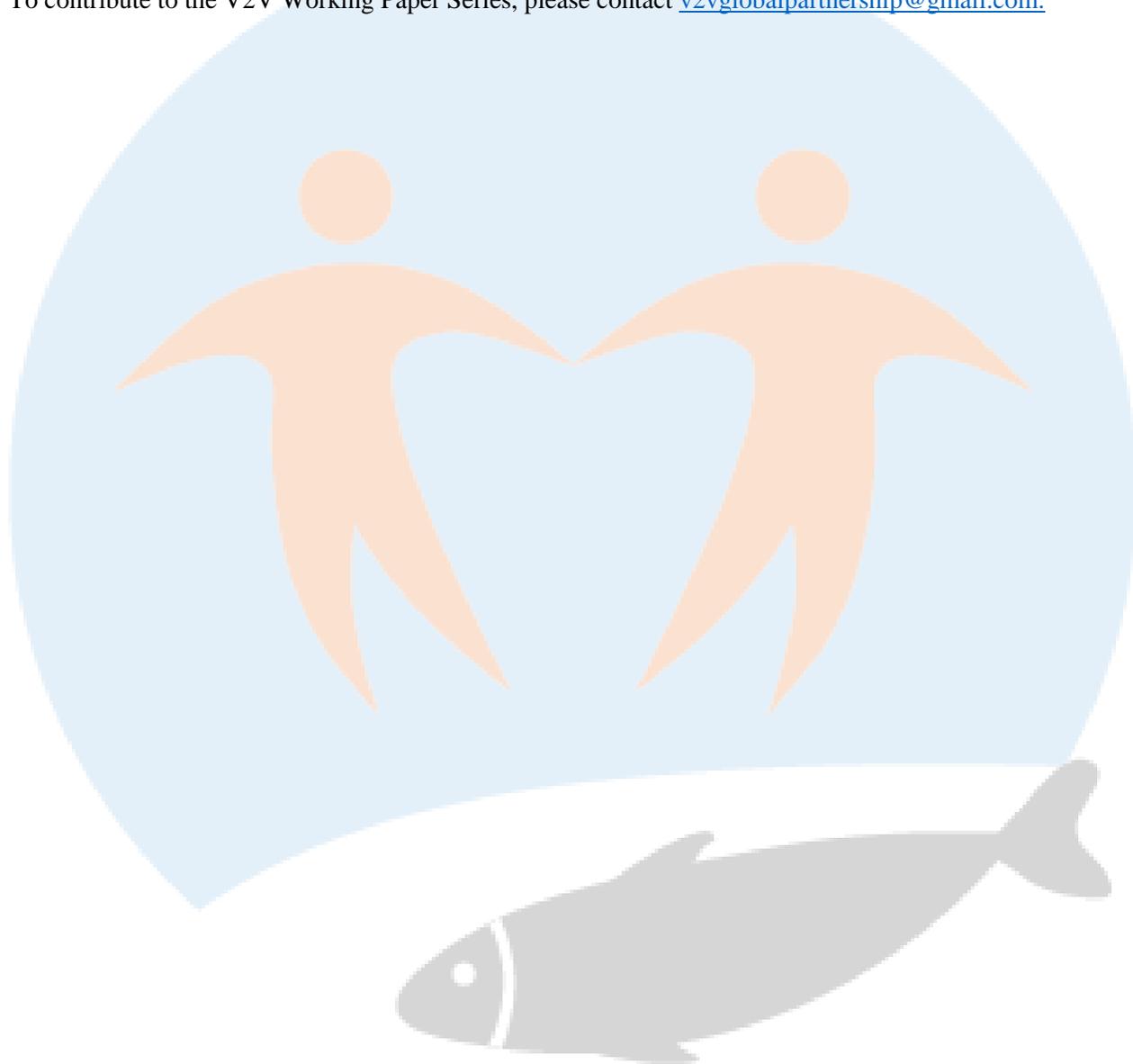
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V2V Global Partnership “Working Paper Series” aims to facilitate the exchange of ideas, mobilize knowledge and generate broad-based discussions on vulnerability-viability themes within the context of small-scale fisheries. The Working Paper Series will provide a collaborative and interactive platform for academics, practitioners, representatives of civil society, and individuals interested in making written contributions to the theoretical, methodological, practical, and policy aspects of small-scale fisheries, both locally and globally. To contribute to the V2V Working Paper Series, please contact v2vglobalpartnership@gmail.com.



A V2V Situational Analysis of Small-Scale Fisheries

Small-scale fisheries (SSF) are an important economic resource, both at the local and global level; their depletion has ramifications on fundamental aspects of life, spanning from food security to society's wellbeing and culture. On the global scale, SSF provide food security, and a source of livelihoods and income for more than 100 million people. The objective of the V2V Situational Analysis is to build a global perspective on key vulnerabilities and opportunities associated with SSF viability across six countries in Asia (Bangladesh, India, Indonesia, Japan, Malaysia, Thailand) and in six countries in Africa (Ghana, Malawi, Nigeria, Senegal, South Africa, Tanzania). Each country level situational analysis identifies the key social-ecological drivers of change, emerging issues and challenges confronting SSF, and important policy and governance concerns.

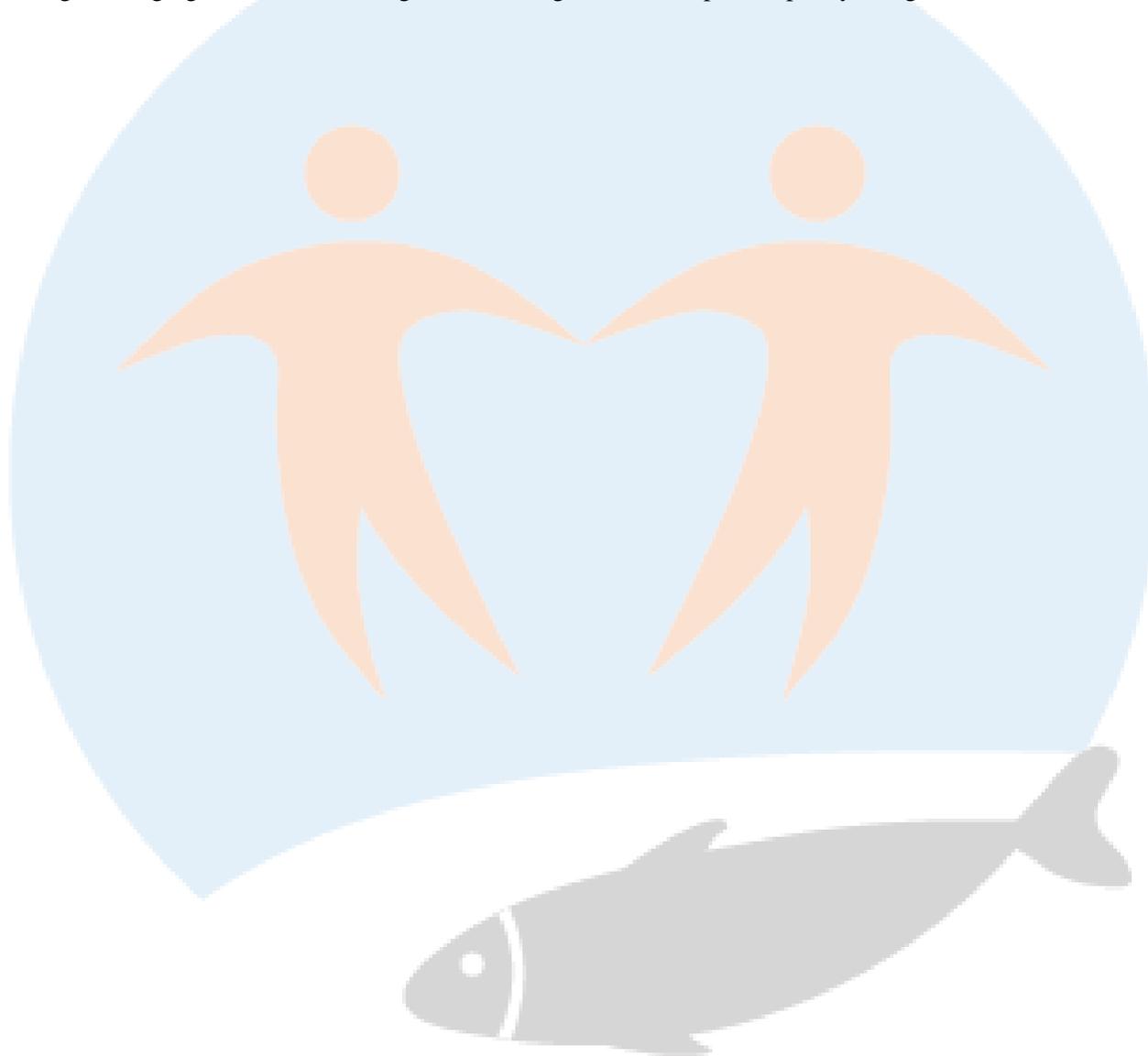


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A Situational Analysis of Small-Scale Fisheries in Indonesia: From Vulnerability to Viability

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1. Introduction

This situational analysis provides an overview of the literature and secondary data on small-scale fisheries (SSF) in Indonesia. The Indonesian V2V team covers these topics comprehensively by looking at fishing communities, coastal communities, and small-scale fishery products, throughout the SSF value chain. We highlight the urgency of discussing a transition from vulnerability to viability in SSF in Indonesia.

Indonesian fisheries are valued for their role in economic growth as well as for providing food security and employment. More than 80% of Indonesia's fish catch comes from small-scale fisheries or SSF (Adhuri et al., 2016). In 2016, Indonesia even became the second country after China to contribute the most to the world's fishery production. According to the 2030 United Nations sustainable development goals, fostering access to rights and dealing with poverty are crucial measures to foster more viable small-scale fisheries, which are currently facing a variety of challenges. One of the core challenges faced by SSF is the decline in fishery production caused by overfishing. The decrease in production certainly affects fishers' income, resulting in poor welfare and increased poverty. Poverty is still a reality in Indonesia, in part due to failure of conventional fisheries development, which affects all actors across the SSF value chain.

In addition to poverty, climate change has caused rising temperatures, sea level rise, coastal erosion, increased extreme weather conditions and changes in weather patterns. All of these have affected the stability of fishery production and changes in fishing season (Rindayanti et al., 2013). The challenges faced by small-scale fisheries are not only limited to the availability of fish resources. In fact, significant challenges are also posed by inconsistent government policies, high community failures (i.e., lack of community organization), environmental degradation, and local and national institutional failures. The issue of climate change and environmental degradation itself also pose a threat to the welfare of fishers' lives in coastal areas due to coastal abrasion, mangroves and soil degradation (Isa et al., 2020), among other consequences. All these factors contribute to small-scale fisheries' vulnerability in Indonesia.

Finally, unsustainable and poorly regulated fishing practices, poor enforcement and governance, degradation of essential fish habitat, and external stressors such as climate change, severely threaten the coastal fisheries on which Indonesia's coastal fishing communities depend. Declining fisheries destabilize nationwide development efforts and pose a material threat to Indonesia's economy, as well as the food security and livelihoods of millions of people. As a result, SSF are among the most impacted sectors with severe consequences to coastal fishers and their families and communities.

2. Meaning and status of small-scale fisheries

2.1 Small-scale fisheries contribution to Indonesia

As the world's largest island country — a vast archipelago made up of 17,000 islands with over 34,000 miles of coasts and hundreds of distinct native ethnic and linguistic groups, Indonesia is endowed with natural richness. It has the world's second longest coastline (see Figure 1), one of the world's largest tracks of mangroves, and the second-largest area of coral reefs in the world. In fact, 97% of Indonesia's coral reefs are located within territorial waters (0-12 nautical miles from shore).

The coastal fishers and fisheries that depend on these essential natural assets form a key part of the nation's cultural heritage and economy. 80 percent of Indonesia's 2.4 million fishers are small-scale coastal fishers, using small boats and simple gear to fish in nearshore areas for food and income. These fishers account for over half of Indonesia's total wild fish production. Fishing in Indonesia has a large role to play in the production of world fish catch.

Figure 1

Location of Indonesia

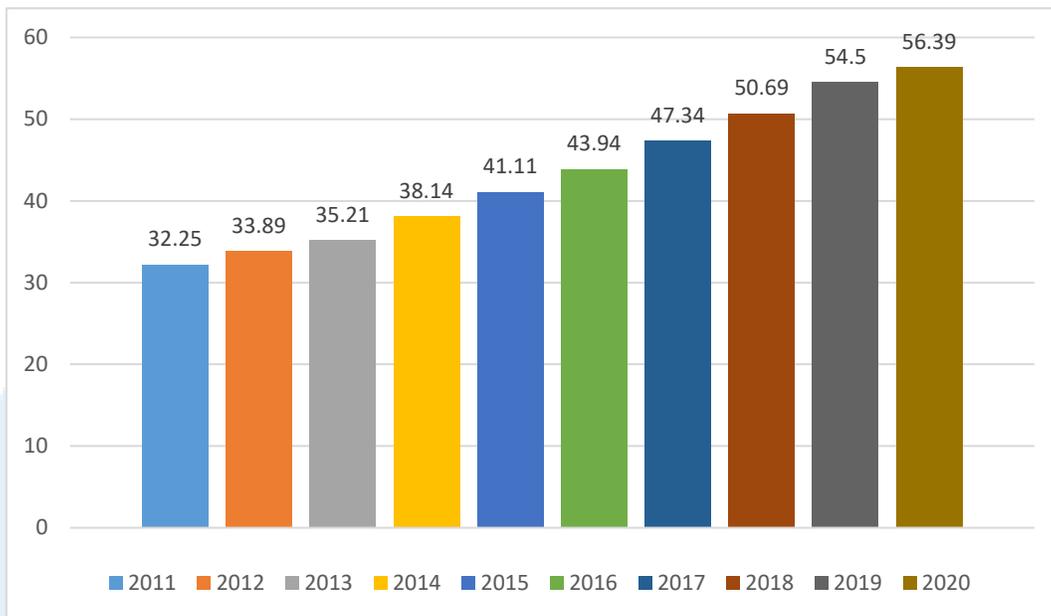


Source. Adapted from Triastutia and Soewarno (2015).

The Food and Agriculture Organization of the United Nations report (FAO 2018) states that Indonesia has contributed to the production of world catch by 7.19% (i.e., 6.54 million tons) in 2016, one step below China with 19.29% (i.e., 17.56 million tons). The condition of the fishing industry in Indonesia in general is still dominated (more than 80%) by small-scale fishing (with a fleet < 10 GT) and became the livelihood of millions of households in coastal areas (Kusdiantoro et al., 2019a). Key issues related to SSF in Indonesia require governance and policy reforms, incorporating a balance between human, resource and ecosystem elements. Key stakeholders in Indonesian SSF are fishers, fish processors, fish traders, local leaders (village heads), political leaders, beach village committees, NGOs, CSOs, government institutions (MDAs), and researchers. Figure 2 below shows the progression in fish consumption in Indonesia from 2011 to 2020.

Figure 2

National Fish Consumption 2011-2020

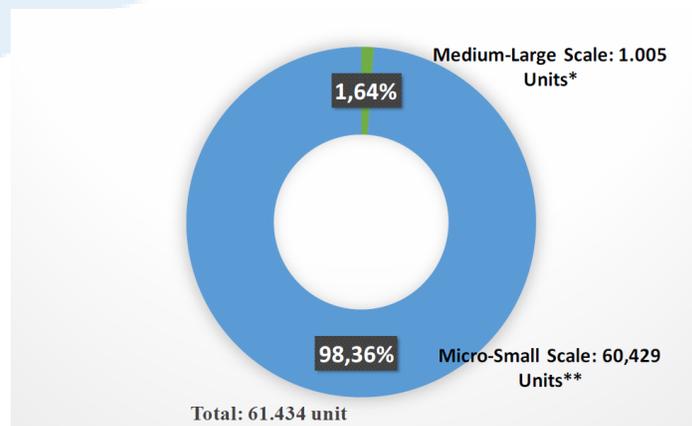


Source. Adapted from Ministry of Marine Affairs and Fisheries of the Republic of Indonesia (2021).

The report of the Ministry of Marine Affairs and Fisheries (KKP) showed that the national fish consumption rate in 2020 amounted to 56.39 kg/capita. This rate was up 3.47% compared to the previous year which amounted to 54.5 kg/capita. Maluku was listed as the province with the largest amount of fish consumption in Indonesia in 2020, which was 72.76 kg/capita. Southeast Sulawesi was in the next position with the amount of fish consumption as much as 71.13 kg/capita. Over the past 10 years, national fish consumption has tended to rise. Figure 3 below shows that fish processing in Indonesia is dominated by micro-small-scale units corresponding to 98.36% of the total for 2018.

Figure 3

Fish processing unit of Indonesia, 2018



Source. Adapted from KKP (2018).

2.2 Small-scale fisheries profile in Indonesia

SSF in Indonesia encompass a wide variety of capture fisheries, aquaculture and mariculture activities, employing labor intensive harvest, processing and distribution technologies. Fisheries have an important and strategic role in Indonesia, it can be seen from at least three roles, namely a source of economic growth, a sources of food (especially animal protein, and a provider of employment (Kusdiantoro et al., 2019a). According to the FAO (2014), Indonesian small-scale production reached to 95% of the total national fisheries.

In Indonesia, small-scale fisheries have an unclear definition. Referring to the new Indonesia regulation (No. 7/2016 about Protection and Empowerment of Fishermen, Fish Raisers and Salt Farmers), Indonesian small-scale fisheries refer to fishers who catch fish for their daily needs, without or with fishing vessels less than 10 gross tonnage (GT). While another regulation, the Indonesian Fisheries Law No. 45/ 2009, defines small-scale fisheries as fishers who are fishing for their daily needs without or with boats under 5 GT (see figures 4 and 5). This mismatch in regulations and the unclear definition of small-scale fisheries and their daily-need catches, make it difficult to track SSF in national statistics (DJPT, 2015).

Fishers in Indonesia either start in the early morning and finish by late afternoon or start late in the night and finish in the early morning, daily. They usually work in pair in one boat. Their basic knowledge on fishing techniques is based on their ancestral experiences (Ayunda & Anna, 2015).

Figure 4

Small-scale fishing boat used in Pati Regency, Central Java Province



Photo credit: The photo was captured by Ika Suciati in 2019.

Figure 5

Small-scale fishing boat used in Bali Province.



Photo credit. The photo is captured by I Gusti Lanang Tantra in 2020.

Indonesia is rich in fishery resources. Before 1998, in Indonesia, there were only a few regulations in fish resources exploitation. During the reformation stage in politics, Indonesia government has focused more strongly on developing this sector to support national income. Many policies had been applied to reform fishery rules until 2014, when the newly elected president has published a new doctrine “Indonesia as the World Maritime Axis” to stimulate the acceleration in the marine development (Kominfo 2016). To achieve this, the government has used 5 pillars, including: revitalization the maritime culture, managing maritime resources for food security, developing maritime infrastructure, improving maritime diplomacy, and boosting maritime defense capacity (Kominfo, 2016). To adopt this new dogma, Marine Affairs and Fisheries Ministry has developed three concepts in sovereignty, sustainability, and prosperity, i.e., fishers are free to take fish in their own country, sustainability secure the future livelihood, and prosperity for viable life.

Regulation of the Minister of Marine Affairs and Fisheries No. 22 of 2015 (Permen KP No.22/PERMEN-KP/2015) prohibits the use of certain fishing gears common in Indonesia (e.g., *hela*, *trawlers*, *cantrang*). They need to ensure that fishing equipment used to catch fish complies with regulations set by the Ministry of Marine Affairs and Fisheries. As with its existence, its affordability and sustainability are very important for fishermen and their families as well as for the Indonesian fishing industry (Triastuti & Soewarno, 2015).

According to President Joko Widodo, Indonesia's marine and fishery wealth has not been utilized optimally. He argues that "70 percent of two-thirds of Indonesia's area is the ocean. Its potential is huge to be a driver of the national economy. The problem is the potential has not been utilized to the maximum by the community nowadays." Indonesia, by far the biggest archipelagic state, faces enormous challenges in all aspects of IUU fishing and addressing those is one of the current Indonesian Government's top priorities (Chapsos et al., 2019). Indonesia's losses due to illegal, unreported, and unregulated fishing (IUU fishing). Statistics show that of all IUU fishing practices in the world, 30 percent occur in Indonesia (Munawar, 2018).

The most common illegal fishing activity in the Indonesian fisheries management area is the theft of fish by foreign fishing vessels without a permit and without clear documents (Abdul, 2016). Illegal fishing in Indonesian seas has caused huge losses, especially for small-scale Indonesian fishers, where their fishing grounds have been disrupted by foreign vessels, especially boats and ships do not have proper permits. In order to support small-scale fishers and realize community welfare, the Government of the Republic of Indonesia takes a firm policy to eradicate illegal fishing through the sinking of illegal fishing vessels (Munawar, 2018). Caught fishing in Indonesian territory without proper documentation and permission is forbidden by the Indonesia's Law on Illegal, Unreported and Unregulated Fishing (IUUF) No. 45/2009, Pl. The slogan of sink-the-vessels action famously known as "Tenggelamkan" (which means "Sink It!") indicated the surging attention and the sense of emergency in Indonesia's IUUF problem. This action attracts worldwide attention when it successfully pushes away fish-stealing vessels from Indonesian waters. Based on a study conducted by researchers from the University of California, Santa Barbara (UCSB), Indonesia's ocean biomass index has doubled since 2014 (Setyowati, 2016). This finding confirms that Indonesia's policy have reduced the rate of IUUF in Indonesia by 25 % since its inception (Cabral et al., 2018).

In Indonesia, it is also common to observe small-scale fishers migrating from one island for periods of several months to follow the seasonal migration of the target species. Fishing locations of small-scale fishers are observed to switch between different islands, provinces and places within the same island, to follow their target species (Halim et al., 2018). Small-scale fishers land their catch predominantly at small wooden jetties or directly on the beaches along the coastal villages throughout Indonesia where no fisheries authorities are present, which makes the recording of catch statistics very challenging and contributes to the unreported landings in Indonesia and the region (Teh & Pauly, 2018).

Indonesia recognizes traditional fishers. Each region has 'customs' or 'regulations that must be obeyed' in their respective regions. For example, in Java it is known as 'sea alms' (like a ceremony at sea) as a form of gratitude for fishermen to God. The 'sea alms' tradition is carried out regularly every year in the month of Sura (the first month of Javanese reckoning) (Abdurrohman, 2016; Suryanti, 2017). In addition, certain fish species are forbidden to be caught in specific areas due to myths or the prohibition of traditional leaders, especially along the coasts of Maluku Province and West Papua Province. Fishing using poisonous plants and chemicals, explosives, and small mesh lift-nets is prohibited under both government and adapt regulations.



Figure 6

Sedekat Laut in Sidoarjo district



Source. Photo retrieved from www.eljohnnews.com.

Figure 7

Sedekat Laut in Pacitan



Source. Photo retrieved from www.instagram.com/aboutpacitan

In general, small-scale fishers are vulnerable as they have high exposure to risks, shocks, stress, and are prone to food insecurity (Allison & Ellis, 2001). The threats to the small-scale fishing occupation comes from external sources, such as the risks from extreme weather, natural disaster and market failures and internal sources, such as access to food stores, and support from kin or community or government support programs (Allison & Ellis, 2001). To cope with their vulnerability, small-scale fishers work in the farming, trading, and construction sectors (Wasak, 2012). In addition, the family members, including mothers, wives and children, are involved in activities such as reef gleaning and post-harvest to bring additional income for the family (Fitriana & Stacey, 2012). Pre-harvest work varies from repairing nets, preparing food and logistics before a trip. Meanwhile, post-harvesting includes handling the fish, processing the catch, and ultimately selling fish. Women also play essential roles in the economic chain of fisheries through financing the fleet, recording catches and bookkeeping, and marketing the fisheries products. Some women even go out fishing. Four percent of fishers are women, and many work with non-motorized boats, and more are not legally identified as fishers. Women's contribution to fisheries help alleviate poverty. For example, women in Barrang Caddi Island, South Sulawesi, organize themselves in business groups and sell a variety of seafood-based products. The existence of this group has greatly helped create livelihood for families and contributes to the local economy.

Acknowledging and including women in the fisheries management is essential for a sustainable and equitable fishing industry. For example, in Kaur Regency, Bengkulu, octopus fisherwomen record catch and monitor extraction to reduce exploitation for octopus. Meanwhile, in Tanakeke, South Sulawesi, women seaweed growers voluntarily work of rehabilitate their village's mangrove ecosystem.

Figure 8

Fisherman's wife in Tegal City is processing fish



Photo credit. The photo was captured by Hapsari Ayu Kusumawardhani, 2018.

Figure 9

Womangrove! A collective of women who protect and revitalize the mangroves of the Tanakeke Islands



Source. Photo retrieved from www.news.mongabay.com

Small-scale Indonesian fishers have been introduced by the Indonesian government with modern technology to help them, such as GPS, fish finder, and sonar. This will hopefully make them more efficient (Nugroho et al., 2021). The latest technology being promoted by the Government of Indonesia for small-scale fishers is the application "Nelayan Pintar" or Nelpin app. The Nelpin app information system is a system developed by the Ministry of Marine Affairs and Fisheries (KKP) as one of the Quick Wins programs which is the embodiment of one of the 9 priority agendas national development of the work cabinet 2014 - 2015 (Nawacita, i.e., the nine development priorities according to the Indonesia government) (Pranowo et al., n.d.). The Nelpin app is a combination of various android-based information applications, ranging from Fishing Area Forecast Map (PPDPI), aquatic fertility, weather information, to the latest fish price information, fuel forecast features, and helpdesk. The technological application is adapted to the needs of fishers. This Nelpin application is expected to change the paradigm of fishers from looking for to catching fish at the sea. The implementation of the Nelpin application is expected to be a tool to determine fishing ground in fishing activities, this will surely positively affect fishers' income because with the app helps to identify the location of fish stocks, so that fishers do not need to waste fuel to find fishing locations and of course fishing activities become more environmentally friendly.

In some areas of Indonesia, especially those with natural resources for tourism, small-scale fishers also play a role in tourism. In addition to catching and cultivating fish, fishing groups can also carry out other activities such as activities in the tourism sector (Sihombing & Nugroho, 2018). They become tour guides, lend their boats to tourists, they can even speak English fluently to communicate with foreign tourists. Tourism is an activity widely available in the province of Bali. Soon it is predicted that the same will happen to fishers in Raja Ampat (West Papua Province), Labuan Bajo, and Komodo Island (East Nusa Tenggara Province).

<i>Summary of small-scale fisheries profile in Indonesia</i>				
Terms used in SSF	Gear types ¹	Vessel types	Ecosystem types	Ecosystem detailed types
<ul style="list-style-type: none"> ● Coastal ● Inshore ● Small boat ● Small scale 	<ul style="list-style-type: none"> ● Gillnets ● Hooks and lines ● Lift nets ● Recreational fishing gears; ● Seine nets ● Surrounding nets; ● Traps 	<ul style="list-style-type: none"> ● Canoe ● Dory ● Fiberglass ● Outrigger ● Piroque ● Raft ● Wooden 	<ul style="list-style-type: none"> ● Marine ● Brackish 	<ul style="list-style-type: none"> ● Archipelago ● Beach ● Coastal ● Coral reef ● Deep sea ● Mangrove ● River ● Estuary
¹ Most parts of Indonesia SSF have stopped using poison/explosives and trawlers because they are prohibited.				

3. Social-ecological changes and key drivers

In this section, we provide information on key social-ecological changes and key drivers of change in respect to SSF vulnerabilities and viabilities in the context of Indonesia. First, climate change drives tidal waves, erratic wind direction, rainfall and unpredictable rainy season, all of which have an impact on fishing activities. Consequently, these factors all have effects on fishers' income and livelihood. Despite the fact that climate change increases the frequency of catastrophic natural disasters and extreme weather conditions, making it dangerous to perform fishing, small-scale fishers still carry out fishing to meet their daily needs. SSF in Indonesia usually uses small boats, or what is often called an outboard motor. The outboard motor is a small engine with a maximum crew of 5 people, and it cannot withstand large waves. Therefore, during bad weather with strong winds and big waves fishermen operating small boatd will choose not to go to sea for their safety Law of the Republic of Indonesia Number 45 of 2009 Article 1 number 11.

Second, production infrastructure for small-scale fisheries is limited. For example, availability of fuel station for fishers (i.e., SPBN) is still far from ideal, so fishers have difficulty getting affordable fuel needed to operate their boats. Even many small fishers are forced to buy retail fuel oil at a higher price (Kencana, 2020). News about several petrol stations (SPBU) in coastal areas often experience shortages of stock, especially for premium gasoline and subsidized diesel, so people find it difficult to get subsidized fuel oil (Rizal et al., 2021). Based on these problems, information on the amount of fuel at the port is needed so that fishers can have better access to fuel. The pattern of fuel consumption in a port area can be influenced by the number and type of fishing fleets actively operating at the port (Shafira & Kandi, 2021). Another example, the availability of electricity and clean water for the establishment of an ice factory in the fishing settlement area is also very limited.

Third, fishers and fish cultivators still have poor education. In fact, many fishers only have primary school education. In addition, most fishers working in SSF are getting older, with an average age of 40 years old (Kusumawardhani & Susilowati, 2021; Nugroho et al., 2021). In addition, the insurance for fishers is still low, which is a concern for the Indonesian government that is trying to change it. Coastal communities commonly depend their income on marine resources with fishing products as the main income. Their work is quite risky, as fishing is inextricable from work accidents, loss of life, loss of boats and equipment, personal health and safety, and safety of ship crews (Mustikasari & Relawati, 2021). With insurance, fishers are expected to avoid the risk of loss due to bad weather at sea, ship accidents, polluted marine environmental conditions, all of which can result in accidents for fishers, physical disabilities, and can ultimately have an impact on the reduction or loss of income used to support families (Rani, 2016).

Fourth, limited production facilities and limited resources (such as fish feed, fishing equipment and vessels) result in very high production costs. Fish feed is still very dependent on factory feed, superior seeds and brood stock originating from outside of the region, fishing boat prices are getting more expensive due to the difficulty of obtaining raw materials (limited wood availability), and business patterns to spread. This makes sale prices high, decreasing the competitiveness of SSF in the sector. Moreover, the majority of the community's business capacity is small-scale due to limited access to banking and poor knowledge of partnership patterns.

One of the Indonesian government's policies that has generated a lot of reactions is the prohibition of environmentally harmful fishing gear. The Indonesian government officially imposed a ban on non-environmentally friendly fishing gear (API) as of January 1, 2018. The government argued that using unsustainable fishing gear has more disadvantages than advantages. The northern coastal area of Java Island, unsurprisingly, an area subject to overfishing by use of harmful gear such as *cantrang*. For this reason, it is inadvisable to use more environmentally friendly gear.

Fishers who use *cantrang* fishing gear are estimated to lose money because their income from fish catches has decreased drastically; secondly, the effect of the ban on *cantrang* has a chain not only on fishers but also on fish auction companies and the surrounding economic activities (Hanum & Sihidi, 2021). Even so, there is a contradiction to the fishers' perception. Another side, they reject the policy of the Minister of Maritime Affairs and Fisheries Regulation Number 2 of 2015 which prohibits trawl because they don't consider trawling a destructive fishing gear. On the other hand, others consider that trawl can adversely affect the availability of fish resources and the aquatic environment. This shows that fishers do not yet understand that there is a relationship between the low selectivity of *arad / cantrang* and the unfriendly environment of the fishing gear they use (Hakim et al., 2021). The Indonesian government is currently building an understanding on these topics, including introductory activities that need to continue to be done so that trawl fishers can accept the replacement of environmentally friendly fishing gear and build fishers' resilience to the diversion of fishing gear to a more environmentally friendly one,

4. Emerging issues and challenges

4.1 Emerging issues

In this section, we address the key emerging issues and challenges facing small-scale fisheries in Indonesia.

4.1.1 Uncontrolled illegal activities at sea

Fish resources usually have a slow regeneration capacity. If the exploitation far exceeds the ability of the resource to regenerate, it results in the resource becoming non-renewable (Wuryandani & Meilani, 2011). Several studies have found evidence that the exploitation rate has exceeded the optimum level of many fish stocks in Indonesia, indicating overfishing, presumably due to the amount of the captured fish in Indonesia (Hakim et al., 2021; Khatami et al., 2019). Overfishing can occur due to a large number of fishers operating in an area (Khatami et al., 2019); and found many cases of IUU so that the decline in fish resources is accelerating (Suherman et al., 2020). Moreover, the use of fishing gear that damages the environment and causes an increasingly massive decline in fish resources (Nababan et al., 2020; Wahyuningrat et al., 2018) is another vulnerabilities to fisheries in Indonesia.

4.1.2 Fisheries conflict

Fishery conflicts in Indonesia are caused by several reasons, including: i) unclear maritime boundaries; ii) social injustice and distribution of resources due to unfair marine resource management regimes; iii) the use of new fishing technology threatens the catch of local fishermen; iv) due to illegal, unreported, and unregulated (IUU) fishing by foreign or domestic vessels due to differences in fishing gear (Kusdiantoro et al., 2019b).

4.1.3 Environmental degradation

Environmental degradation both from human activities and from nature greatly affects the production of fish catches and, thereby, fishers livelihoods. Climate change resulting in weather uncertainty also affects fishing activity as it becomes difficult to predict the best time to go in the sea. Climate change also causes flooding which may disrupt fishers homes, causing the lives of coastal communities, especially fishers to become threatened (Nissa', 2019).

4.1.4 The low human capital of small-scale fishing communities

Many studies have ignored the importance of education in fishing communities. According to (Chapsos et al., 2019) lack of education is related to illegality, for instance due to lack of information. Education can help to improve fishers understanding of rules and regulations, as well as their potential benefits to SSF. In addition, better education can also improve people's access to alternative jobs.

4.1.5 The poverty of small-scale fishing communities

Indonesia is a country that has the third-largest fishery production in the world. Unfortunately, high fishery production is not in line with fishers' welfare. Based on the study conducted by Nissa' (2019) the majority of fishers in Indonesia are still in poverty because their income cannot cover their daily expenses. Meanwhile, according to Cahyagi & Gurning (2018) poverty among fishers in Indonesia is multidimensional because it includes other aspects besides income, including difficulty in getting access to fuel, bait, and fishing gear. At the same time, Indonesian fisheries are under threat due to the degradation of the marine ecosystem and overfishing.

4.1.6 Low financial access

Fishers are a type of livelihood that is closely related to the need for financial capital to increase access to a decent life such as savings, credit, and insurance. Considering that the income of small-scale fishers is fluctuating and tends to be low-income. Various types of financial firms are already available but constrained by difficult access because fishing households do not have sufficient information about financial access.

4.1.7 More pro-economic government policies

The development of a blue economy conceptually focuses on creative and innovative investments, including new types of businesses and jobs in coastal areas, which in the end can improve the welfare of the community while still paying attention to environmental sustainability. However, according to Bennett

et al. (2014) the focus on economic production that echoes the blue economy has legalized the privatization of resources from local users, resulting in ocean grabbing. Moreover, resultant pollution from such activities may increase pollution and be harmful to the environment and coastal communities. Several studies have found that coastal tourism in Indonesia causes harm to the environment and threatens the livelihoods of fishers. For example, a study conducted by (Karlina et al., 2018) stated that travel agencies, tourism, and settlements will affect the ecological system, which in the short term showed a balanced impact, both positive and negative (e.g., damage to the seaweed ecosystem). However, without good management, it will cause bad impacts both socially and ecologically.

4.1.8 The impact of the COVID-19 pandemic

The impact of the COVID-19 pandemic in Indonesia on small-scale fisheries was felt when a social restriction policy was implemented due to hampered fish sales. The lockdown policy from March to May 2020 according to Ferrer et al. (2021) affected seafood supply throughout the value chain. Estimates show a 70% reduction in fish supply for hotels, restaurants, and cafes, and a 40% reduction in household fish consumption. During the lockdown, transportation uncertainty and irregularities, lower consumer purchasing power, and business closures (i.e., restaurants, catering, and hotels) forced local traders to sell fish in local markets at much lower prices than before COVID-19. As a result, the income of fishers' households also decrease.

4.2 Emerging challenges

4.2.1 Unclear definition of small-scale fisheries

Before any action can be undertaken, it is necessary to have a clear and functional definition of small-scale fisheries. According to Smith and Basurto (2019), to define SSFs, attention must be given to the size and type of boat, engine horsepower, equipment type, time commitment, catch rates and disposal, environmental knowledge, the significance of fishing as a livelihood, and marginality, among others. Once such definition is drafted in Indonesia, government efforts can be made to support sustainable fisheries management and draft policies to support small-scale fishers.

4.2.2 Implementing government programs that are not implemented properly

Ariadno and Amelina (2016) highlight several factors influencing the implementation of government programs to improve the welfare of small-scale fishing communities including inadequate human resources. They include a diversity of SSF characteristics in each region resulting in different SSF needs of government programs and poor coordination between governmental agencies.

4.2.3 Fishers' awareness of SDI sustainability is low

Society awareness of the principles of conservation of fishery resource management seems very difficult to foster due to urgent short-term economic needs and the diversity of fishers understanding on sustainability and low levels of education, the low enforcement of legal sanctions for violating the rules (Atmaja & Nugroho, 2017).

5. Policy and governance

5.1 Sustainable fishing policy

The decline in fish resources due to the activity of capture fisheries products is a serious concern for the sustainability of fish resources in Indonesia Atmaja & Nugroho (2017) explained that the government had formulated a set of laws concerning norms in the fisheries sector as the basis for the law. The basic norms are contained in the constitution article 33 paragraph (3) of the 1945 Constitution of the Republic of Indonesia, where the earth, water, and natural resources contained therein are controlled by the state and used as much as possible for the prosperity of the people. This basic provision covers a wide range of values, not only covering all sectors of life on land and in the air but also the natural wealth contained therein. The rule of law as an application rule that regulates the field of fisheries normatively includes:

- Regulation Number 19 of 1961 concerning Ratification of Three Conventions of 1958 concerning the Regulation of the Sea,
- the Convention on Fisheries and Marine Products and Development of Free Marine Biodiversity Resources,
- Legislation 5 of 1983 concerning the Indonesian Exclusive Economic Zone (ZEEI), Law Number 5 of 1990 concerning Conservation of Natural Resources and Their Ecosystems,
- Law Number 32 of 2009 concerning Protection and Management of the Environment and Law Number 45 of 2009 concerning Fisheries Exchange Law Number 31 of 2004 concerning Fisheries

In particular, the rules regarding the prohibition of the use of non-environmentally friendly fishing gear are contained in the Minister of Marine Affairs and Fisheries Regulation No. 2/PERMENKEP/2015 concerning the Prohibition of the Use of Fishing Equipment, which consists of Trawls and Seine Nets.

5.2 Community-based fisheries management

Coastal and fisheries resource management policies are long-term strategies and programs to strengthen Indonesia's sustainable economy. Several studies conducted by Campbell et al., 2013; Pomeroy & Andrew, 2011) found that the community-based management model was appropriately implemented in Indonesia. In the context of developing countries, Pomeroy & Andrew (2011) added that the implementation of co-management must be carried out at several levels including the individual level (i.e., individual incentive structure); stakeholders (i.e., stakeholder involvement and local political support); society (i.e., following existing and traditional social and cultural institutions and structures); partners (i.e., partnerships, coordinating board, and agreements); government (i.e., support of government agencies, enabling policies, and laws); external agents; and the overall process (i.e., trust, networking and advocacy, leadership, organization, and financial resources). Co-management has proven capable of encouraging the transition of livelihoods to sustainable fishing practices, reducing destructive fishing, and achieving the protection of life diversity. In addition, the implementation of community-based policies is also complemented by community empowerment through increased knowledge and participation in the planning and management process, and economic support from governments and NGOs.

Implementation of Co-management in Indonesia focuses on community-based management. This means that local communities play a central role in the management of cultural heritage through indigenous knowledge systems. It is because the people of Indonesia have customary rules that bind community activities in addition to government legal rules. Examples include:

- The management of the coastal tourism system in Bali is carried out by collaborating with local residents for the identification and interpretation of heritage sites and the development of strategic planning processes for conservation and tourism activities. (Lukman, 2020).
- Community participation in mangrove rehabilitation management in Demak is able to increase public awareness about the importance of ecosystem rehabilitation to protect rural communities from coastal hazards (Damastuti & de Groot, 2019).
- Dugong habitat management strategy in community based Tolitoli Regency is proper management. Community-based management is based on community knowledge that has an impact on people's attitudes to participate and have awareness of sustainable fisheries management. This form of community-based management is characterized by the presence of a supervisory community group (POKMASWAS) to protect dugong from the hunter and seagrass damage (Amany et al., 2022).
- Coastal co-management in East Timor is effective if it involves the community in resource management. The integration of government policies with indigenous peoples must be adjusted to achieve sustainable management. It is important to have strong community institutions to encourage the realization of ideal co-management (Tilley et al., 2019).

Local communities understand the environment rather than the outside. To integrate community knowledge and local perspectives in the management of appropriate resources to be carried out. Community participation in management also encourages a sense of resource supply to improve a conscious attitude to the principle of sustainability. Conflicts of customary rules and traditional beliefs with legal rules from the government need to be integrated and discussed to reach mutual agreement. In summary community-based management is right to do in managing coastal resources.

References

- Abdul, F. (2016). *Pencurian Ikan Oleh Kapal Asing Di Wilayah Teritorial Indonesia Dalam Perspektif Hukum Positif Di Indonesia*. 4(1), 156–164. <https://doi.org/10.31219/osf.io/54avr>
- Abdurrohman, M. (2016). Memahami Makna-Makna Simbolik Pada Upacara Adat Sedekah Laut di Desa Tanjungan Kecamatan Kragan Kabupaten Rembang. *Jurnal The Messenger*, 7(1), 27. <https://doi.org/10.26623/themessenger.v7i1.286>
- Adhuri, D. S., Rachmawati, L., Sofyanto, H., & Hamilton-Hart, N. (2016). Green market for small people: Markets and opportunities for upgrading in small-scale fisheries in Indonesia. *Marine Policy*, 63, 198–205. <https://doi.org/10.1016/j.marpol.2015.03.021>
- Allison, E. H., & Ellis, F. (2001). The livelihoods approach and management of small-scale fisheries. *Marine Policy*, 25(5), 377–388. [https://doi.org/10.1016/S0308-597X\(01\)00023-9](https://doi.org/10.1016/S0308-597X(01)00023-9)
- Amany, C., Kamal, M. M., Kurniawan, F., & Sabila, V. (2022). Seagrass, dugong, and people: Lessons learned from community-based conservation in Tolitoli Regency, Sulawesi Tengah, Indonesia. *IOP Conference Series: Earth and Environmental Science*, 967(1), 012032. <https://doi.org/10.1088/1755-1315/967/1/012032>
- Ariadno, M. K., & Amelina, F. (2016). An evaluation of the Indonesian law and policy on small-scale fisheries. *Journal of Sustainable Development Law and Policy (The)*, 7(2), 48. <https://doi.org/10.4314/jsdlp.v7i2.3>
- Atmaja, S. B., & Nugroho, D. (2017). Upaya-Upaya Pengelolaan Sumber Daya Ikan Yang Berkelanjutan Di Indonesia. *Jurnal Kebijakan Perikanan Indonesia*, 3(2), 101. <https://doi.org/10.15578/jkpi.3.2.2011.101-113>
- Ayunda, N., & Anna, Z. (2015). Evaluasi Awik-Awik Pengelolaan Sumber Daya Perikanan Pantai Lombok Timur. *Jurnal Kebijakan Sosial Ekonomi Kelautan dan Perikanan*, 5(1), 47. <https://doi.org/10.15578/jksekp.v5i1.1014>
- Bennett, N., Dearden, P., Murray, G., & Kadfak, A. (2014). The capacity to adapt?: Communities in a changing climate, environment, and economy on the northern Andaman coast of Thailand. *Ecology and Society*, 19(2). <https://doi.org/10.5751/ES-06315-190205>
- Cabral, R. B., Mayorga, J., Clemence, M., Lynham, J., Koeshendrajana, S., Muawanah, U., Nugroho, D., Anna, Z., Mira, Ghofar, A., Zulfainarni, N., Gaines, S. D., & Costello, C. (2018). Rapid and lasting gains from solving illegal fishing. *Nature Ecology & Evolution*, 2(4), 650–658. <https://doi.org/10.1038/s41559-018-0499-1>
- Cahyagi, D., & Gurning, R. O. S. (2018). A Review on Indonesian Fishermen Prosperity in the Coastal Area. *Applied Mechanics and Materials*, 874, 3–9. <https://doi.org/10.4028/www.scientific.net/AMM.874.3>
- Campbell, S. J., Kartawijaya, T., Yulianto, I., Prasetya, R., & Clifton, J. (2013). Co-management approaches and incentives improve management effectiveness in the Karimunjawa National Park, Indonesia. *Marine Policy*, 41, 72–79. <https://doi.org/10.1016/j.marpol.2012.12.022>
- Chapsos, I., Koning, J., & Noortmann, M. (2019). Involving local fishing communities in policy making: Addressing Illegal fishing in Indonesia. *Marine Policy*, 109, 103708. <https://doi.org/10.1016/j.marpol.2019.103708>
- Damastuti, E., & de Groot, R. (2019). Participatory ecosystem service mapping to enhance community-based mangrove rehabilitation and management in Demak, Indonesia. *Regional Environmental Change*, 19(1), 65–78. <https://doi.org/10.1007/s10113-018-1378-7>
- DJPT. (2015). *Statistic of marine capture fisheries by fisheries management area (FMA) 2005–2014*.
- FAO. (2014). *Fisheries and aquaculture profile: Indonesia*. <http://www.fao.org/fishery/facp/IDN/en#CountrySectorSectorSocioEcoContribution>.
- FAO. (2018). *Fishery and Aquaculture Statistics 2016*.
- Ferrer, A. J., Pomeroy, R., Akester, M. J., Muawanah, U., Chumchuen, W., Lee, W. C., Hai, P. G., & Viswanathan, K. K. (2021). COVID-19 and Small-Scale Fisheries in Southeast Asia: Impacts and Responses. *Asian Fisheries Science*, 34, 99–133. <https://doi.org/10.33997/j.afs.2021.34.1.011>
- Fitriana, R., & Stacey, N. (2012). *The Role of Women in the Fishery Sector of Pantar Island, Indonesia*. 17. [ISSN 0116-6514](https://doi.org/10.1116-6514).
- Hakim, L., Eko Sri Wiyono, & Sugeng Hari Wisudo. (2021). Muarareja Fishermen Perceptions on The Prohibition of Arad and Environmentally Friendly Fishing Tool Assistance Programs. *Marine Fisheries : Journal of Marine Fisheries Technology and Management*, 12(2), 161–171. <https://doi.org/10.29244/jmf.v12i2.35913>

- Halim, A., Wiryawan, B., Loneragan, N. R., Hordyk, A., White, A. T., Koeshendrajana, S., Ruchimat, T., Pomeroy, R. S., & Yuni, C. (2018). *Developing a functional definition of small-scale fisheries in support of marine capture fisheries management in Indonesia*. 27. <https://doi.org/10.1016/j.marpol.2018.11.044>
- Hanum, A. A., & Sihidi, I. T. (2021). *Kebijakan Pelarangan Penggunaan Cantrang dan Dampaknya Terhadap Nelayan Cantrang di Kecamatan Brondong Kabupaten Lamongan*. 9, <https://doi.org/10.34010/agregasi.v9i1.4470>
- Isa, M., Sugiyanto, F., & Susilowati, I. (2020). Integrated Analysis of Adaptation and Mitigation on Coastal Flood. *International Journal of Agricultural Science*, 05. <https://www.iasas.org/iasas/home/caijas/integrated-analysis-of-adaptation-and-mitigation-on-coastal-flood>
- Karlina, I., Kurniawan, F., & Idris, F. (2018). Pressures and Status of Seagrass Ecosystem in the Coastal Areas of North Bintan, Indonesia. *E3S Web of Conferences*, 47, 04008. <https://doi.org/10.1051/e3sconf/20184704008>
- Kencana, M. R. B. (2020). *Nelayan keluhkan sulitnya dapat BBM bersubsidi* [News]. <https://www.liputan6.com/bisnis/read/4335524/nelayan-keluhkan-sulitnya-dapat-bbm-bersubsidi>
- Khatami, A. M., Yonvitner, & Setyobudiandi, I. (2019). Karakteristik Biologi Dan Laju Eksploitasi Ikan Pelagis Kecil Di Perairan Utara Jawa. *Jurnal Ilmu dan Teknologi Kelautan Tropis*, 11(3), 637–651. <https://doi.org/10.29244/jitkt.v11i3.19159>
- Kominfo. (2016). *Menuju Poros Maritim Dunia Kerja Nyata*. <https://www.kominfo.go.id/>
- Kusdiantoro, K., Fahrudin, A., Wisudo, S. H., & Juanda, B. (2019a). Perikanan Tangkap di Indonesia: Potret dan Tantangan Keberlanjutannya. *Jurnal Sosial Ekonomi Kelautan Dan Perikanan*, 14(2), 145. <https://doi.org/10.15578/jsekp.v14i2.8056>
- Kusumawardhani, H. A., & Susilowati, I. (2021). Wives' multiple roles in supporting coastal families' economy. *Jurnal Ekonomi Dan Bisnis*, 24(2), 289–306. <https://doi.org/10.24914/jeb.v24i2.4352>
- Lukman, A. (2020). Community-based management of the USAT Liberty, Bali, Indonesia: Pathways to sustainable cultural heritage tourism. *Journal of Cultural Heritage Management and Sustainable Development*, 10(3), 217–231. <https://doi.org/10.1108/JCHMSD-05-2019-0053>
- Munawar, M. H. (2018). *Analisis Kebijakan Penenggelaman Kapal sebagai Kebijakan Strategis Pemberantasan Illegal, Unreported, and Unregulated (IUU) Fishing di Indonesia Tahun 2014-2017*. 4(4), 878–888. <http://ejournal-s1.undip.ac.id/index.php/jihi>
- Mustikasari, I., & Relawati, R. (2021). Perceptions on fisherman's insurance: A case study in PPN Prigi, Jawa Timur. *AMCA Journal of Science & Technology*, 1(1), 5–7. <https://doi.org/10.51773/ajst.v1i1.26>
- Nababan, B. O., Kusumastanto, T., Adrianto, L., & Fahrudi, A. (2020). Analisis Ekonomi Alat Penangkapan Ikan Arad Di Pantai Utara Provinsi Jawa Tengah. *Jurnal Sosial Ekonomi Kelautan Dan Perikanan*, 1(1), 1. <https://doi.org/10.15578/jsekp.v1i1.8492>
- Nissa', Z. N. A. (2019). *Analisis Kerentanan Penghidupan Rumah Tangga Nelayan Di Kota Tegal*. (Doctoral dissertation, IPB University). <https://repository.ipb.ac.id/handle/123456789/100148>
- Nugroho, S. B. M., Susilowati, I., Thohir, M., Prastyadewi, I., & Suciati, I. (2021). *Fishermen behavior in the use of information and communication technologies (ICTs) in Central Java Province, Indonesia: Comparative study in Pati and Pemalang regencies*. 14(5), 10. <http://www.bioflux.com.ro/aacl>
- Pomeroy, R. S., & Andrew, N. (Eds.). (2011). *Small-scale Fisheries Management: Frameworks and Approaches for the Developing World*. CABI.
- Pranowo, W. S., Hermawan, A., Saepuloh, D., Theoyana, T. A., & Abida, R. F. (n.d.). *Sistem Informasi -Nelayan Pintar*. 2.
- Rani, M. (2016). *Insurance Protection For Fishermen*. 4, 14. <https://ojs.umrah.ac.id/index.php/selat/issue/view/23>
- Rindayanti, H., Susilowati, I., & Hendrarto, B. (2013). Adaptasi Nelayan Perikanan Tangkap Pulau Moro Karimun Kepulauan Riau Terhadap Perubahan Iklim. *Prosiding Seminar Nasional Pengelolaan Sumberdaya Alam Dan Lingkungan 2013*. http://eprints.undip.ac.id/40677/1/040-Heni_Rindayati.pdf
- Rizal, D. R., Purwangka, F., Imron, M., & Wisudo, S. H. (2021). Kebutuhan Bahan Bakar Minyak pada Kapal Perikanan di Pelabuhan Perikanan Nusantara Pelabuhan Ratu. *ALBACORE Jurnal Penelitian Perikanan Laut*, 5(1), 029–042. <https://doi.org/10.29244/core.5.1.029-042>
- Setyowati, D. (2016). *Susi Berantas Illegal Fishing, Penerimaan Sektor Perikanan Melejit Nasional*. <https://katadata.co.id/berita/2016/10/20/susi-berantas-ilegal-fishing-penerimaan-sektor-perikanan-melejit>
- Shafira, F. S., & Kandi, O. (2021). *Analisis Kebutuhan Air Bersih Dan Bahan Bakar Minyak Dalam Mendukung Aktivitas Penangkapan Di Pangkalan Pendaratan Ikan Ujung Seurangga, Kabupaten Aceh Barat Daya*. 1, 14. <http://www.e-repository.unsyiah.ac.id/JKPI/article/view/21059>

- Sihombing, L., & Nugroho, S. (2018). Peran Kelompok Nelayan Dalam Aktivitas Pariwisata Di Desa Kedonganan Kuta, Bali. *Jurnal Destinasi Pariwisata*, 5(2), 294. <https://doi.org/10.24843/JDEPAR.2017.v05.i02.p17>
- Suherman, A., Santosa, M. A., Ihsan, Y. N., Wijayanto, D., & Juwana, S. (2020). *The eradication of IUU fishing in Indonesia for fisheries resources sustainability by the Task Force 115*. 13(5), 16. <http://bioflux.com.ro/docs/2020.2522-2537.pdf>
- Suryanti, A. (2017). Upacara Adat Sedekah Laut di Pantai Cilacap. *Sabda : Jurnal Kajian Kebudayaan*, 3(2). <https://doi.org/10.14710/sabda.v3i2.13268>
- Teh, L. C. L., & Pauly, D. (2018). Who Brings in the Fish? The Relative Contribution of Small-Scale and Industrial Fisheries to Food Security in Southeast Asia. *Frontiers in Marine Science*, 5, 44. <https://doi.org/10.3389/fmars.2018.00044>
- Tilley, A., Hunnam, K. J., Mills, D. J., Steenberg, D. J., Govan, H., Alonso-Poblacion, E., Roscher, M., Pereira, M., Rodrigues, P., Amador, T., Duarte, A., Gomes, M., & Cohen, P. J. (2019). Evaluating the Fit of Co-management for Small-Scale Fisheries Governance in Timor-Leste. *Frontiers in Marine Science*, 6, 392. <https://doi.org/10.3389/fmars.2019.00392>
- Triastuti, N. S., & Soewarno, N. (2015). Innovative use of Reinforced Concrete for Sustainability of Purse Seine Boat Building in Aceh. *Procedia Engineering*, 125, 899–904. <https://doi.org/10.1016/j.proeng.2015.11.081>
- Wahyuningrat, Haryanto, T., & Rosyadi, S. (2018). Practices of Illegal Fishing in Pematang Region: A Policy Analysis. *E3S Web of Conferences*, 47, 06010. <https://doi.org/10.1051/e3sconf/20184706010>
- Wasak, M. (2012). *Keadaan Sosial-Ekonomi Masyarakat Nelayan Di Desa Kinabuhutan Kecamatan Likupang Barat. Kabupaten Minahasa Utara, Sulawesi Utara*. 1, 5. http://repo.unsrat.ac.id/280/1/KEADAAN_SOSIAL-EKONOMI_MASYARAKAT_NELAYAN_DI_DESA_KINABUHUTAN_KECAMATAN_LIKUPANG_BARAT_KABUPATEN_MINAHASA_UTARA_SULAWESI_UTARA.pdf
- Wuryandani, D., & Meilani, H. (2011). Kebijakan Pengelolaan Sumber Daya Perikanan Laut Untuk Menunjang Ketahanan Pangan di Indonesia. *Jurnal Ekonomi & Kebijakan Publik*, 2(1), 395–422. <https://doi.org/10.22212/jekp.v2i1.95>

Vulnerability to Viability (V2V) Global Partnership

The Vulnerability to Viability (V2V) project is a transdisciplinary global partnership and knowledge network. Our aim is to support the transition of small-scale fisheries (SSF) from vulnerability to viability in Africa and Asia. Vulnerability is understood as a function of exposure, sensitivity and the capacity to respond to diverse drivers of change. We use the term viability not just in its economic sense but also to include its social, political, and ecological dimensions.

The V2V partnership brings together approximately 150 people and 70 organizations across six countries in Asia (Bangladesh, India, Indonesia, Japan, Malaysia, Thailand), six countries in Africa (Ghana, Malawi, Nigeria, Senegal, South Africa, Tanzania), Canada and globally. This unique initiative is characterized by diverse cultural and disciplinary perspectives, extensive capacity building and graduate student training activities, and grounded case studies from two regions of the world to show how and when SSF communities can proactively respond to challenges and creatively engage in solutions that build their viability. Further information on the V2V Partnership is available here: www.v2vglobalpartnership.org.

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**VULNERABILITY TO VIABILITY
GLOBAL PARTNERSHIP**