



Institutional roles of fisheries cooperatives in Indonesia: implications for small-scale fisheries development

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Abstract. Fisheries cooperatives are widely recognized as important institutional mechanisms for supporting small-scale fisheries, particularly in developing countries. This paper reviews the institutional roles of fisheries cooperatives in Indonesia and examines their implications for small-scale fisheries development. Using a narrative review approach, the study synthesizes global literature and empirical evidence to analyze four key institutional roles: economic and financial functions, market and value chain functions, governance and compliance functions, and capacity-building and social functions. The findings show that fisheries cooperatives in Indonesia have contributed to improving access to finance, supporting collective marketing, and strengthening social capacity among fishers. However, governance and compliance functions remain limited and are better understood as emerging roles. The effectiveness of cooperatives is constrained by persistent challenges, including weak managerial capacity, limited financial resources, low member participation, and structural market conditions. The study highlights the need for strengthening cooperative institutions through improved governance, financial management, and stronger integration with market and policy systems. It concludes that fisheries cooperatives can play an important role in promoting inclusive and sustainable small-scale fisheries development in Indonesia, provided that institutional constraints are effectively addressed.

Keywords: coastal livelihoods, collective organization, cooperative governance, market integration, sustainable fisheries.

Introduction. Small-scale fisheries (SSF) play a crucial role in supporting livelihoods, employment, and food security, particularly in developing countries (Allison & Ellis 2001; FAO 2015; Teh & Pauly 2018). Globally, this sector provides income and subsistence for millions of people and contributes significantly to the supply of affordable animal protein (Béné et al 2015; FAO 2024). In Indonesia, small-scale fisheries dominate the sector and are closely linked to the socio-economic conditions of coastal communities (Napitupulu et al 2022; Saksono et al 2023; Tarno 2025). However, despite their importance, small-scale fishers often face a range of structural constraints related to finance, markets, and governance (Jentoft & Eide 2011; Adhuri et al 2015; Satria 2015; Taniu et al 2024). At the same time, increasing pressure on fisheries resources, environmental degradation, and climate-related risks have intensified the need for more effective institutional arrangements to support both sustainability and welfare outcomes (Allison et al 2009; Hidayati et al 2021; Ramenzoni 2021; Villasante et al 2022).

One of the key approaches to addressing these challenges is through collective action. Through collective arrangements, fishing communities can develop and enforce shared rules that regulate access to and use of common-pool resources, thereby helping to prevent overexploitation and ensure long-term resource sustainability (McCay & Acheson 1987; Ostrom 1990; Elsler et al 2022). Collective action also provides a platform for fishers to participate in decision-making processes, exercise their rights, and engage with governance systems (Elsler et al 2022; Das 2023). Strengthening collective action is therefore considered important for improving access to financial services, infrastructure,

and markets, while supporting broader outcomes such as social resilience and economic well-being in small-scale fisheries.

Among various forms of collective organization, fisheries cooperatives have been widely promoted as institutional mechanisms that can strengthen economic performance, enhance governance, and support sustainable resource management (Atapattu 1993; FAO & IFAD 2012; Elsler et al 2022; Gladstone et al 2025). Cooperatives provide a platform for pooling resources, improving access to finance and inputs, increasing bargaining power in markets, and facilitating participation in policy processes (Jentoft 1986; Markelova et al 2009). Empirical evidence from different contexts suggests that well-functioning cooperatives can contribute to improved income, better compliance with management rules, and stronger social cohesion within fishing communities (Gutiérrez et al 2011; Ferr 2021; Elsler et al 2022; Hendriks 2022; Wintergalen et al 2022).

In Indonesia, the role of fisheries cooperatives has gained increasing attention, particularly in relation to recent policy developments such as quota-based fisheries management (*penangkapan ikan terukur*) (Zulham et al 2022; Trenggono 2023; Azis & Rohimi 2025). This policy framework requires fishers to be organized into formal institutions, including cooperatives, to access fishing quotas and participate in regulated fishing systems (Nurlaela 2023). Such developments reflect a broader shift toward institutional-based governance, where collective organizations are expected to play a central role in improving efficiency, equity, and sustainability (Stacey et al 2021). At the same time, cooperatives are also expected to support economic activities, including access to finance, input provision, and market integration (Yonesaka 1985; Taniu et al 2024; Azis & Rohimi 2025), making them multifunctional institutions in small-scale fisheries.

However, despite their strategic importance, the performance of fisheries cooperatives in Indonesia remains uneven (Yunani et al 2020; Zulham et al 2022; Chikmawati & Anisariza 2023; Zulkarnaini et al 2023). Many cooperatives function primarily as administrative units for government programs rather than as effective economic and governance institutions (Yapanto et al 2020; Suharsono et al 2021; Taniu et al 2024). This situation reflects a gap between the potential roles of cooperatives and their actual performance.

While the existing literature has discussed the role of cooperatives in general, there is still a limited synthesis that specifically examines the institutional roles and functions of fisheries cooperatives in Indonesia in a comprehensive manner. Most studies tend to focus on specific aspects, such as marketing, finance, or community development, without integrating these roles into a broader institutional perspective. As a result, there is a need for a more structured understanding of how fisheries cooperatives function as institutions that link economic, social, and governance dimensions in small-scale fisheries.

Against this background, this paper aims to review the institutional roles and functions of fisheries cooperatives in Indonesia. The paper adopts a narrative review approach, combining global theoretical perspectives with evidence from Indonesia. It focuses on four main institutional roles, namely economic and financial functions, market and value chain functions, governance and compliance functions, and capacity-building and social functions. In addition, the paper examines the key challenges that affect cooperative performance and discusses implications for strengthening their role in supporting sustainable fisheries and coastal community development.

Small-scale Fisheries. Small-scale fisheries (SSF) represent a highly diverse and important sub-sector within global fisheries systems. They are typically characterized by small-scale operations, limited capital investment, and strong reliance on household labor (FAO 2015; Teh & Pauly 2018; Bitoun et al 2024). SSF often operate in nearshore areas and play a significant role in supplying fish for local consumption, particularly in developing countries (HLPE 2014; Béné et al 2015; Viana et al 2023; Bitoun et al 2024). In practice, SSF can range from subsistence-oriented activities to semi-commercial operations integrated into local and export markets (FAO Advisory Committee on Fisheries Research 2004; Duggan & Kochen 2016; Hardy et al 2016; Costello & Ovando

2019). Despite variations in definition across countries, SSF are generally understood as livelihood-oriented activities that are closely embedded in local social, cultural, and economic systems (Jentoft & Eide 2011; Basurto et al 2013; Cohen et al 2019).

Globally, SSF contribute substantially to employment and food security. They provide livelihoods for millions of people, both directly through fishing activities and indirectly through related value chain activities such as processing and trading (Allison & Ellis 2001; Teh & Sumaila 2013; FAO 2015; FAO et al 2023; Calò et al 2022). In many regions, SSF also play a critical role in sustaining rural economies and supporting vulnerable populations (Sulanke & Rybicki 2021; Hendriks 2022; Gianelli et al 2024). In Southeast Asia, including Indonesia, SSF have historically contributed a large share of fish for domestic consumption (Stacey et al 2021; Saksono et al 2023), highlighting their importance in local food systems and nutrition.

In Indonesia, SSF dominate the fisheries sector in terms of the number of fishers and fishing units (Napitupulu et al 2022; Saksono et al 2023; Tarno 2025). These fisheries are closely linked to the socio-economic conditions of coastal communities, where fishing activities are often integrated with other livelihood strategies (Stacey et al 2021; Aini & Kurniawan 2022; Erfin et al 2024). Small-scale fishers typically operate using simple technologies and depend on local ecological knowledge, which reflects the adaptive nature of this sector (Arif & Pradini 2020; Yonvitner et al 2021; Parsaulian et al 2024; Maria et al 2026). At the same time, SSF in Indonesia are shaped by diverse institutional arrangements, including informal norms, local practices, and formal regulatory frameworks.

Despite their importance, SSF operate within complex and dynamic environments. They are influenced by ecological, economic, and institutional factors that affect both resource sustainability and livelihood outcomes (Agunggunanto & Darwanto 2016; Stacey et al 2021; Parsaulian et al 2024). These include pressures on fish stocks (Gutiérrez et al 2012; Costello & Ovando 2019; Sulanke & Rybicki 2021), changes in market structures (Nur et al 2023; Wiranthi et al 2024), and evolving governance systems (Kapembwa et al 2021; Dudayev et al 2023). Such conditions highlight the need for institutional arrangements that support coordination, improve access to resources, and strengthen the capacity of fishers to respond to changing circumstances.

In this context, collective action becomes particularly relevant in SSF. The characteristics of SSF, including their reliance on shared resources and dispersed actors, make coordination and cooperation essential (FAO & IFAD 2012; Basurto et al 2013; Wintergalen et al 2022). Institutional arrangements that enable collective decision-making and coordinated action can support both sustainable resource use and improved socio-economic outcomes (Kalikoski & Franz 2014; Rivera et al 2017; Zenbaba 2024). This provides the foundation for the development of collective organizations, such as fisheries cooperatives.

Cooperatives and Collective Action. Collective action is widely recognized as an important mechanism for managing common-pool resources such as fisheries. Foundational work by Elinor Ostrom demonstrates that communities are capable of developing and enforcing their own rules to govern shared resources, thereby avoiding the “tragedy of the commons” (Ostrom 1990). In the context of SSF, collective action enables fishers to coordinate behavior, regulate access, and establish norms that support sustainable resource use (McCay & Acheson 1987; Frawley et al 2019; Botto-Barrios & Saavedra-Díaz 2020; Elsler et al 2022). Through collective action, fishing communities can develop and enforce rules related to access, fishing practices, and resource management, which may contribute to improved ecological outcomes over time.

Beyond resource management, collective action can also support socio-economic objectives in SSF. By organizing collectively, fishers may improve their access to markets, financial services, and infrastructure (FAO 2016). Collective arrangements can also strengthen fishers’ ability to engage with external actors, including government agencies, buyers, and development organizations (Prosperi et al 2022). In this sense, collective action provides a platform for coordination, representation, and participation within broader governance and economic systems (Markelova et al 2009; FAO 2015).

Within this broader framework, cooperatives represent one of the most prominent and practical forms of collective action in SSF. Fisheries cooperatives provide an organizational structure through which fishers can pool resources, coordinate activities, and pursue shared economic and social objectives (Pollnac 1981; Jentoft 1986; Rivera et al 2017; Wintergalen et al 2022). By operating collectively, fishers are better positioned to reduce transaction costs, improve access to inputs and credit, and strengthen their bargaining power in output markets (Deacon 2012; Elsler et al 2022; Sanyal et al 2023). Cooperatives also facilitate economies of scale in production and marketing (Cook 1995; Nilsson 1998; Markelova et al 2009), enabling members to capture higher value from their catch and reduce dependence on intermediaries. In many cases, they serve as intermediaries linking fishers to government programs, financial institutions, and private sector actors, thereby enhancing integration into broader value chains (Shahidullah & Islam 2018; Nalefo et al 2024; Sari et al 2025).

Fisheries cooperatives can also play an important role in governance and resource management (Deacon 2012; Basurto et al 2013; Stacey et al 2021). Well-functioning cooperatives can support the development and enforcement of rules related to fishing effort, gear use, and access rights, contributing to the sustainability of fish stocks (Chibanda et al 2009; Elsler et al 2022; Dudayev et al 2023). Evidence from various contexts indicates that cooperatives with strong internal governance, characterized by democratic decision-making, transparency, trust, and effective conflict resolution, are more likely to achieve positive ecological and social outcomes (Rivera et al 2017; Méndez-Medina et al 2021; Zenbaba 2024). In this regard, cooperatives are not only economic organizations but also institutional arrangements that shape behavior, incentives, and compliance within fisheries systems.

At the global policy level, the importance of collective action and fisher organizations has been formally recognized through instruments such as the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (SSF Guidelines) (FAO 2015). These guidelines emphasize that organizations such as cooperatives can empower fishers to participate in decision-making processes, secure access rights, and improve their livelihoods. Strengthening the capacity for collective action is therefore seen as essential for achieving broader development objectives, including poverty reduction, food security, and social resilience in coastal communities (Béné et al 2007; Kalikoski & Franz 2014; Rivera et al 2017).

Overall, cooperatives provide a critical institutional bridge between individual fishers and broader governance and market systems. They enable collective action to address both economic inefficiencies and resource sustainability challenges. However, their success depends on internal governance quality, external support systems, and the broader socio-economic context in which they operate (Pollnac 1988; Ünal et al 2009; FAO IFAD & 2012; Bennett 2017). Understanding these dynamics is particularly important for countries such as Indonesia, where fisheries cooperatives are increasingly promoted as instruments for strengthening SSF and achieving sustainable development goals.

Fisheries Cooperatives in Indonesia. Fisheries cooperatives in Indonesia have developed as part of broader efforts to organize small-scale fishers and improve their economic and social conditions. As one of the largest archipelagic countries in the world, Indonesia has a highly diverse fisheries sector dominated by small-scale fishers operating in coastal and nearshore areas (Ariadno & Amelina 2016; Rahayu et al 2025). In this context, cooperatives have been introduced as institutional arrangements to support collective organization, facilitate access to resources, and improve the integration of fishers into economic and governance systems.

In the Indonesian context, cooperatives are formally defined as member-based economic organizations that operate based on principles of mutual assistance and collective ownership, as regulated under national cooperative law (Saediman 2001). Historically, the development of cooperatives in rural areas has evolved through several institutional forms, including Village Unit Cooperatives (*Koperasi Unit Desa* or KUD), sector-based cooperatives such as fisheries cooperatives, and, more recently, village-

owned enterprises (*Badan Usaha Milik Desa* or BUMDes). These institutional arrangements reflect changing policy approaches to rural and coastal development, with varying degrees of member participation and economic orientation. This historical evolution helps explain the diversity in the structure and performance of fisheries cooperatives observed across regions in Indonesia.

Many fisheries cooperatives in Indonesia were initially established through government programs aimed at strengthening rural economies and supporting coastal communities (Puspasari & Sudibyo n.d.; Widodo & Indriyanto 2020; Yapanto et al 2020). As a result, cooperatives have often functioned as formal organizational units that facilitate the distribution of government assistance, such as subsidized inputs, financial support, and training programs (Suprihartini & Kurniawan 2019; Arifandy et al 2020; Kementerian Koordinator Bidang Perekonomian Republik Indonesia 2021). While this approach has helped expand the number of cooperatives, it has also shaped their institutional characteristics, with varying levels of member participation, ownership, and operational capacity across regions.

A recent policy development is the implementation of quota-based fisheries management (*penangkapan ikan terukur*), which emphasizes regulated access to fishing resources (Zulham et al 2022; Trenggono 2023). Under this policy framework, fishers are generally required to be organized into formal institutions, such as cooperatives, in order to access fishing quotas and participate in regulated fishing zones (Nurlaela 2023). This development highlights the growing importance of collective institutions in coordinating fishing activities and supporting compliance with regulatory systems.

More recently, government initiatives aimed at strengthening village-level economic institutions, including programs such as *Koperasi Desa Merah Putih* (Red White Village Cooperatives), indicate a renewed emphasis on cooperative development (Koni et al 2026). These initiatives seek to position cooperatives as key economic actors at the local level, including in coastal communities. Although their implementation is still evolving, such programs may create new opportunities for integrating fisheries cooperatives into broader local economic systems and development strategies.

Beyond their role in policy implementation, fisheries cooperatives in Indonesia are also expected to support a range of economic and organizational functions. These include facilitating access to finance, coordinating input provision, supporting marketing activities, and strengthening linkages between fishers and other actors in the value chain (Chandrasekera 1990; FAO & IFAD 2012; Wanyama 2014). In this sense, cooperatives are multifunctional institutions that connect fishers to markets, financial systems, and governance structures.

Despite their strategic role, the development and performance of fisheries cooperatives in Indonesia remain diverse. Empirical evidence suggests that many cooperatives have been established primarily as administrative units to facilitate government programs, rather than as fully functioning economic and governance institutions (Saediman 2001; PSHK et al 2019; Yapanto et al 2020; Koni et al 2026). As a result, their capacity to generate collective action, improve market access, and enhance member welfare is often limited. Data from the Ministry of Cooperatives and Small and Medium Enterprises (SMEs) indicate that although thousands of fisheries cooperatives exist in Indonesia, a substantial proportion are inactive or lack formal registration (Riswan et al 2017; Kementerian Koordinator Bidang Perekonomian Republik Indonesia 2021; Chikmawati & Anisariza 2023), reflecting structural weaknesses in institutional capacity and sustainability.

Institutional Roles and Functions of Fisheries Cooperatives. Fisheries cooperatives in Indonesia perform multiple institutional roles that are closely related to the economic, social, and governance characteristics of SSF. These roles are interconnected and together determine the extent to which cooperatives can improve fishers' welfare and support sustainable fisheries management. In practice, however, the effectiveness of these functions varies across regions depending on institutional capacity, member participation, and external support. This section discusses the main institutional roles of fisheries cooperatives in Indonesia, focusing on their economic and financial functions,

market and value chain functions, governance and compliance functions, and capacity-building and social functions.

Economic and financial functions. Fisheries cooperatives in Indonesia can serve as economic and financial institutions that support small-scale fishers in accessing capital and financial services (Adam et al 2013; Agunggunanto & Darwanto 2016; Wulandari & Halimatussadiah 2022; Sari & Suryadi 2025). Small-scale fishers are commonly characterized by low asset ownership, irregular income, and high exposure to risks, which limit their access to formal financial institutions such as banks (Satria 2015; Kusnadi 2017; Bidayani et al 2023; Saksono et al 2023). As a result, many fishers rely on informal credit systems, often linked to marketing arrangements with middlemen (Wibisono & Manaf 2018; Adisel et al 2023). In this context, fisheries cooperatives are often expected to function as alternative financial intermediaries that provide more accessible and equitable financial services.

One of the primary economic functions of fisheries cooperatives is the provision of savings and loan services tailored to the needs of fishers. Through these schemes, members can access working capital for daily fishing operations, such as fuel and provisions, as well as investment capital for fishing equipment (Adam et al 2013; Yusuf et al 2014; Twumasi et al 2021). Empirical studies in several regions in Indonesia suggest that cooperatives can help improve financial inclusion and reduce dependence on informal lenders, although outcomes vary across locations (Adam et al 2013; Hamdani et al 2020; Wulandari & Halimatussadiah 2022; Chikmawati & Anisariza 2023). When effectively managed, cooperative-based credit systems may offer lower interest rates, more flexible repayment mechanisms, and stronger social control compared to informal arrangements (Maulana et al 2014; Yusuf et al 2014; Wulandari & Halimatussadiah 2022).

In addition to financial services, fisheries cooperatives can contribute to economic efficiency through collective procurement of inputs. By organizing bulk purchases of fuel, fishing gear, ice, and other operational needs, cooperatives can reduce costs and improve the reliability of input supply to members (Sari & Rahmayanti 2022; Taniu et al 2024; Adi et al 2026). This function is particularly relevant in remote coastal areas, where access to inputs is limited and prices are relatively high. Some cooperatives also manage fuel distribution systems, which helps address one of the most significant cost components in fishing operations (Adam et al 2013; Cineretta et al 2017; Susanti et al 2020; Chikmawati & Anisariza 2023).

Fisheries cooperatives also have the potential to support income stabilization and risk sharing, although this function remains relatively limited in practice. Fishing activities are characterized by high uncertainty due to seasonal variability and weather conditions (Savo et al 2017; Junawan 2021; Villasante et al 2022; Saediman et al 2024), which often result in fluctuating incomes. Cooperatives can help mitigate these risks through savings schemes, emergency funds, and mutual support among members (FAO & IFAD 2012; Adam et al 2013; Pramudya et al 2013; Cineretta et al 2017). In some cases, cooperatives have also facilitated diversification of economic activities, including fish processing (Andarrini et al 2020; Chikmawati & Anisariza 2023; Sari & Suryadi 2025), aquaculture (Soejarwo & Yusuf 2018; Wulandari & Halimatussadiah 2022; Wulandari et al 2025), and small-scale trading (Wiandhani et al 2016; Cineretta et al 2017; Yunani & Supriadi 2020), which can provide additional sources of income for fishing households.

However, the effectiveness of these functions varies across cooperatives due to differences in institutional capacity, financial resources, and member participation. Fisheries cooperatives in Indonesia have the potential to improve financial access and strengthen economic resilience, but this potential is not always realized. Strengthening this role requires improvements in governance, financial management, and the development of financial services suited to fisheries livelihoods.

Market and value chain functions. Fisheries cooperatives in Indonesia have the potential to improve the position of small-scale fishers within market systems and value chains. In many coastal areas, fishers market their catch individually, which limits their

bargaining power and access to more competitive markets (Pramudya et al 2013; Kusnadi 2017; Arif & Pradini 2020; Nestiana 2023). In this context, cooperatives are often expected to function as collective marketing institutions that can strengthen fishers' position in market transactions.

One of the key roles of fisheries cooperatives is collective marketing. By aggregating fish catches from members, cooperatives can increase the volume of products offered to the market, allowing them to negotiate better prices with buyers such as wholesalers and processors (Cook 1995; Nilsson 1998; Markelova et al 2009). Collective marketing can also support more consistent supply and basic quality control, which are important for accessing higher-value markets (Yunani & Supriadi 2020; Naninsih et al 2025; Harun et al 2026). Empirical studies in Indonesia suggest that cooperatives can help improve price outcomes for fishers when coordination among members is maintained (Adam et al 2013; Cineretta et al 2017; Wulandari & Halimatussadiyah 2022).

Fisheries cooperatives can also contribute to improving price transparency and access to market information (Basurto et al 2013; Adhuri et al 2015; Taniu et al 2024). Many small-scale fishers have limited access to information on prices and demand (Bayyinah et al 2016; Doddema et al 2020), which limits their ability to make marketing decisions. Through cooperatives, information can be shared more systematically, helping fishers respond to market conditions and reduce information asymmetry.

In addition, cooperatives can support value chain functions related to post-harvest handling and logistics (Bijman et al 2010; Yunani & Supriadi 2020). Fishery products are highly perishable, and product quality is strongly influenced by handling practices. Some cooperatives have developed basic facilities such as ice supply, storage, and transportation services, which help maintain product quality and reduce post-harvest losses (Chikmawati & Anisariza 2023; Sari et al 2025). Improved handling and logistics can also enable fishers to access better market segments.

Fisheries cooperatives may also facilitate compliance with market requirements, including quality standards and traceability. As market systems become more demanding, particularly in formal and export markets, small-scale fishers often require institutional support to meet these requirements (Duggan & Kochen 2016; Pembayun et al 2024; Shamsuzzoha et al 2024). Cooperatives can act as intermediaries that coordinate collective compliance and support the adoption of improved practices.

However, the ability of cooperatives to perform these market and value chain functions varies across regions, reflecting differences in organizational capacity, infrastructure, and the strength of market linkages. Fisheries cooperatives in Indonesia, therefore, have the potential to strengthen market access, improve bargaining power, and support value chain development for small-scale fishers, although this potential is not always fully realized. Their effectiveness depends on their capacity to sustain coordination among members and to build stronger and more consistent linkages with market actors.

Governance and compliance functions. Fisheries cooperatives in Indonesia may help support governance and compliance in small-scale fisheries. As fisheries management systems become more structured, cooperatives are often positioned as institutional intermediaries that connect fishers with regulatory frameworks and policy processes. In this context, cooperatives provide a mechanism for organizing fishers, facilitating coordination, and supporting participation in fisheries governance.

One of the key governance functions of cooperatives is to help organize fishers into formal groups, which can support the implementation of fisheries policies. Through cooperatives, fishers can be registered, coordinated, and involved in collective decision-making processes (Atapattu 1993; FAO & IFAD 2012). This organizational structure may also support data collection and reporting, which are important for fisheries management and monitoring systems.

Fisheries cooperatives can also contribute to improving compliance with regulatory requirements. As fisheries governance increasingly emphasizes legality and accountability, fishers are required to follow rules related to licensing, fishing zones, and

reporting (Friedman & Ormiston 2022; Wiranthi et al 2024). Cooperatives can help facilitate these processes by assisting members in meeting administrative requirements and coordinating compliance at the group level. This role becomes particularly relevant within evolving governance frameworks, as discussed in the previous section.

In addition, cooperatives may support traceability and transparency within fisheries value chains. As concerns about illegal, unreported, and unregulated fishing increase, both domestic and international markets require greater assurance regarding the origin of fish products (Doddema et al 2020). Cooperatives can help organize documentation, maintain basic records, and promote more standardized practices among members, which can support traceability systems (Giagnocavo et al 2017; Tolon 2017).

At the internal level, fisheries cooperatives are generally expected to operate based on principles of participation, transparency, and accountability (Faedulloh 2015; Yunani et al 2020; Jamaluddin et al 2023). In the Indonesian context, these principles are often linked with local practices such as *musyawarah* (deliberation) and *gotong royong* (mutual cooperation), which can support collective decision-making and coordination among members (Hastangka 2012; Mujiyanti 2023; Zakaria & Kantona 2025).

It is important to note that the governance and compliance functions of fisheries cooperatives in Indonesia remain relatively limited in practice. Requirements related to certification, traceability, and compliance with formal standards are still emerging in many SSF systems. While such functions have been more widely implemented by cooperatives in developed countries (Giagnocavo et al 2017; Tolon 2017; Iue et al 2022), evidence from Indonesia remains limited. Existing studies suggest that only a small number of cooperatives have begun to engage in activities related to traceability or certification (Prananta et al 2025; Herman et al 2026), and these cases are still relatively isolated.

Therefore, the role of fisheries cooperatives in governance and compliance in Indonesia should be understood primarily as a potential or emerging function rather than an established one. Strengthening this role will require further institutional development, capacity building, and stronger alignment between cooperative structures and evolving regulatory and market requirements.

Capacity building and social functions. Fisheries cooperatives in Indonesia can play a role in supporting capacity building and social development among small-scale fishers. In many coastal communities, fishers have limited access to training, information, and technical support (Arif & Pradini 2020; Wulandari & Halimatussadiyah 2022). In this context, cooperatives can provide a platform for knowledge sharing and collective learning, helping fishers improve their skills and adapt to changing conditions (Satria 2015; Mujiyanti 2023; Adi et al 2026).

One of the main functions of cooperatives is to facilitate training and extension activities (Cineretta et al 2017; Saputri et al 2019; Suprihartini & Kurniawan 2019; Andarrini et al 2020). These may include training on fishing techniques, post-harvest handling, product quality improvement, and safety at sea. Cooperatives can also support the dissemination of information related to regulatory requirements and market standards. In many cases, these activities are conducted in collaboration with government agencies, universities, and other institutions, highlighting the role of cooperatives as intermediaries in knowledge transfer (Sari & Rahmayanti 2022).

Fisheries cooperatives can also contribute to strengthening social capital within fishing communities (Pretty & Ward 2001; Bijman et al 2010; Wibowo et al 2022). Through regular meetings and collective activities, cooperatives create opportunities for interaction, coordination, and mutual support among members. These processes can help build trust and shared understanding, which are important for sustaining collective action.

In addition, cooperatives may provide basic forms of social support for their members (Alabsi & Komatsu 2014; Kalikoski & Franz 2014). Fishing is a livelihood characterized by uncertainty, and fishers often face risks related to weather conditions, income fluctuations, and occupational hazards (Miñarro et al 2016; Villasante et al 2022;

Taniu et al 2024). Cooperatives can support members through collective savings, mutual assistance, and access to social programs, which can contribute to household resilience.

However, the effectiveness of these capacity-building and social functions varies across cooperatives due to differences in organizational capacity and levels of member participation. Fisheries cooperatives in Indonesia, therefore, have the potential to support capacity development, strengthen social relations, and enhance the resilience of small-scale fishers, although this potential is not always fully realized. Their effectiveness depends on their ability to sustain collective activities and to establish stronger collaboration with external support systems.

Institutional Challenges and Constraints. There are several challenges that constrain the development of fisheries cooperatives in Indonesia. These challenges are interrelated and arise from a combination of internal organizational limitations and broader structural conditions that shape the performance of cooperatives.

One of the main challenges relates to governance and managerial capacity. A growing body of empirical studies in Indonesia consistently shows that many fisheries cooperatives face limitations in organizational management, financial administration, and leadership capacity (Indarti 2015; Saputri et al 2019; Handayani et al 2020; Zulham et al 2022; Chikmawati & Anisariza 2023; Zulkarnaini et al 2023; Nalefo et al 2024; Naninsih et al 2025; Sari & Suryadi 2025; Wulandari et al 2025). These limitations affect the ability of cooperatives to manage financial resources, coordinate member activities, and maintain transparent and accountable decision-making processes. As a result, many cooperatives function below their expected potential as economic and organizational entities.

Another key constraint relates to financial sustainability. A substantial body of empirical studies in Indonesia indicates that many fisheries cooperatives face persistent limitations in capital availability and financial management capacity (Hejazziey 2009; Pramudya et al 2013; Indarti 2015; Saputri et al 2019; Sari et al 2020; Zulham et al 2022; Chikmawati & Anisariza 2023; Hamdani 2023; Harahap 2023; Zulkarnaini et al 2023; Wiranthi et al 2024; Sari & Suryadi 2025; Wulandari et al 2025). These constraints are closely linked to the irregular income patterns of fishers and the limited ability of cooperatives to accumulate capital over time. As a result, the continuity of financial services is often affected, and cooperative-based financial mechanisms do not always function as intended in supporting members' economic activities.

Market-related factors also influence cooperative performance. In many coastal areas, fishers operate within established market structures that are shaped by long-standing relationships between fishers and intermediaries (Basurto et al 2013; Arif & Pradini 2020; Taridala et al 2021). These arrangements often determine access to credit, inputs, and market outlets, which in turn affect the incentives for fishers to participate in cooperative-based systems. As a result, cooperatives may face difficulties in functioning as effective market intermediaries in certain contexts.

Another important challenge relates to member participation. A number of studies in Indonesia indicate that many cooperatives experience low levels of active participation among members (Hejazziey 2009; Adam et al 2013; Agunggunanto & Darwanto 2016; Wiandhani et al 2016; Riswan et al 2017; Andarrini et al 2020; Handayani et al 2020; Sari & Suryadi 2025), which affects their ability to function effectively as collective organizations. Limited participation reduces the capacity of cooperatives to coordinate activities, implement decisions, and sustain collective initiatives. At the same time, low participation is often linked to broader institutional and structural conditions, including weak governance, limited economic benefits, and lack of trust among members (Yunani et al 2020; Sari & Suryadi 2025). This suggests that member participation is not only a constraint but also an outcome of the overall performance of cooperatives.

Policy and institutional environments further shape the performance of fisheries cooperatives in Indonesia. The development of cooperatives has often been influenced by program-based approaches (Saediman 2001; Riswan et al 2017; Yapanto et al 2020), which may affect the level of member ownership and long-term sustainability. Variations

in policy implementation and institutional coordination across regions also contribute to differences in cooperative performance.

Socio-cultural factors further contribute to the diversity of cooperative performance. Local values, social relations, and levels of trust among members influence participation and collective action (Maharani & Hafsaridewi 2014; Glaser et al 2015; Arif & Pradini 2020; Chikmawati & Anisariza 2023). These factors can either support or limit the ability of cooperatives to function as cohesive organizations.

Overall, the challenges faced by fisheries cooperatives in Indonesia reflect the interaction between institutional capacity and broader structural conditions. Addressing these challenges requires a comprehensive approach that integrates organizational strengthening, improved financial systems, and better alignment with market and policy environments. Such efforts are essential to enable fisheries cooperatives to perform their roles more effectively within small-scale fisheries systems.

Conclusions. This review shows that fisheries cooperatives in Indonesia have the potential to play important roles in supporting small-scale fisheries. As institutional arrangements, cooperatives can contribute to improving access to finance, strengthening market participation, and supporting capacity development among fishing communities. These roles are particularly relevant in Indonesia, where small-scale fisheries dominate and are closely linked to the livelihoods of coastal populations.

However, the findings also indicate that the performance of fisheries cooperatives in Indonesia remains largely suboptimal. Many cooperatives operate below their expected potential due to persistent institutional and structural constraints. While economic and market-related functions have been implemented to some extent, their effectiveness varies across regions and organizational contexts. In contrast, governance and compliance functions, including those related to traceability and regulatory alignment, remain limited and are better understood as emerging roles rather than established practices.

The findings suggest that strengthening fisheries cooperatives requires a comprehensive and context-specific approach. Efforts should focus on improving internal governance, including leadership, financial management, and member participation, as well as strengthening the economic functions of cooperatives. In addition, greater attention is needed to support the development of governance and compliance functions, which are increasingly important in evolving fisheries management and market systems.

These findings also highlight several practical implications for small-scale fisheries development in Indonesia. Policy interventions should move beyond program-based approaches and focus on strengthening cooperatives as active and member-driven economic institutions. This includes improving access to finance, enhancing market linkages, and supporting capacity-building initiatives. At the same time, efforts to strengthen governance functions should be aligned with the gradual development of institutional capacity at the cooperative level.

Future research is needed to better understand the diversity of cooperative models across regions in Indonesia and to identify conditions that support their effectiveness. Comparative and empirical studies at the local level would provide useful insights for improving cooperative performance and policy design.

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