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Casting a Net on Policy: A Thematic Analysis of India's National Fisheries Policy

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ABSTRACT

The National Fisheries Policy (NFP) aims to boost fish production, alleviate poverty, meet nutritional requirements, generate foreign revenue, and maintain ecological equilibrium. This study seeks to analyse the core aspects of the fisheries policy using Braun and Clarke's six-phase thematic analysis process. By employing NVivo software, the study looks into the narrative of policy interventions outlined in the document. The analysis used three distinct approaches: Reflexive, Descriptive vs Prescriptive, and Development vs Welfare. The study findings indicate that the National Fisheries Policy significantly emphasises various interventions related to institutional measures, development, management, capacity building, welfare, and other key aspects. The analysis indicates a predominant emphasis on prescriptive measures over descriptive measures, suggesting a forward-looking policy orientation. While the forthcoming national fisheries policy appears adequate to address present and future needs, successful implementation will be crucial in realizing its potential impact on sustainable fisheries development in India.

Keywords: National Fisheries Policy, Indian fisheries, thematic analysis, NVivo, policy interventions

JEL codes: Q22, Q28, Q56

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INTRODUCTION

The Indian fisheries are surrounded by a wide array of unique resources, ranging from the primaeval waters of the Himalayas to the expansive Indian Ocean. This sector supports the livelihoods of approximately 16 million individuals engaged in fishing and fish farming at the primary level, nearly twice that number when considering the entire value chain (National Fisheries Policy: Sixth Draft for Consideration, 2020). According to the Government of India, 2022, India's fisheries sector can tap into previously untapped or under-utilised resources in marine and inland waters, achieve substantial increases in production and productivity through aquaculture, and effectively integrate with other agricultural sectors. The National Fisheries Policy of 2020 was formulated to integrate and streamline various existing policies, namely the 2017 National Policy on Marine Fisheries (NPMF), the Draft National Inland Fisheries and Aquaculture Policy (NIFAP), and the Draft National Mariculture Policy (NMP). This consolidation aimed to create a more comprehensive and cohesive approach, ensuring a socially inclusive, economically sustainable, and ecologically responsible fisheries sector. The intention was to address any gaps or redundancies present in the

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previous policies, such as delays in previous policies regarding adoption, promoting efficiency and effectiveness in fisheries management. With its remarkable diversity, the National Fisheries Policy of 2020 was formulated to establish a socially inclusive, economically sustainable, and ecologically responsible fisheries sector. The draft NFP has substantially altered the previously circulated marine, inland, and mariculture fisheries policies. This modification necessitates a fresh look. Gangal *et al.* (2023) suggest that the interplay of national goals, local socio-political influences, bioeconomic models, and technological advancements significantly shapes fisheries policy. Being pivotal in its role, there arises a need for its analysis.

As discussed by Sandelowski (1995), qualitative research methods play a vital role in investigating the intricate dynamics and impacts of public policies. However, Clarke and Braun (2013) have raised concerns regarding the analysis of qualitative research. Sandelowski (1995) emphasises that qualitative research aims to offer insights rooted in human experience. To enhance the reliability of qualitative research, greater transparency and more advanced tools are needed as this research tradition gains prominence (Rowland and Myatt, 2014; Rosenthal, 2016). Thorne (2000) notes that data analysis is often the most challenging stage, a view supported by Clarke and Braun (2013), who stress the importance of detailed instructions for practical implementation.

Thematic analysis (TA) is a valuable qualitative analysis technique that has gained recognition across various fields, as stated by Merton (1975). It involves deductive and inductive techniques, according to Mihas (2023), and was significantly demonstrated by Braun and Clarke (2006). TA revolves around coding, where codes represent individual topics and themes capture broader dimensions or meanings across multiple codes (Mihas, 2023). Researchers may create clusters of related codes to identify themes, providing in-depth interpretations of data, as outlined by Boyatzis (1998). TA is particularly suitable for studies seeking interpretations, with researchers serving as the analytical instrument throughout the process, as noted by Starks and Trinidad (2007). This method has been widely utilised in studies related to communications, media, creative industries, and cultural policies (Blomkamp, 2014; Darchen and Tremblay, 2015; Herzog and Dias Osório, 2018; Herzog and Ali, 2015; McNally *et al.*, 2017, 2018; Ruhode, 2016; Stover, 2010)

As one of India's most productive and dynamic sectors, fisheries policy outlines the goals for the country's fisheries sector, including maximising sector profitability, boosting fish production, and creating/maintaining as many job opportunities as possible. The National Fisheries Policy 2020, set out by the Government of India, aims to integrate the various existing policies related to fisheries in India and, therefore, impacts the overall management of the sector. No review of the draft NFP 2020 has been performed so far, particularly in the context of a long-term perspective. Keeping this in view, this paper critically reviews National Fisheries Policy 2020 in addressing the needs of the fisheries sector using Thematic Analysis. It also aims to provide an insight into or response to, the fundamental questions about the credibility, efficacy,

and long-term viability of public action. Nevertheless, the policy remains in draft status, and this infancy in the policy can be ascribed to the complexity of integrating various policies, the ongoing stakeholder engagement process, the commitment to inclusivity, the translation and regional circulation requirements.

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DATABASE AND METHODOLOGY

The central data for analysis was derived from the "National Fisheries Policy, 2020 - Sixth Draft for Consideration," accessed via the official Department of Fisheries website (National Fisheries Policy: Sixth Draft for Consideration, 2020). Braun and Clarke (2006) provide a six-phase guide, a useful framework for conducting this analysis. As for the data analysis approach, themes were identified using the semantic /explicit approach: "...within the explicit or surface meanings of the data and the analyst is not looking for anything beyond what participant has said or what has been written" (Braun and Clarke, 2006). NVivo software was used to capture the focus of the policy. Furthermore, the document was coded and analysed based on three approaches.

All three approaches were analysed using Braun and Clarke's (2006) six-phase process, described below (Braun and Clarke, 2006).

Approach 1	Reflexive approach : Theoretically flexible interpretative approach that facilitates the identification and analysis of patterns in the whole policy draft		
Approach 2	Prescriptive versus Descriptive approach : Contrasting Time Perspectives This approach aimed to determine whether the policy orientation leans towards being past/present-driven or future-driven.		
Approach 3	Growth versus Welfare approach : Comparison of Growth and Sustenance-Driven Approaches		

<u>Step 1: Become Familiar with the Data:</u> The initial step involved thoroughly reviewing the NFP dataset for a deep understanding. This phase lasted three weeks, extracting essential policy-relevant information and noting potential codes/themes.

<u>Step 2: Generating Initial Codes:</u> During this phase, the data was systematically organised to create initial codes, which form the basis for developing themes (Byrne, 2022). NVivo was used due to its ability to handle extensive datasets (Maguire and Delahunt, 2017). The policy document was segmented into nine files, aligning with the nine key dimensions of the policy, resulting in the generation of fifty-four codes. During the policy coding, open coding was employed, which entails beginning with an open and flexible approach. This method involves creating codes based directly on the data rather than pre-established categories. Such an approach promotes greater adaptability and facilitates the discovery of new insights throughout the data analysis

process (Maguire and Delahunt, 2017). Relevant data was coded to highlight core policy aspects efficiently (Table 1).

Access to credit	DS Resource	Institutional	Regulatory
Adaptation measures	DS skill enhancement	lssues	Resource
Artisanal Fishers	DSF data	IUU	Significance
Availability of seed	DSF Resources	Knowledge	Social Security
Bio Filters	Employment	Logistics	Species production
Blue Economy	Fisheries Biotechnology	Management Measures	SSF
Capacity Building	Forward Backward	Mitigation Measures	Status
Conservation	Gender	MSP	Success Stories
Control & Surveillance	Gender Data	Participatory measures	Support Services
Data	Improvement of	Private participation	Trade related
Data availability	Improvement of	R&D	Water flow
Deep Sea Fishing	International	Rationalisation	Welfare measures
Developmental	Infrastructure	Redress Mechanism	
Distribution channel	Input improvement	Regional Co-operation	

TABLE 1: TOTAL CODES CREATED DURING PRELIMINARY ITERATION

<u>Step 3: Search for themes:</u> This stage involves transitioning from interpreting individual data elements to identifying collective meanings within the dataset. The coded data underwent analysis to merge codes with shared meanings, leading to the emergence of themes. For instance, codes related to government procedures for fishermen's welfare merged into the theme "Institutional Mechanisms." Other codes, such as access to credit, data, employment generation, and research and development, were consolidated under this theme. This phase culminated in organising ten overarching themes that encapsulated the policy's core essence. The ten themes are highlighted in Table 2.

TABLE 2: KEY THEMES IN THE NATIONAL FISHERIES POLICY

Welfare measures	Regulatory mechanism	
Conservation measures	Capacity building	
Developmental measures	Deep sea fishing	
Institutional measures	Forward Backward Linkage	
Management measures	Status	

<u>Step 4: Review Themes</u>: This stage encompassed reviewing, adjusting, and enhancing the initial themes identified in Step 3. The raw data was re-evaluated for referential adequacy, and themes were assessed for coherence and distinctiveness. The evaluation was guided by questions such as whether the themes logically align if there

is substantial evidence supporting them, if they are distinct or overlapping, and if any new themes emerge from the data.

<u>Step 5: Define Theme</u>: The final iteration aimed to distil the core essence of each theme through a rigorous peer debriefing process. This stage involved a comprehensive analysis of the data elements to ensure that each theme accurately captured the research question and data essence.

<u>Step 6: Write-up:</u> The write-up phase has been discussed in the "Results and Discussion" section of the paper.

III

RESULTS AND DISCUSSION

Approach 1: Reflexive Approach

In Approach 1, the analysis uncovered nine key dimensions corresponding to specific aspects outlined in the policy. These dimensions elucidated the primary focus areas and core elements of the policy, providing a comprehensive understanding of its major objectives and strategic direction.

Key Dimension 1: Marine Fisheries: NFP has been designed to bolster the marine fisheries sector by employing a holistic strategy encompassing management and institutional measures to uplift fishers' livelihoods and advocate for sustainable practices. It emphasizes various management measures such as input-output control, establishing fisheries management areas, optimising fishing efforts, and restoring depleted fish stocks. Additionally, institutional measures are highlighted to support fishers, including livelihood enhancement provisions during closures and conflict resolution mechanisms at regional, inter-state, and national levels.

The policy has more opportunities for improvement in addressing the specific issues faced by traditional and small-scale marine fishers. To further enhance inclusivity and foster the overall development of the marine fisheries sector, the policy can consider explicitly recognizing and addressing the unique challenges faced by small-scale fishers. The findings align with the conclusions discussed by Jena and George (2018), which underscores the importance of incorporating specific provisions in the policies and institutions to address SSF challenges, promote fair resource distribution, and foster regional collaboration. The NFP demonstrates strengths in its focus on sustainable fishing practices and interventions to improve deep-sea fishing productivity and sustainability. This aligns with Devaraj (1996) and James (2014), who advocate for a robust National Fishery Policy, specifically emphasizing deep-sea fishing. By proposing solutions that cater to issues like access to resources, market constraints, and technological limitations, the policy can ensure a more comprehensive approach that supports the diverse needs of fishers and promotes sustainable growth within the sector.

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Key Dimension 2: Inland Fisheries: This dimension delves into a comprehensive exploration of potential interventions within the inland sector, encompassing various considerations. The diverse range of themes within this dimension sheds light on the myriad interventions that the government could potentially implement to elevate the inland fisheries sector in India. The status theme provides a detailed analysis of the current situation, covering strategic area coverage, the demographic profile of fishers, production levels, sectoral importance, and existing challenges. The theme focuses more on understanding resource base, output trends, and current systems to understand better and address the limitations and potential of inland aquaculture. Following this, the policy pivots its focus towards management strategies, strongly emphasising reestablishing the link between rivers and floodplains as a strategic method to rejuvenate these resources and leverage their diverse ecosystem services effectively. The findings align with the study conducted by Amoros and Bornette (2002), who underscore that linking floodplains with rivers through effective hydrological connectivity supports ecological diversity, habitat availability, nutrient exchange, ecosystem resilience, flood mitigation, and water quality. Conservation efforts, including maintaining an optimal water flow to support fisheries, protecting riverine areas and their adjacent floodplains, and enhancing the ecological health of the riverine ecosystem, are central components highlighted in this section of the policy.

The policy can enhance effectiveness by incorporating targeted interventions and addressing significant opportunities within the inland sector. By deepening the analysis provided in the status theme to explore critical issues and challenges faced by the sector, the policy can better align with the sector's needs. Furthermore, highlighting the environmental stress on riverine fisheries caused by pollution, encroachments, and excessive water use presents an opportunity to emphasize essential conservation efforts required to mitigate these threats effectively. Many of these interventions ally with the recommendations elucidated by Katiha *et al.*, 2005 in their study on Inland aquaculture

Key Dimension 3: Aquaculture: The National Fisheries Policy presents a comprehensive strategy to advance aquaculture across freshwater, brackish, and marine environments. For freshwater aquaculture, the focus is on enhancing ornamental fisheries by establishing supply chains, sourcing broodstock, and promoting large-scale breeding operations. The policy aims to diversify species in brackish water by reviving tiger shrimp (Penaeus indicus) and incorporating finfish like seabass and mullets. It supports the domestication of these species for pathogen-free germplasm, expands shrimp farming for efficient coastal use, and improves biosecurity by banning antibiotics, adding quarantine facilities, and promoting Best Management Practices (BMPs) and Good Aquaculture Practices (GAP). For mariculture, the policy outlines a strategic blueprint for development, including suitable areas, species, and the creation of brood banks and commercial hatcheries. It promotes seaweed farming, supports seaweed seed banks, and focuses on attracting fishers and women to seaweed farming. These measures aim to boost productivity, sustainability, and economic benefits across all aquaculture sectors. The range of

themes contained within this dimension exemplifies the varied interventions that the government could undertake to enhance the aquaculture sector. A detailed analysis shows that the sector encompasses nine distinct themes, each representing a unique avenue for intervention and improvement. Among these themes, the "Status" category stands out for its focus on current data, the sector's significance, and the prevalent challenges it faces. This theme is a foundational pillar for understanding the sector's present state and identifying areas for enhancement. In contrast, the "Developmental Measures" theme takes a proactive approach by outlining strategies to introduce cutting-edge technologies into the farming system. Jayasankar (2018) also highlights the need to advance research and development efforts and maintain sustainable growth practices. Additionally, it emphasises enhancing trout farming in high-altitude regions through targeted improvements in road infrastructure, transportation networks, power supply, and communication systems in hilly areas. These developmental initiatives are designed to modernize practices and boost productivity in key aquaculture areas.

Furthermore, the "Management Measures" theme is pivotal in ensuring the sector's sustainability and growth. This theme revolves around guaranteeing that farmers have access to high-quality seeds through initiatives like hatchery accreditation, seed certification programs, and stringent quality control measures. By focusing on seed quality and management practices, this theme aims to enhance productivity, promote sustainable practices, and support the long-term viability of aquaculture operations.

Key Dimension 4: Infrastructure: This dimension emphasised three key interventions, highlighting developmental measures to establish and enhance existing infrastructure. The policy prioritizes the modernization and expansion of infrastructure across the fishing sector to enhance operational efficiency and fish handling. A national master plan will be developed to assess and address infrastructure needs, including landing, berthing, sorting, cleaning, auctioning, and packing facilities. This plan will explore funding options such as public, private, and public-private partnerships, utilizing various operational models like Build-Own-Operate (BOO) and Build-Operate-Transfer (BOT). In the inland sector, the policy will focus on developing fish landing platforms, auction, and packing areas at key sites and transport facilities to ensure timely and proper delivery of harvested fish. The policy aligns with the findings of Katiha et al. (2005), who highlighted the importance of budgetary support for investment in research, infrastructure development, training and extension in all aspects of freshwater aquaculture. The "Status" component delved into current trends and pressing issues, with a specific focus on data related to fleet size, congestion challenges at landing centres, and deficiencies in facilities at fishing harbours and landing centres.

Moreover, this section illuminated institutional measures, particularly the proposal for establishing an Inter-Ministerial/Department Committee. This committee would involve relevant ministries/departments within the Union Government,

States/UTs, and other stakeholders to oversee the effective implementation of the master plan. Furthermore, the policy highlights intervention to address the needs of beach landing centres (BLCs) in approximately 3,400 fishing villages, many of which lack adequate hygienic facilities.

Key Dimension 5: Post Harvest technology: The section focused on the subsequent interventions. The "Status" intervention focused on critical issues such as post-harvest losses, market dynamics, and collecting quantitative and value-driven data to inform decision-making. In contrast, "Management Measures" outlined strategies like equipping fishing vessels with cooling facilities, improving distribution channels and cold chain systems, and implementing certification and labelling schemes to ensure quality and safety standards. "Capacity Building" initiatives in the policy aim to empower value chain participants by providing support and resources to enhance their skills in value addition and innovation. Additionally, a range of other interventions was identified, including "Developmental Measures" to drive sector growth, "Institutional Measures" to strengthen governance structures, "Welfare Mechanism" to support stakeholders' well-being, "Regulatory Measures" for effective oversight, and "Forward-Backward Linkages" to optimize connections within the industry value chain. The plethora of interventions given in the policy lies in line with the findings highlighted by Keerthana et al. (2022). These interventions collectively aimed to address the key challenges and drive sustainable development in the fisheries sector.

Key Dimension 6: Environment and Climate Change: From the detailed overview, this dimension aimed to address pressing issues and promote sustainable development in the fisheries sector. The "Status" intervention centred on concerns related to climate change, the adverse impacts of inadequate effluent treatment, and the proliferation of solid waste, particularly plastics. This component emphasised the importance of addressing these issues to protect the environment and ensure the long-term viability of the sector.

The "Conservation Measures" intervention involved providing timely adaptive strategies for fishing and farming communities to mitigate the effects of climate change. Additionally, it introduced the concept of green fisheries, which aimed to reduce Greenhouse Gas (GHG) emissions and promote eco-friendly practices within the sector. "Management Measures" encompassed exploring potential game-changing information and technologies for fisheries management, along with improved management practices to enhance the economic gains for fishers and other stakeholders in the sector. This component aimed to drive innovation and efficiency in fisheries operations. The section also included other interventions such as "Regulatory Measures," "Developmental Measures," and "Institutional Measures," which aimed to ensure adequate oversight, promote sector growth, and strengthen governance structures, respectively. A review by Vivekanandan (2013) underlines the interventions already highlighted in policy, such as integrated management strategies that increase ecosystem adaptability, develop robust indicators, and reduce fishing pressure to

support the sustainability of tropical marine fisheries amidst ongoing climate change. These interventions collectively aimed to address key challenges and drive sustainable development in the fisheries sector.

Key Dimension 7: Social Security: The range of interventions within this dimension aims to improve the welfare and sustainability of small-scale fisheries and aquaculture. "Welfare Measures" prioritised safeguarding small-scale fisheries and aquaculture, implementing community welfare programmes to uplift fisher communities and workers, and establishing a safety net for vulnerable groups. The "Status" aspect delved into critical issues affecting coastal and riparian communities, the impact of extreme weather events and human-induced disasters on fisher communities, and data concerning women's participation in fishing activities. The "Capacity Building" intervention aimed to actively involve small-scale fisheries in socio-economic development discussions and provide support to enhance their engagement in conservation and management efforts. Additionally, the section included interventions such as "Institutional Measures," "Forward-Backward Linkage," "Management Measures," "Regulatory Measures," and "Developmental Measures." These interventions collectively aimed to address various challenges, promote sustainable practices, and enhance the overall well-being of fisher communities and workers in the sector. The number of interventions mentioned aligns with the findings of Drèze and Sen (1989), Guhan, 1993, and Kurien and Paul (2001).

Key Dimension 8: Governance: The section focused on various interventions to address key aspects of the fisheries sector. The "Status" intervention delved into the intricate dynamics of fisheries, characterised by evolving practices and resource utilisation, while also providing insights into the current status of Marine Fisheries Regulatory Authorities (MFRAs)."Institutional Measures" entailed the implementation of adaptive strategies within a specified timeframe for fishing and farming communities, alongside the development of a Model Bill intended for review by coastal States/Union Territories. Symes (2006) illustrates the inherent appeal of the concept, showcasing its multifaceted nature, diverse forms, and growing widespread interest.

Moreover, efforts in "Capacity Building" were directed at enhancing the expertise of traditional fishers and fish farmers through training programmes and technological advancements to facilitate their transition from traditional methods to more economically viable practices. Additional interventions encompassed initiatives such as "Deep Sea Fishing," "Developmental Measures," and "Forward-Backward Linkage," all aimed at fostering growth, sustainability, and innovation within the fisheries sector.

Key Dimension 9: Regional Co-operation: The "Status" component focuses on data related to the Indian subcontinent and neighbouring regions, underscoring the importance of collaboration. On the other hand, "Institutional Measures" aim to foster strong regional cooperation for sustainable resource management, including species

conservation. This involves enhancing collaboration in marine fisheries through bilateral agreements and increased engagement with regional fisheries and environmental bodies, emphasising the value of working together. Moreover, the "Capacity Building" initiatives target enhancing skills and knowledge essential for operating effectively in unfamiliar oceanic territories. These efforts aim to equip individuals with the expertise needed to thrive in diverse marine environments, contributing to improved practices and sustainable development in maritime activities. Phillipson's (2002) analysis examines the network of local, regional, and national organisations in the UK and their capacities to take on greater roles in formulating and implementing fisheries policy.

The policy document is structured around nine different themes, with most of the content focusing on the current state of the sector and the status data. This section provides a comprehensive overview of the current situation, including key metrics and challenges within the sector. Additionally, the policy addresses institutional measures, which involve improving existing institutions and establishing new ones to enhance the sector's governance structure. These measures ensure effective oversight and promote sustainable practices within the sector. Furthermore, the policy discusses developmental measures, which are strategies to introduce new technologies and improve existing infrastructure to drive sector growth. These measures are designed to modernise practices and boost productivity in key areas of the sector.

Approach 2: Prescriptive Versus Descriptive Approach

Within the National Fisheries Policy, Approach 2 delineates two key dimensions: prescriptive and descriptive measures. The policy predominantly focuses on prescriptive measures, constituting 75 per cent of its strategic approach. These prescriptive measures encompass tangible and actionable steps crucial for achieving specific objectives outlined in the policy. Key interventions include diversifying and expanding the species spectrum by ensuring healthy stocking material and introducing advanced technologies such as Biofloc and Re-circulatory Aquaculture Systems. Integration of fish farming with other agricultural activities, securing water resources, and setting up Fish Farmer Producer Organizations (FFPOs) are prioritised to enhance productivity. To bolster cold-water fisheries, the policy mandates a comprehensive assessment of resources, replenishment of trout germplasm, establishment hatcheries and feed mills, and promotion of angling tourism. Addressing the skewed production and distribution of quality fish seed, the policy supports commercial-scale production of high-value species and genetic improvements, fostering collaboration between research institutions and the private sector for technology commercialisation. Structural reforms are proposed, such as establishing a Ministry and Directorate General of Fisheries, developing staff capacities, and modernising infrastructure through diverse funding mechanisms. Entrepreneurial skills among fishers are to be developed and supported by a national platform for data collection and ensuring conducive water flow and ecological health of riverine systems. For small-scale fisheries (SSF), the policy aims to define SSF legally, provide incentives for selforganisation, and enhance resilience and social safety nets.

In contrast, the descriptive measures within the policy serve to provide a broader context and understanding of the fisheries sector. These measures offer detailed factual information on current production statistics, highlighting the sector's strengths, historical developments, and future opportunities and challenges. The policy underscores the importance of documenting the impacts of climate change on fish species distribution, abundance, breeding behaviour, and other phenological attributes. Highlighting the sector's strengths, it traces the historical development of modern fish farming practices over the past six decades and examines the global trend of fisheries management credibility. It recognises the importance of India's scientific institutions and advocates for the participation of Indian scientists in regional and international organizations to establish leadership and enhance India's position as a knowledge exporter. The policy also provides a detailed analysis of future opportunities, such as the potential for cold-water fisheries and the commercialisation of fisheries and aquaculture, as well as challenges, including water resource management and climate change impacts. By incorporating both prescriptive and descriptive elements, the National Fisheries Policy aims to create a comprehensive framework that guides specific actions and provides a holistic view of the sector's dynamics.

Approach 3: Growth versus Welfare approach

Approach 3 of the National Fisheries Policy strongly emphasises prioritising welfare over development, signalling a commitment to enhancing the well-being of fisher communities and fish workers. This approach entails implementing measures that directly benefit these groups, such as providing social safety nets like insurance and pensions, offering education and training programmes to enhance skill development, facilitating the formation of self-help groups and cooperatives for resource pooling and marketing support, improving access to financial services, and safeguarding the rights of fishers, including their traditional fishing areas. Welfare initiatives focus on community support and social safety, highlighting the importance of ensuring quality inputs such as seed and feed, providing extension and technical services for aquatic animal health and water quality management, and setting up Fish Farmer Producer Organisations (FFPOs). Securing water resources for fish farmers addresses competing demands for freshwater, a critical welfare measure. The policy emphasizes supporting small-scale fisheries (SSF) by legally defining 'small-scale fisheries,' designing incentives for small-scale operators to self-organise, building skills, expertise, and entrepreneurship among SSF, assisting them in forming self-help groups (SHGs), cooperatives, or FFPOs, and improving resilience and social safety nets for SSF. Community and supply chain integration initiatives encourage community ownership over the supply chain, establish fisheries co-management structures in States and UTs, and develop integrated end-to-end supply chains.

Conversely, the development dimension within Approach 3 focuses on initiatives to enhance the productivity and sustainability of the fisheries sector. These measures include introducing innovative technologies like fish aggregating devices and solar-powered boats, upgrading infrastructure such as roads, ports, and cold storage facilities, investing in research and development to bolster fish stocks, and promoting aquaculture practices. The policy seeks to drive growth within the fisheries sector by integrating new technologies and infrastructure improvements while ensuring its longterm sustainability. These include diversifying and expanding the species spectrum by ensuring the availability of healthy stocking material of required species and introducing new field-tested technologies such as Biofloc, Re-circulatory Aquaculture System, and Integrated Multi-trophic Aquaculture (IMTA). Another crucial development measure is integrating fish farming with other agricultural activities like livestock, poultry, dairy, horticulture, and crops. The policy underscores the importance of international participation and leadership by encouraging Indian scientists' involvement in regional and international organisations, establishing regional leadership through collaborative research programs, and recognising the global trend of fisheries management credibility.

The policy endeavours to create a more resilient and prosperous environment for fisher communities and the broader fisheries industry through a strategic blend of welfare-focused and development-driven interventions.

IV

COMPARATIVE ANALYSIS OF NATIONAL FISHERIES POLICIES: ADDRESSING SUSTAINABLE FISHERIES MANAGEMENT IN INDIA AND BEYOND:

Recognising the crucial role of the fisheries sector in enhancing trade and ensuring food security, India's national development plan, as outlined in the 5-Year Plan, integrates measures to improve food safety in fish distribution and addresses the potential impact of port development on small-scale fisheries, a concern similarly highlighted in Bangladeshi and Thai documents regarding the consequences of unsustainable fishing practices (Thorpe et al., 2005). The marine resource optimisation is also a case in the national policy of other Asian countries like Indonesia (Apriliana, 2024). The neighbouring country of India, like Pakistan, has recognised the challenges facing its fisheries sector, including the rise of small-scale artisanal fisheries, lack of modern technology, weak institutional development, inadequate infrastructure, and insufficient skilled human resources, leading to the formulation of a National Fisheries Policy (NFP) to address these issues (Noman et al., 2022). The fisheries policy of some of the least developed countries like Uganda also focused on "sustainable exploitation of the fisheries resources at the highest possible level, while conserving the environment" (Allison, 2003) and Nigeria (the largest catfish producer in the world and the largest aquaculture producer in Sub-Saharan Africa), as its aquaculture industry heavily relies on catfish, which is insufficient to meet the growing demand, the country is developing a multispecies aquaculture industry through policy intervention, with the

Federal Ministries of Agriculture and Food Security and Marine and Blue Economy, supported by IFPRI and WorldFish, reviewing and updating the Fisheries and Aquaculture Policy (2024–2028) (Ragasa *et al.*, 2023). While in Tanzania, recognising that the 1997 National Fisheries Sector Policy and Strategy Statement could not adequately address the challenges such as sustainable resource management, processing, marketing, aquaculture development, and quality control, the government introduced the National Fisheries Policy of 2015 to tackle these issues, respond to emerging micro and macroeconomic changes, optimise resource use, and capitalize on new opportunities, with the ultimate goals of achieving food security, reducing poverty, and enhancing the sector's contribution to gross domestic product through improved management, research, training, and international cooperation (National Fisheries Policy, 2015).

V

CONCLUSION AND POLICY IMPLICATIONS

The National Fisheries Policy 2020 is a forward-looking document that lays a strong foundation for the sustainable growth of India's fisheries and aquaculture sectors. The industry's evolving landscape and its complex challenges necessitate additional considerations to ensure the policy's full potential is realised. While the policy is ambitious and covers various critical aspects of fisheries management, there is still some room for improvement that can be addressed to enhance its effectiveness.

Integrating Welfare and Development: One critical area for enhancement in the policy lies in optimising the balance between welfare and development priorities. While Approach 3 emphasises welfare over development, there is an opportunity to harmonise these dimensions effectively. By adopting a balanced approach that seamlessly integrates welfare and development, the policy can ensure that measures aimed at welfare directly contribute to sustainable development outcomes in the long term, fostering a mutually beneficial relationship between the two aspects.

Strengthening Implementation Frameworks: Monitoring, Evaluation, and Accountability: Another scope for improvement lies in strengthening the link between policy formulation and implementation within the NFP 2020. While the policy is comprehensive, successful execution revolves around the dedication and capabilities of the government and stakeholders. Implementing robust monitoring and evaluation mechanisms, establishing clear accountability frameworks, and fostering effective coordination among relevant entities are essential to enhance the policy. Furthermore, accentuating the policy with a detailed analysis of the sector's current landscape, including strategic coverage, fishers' demographics, production levels, sectoral significance, and existing challenges, particularly in the Inland sector, can bolster the NFP's efficacy in realizing its vision and goals.

Enhancing Stakeholder Engagement and Participation: There is a need to enhance stakeholder engagement and participation in policy implementation. Involving fishers' communities, industry representatives, researchers, and civil society organisations in decision-making can lead to more inclusive and effective policy outcomes. The policy can benefit from diverse perspectives and local knowledge by fostering collaboration and dialogue among stakeholders, ultimately enhancing its relevance and impact.

Expanding Research and Development (R&D) Initiatives: The policy's focus on introducing new technologies and species diversification is commendable, but there is room for a more aggressive push in Research and Development (R&D). The government should consider creating dedicated funds for R&D in aquaculture, focusing on the genetic improvement of commercially important species. Collaborative programs with the private sector, facilitated by the government, can accelerate technological advancements and their adoption by fishers and farmers.

Securing Water Resources and Promoting Sustainable Practices: The competing demand for freshwater resources is a significant challenge for aquaculture. The policy should advocate prioritising water resources for fish farming in regions where aquaculture is a primary livelihood.

Data-Driven Decision Making and Policy Adaptation: There is a pressing need to enhance data collection, collation, and dissemination mechanisms within the fisheries sector. Developing a national-level platform for data management would support evidence-based decision-making and policy adaptation. This platform could also provide a centralised repository for sectoral data, making it accessible to researchers, policymakers, and other stakeholders. The findings are also emphasised by Katiha et al. (2005), who advocate for creating an adequate and reliable database for the fisheries sector.

In conclusion, while the National Fisheries Policy 2020 showcases a robust dedication to sustainable fisheries development, focusing on optimising the balance between welfare and development priorities, strengthening implementation mechanisms, and fostering enhanced stakeholder engagement are pivotal measures to enhance its effectiveness. Proactively addressing these areas of improvement will empower the policy to more effectively realise its objectives of fostering sustainability, improving livelihoods, and securing the long-term viability of India's fisheries sector.

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