

Socio-economic and gender issues in inland open waters

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Introduction

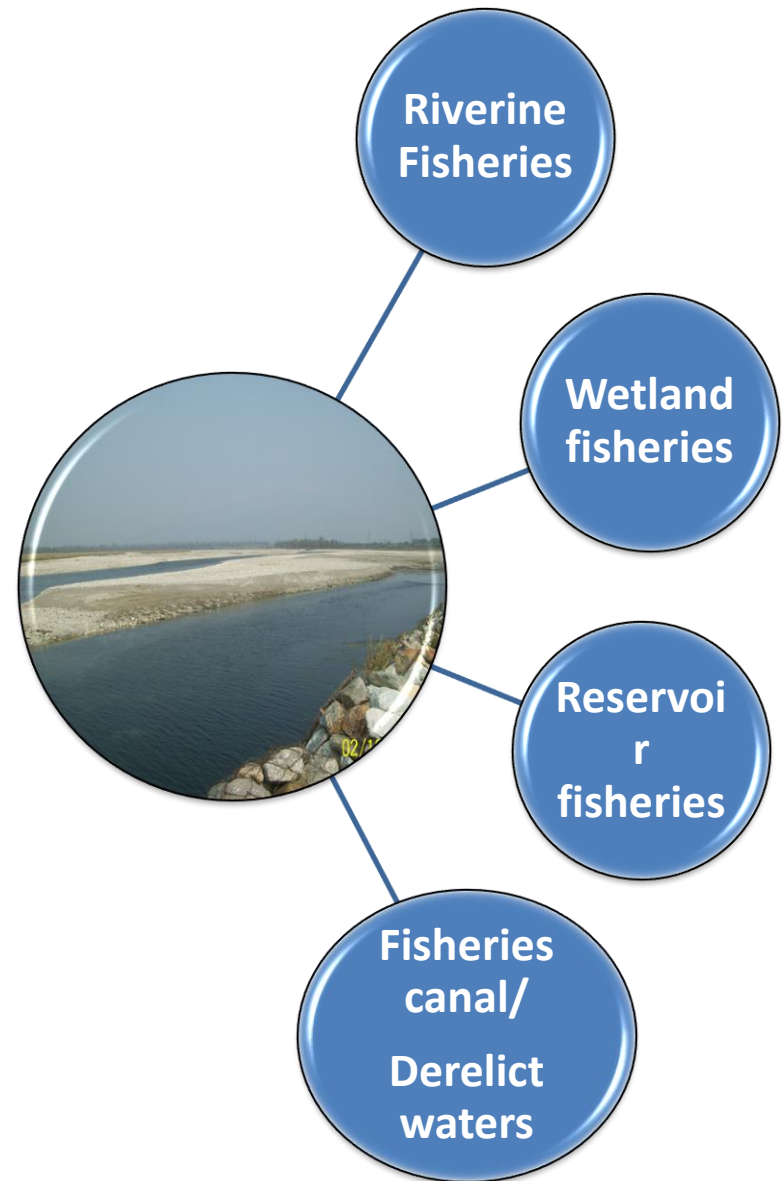
- Inland capture fisheries are dynamic in nature.
- Extracting fish or other aquatic organisms from inland waters is known as inland fisheries
- Inland fisheries sector in India is largely comes under small-scale fisheries can be defined as an easy, individual or household(family) venture, entail low levels of technology

Characteristics of inland openwater fisheries

- Inland fishers are usually socio-economically backward, belong to the traditional fishers' community
- Small crafts, mainly non-motorized boats and simple gears are used to harvest the fish or other aquatic organisms
- Fishers largely work as share-workers or operate individually.
- The fishers do have traditional knowledge on fishing activities, biodiversity, resources
- The activities of small-scale fisheries usually comprise supplying fish and fishery products to local and domestic markets as well as for subsistence consumption

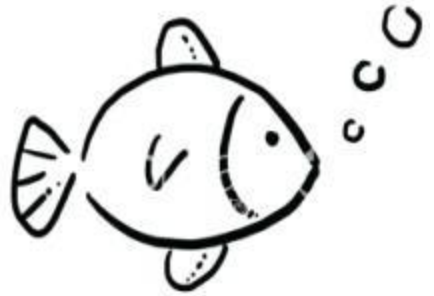
Inland open water fisheries

- Inland fisheries and aquaculture have grown in absolute terms, **potential is yet to be realised.**
- The vast and varied resources, still **un-utilised and under-utilised**
- The public and private **investments are minimal**
- Need to **streamline policies and programs** to take R&D benefits to the farmers and fishers
- **14.5 million fishers including 40% male 32 % Female and 28% Children**



- Rivers are the richest fish genetic resources and habitat of precious fish germplasm, supporting vast biodiversity.
- Multi-species, multi-gear fish assemblage in these rivers support the livelihood of the fishers.

Challenges in Riverine fisheries



Ownership issues
due to 'common
pool' nature of
rivers

Pollution due to
heavy
industrialization,
Plastic pollution

lack of control and
regulation for
juvenile fishing

Absence of fishing
rights

Use of pesticides
for fish harvesting

Violation of fishing
ban period, Over
fishing

Destructive fishing
gears and methods
Electro-fishing

Destruction of fish
seeds

Decline in Fish Production in Hoogly river: Perception of fishermen community.....



Reasons behind decline of fishery	Rank given by respondents							Total Number of Respondents	Total Score	Mean Score	Rank
	1	2	3	4	5	6	7				
Use of destructive fishing gears	39	77	56	75	32	14	7	300	19820	66.06	I
Erratic Rainfall/Climatic hazards/variation	111	68	65	26	19	4	7	300	19362	64.54	II
Huge catch of fish in lower part of Hoogly /sea mouth	89	70	67	34	20	10	10	300	18180	60.3	III
Industrial pollution in Hoogly river	47	41	34	78	50	18	32	300	15691	52.3	IV
Siltation in Hoogly river	9	23	32	47	51	75	63	300	12469	41.56	V
Fresh water discharge/influx	0	19	26	21	32	86	116	300	10522	35.07	VI

Floodplain wetlands (locally known as *beel/baor/haor/ox-bow/chaor*) are highly productive and breeding and nursery grounds for a number of aquatic organisms including commercially important fishes

Present need:

- Conservation and restoration of ecological integrity of important natural wetlands
- Promotion of culture based fisheries in identified floodplain Wetlands
- Ensuring easy availability of quality seed for stocking of wetlands

Challenges in Wetland fisheries

Ownership issues due to 'common pool'

Conflict with agriculture sector

Encroachment

Loss of river connectivity

Governance and institutional arrangements

Lack of awareness in use of sustainable fish production

Water Abstraction



Penculture is economically viable and technologically feasible for in-situ raising of desired stocking material

RBQ and Rank of various problems perceived in triangulation

Prob. No.	RBQ of KI	RBQ of Farmers	di ²	r	Av. RBQ(%)	AEOD(%) of KI	AEOD(%) of Farmers	di ²	Av. AEOD(%)	Final rank of the problems
Ownership issue among the fishermen	85(2)	78.7(2)	0	0.9	81.8	35	29	0.9	32	2
Conflict with agricultural sector	71.3(4)	64.84(4)	0		68	25	22		23.5	4
Management of pen in the wetland	83.2(3)	72.62(3)	0		77.6	30	26		28	3
Lack of awareness	89.3(1)	86.5(1)	0		87.9	39	41		40	1
Technological feasibility	63.3(6)	60.97(5)	1		62.1	17	21		19	5
Risk of theft/poaching	66.6(5)	52.7(6)	1		59.6	20	15		17.5	6

Ref: Aparna Roy and M Aabul Hassan (2013). Adoption of Pen Culture Technology in the Wetlands of West Bengal, India. *Fishery Technology* 50 (2013) : 342 - 346

Reservoirs are the major resource where fisheries enhancement tools can be applied for the production of animal protein and can, **combat poverty and mal-nutrition** of the country.

Challenges in Reservoir fisheries

Ownership issues due to 'common pool'

Social Conflict

Displaced people

Area is large and scattered villages

Transfer management right

Water Abstraction

Unplanned management and use of resources

Need in Reservoir fisheries:

- **Transfer of management rights** of all manmade waterbodies to State Fisheries Department(s)
- **Promotion of cage culture in reservoirs**
- **Production optimization through culture based fisheries**

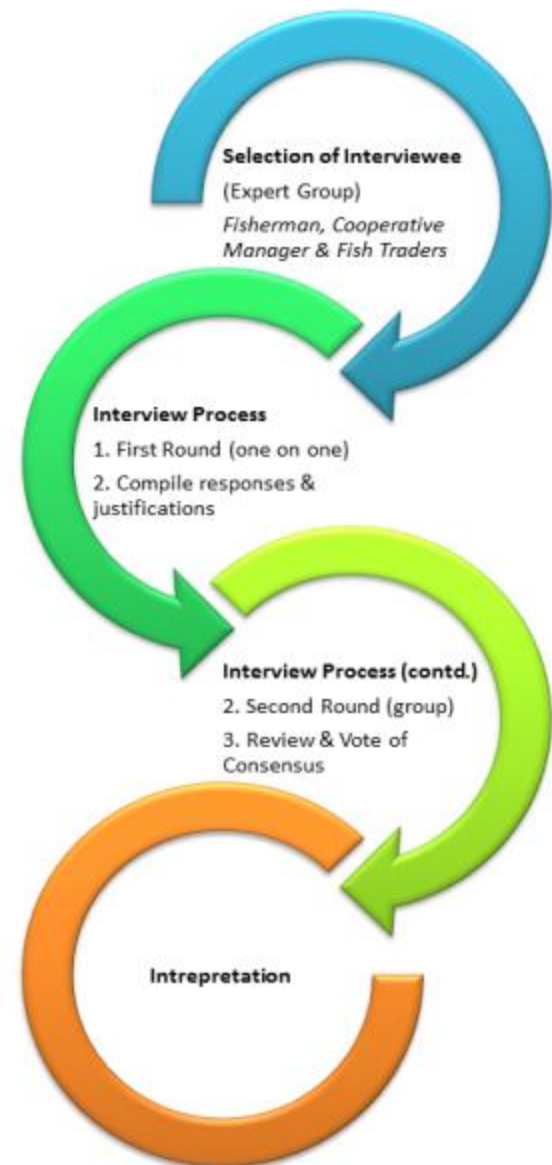
Challenges in Derelict waters/ canals

- These resources are often exploited for small-scale fisheries, but the harvest from these canals are not taken into account of inland fisheries production
- Socio-political dynamics is major concern in developing fisheries in those waterbodies

Climate Change

Drought; shift in seasons(prolong dry spell/ erratic rain fall)flood and extreme climatic events leads to decline in fish production; breeding failure ; increased abundance, introduction invasive species, siltation etc

Malay Naskar, Koushik Roy, Gunjan Karnatak, Saurav Kumar Nandy and Aparna Roy(2017).Quantifying climate change induced threats to wetland fisheries: a stakeholder driven approach. *Environment, Development and Sustainability*.DOI: 10.1007/s10668-017-0018-6



Threats	Pooled Degree of consensus (%)	Climate related Inducing factors (from 1 st and 2 nd round of interview)
<i>Water stress</i>	95	<p>Poor rainfall during actual monsoon months and delaying (staggering) of monsoon proper to July-October Intense summer High evaporation rates and evapo-transpiration rates by aquatic weed mass.</p>
<i>Wetland accretion</i>	85	<p>Flash flood or cloud burst rains. Frequent drought-flood cycle (accelerated hydro cycle) loosening top soil. Increase in intensity and frequency of non-seasonal rains more sediments through run offs.</p>
<i>Aquatic weed proliferation</i>	70	<p>Prolonged summer resulting in longer persistence of concentrated nutrients in limited volumes of water (summer eutrophication). Frequent or high intensity extreme weather events like storm surges and floods bringing in plants, seeds and spores of aquatic weeds.</p>
<i>Loss of wetland connectivity</i>	65	<p>Water stress. Influx and deposition of sediments during monsoon.</p>
<i>Periodic recruitment failure of SIFs</i>	45	<p>Delayed arrival of monsoon rains. Or bsence of pre-monsoon rains. Flash rains resulting in flash floods results in smothering (blanketing) of fish eggs with silt/mud.</p>
<i>Ulcer like diseases</i>	30	<p>Warmer winter temperatures and Non-seasonal heavy rains. Intense summer heat and resulting water stress to fishes. Water quality issues (pungency of water, poor odour, low DO, Acidic pH, blooms of blue green algae) lowering tolerance limits of fish.</p>
<i>Enhanced toxicity to agricultural pesticide run offs</i>	20	<p>Warmer winter temperatures Intense summer heat and resulting water stress to fishes and Water quality issues</p>



Socio economic condition of Inland fishers

Literacy rate

Resources	Literacy %
Reservoirs	63.32
Wetlands	65.23
River	79.10
Total	70.70

Income Status of fishers (Rs/Yr)

Resources	Enterprise					Total
	Fishery	Labour	Agriculture	Business	Any other	
Reservoir	20078.42	8510.39	3795.22	2638.48	1649.33	34696.43
wetland	9868.54	3279.49	1440.36	2575.80	218.75	15164.23
River	13207.32	6580.68	4127.04	7013.04	383.04	31311.12
Overall	16005.36	6920.40	3568.44	4533.36	891.96	30690.96
% of Total	52.15	22.55	11.63	14.77	2.91	100.00

Problems faced by the fishermen

Declining fish production from open water resources

Extinction of certain indigenous fish species

No assured income and no alternative income in lean seasons

Climate variability

No Government support

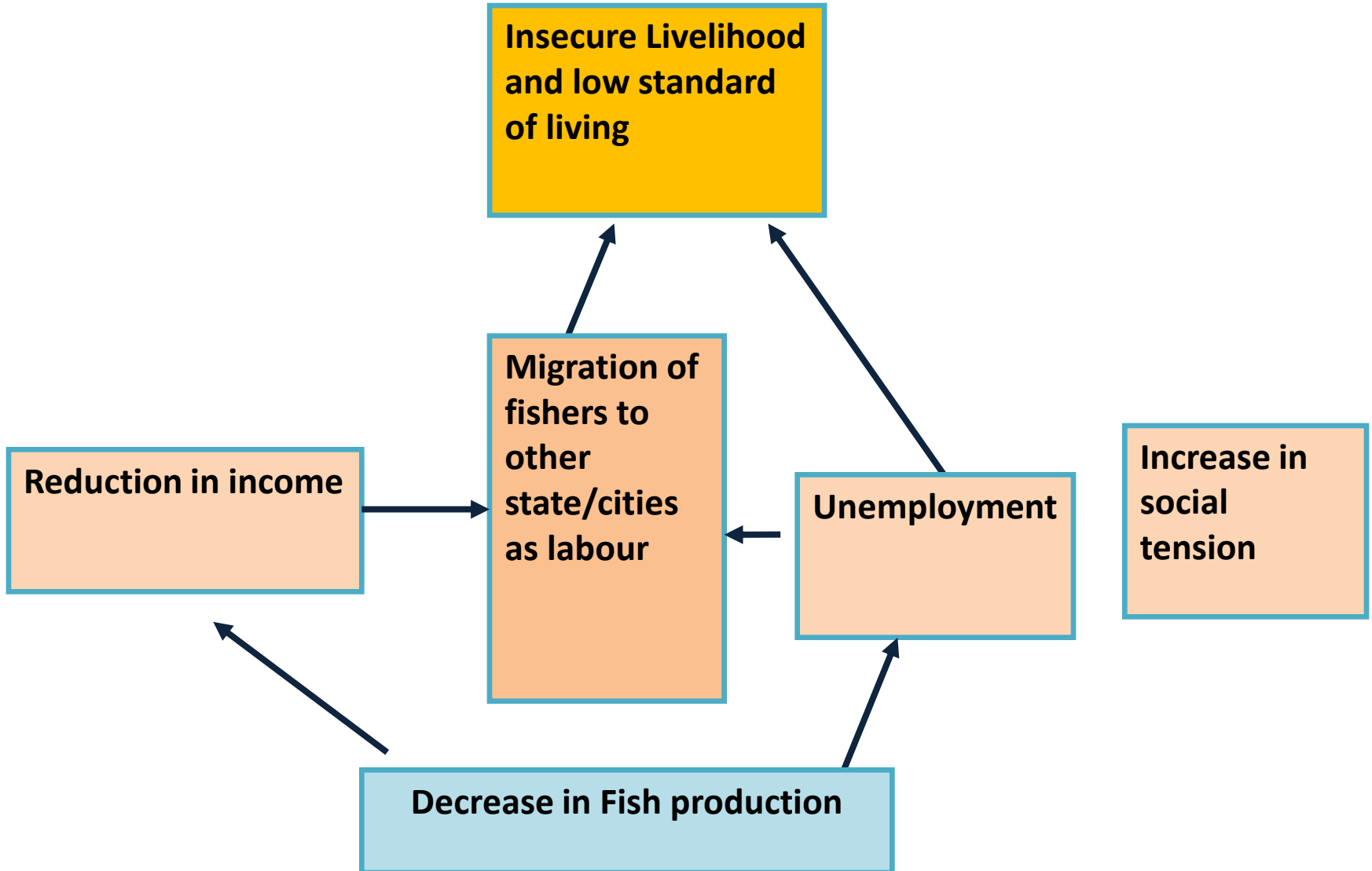
Lack of credit facilities

Lack of insurance policies

Loss of livelihood and nutritional security



How threats in inland fisheries affects the society?





Fish Stock enhancement in rivers/wetlands / reservoirs and Action to combat declining fish bio-diversity



Awareness campaigns and policy intervention on juvenile fishing



Regulation of use of plastic and pesticides, pollutants



Organized marketing channel to reduce price spread

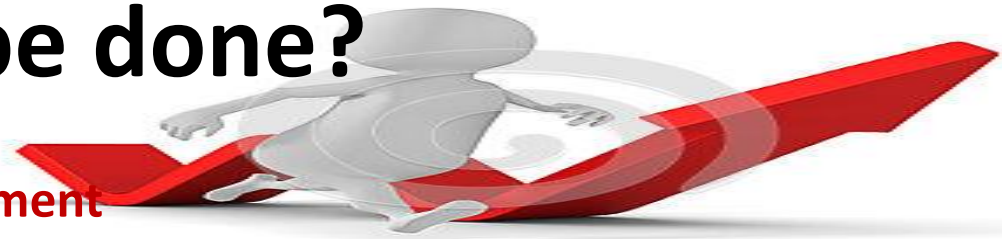


Income diversification and off-season income generation for fishermen



Policy interventions to settle governance issues and linkages and support for govt.

What else can be done?



- **Human resource development**

Training and capacity building of the fishers and line department officials –based on their needs

- **Institutional finance (Credit & Insurance)**

- **Governance and Institutions**

Fisheries sector need to be recognized as legitimate stakeholders in rivers, wetlands and reservoirs

- **Water use/budgeting and Management Policy**

Recognizing minimal right to water for fisheries , considering it primary food production sector.

- **Introduction and regulation of exotic aquatic species**

Regulated entry of exotic aquatic species as per the existing National laws/ rules and adequate biosecurity protocols for import, breeding and farming is needed necessary

- **Fisheries cooperatives**

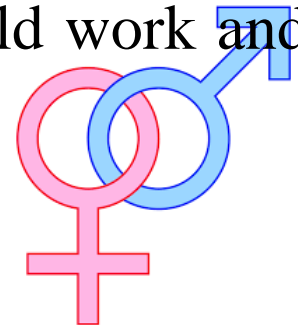
Strengthening of fisheries cooperatives by ensuring good governance, business, accountability and values

- **Research and development linkages**

Gender dimensions in small scale fisheries : counting women's contribution

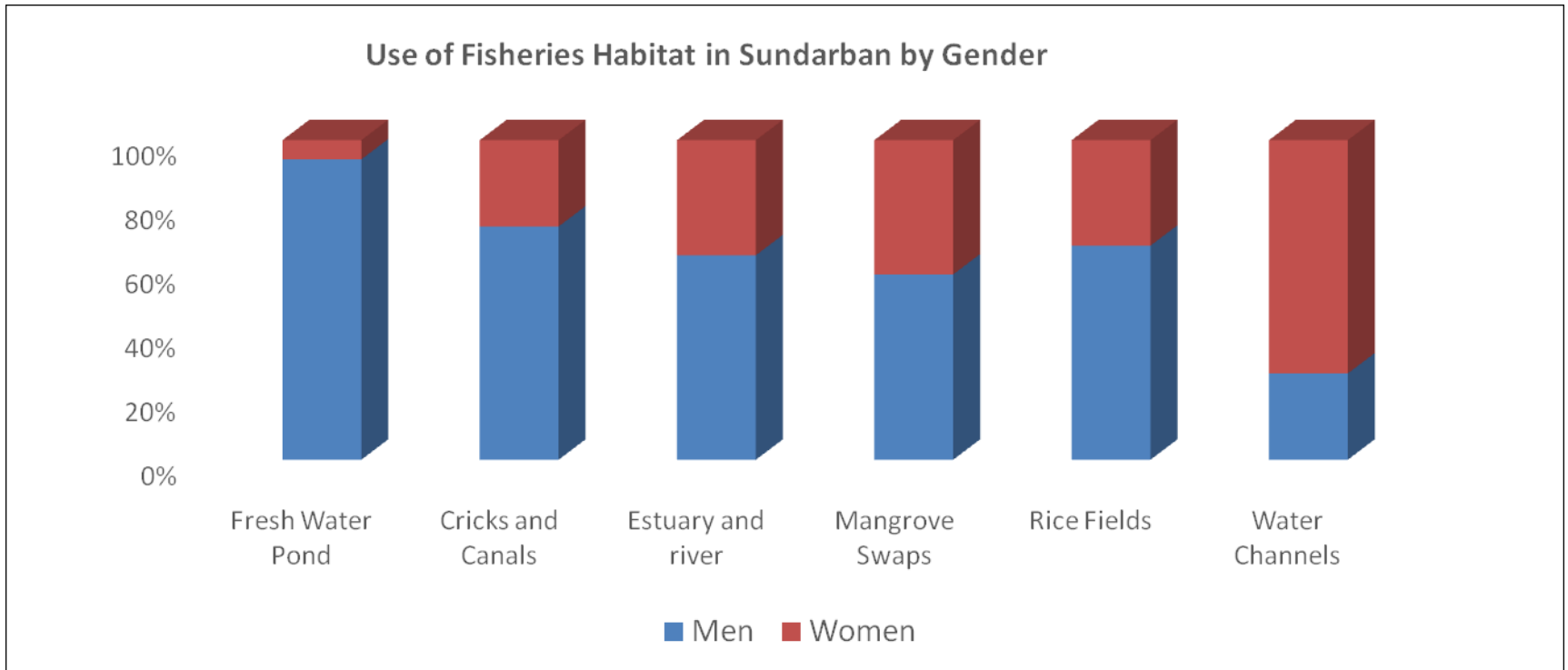


- The term “**Gender role**” refers to the activities performed by men and women in different situations and times and within the boundary of different cultures, classes, castes, ethnic groups etc.
- The roles of men and women are shaped by various forces such as **social, cultural, economic, environmental, religious** and political and vary from one socio-cultural system to the other.
- In this inland open water fisheries context Moser’s Triple role framework helps researchers to understand the division of time and labour within the household and community.
- **Moser introduces the idea of women’s ‘triple role’, i.e.**, their three-fold role in production, reproduction (household work and childcare), and community affairs.



Gender dimensions

An overview of women's involvement in SSF in Sundarban



- ***Production role of women***

women involved collecting fish seed, catching of fishes, processing and marketing of fish catch, making and repairing nets and gears, helping in the preparation for fishing trips and in unloading and sorting the fish which contribute significantly to household incomes and local economies.

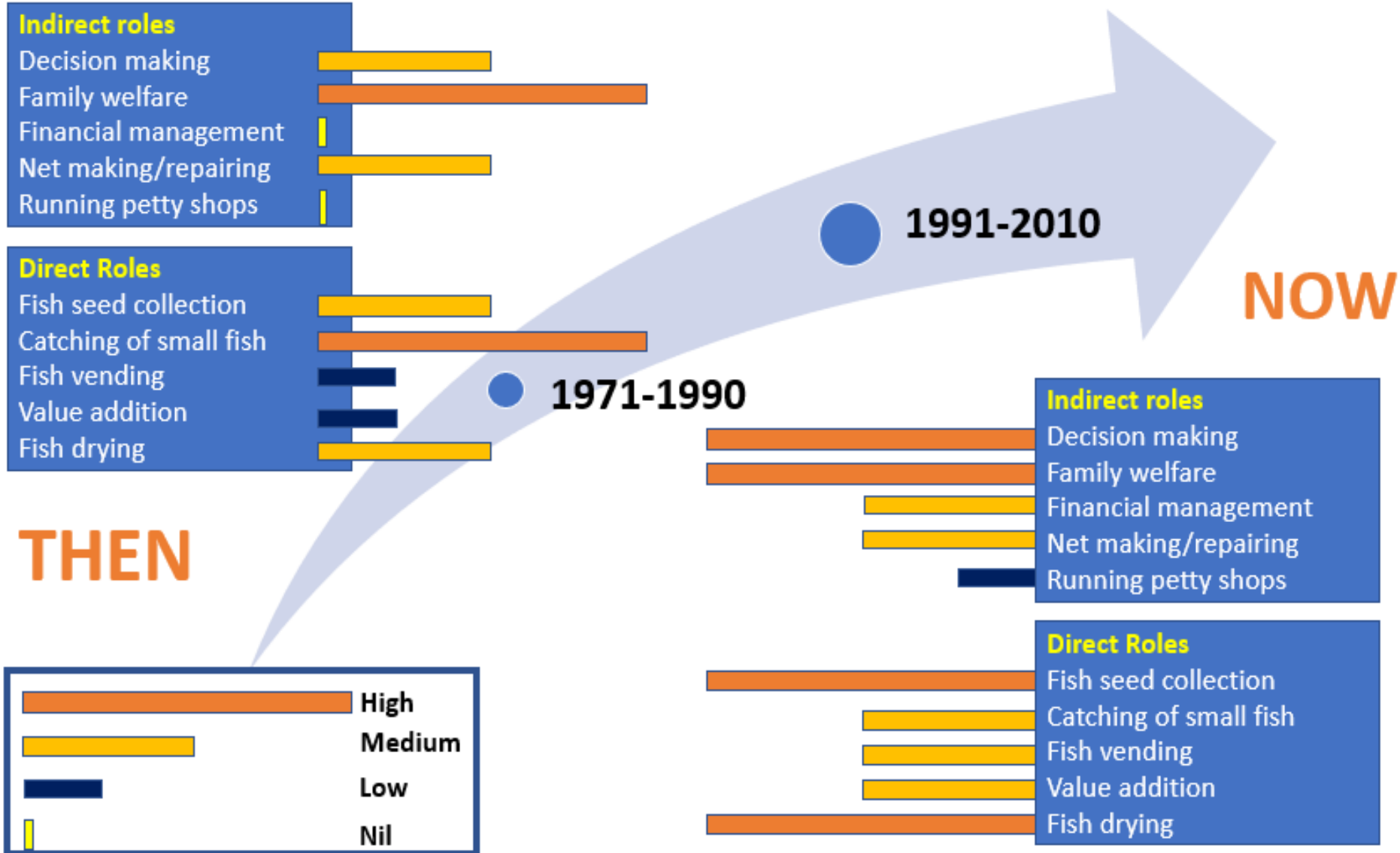
- ***Reproduction role of women***

women involves in household activities, income generation activities and spares time for self. They are involved in various types of productive and reproductive activities but having very less time for their own. As a result, they are vulnerable towards malnourishment which being coupled with long working hours cause sociological, economic and health implications for women (IFPRI, 1995).

- ***Community roles of women***

These roles comprise of their degree of participation in the community events which help them to gain knowledge and information leading their way towards empowerment

Changing 'gender role' over the time



Fisher women's access and control over resources



SSF guideline section	Issues related to SSF in Indian Sundarbans
<p>Tenure rights (5.3-5.4) (Governance of tenure and small-scale fisheries and resource management)</p>	<ul style="list-style-type: none"> • Women have limited access or control over fisheries resources such lease in ponds, waterbodies etc • Women do not have membership in Fishermen Cooperative societies or Trader’s association. Such incidence is also common in Japan, where women are denied membership in fisheries cooperatives(Kleiber et al.,2017)
<p>Access to fishing resources(6.4) (Social Development. Employment and decent work)</p>	<ul style="list-style-type: none"> • Women have limited or no access to fishing-crafts .
<p>Access to markets and marketing resources(7.6) (Value Chain and post harvest trade)</p>	<ul style="list-style-type: none"> • Markets and auction-yards are dominated by men. In Bangladesh the markets are exclusively dominated by men (Kleiber et al, 2017). • Women suffer from financial exclusion • Less decision-making power on finance handling
<p>Recognition of opportunities for fisheries labour(6.5) Social Development. Employment and decent work</p>	<ul style="list-style-type: none"> • Gender sensitive policies /programmes are not available
<p>Recognize role of women and ensure amenities and services and services appropriate for women (7.2) Value Chain and post-harvest trade</p>	<ul style="list-style-type: none"> • Women labour engaged in fisheries often are paid less wages than men • Women labour in a fisher household is often not accounted(Williams,2015)
<p>Education, Health (6.2) Social Development. Employment and decent work</p>	<ul style="list-style-type: none"> • Access to general education is restricted for girl child from fishermen families, as they have to look after their other siblings when their mother go out for fishing or other related activities. • Advanced health care facilities not available in Indian Sundarban

Food security(5.2 & 5.8) Responsible governance of tenure

- **Women are care giver of the families and they ensure food for all members of the family**
- **Fisher women sometimes have to sacrifice their own meal for other members/relatives. The same has witnessed by D'Souza and Tandon, 2015 in Bangladesh.**

Occupational health and safety(6.12) Social Development. Employment and decent work

- **Tidal flow, saline water, crocodile or tiger attack are the main reasons of occupational health hazards for both men and women fishers. In fishing high risks are involved and can be fatal (Power 2008).**

Violence and access to justice(6.9) Social Development. Employment and decent work

- **Violence, abuse etc. sometimes restrict the womenfolk in Sundarbans to exercise their occupational and social rights**

Policy coherence(10.1) (Policy coherence, institutional coordination and collaboration)

- **No policy for Gender equity and equality particularly for fisher-women of Sundarban**

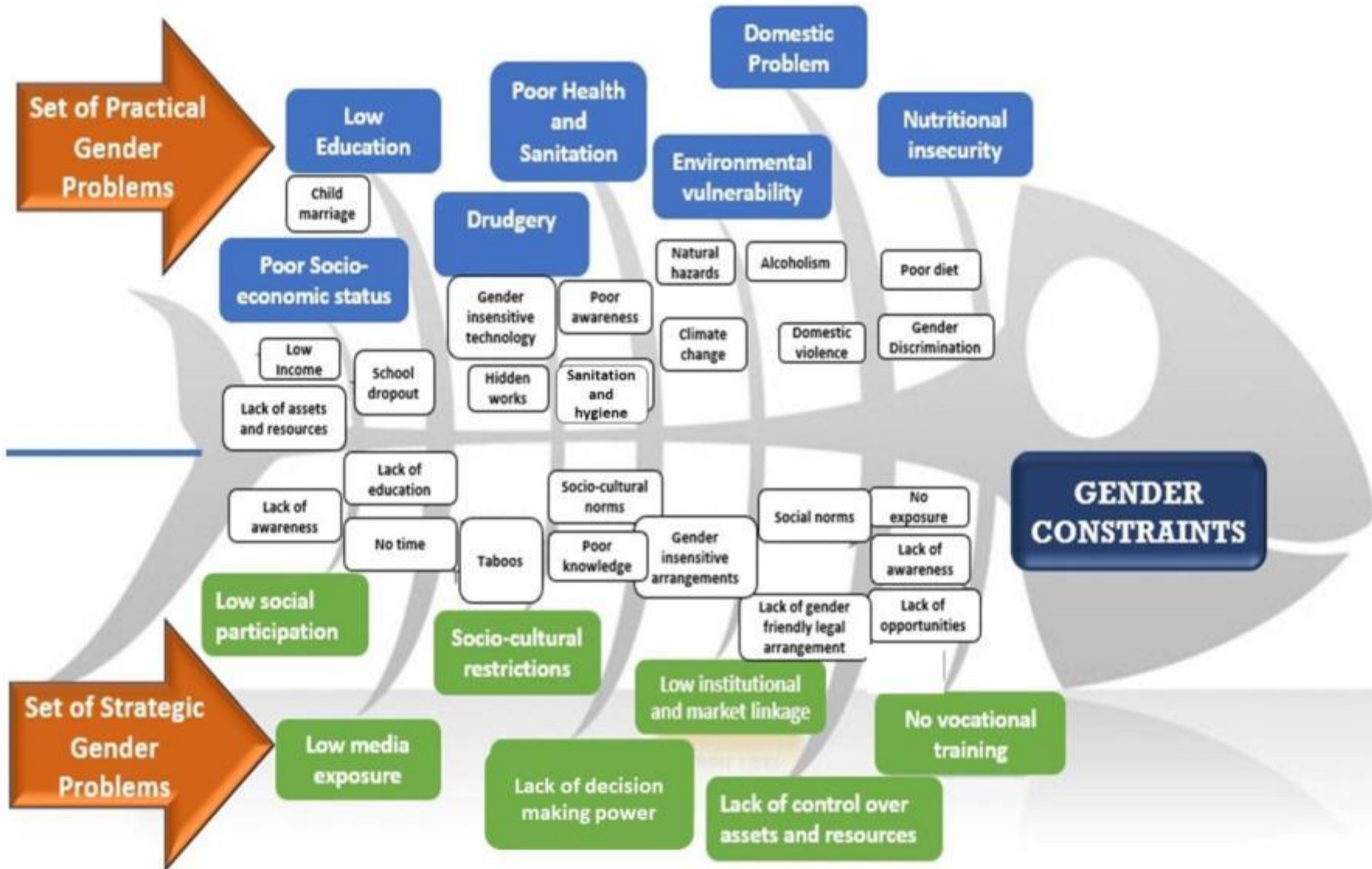
Capacity development(11.7,12.1) Capacity development

- **Inadequate training programmes are organized for Small Scale Fisheries management or development**
- **Most of the time, fisher women are not targeted for extension training or skill enhancement**
- **Due to social barriers, women are often not been able to participate in such programmes**

Research and monitoring(11.1,11.10,13.3) Information, research and communication

- **Lack of gender-disaggregated data in SSF sector of Indian Sundarbans**
 - **Lack of documentation of role of women in fisheries**
 - **Less priority given to gender sensitive researches**
-

Fishbone diagram that attempts to highlight the problems along with their root



Strategies for meeting Practical Gender Needs

- Mass Literacy campaigns
- Health awareness campaigns
- Gender sensitive technologies
- Training for occupational health hazards
- Sanitation and toilet
- Infrastructural facility for health and education

Gender Research Framework In Inland Fisheries Sector



Our role as
Researchers

Strategies for meeting Strategic Gender Needs

- Financial inclusion and support
- Institutional linkage
- SHG/ Mahila mandal
- Female extension worker
- Gender sensitive training
- Nutritional and livelihood security
- Women component in development policy

Valuation studies of women's livelihood roles
Entrepreneurial model for fisher women
Integrated livelihood and gender security model with gender perspective



THANK YOU

