Dried out // Flooded out
Governance of Dams and Riverine Fisheries in India

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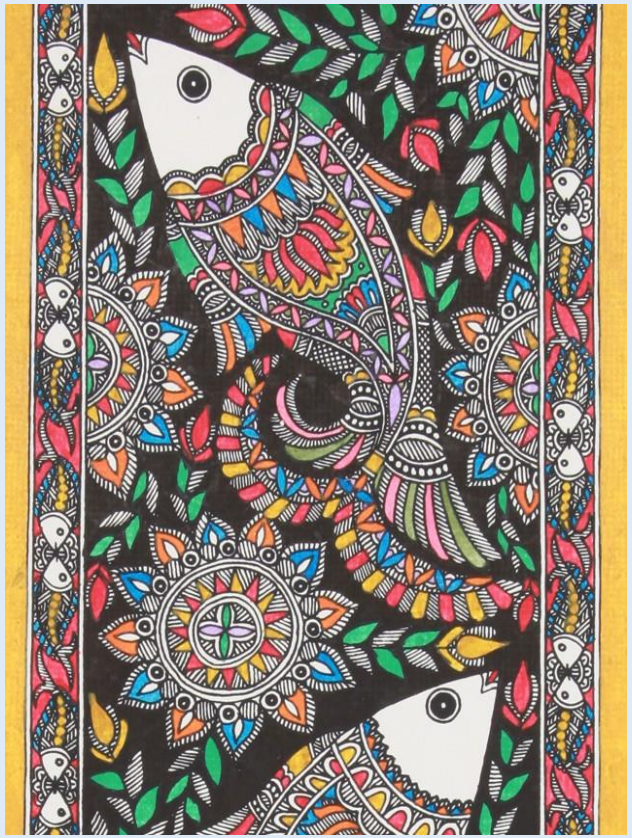
Inland Fisheries is a booming sector in India

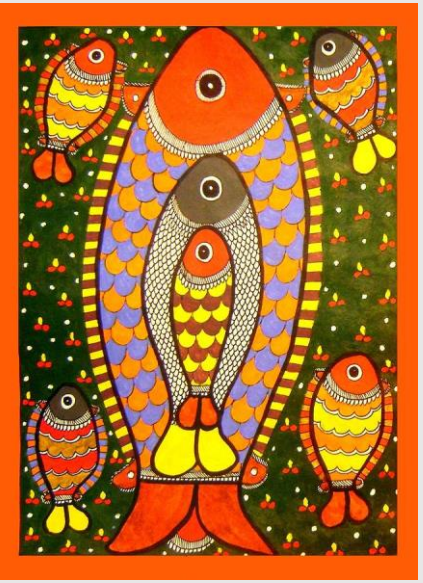


- India is world's second largest producer of inland fish. In year 2013-14, Inland fisheries contributed to around 6.14 million metric tonnes, nearly double the marine fish production(Handbook on Fisheries Stats, 2014, DAHD, Ministry of Agriculture)
- Contribution of Riverine Fisheries to this is barely 10%. Inland Fish production is concentrated in reservoirs, tanks and fish farms
- The current riverine fishery is below subsistence level with an average yield of 0.3 tonne per km, which is about 15% of their actual potential (10th Five Year Plan Working Group in Fisheries)

Rivers in India support spectacular fish diversity!

- India is a megadiverse country with respect to freshwater fish diversity with over 700 species.
- India has 158 Threatened species of freshwater fish (14 Critically Endangered, 68 Endangered, 76 Vulnerable) as per the IUCN Red List of Threatened Species
- Indian rivers home to the largest number of endemic freshwater fish (27.8%) in all Asian Countries. (National Bureau of Fish Genetic Resources, *Threatened Freshwater Fish of India,* 2010)
- Region like Western Ghats and Eastern Himalayas support remarkably high endemism. New fish discoveries continue at a fast pace.
- Western Ghats region has about 67% endemic fish species and 33 new species were discovered in just 4 years between 2010 to 2014. (Dr. Rajeev Raghavan)
- Regions like Eastern Himalayan Biodiversity Hotspot are Data Deficient, but with extremely high diversity

Rivers in India support over 10 million fishers!



- About 75% of 15 million fishers in India fish in inland waters and depend on rivers, wetlands, floodplains, estuaries and reservoirs for sustenance and livelihood.
- India has over 100 traditional fishing communities, specializing in different fishing methods, gears, regions and even species (Example: Hilsa, Jhinga Bhoi)
- Most are marginalized today.
- Traditional communities and tribes have various **community conservation elements** linked to fisheries like sacred fish species, sacred river reaches, sacred sanctuaries where fishing and pollution is prohibited, fishing bans in certain seasons, festivals and art related to fish and fisheries like songs, paintings, etc.,
- Its not only livelihood, but also a part of cultural heritage
- The conservation ethic is cross cutting across regions (Western Ghats Central India, Eastern coast and Himalayas) and religions (Hindus/ Buddhists/ Animistic Tribes)
- Tribal settlements in Central India strongly oppose destructive fishing practices, practice river restoration and sustainable harvesting practices.

Challenges facing Rivers, Fisheries and Livelihoods

- Riverine fisheries on verge of collapse in most bigger rivers
- The biologically and economically important species are being replaced by low value fish species, 'trash' and exotics in large river systems. (CIFRI Riverine Ecology and Fisheries, 2000)
- Fish spawn and total fish landing is decreasing, exotics are increasing alarmingly
- The fish spawn availability index in river Ganga declined from 2984 ml in the 1960s to 27 ml in recent years (2004) (Natarajan 1960. ClFRI Annual Report 1971-2004)
- Economically and ecologically important species like Mahseer(*Tor tor*) nearly wiped from major landing centers (Example: Hoshangabad)
- Hilsa (India Shad) declining in most estuaries. Fall in upper stretches as much as 90%-100%. (Example: Allahabad)
- Prawns like *M. malcolmsonii* becoming rarer in estuaries, nearly extinct in upper reaches of rivers like Godavari, Cauvery, etc.,
- No systematic catch data maintained for riverine fisheries

Damned..

Major Problems faced by Riverine fish, fisheries and fishers

- **Impacts of Dams, hydropower projects, barrages, embankments, flood control measures:**

Water abstraction, loss of connectivity, drying up of sources, changes in hydrology, increase in salinity of estuaries, increase in sedimentation, delta erosion, loss of nutrients, introduction of exotics, loss of fishing rights, submergence of fishing spots, displacement of fisherfolk without compensation, lack of acknowledgement of Riverine Fisheries as a legitimate Water User!

- **Pollution**

Untreated sewage and industrial effluents worsening impacts of decreased water levels and changes in hydrology. Fish Kills a common feature in most large rivers. Complaints of fishers unattended.

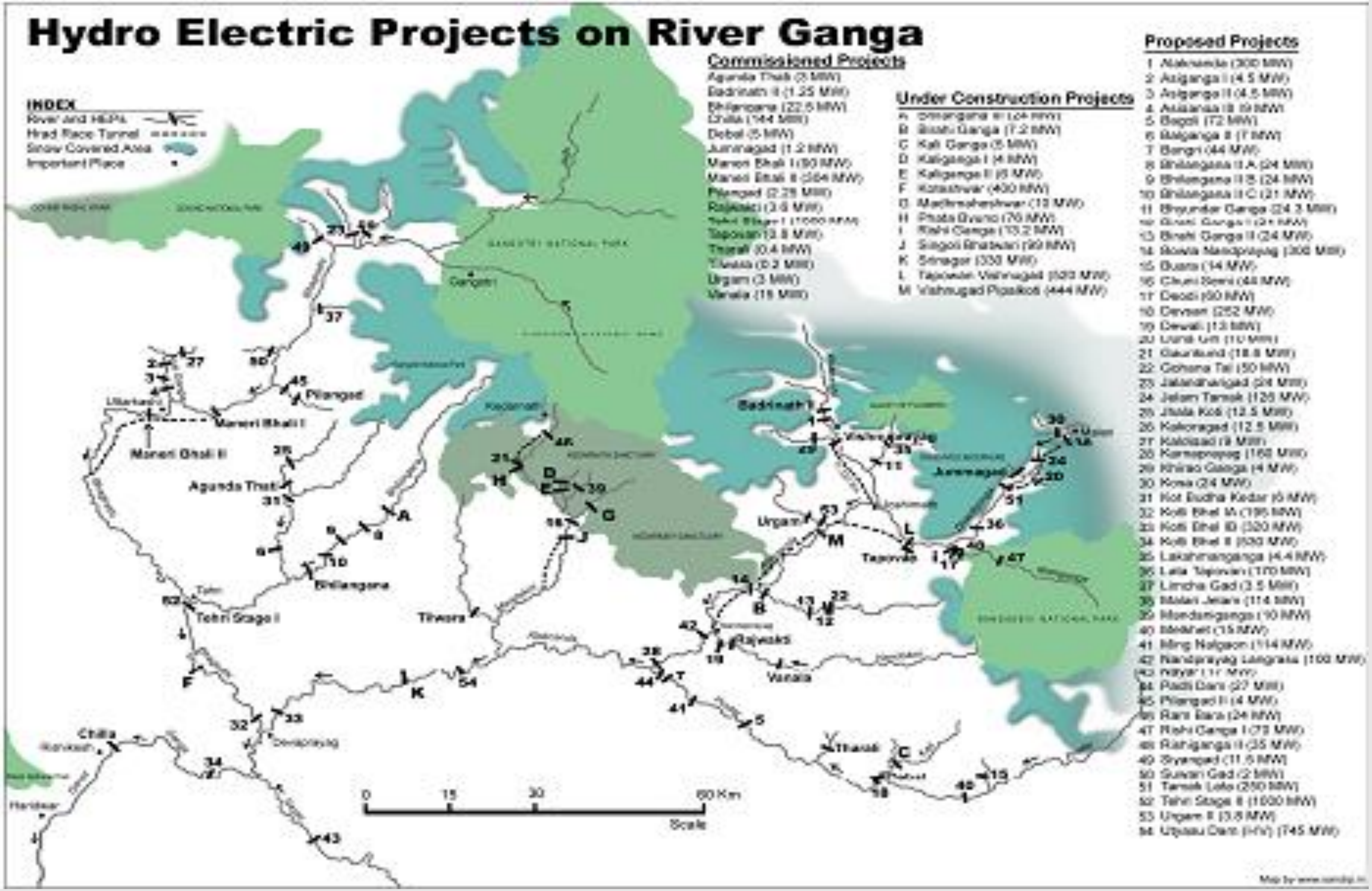
- **Lack of systematic data, studies, analysis of riverine fish and fisheries:**

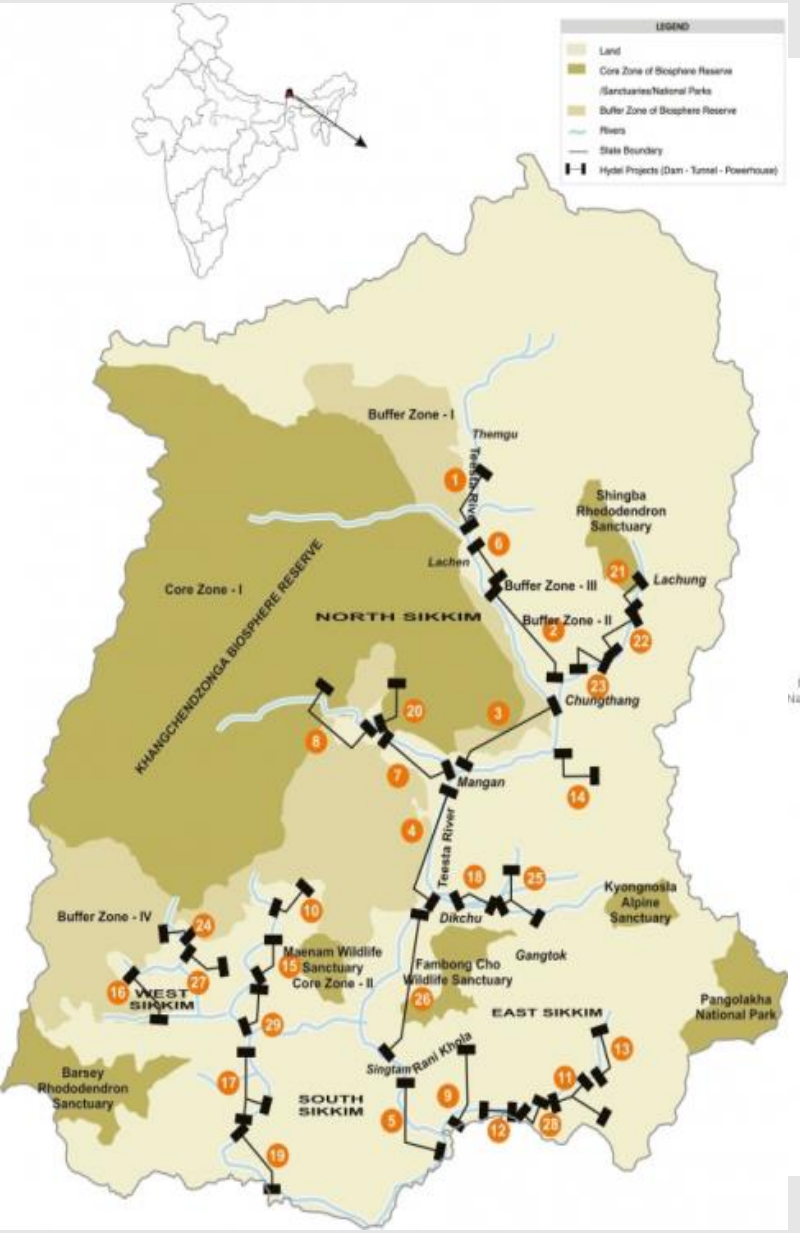
Most resources and funding concentrated around reservoir fisheries

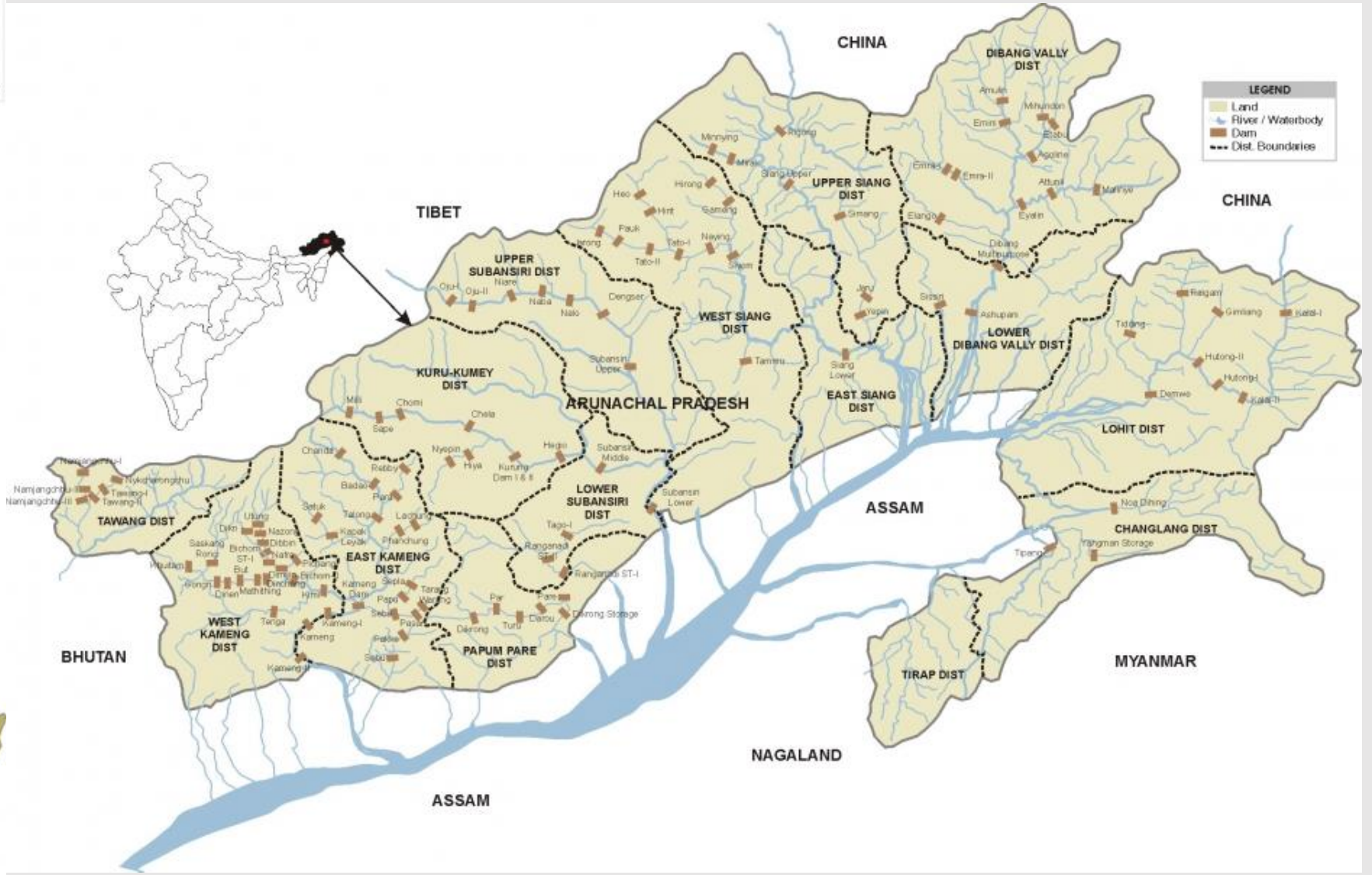
- **Lack of Policy, Legal and Institutional support to the sector**

Flood of Dams
Existing, Under-construction and Planned

- India is the third largest dam builder in the world with over 5189 large dams and over 500 large hydropower dams in advanced stage of planning across some of the richest rivers in Himalayas and Western Ghats.
- Interlinking of River pushed by the current government will mean at least 78 more dams and over 100 BCM water transfer.
- The environmental and social impacts of these projects on fish diversity and fisheries livelihoods is one of the biggest challenges faced by Riverine Fisheries


Hydro Electric Projects on River Ganga
INDEX
River and HEPs
Head Race Tunnel
Snow Covered Area
Important Place
Commissioned Projects
Agunda Thati (3 MW)
Badrinath II (1.25 MW)
Bhilangana (22.5 MW)
Chilla (144 MW)
Debal (5 MW)
Jumnagad (1.2 MW)
Maneri Bhali I (90 MW)
Maneri Bhali II (304 MW)
Pilangad (2.25 MW)
Rajwakti (3.6 MW)
Tapovan (3.6 MW)
Tharali (0.4 MW)
Tiloth (0.2 MW)
Urgam (3 MW)
Vanala (15 MW)
Under Construction Projects
B Birahi Ganga (7.2 MW)
C Kali Ganga (5 MW)
D Kaliganga I (4 MW)
E Kaliganga II (6 MW)
F Kotashwar (400 MW)
G Madhmaheshwar (10 MW)
H Phata Byung (76 MW)
I Rishi Ganga (13.2 MW)
J Singoli Bhatwari (99 MW)
K Srinagar (330 MW)
L Tapovan Vishnugad (520 MW)
M Vishnugad Pipalkoti (444 MW)
Proposed Projects
1 Alaknanda (300 MW)
2 Asiganga I (4.5 MW)
3 Asiganga II (4.5 MW)
4 Asiganga III (9 MW)
5 Bagoli (72 MW)
6 Balganga II (7 MW)
7 Bangri (44 MW)
8 Bhilangana II A (24 MW)
9 Bhilangana II B (24 MW)
10 Bhilangana II C (21 MW)
11 Bhyundar Ganga (24.3 MW)
13 Birahi Ganga II (24 MW)
14 Bowla Nandprayag (300 MW)
15 Buara (14 MW)
16 Chuni Semi (44 MW)
17 Deodi (60 MW)
18 Devsari (252 MW)
19 Dewali (13 MW)
21 Gaurikund (18.6 MW)
22 Gohana Tal (50 MW)
23 Jalandharigad (24 MW)
24 Jelam Tamak (126 MW)
25 Jhala Koti (12.5 MW)
26 Kakoragad (12.5 MW)
28 Karnaprayag (160 MW)
29 Khirao Ganga (4 MW)
30 Kosa (24 MW)
31 Kot Budha Kedar (6 MW)
32 Kotli Bhel IA (195 MW)
33 Kotli Bhel IB (320 MW)
34 Kotli Bhel II (530 MW)
35 Lakshmanganga (4.4 MW)
36 Lata Tapovan (170 MW)
37 Limcha Gad (3.5 MW)
38 Malari Jelam (114 MW)
39 Mandaniganga (10 MW)
40 Melkhet (15 MW)
41 Ming Nalgaon (114 MW)
42 Nandprayag Langrasu (100 MW)
44 Padli Dam (27 MW)
45 Pilangad II (4 MW)
46 Rambara (24 MW)
47 Rishi Ganga I (70 MW)
48 Ramganga II (35 MW)
49 Syangad (11.5 MW)
50 Suwari Gad (2 MW)
51 Tamak Lata (250 MW)
52 Tehri Stage II (1000 MW)
53 Urgam II (3.8 MW)
54 Utyasu Dam (HV) (745 MW)
0 15 30 60 Km
Scale


LEGEND
Land
Core Zone of Biosphere Reserve
/Sanctuaries/National Parks
Buffer Zone of Biosphere Reserve
Rivers
State Boundary
Hydel Projects (Dam - Tunnel - Powerhouse)
Buffer Zone - I
Themgu
Teesta River
Shingba Rhododendron Sanctuary
Lachen
Buffer Zone - III
Lachung
Core Zone - I
NORTH SIKKIM
Buffer Zone - II
KHANGCHENDZONGA BIOSPHERE RESERVE
Chungthang
Mangan
Teesta River
Buffer Zone - IV
Dikchu
Kyongnosla Alpine Sanctuary
Maenam Wildlife Sanctuary
Core Zone - II
Gangtok
Fambong Cho Wildlife Sanctuary
WEST SIKKIM
EAST SIKKIM
Pangolakha National Park
Singtam
Rani Khola
Barsey Rhododendron Sanctuary
SOUTH SIKKIM


LEGEND
Land
River / Waterbody
Dam
Dist. Boundaries
CHINA
TIBET
BHUTAN
NAGALAND
ASSAM
MYANMAR
ARUNACHAL PRADESH
DIBANG VALLY DIST
UPPER SIANG DIST
UPPER SUBANSIRI DIST
WEST SIANG DIST
EAST SIANG DIST
LOWER DIBANG VALLY DIST
KURU-KUMEY DIST
LOWER SUBANSIRI DIST
LOHIT DIST
TAWANG DIST
EAST KAMENG DIST
WEST KAMENG DIST
PAPUM PARE DIST
CHANGLANG DIST
TIRAP DIST

Dams create winners and losers

- Fishing rights of traditional not respected, do not get discussed when faced with water withdrawal by dams, canals, barrages, hydropower, etc.,
- Fishers are not compensated for displacement and loss of livelihoods due to dams, drying up an flooding of rivers by hydropower
- Downstream impacts of dams on fishers are not studied
- Focus firmly on Reservoir Fisheries, which alienate downstream fishermen and marginalized groups
- River Fishers do not have water user rights or fishing rights in most states
- No targeted welfare schemes are directed towards River fishers

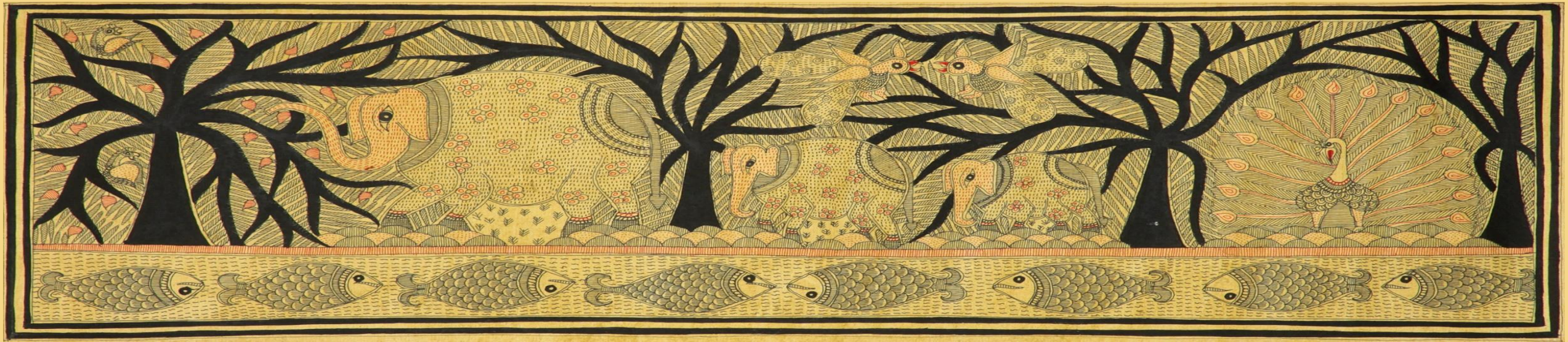
No wonder: riverine fishers remain one of the most marginalized groups in India society

I. Policy Framework supporting Riverine Fisheries

- India does not have any Inland Fishing Policy, although a National Marine Fishing Policy exists (2004)
- **National Water Policy (2012)** does not acknowledge riverine fish, fisheries, biodiversity or dependent livelihoods
- It talks about securing minimum ecological needs of the river without assigning any priority to it
- It does not mention the diverse vocations and livelihoods that depend on rivers like fishers, boatmen, riparian farmers, etc.
- **National Environmental Policy (2006)** does mention riverine fisheries and impacts of reducing stream flows on fisheries and livelihoods, it does not recommend any remedial measures.

II. Legal Framework affecting riverine fisheries in India

- **No law to protect flowing rivers:** Its acceptable for dams to dry up rivers completely.
- No specific laws to protect river as an ecosystem.
- Archaic **Indian Fisheries Act of 1897** has not been amended till date. Does not respond to any new and emerging challenges.
- States have promulgated their laws, based on the overarching framework provided by Indian Fisheries Act.
- The importance of flowing rivers and fishing for local communities, both in terms of nutrition as well as livelihood, is rarely noted in these.
- Some **State Fisheries Acts** like Assam, Arunachal Pradesh, Karnataka and Kerala are slightly more progressive in terms of recognizing traditional fisheries and inland waters
- No State Act unambiguously establishes right of fishers on river water as users
- **The Wildlife (Protection) Act 1972** : Although India has 158 threatened freshwater fish species as per IUCN, no true freshwater fish is protected under the Wildlife (Protection) Act 1972.
- Only species protected include Gangetic Dolphin, Ganges Shark (*Glyphis gangeticus*) and *Ganges Stingray*.



II. A. Consideration of Fish and Fisheries during Environmental Appraisal of Dam projects

- Irrigation and River Valley Projects require **Environmental Clearance** (EC) from the Ministry of Environment, Forests and Climate Change under the EIA Notification 2006, as per the Environment (Protection) Act, 1986
- Environment Impact Assessment (EIA) Report is a pre-requisite for EC appraisal, which includes impacts of the project on fish and fisheries and a management plan to address impacts
- As per SANDRP's analysis, the Committee in MoEF CC which appraises EC for projects has a ZERO rejection rate for dam projects
- Fish ladders recommended very rarely, in 6 cases of 157 projects, that too non-binding
- Impact of Hydropeaking by Hydropower dams on fisheries not even considered while decision making

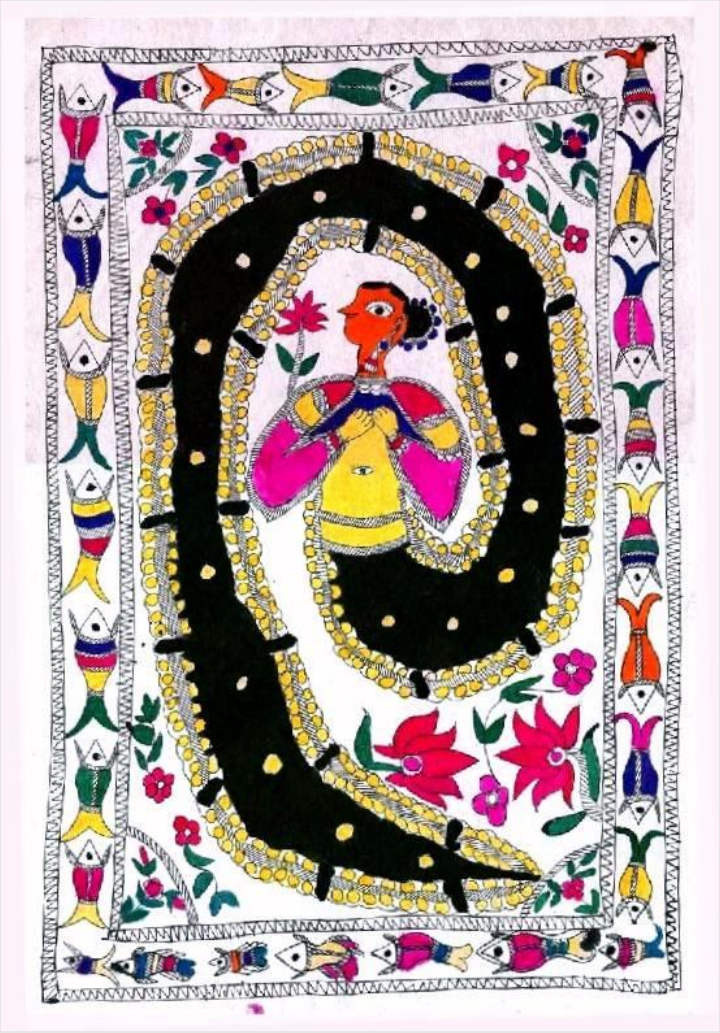
- EIAs routinely provide false information on fish diversity as well as fisheries livelihoods

- EIA report of **200 MW Gundia HEP in the Western Ghats Global Biodiversity hotspot** concludes that there are ‘no rare or endemic species fish species in the river’. In reality, this region is one of the most important sites in India for protection of fish diversity with numerous discoveries of new fish species in the surroundings

- Same is the case with EIA of **163 MW Athirappilly** HEP on Kerala’s fish rich Chalakudy River.

- **River Subansiri is one of the only tributaries of Brahmaputra with a resident population of the endangered Gangetic Dolphin** which is also the National aquatic animal of India, but the Basin Study dealing with hydropower dams on Subansiri does not make a mention Gangetic Dolphin or make any recommendations for protection of this iconic specie.

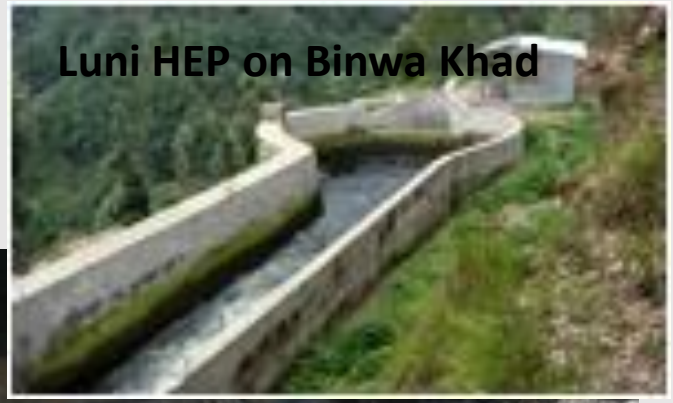
- Mega Hydropower projects on tributaries of Brahmaputra will disrupt fisheries of Assam and Arunachal Pradesh, but EIAs do not mention any impact on the downstream or on fishing livelihoods
- Agencies entrusted with safeguarding fish diversity like Central Inland Fisheries Research Institute (CIFRI) and inland fisheries themselves providing compromised reports.



- Fisheries Departments in Himalayan as well as Western Ghat States have become rubber stamps for providing No Objection Certificates to HEPs while taking monitory compensation for dam projects.
- Himachal Fisheries department charges Rs 50,000 per kilometer river diverted and additionally, Rs 50,000 Per MW electricity generated as compensation from dam developers.
- Permissions granted by Fisheries Departments without any relevant studies in states like Himachal Pradesh, Karnataka, Arunachal Pradesh to dam project which will destroy not only endangered fish, but community conserved areas, fishing livelihoods, etc.
- This means windfall profits to Fisheries departments and nothing to actual fish diversity that is being destroyed.

Farce of HP Fishery Department's Negative List for Hydel Projects.

S.No.	Name of District	River/Stream/Tributaries declared as sensitive	Remarks
1	Chamba	1. Sull Khad from Chakdli to Langhera.	About 30 Km stretch.
		2. Chanju Nallah.	--
		3. Tulang Kl Nallah.	
		4. Tundah Nallah.	
		5. Chaned Nallah	10-15Kms from the confluence of river Ravi.
2	Hamirpur	1. Man khad	--
		2. Kunah khad	
		3. Gasoti khad	
3	Kangra	1. Binwa khad	30 Km upstream of the confluence of these streams & its tributaries with the Pong reservoir.
		2. Neugal	
		3. Baner	
		4. Gaj	
		5. Dehar	
4	Kinnaur	1. Baspa & its tributaries	
		2. Tedong Nallah	
		3. Kirang Khad	
5	Kullu	1. Haripur Nallah	
		2. Sujan Nallah	
		3. Tirthan Khad & its tributaries	
6	Shimla	1. Badyara	
		2. Khanyara Nallah	
7	Solan	1. Ashwani khad	---
8	Sirmour	1. Giri river	---
		2. Nari Khad	
		3. Silli khad	10-15 Kms from its confluence to Tons
9	Mandi	1. Rana khad & its tributaries.	---
		2. Lamba dug/Uhal.	
		3. Arnodi khad	10-15 kms stretch with the confluence of Beas river.
		4. Bakhli khad	--
		5. Jeuni khad	



हिमाचल

चांजू बिजली प्रोजेक्ट कॉसमौस के हाथ

प्रधान ऊर्जा सचिव ने कंपनी के साथ समझौता किया

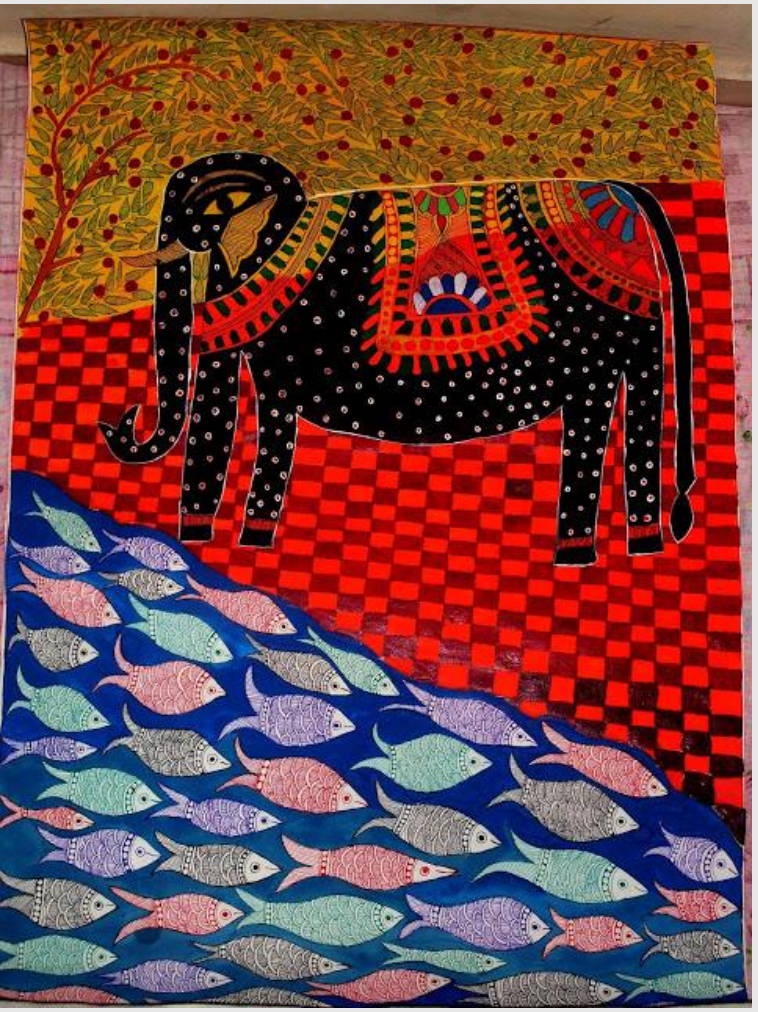
झंडूता में पटवारी रिश्वत लेते गिरफ्तार

चक्की- चंबी पुल जल्द बनेंगे : गुलाब

कैदी ने कोर्ट में पु कर्मी को थप्पड़ ज

- **River Interlinking** will have disastrous impacts on local fish species, but many links are being pushed even without EIA
- EIA of the first River link **Ken Betwa** says the Rivers have no endangered or endemic species, when Ken has 4 endangered and 9 vulnerable species (CIFRI 2010)
- EIA reports make claims like River linking providing “short-cut” for fish through canals for upstream migration!
- EIA of **Shongtong Karcham** Project in Himachal Pradesh mentions only 3 fish species when the committee itself states that the region has at least 51 fish species. But the Committee has no qualms clearing the project without any mitigation measures.

Environment Management Plans and Hatchery-Love



- Only mitigation measures suggested by EIAs and recommended by Ministry is Fish Hatcheries and Fish Farms.
- MoEF notes that fish ladders are not feasible for heights above 45 meters. No studies to establish this. No exploration of fish pass, locks, lifts or elevators.
- There is no study about the efficacy or the impacts of existing fish farms or hatcheries. Most are in a state of disrepair or rear exotic species.
- Not a single successful example of Snow Trout breeding and culture anywhere in India through hatcheries or farms
- No success story in India where a dam company (with the exception of Tata Dams in Lonavala, Maharashtra) actually stocks rivers with Mahseer fingerlings, or distributes fish seed and fingerlings to farmers and fisherfolk. In one sense, all this money has been going down the drain.

No.	Project	River	State	Important Fish	Mitigation Measure/ managment plan	Cost in Rs.	EIA Agency
1.	300 MW Alaknanda Project	Alaknanda	Uttarakhand	Project in No fish zone	Check dams d/s dam with 10% water release from dam	59,00,000	CISMHE
2.	2700 MW Lower Siang HEP	Siang River	Arunachal Pradesh		Hatcheries, Reservoir fisheries, downstream measures Removal of sandbars in the downstream,Putting meanders back into water course, Creation of hiding places for fish, Adding diverse substrata	10,17,36,000	CISMHE
3.	3000 MW Dibang Multipurpose Project	Dinbang River	Arunachal Pradesh	Snow Trout, Mahseer species, culturally important species	Ladder, Lift, bypass channel not feasible. Suggests Hatcheries, breeding exotic fish also lke Rainbow trout.	1,12,00,000	National Productivity Council, Guwahati
4.	660 MW Luhri HEP	Satluj RIver	Himachal Pradesh	18 species, Snow Trout, Puntius, Garr asp, Tor sp, etc	Hatcheries	34,67,500	CISMHE
5.	240 MW Umngot HEP	Umngot River	Meghalaya	Extremely rich in fisheries diversity. Locals ask declaring it as fish sanctuary	Seeding of Resrvoir	23,13,000	EIA-EMP
6.	Mohanpura Irrigation Project		Madhya Pradesh	Indian Carps	Seeding. Absolutely no clarity	8,09,00,000	WAPCOS

- **Mini Hydel Projects** (below 25 MW) are coming up in fish rich rivers of Western Ghats and Himalayas.
- Many of these include large dams, diversion and drying up of downstream stretches.
- However, Mini Hydel Projects are entirely outside the Purview of Environmental Appraisal. No impacts of these projects on fish and fisheries are studied.
- Fisheries departments have been clearing such projects with impunity.
- These projects are affecting fish sanctuaries and sites of new fish discoveries.
- No mitigation measures like fish ladders, environmental flows are recommended or implemented for these projects, causing serious harm to fish and fisheries.

III. Institutional Framework

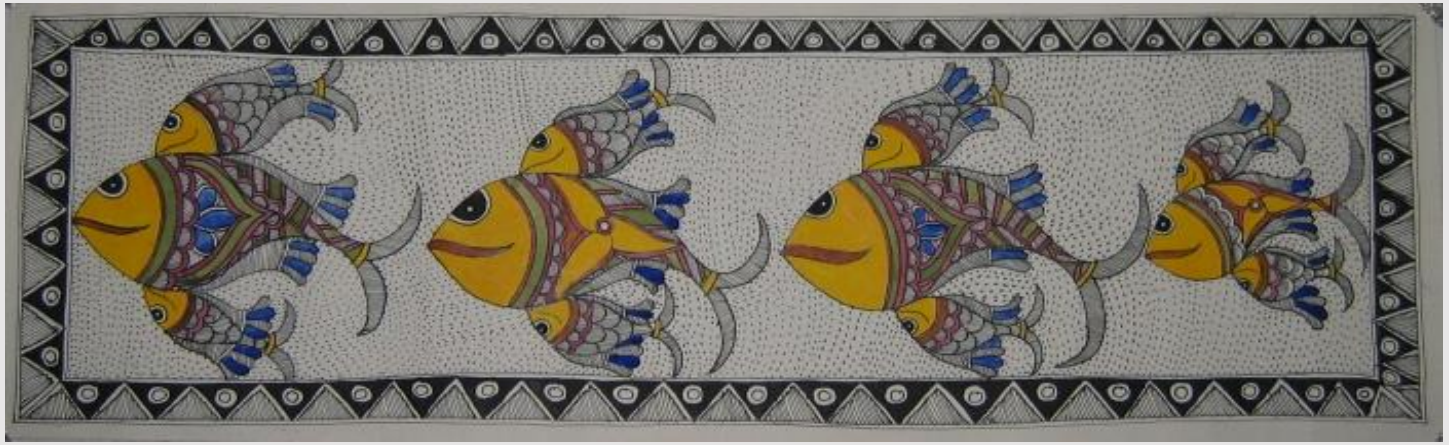
- Fisheries is governed under the Department of Animal Husbandry, Dairying and Fisheries of the Ministry of Agriculture (DAHD)
- There is **no separate Ministry of Fisheries or a Department for freshwater fisheries**
- Focus of Ministry of Fisheries through its schemes and projects is Marine Fisheries and increase in production though Reservoir Fisheries. No specific plan for riverine fisheries
- Over 18 Centrally funded institutions and Boards working on fisheries (apart from state institutions and universities) under the (DAHD) and Indian Council for Agricultural Research (ICAR)
- These include NFDB, CIFRI, CIFA,CIBA, FSI, NBFGR, Directorate of Cold Water Fisheries, Bhimtal etc.,

- **National Fisheries Development Board (NFDB)** was formed in 2006, NDB was seen as a major step of the DAHD in integrating work on fisheries.
- Most of the fishing schemes are being diverted from DAHD to NFDB . NFDB
- The NFDB does not focus on riverine capture fisheries at at all. It works on aquaculture and reservoir fisheries.
- *How will this board help marginal fisherfolk if it refuses to look at natural resources which sustain millions of poor?*
- Most of the centrally sponsored schemes for Inland Fisheries (including the 2014-15 scheme) focus on aquaculture and do not mention rivers.

Central Inland Fisheries Research Institute (CIFRI)

- CIFRI supposed to be a Premier Institute to study inland and riverine fisheries and related issues
- CIFRI representative is on the EAC which appraises dam projects.
- Despite this, there is no consideration of fisheries related issues at the time of clearance, no recommendation of fish ladders passes or lifts, fish and fisheries has never been an issue.
- The institute erected Fish Lock on Farakka Barrage on Ganga in Malda, West Bengal in 1970s
- The barrage has nearly wiped off Hilsa (India Shad) fisheries in the upstream, but CIFRI initiated no work on the fish lock which never functioned effectively and has been in the state of disrepair for several decades, nor has it initiated work on the Hilsa Hatchery that was set up near the barrage.
- The institute now conducts environmental flows assessment for private dam lobbies and has been submitted problematic reports on eflows, compromising riverine and fish health and of convenience for the developers.
- There is no advocacy about water rights for fisheries, need for fish passes, state of art work on eflows, etc.

State Fisheries Departments



- In most States, fisheries are vested with the State Fisheries Department
- Inside Protected Areas, Fisheries and Rivers are governed by Forest Department
- The Fisheries Department is tasked with issuing licenses for fishing, and auctioning fishing rights in reservoirs etc., in all States
- Most Fisheries departments, along with Irrigation Departments concentrate on seeding reservoirs and issuing fishing contracts.
- Most of these contracts are awarded to contractors with finances, infrastructure and wherewithal.
- Local fishermen are pushed out of this system.
- State Fisheries Department of Maharashtra told us that rivers are not their purview..they only deal with reservoir fisheries.


When we opposed the meeting they put us in jail for 2 days, until she was out of Madhya Pradesh, which was ruled by the Congress Party


ડેમ આવે ને માછીમારો
મરે આ
સરકાર તો લોકોને મારે

In conclusion

- There is no enabling Policy, Regulatory, Legal and Institutional set up supporting riverine fish, fisheries and fishers in India. This maybe because riverine fishers are one of the most vulnerable sections of the Indian society, who have been unable to organize effectively and voice their concerns
- Water infrastructure, specifically dams and barrages have affected river diversity as well as fishing livelihoods, skewing the inherent equity and diversity of a riverine system by controlling it in the hands of Fisheries contractors, Irrigation Engineers and Fisheries Departments
- There is gap between scientific studies and social realities.

- There is an urgent need for existing institutions including the Ministry of Agriculture, MoEF CC, State Fisheries Departments, CIFRI, etc., to pay attention to this sector and attempt to undo past mistakes.
- **Enabling policy** for riverine fisheries, acceptance of riverine fisheries as a legitimate water user and involvement of Fishers in decision making surrounding dams
- **State of art scientific work** on environmental flows responding to downstream fisheries challenges, not single species
- Work on **water needs** for fish assemblages, **fish ladders** and passes, impact of **hydropeaking** on fisheries, **efficacy of hatcheries** and fish farms, data on river fishers, catch data, species composition and trends, etc.,
- Scientific bodies as well as civil society needs to pay heed to rivers and riverine fisheries issues, raise these issues in the public discourse and seek answers.
- **International institutions like FAO** can help by initiating such studies in regions like India where the issue is neglected and is directly related to food and livelihood security of millions
- Continuing neglect of riverine fisheries harms not only rivers and dwindling fish diversity, but also the millions of marginal fishers who depend on India's Rivers, floodplains, estuaries, lakes and wetlands for their livelihoods..

Thank You!

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