

## DRAFT FOR COMMENTS

### **Governance of water and freshwater fish production systems in India: Is there need for a national policy to protect fishers and fishworkers?**

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#### **I. The human right to water**

1. Water is a limited natural resource and a public good fundamental for life and health. The human right to water is indispensable for leading a life in human dignity, observes the United Nations, and it is a prerequisite for the realization of other human rights. Importantly, besides personal and domestic use, freshwater is required for a range of different purposes to realise many of the rights guaranteed in the International Covenant on Economic, Social and Cultural Rights (ICESCR).<sup>1</sup> While water is necessary to produce food, including fish, (right to adequate food) and to ensure environmental hygiene (right to health), it is essential for securing livelihoods (right to gain a living by work) and enjoying certain cultural practices (right to take part in cultural life) (United Nations, 2002).

2. The United Nations document *Transforming our world: the 2030 Agenda for Sustainable Development*<sup>2</sup> reiterates the right to water as a human right, and underscores the need to conserve and sustainably use freshwater resources and to protect biodiversity. The Sustainable Development Goal No. 6, namely, to *ensure availability and sustainable management of water and sanitation for all* and its targets: 6.4, 6.5, and 6.6 as well as 6.a and 6.b are relevant in this context.<sup>3</sup> It is, therefore, necessary to ensure sustainable access to water resources also for purposes including fisheries to realize the right to food and secure livelihood. The human right to water of individuals and groups, especially of disadvantaged and marginalized fishers and fishworkers and tribal communities, including women, to life and secure fisheries-based livelihoods, is currently neglected and should adequately be recognized.

#### **II. Consumptive and non-consumptive use of water**

3. Freshwater and fish are ecosystem services that provide benefits to human communities. Unlike maritime waters that have only 'non-consumptive' use, the freshwater resources have both 'consumptive' and 'non-consumptive' use. Freshwater as a resource is used up in irrigation, power generation and drinking water supply—what is called 'consumptive' use. Freshwater is also used, for example, in navigation, flood protection or flood control, fishing and aquaculture—what is called 'non-consumptive' use. When it comes to water allocation policy, consumptive use of freshwater has been given greater precedence over non-consumptive use (International Law Commission, 1974). In Uttar Pradesh, for example, conversion of floodplains for consumptive agriculture would, it is feared,

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<sup>1</sup> ICESCR was ratified by India in 1979. There are no provisions in the Indian Constitution regarding the right to water. However, the Supreme Court of India has recognized the fundamental right to water as integral to the right to life (See Ministry of Water Resources, River Development & Ganga Rejuvenation, 2016).

<sup>2</sup> See, <https://sustainabledevelopment.un.org/post2015/transformingourworld>

<sup>3</sup> 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

6.b Support and strengthen the participation of local communities in improving water and sanitation management

reduce availability of these waterbodies for non-consumptive fisheries and aquaculture (Department of Fisheries, 2013).

4. Even in policies related to non-consumptive use, fishing and aquaculture are given far less importance than navigation and flood protection. It is unclear, for example, how the recently adopted National Waterways Act, 2016 (No. 17 of 2016) will address issues raised by the Rajya Sabha Department-related Standing Committee on Transport, Tourism and Culture on the National Waterways Bill, 2015, regarding the effect of vessel movement on river banks and fishers, and on fish breeding and fish catch (Rajya Sabha, 2015).

5. The principle of equitable and reasonable allocation of freshwater resources is often not heeded. Between States, the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses (Watercourses Convention)—which entered into force in 2014—makes provisions to address this issue. It is yet to be ratified by India and its neighbours.<sup>4</sup> There are no viable mechanisms yet between states of India when it comes to issues of allocation of freshwater resources between and within consumptive and non-consumptive use.

### **III. Governance framework for freshwater and fisheries in India**

6. Under the Seventh Schedule (Article 246), ‘water’ in the Constitution of India is on the State List, or List II, (entry 17) but subject to entry 56 of the Union List, or List I, dealing with regulation and development of inter-state rivers and river valleys. Under the Sixth Schedule dealing with provisions as to the administration of tribal areas in the states of Assam, Meghalaya, Tripura and Mizoram [Articles 244(2) and 275(1)], North Cachar Hills<sup>5</sup> Autonomous Council and Karbi Anglong Autonomous Council have additional powers to make laws, inter alia, regarding water, but, again, subject to entry 56 of the Union List. Under the 1992 Constitution (Seventy-third Amendment) Act, water management, watershed development and areas covered by water are also devolved to panchayats and included in the Eleventh Schedule (Article 243G).

7. Under Article 262, the Indian Parliament, by law, can adjudicate disputes or complaints related to the “use, distribution or controls” of any inter-state rivers or river valleys—presumably including both consumptive and non-consumptive use of water.<sup>6</sup> The Parliament, under Article 253, is also vested with power to make any law for the whole or any part of the territory of India for implementing any treaty, agreement or convention with any other country or countries or any decision made at any international conference, association or other body. Under Article 51, the State is expected to foster respect when it comes to international law and treaty obligations.

8. International issues related to watercourses, more often than not, are dealt with as bilateral. At this level, fishing and fish culture are mentioned under “non-consumptive use” in a treaty between India and Pakistan (Indus Waters Treaty, 1960).<sup>7</sup> While allowing the rivers to cross into the other country, fishing or fish culture, is protected under this Treaty in the upstream waters of each country along with domestic use and other non-consumptive use. There are several bilateral, transboundary watercourses agreements between India and its neighbouring countries. While a number of major and minor river basins in peninsular India are shared between two or more states, several are confined only to individual states. There are river-sharing agreements between some of these states. Other than the Indus Waters Treaty, the interests of fisheries and aquaculture, however, are not upheld in any

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<sup>4</sup> Article 10 (2); “In the event of a conflict between uses of an international watercourse, it shall be resolved with reference to articles 5 to 7, with special regard being given to the requirements of vital human needs (emphasis added).

<sup>5</sup> It is now known as Dima Hasao District instead of North Cachar Hills.

<sup>6</sup> However, to our knowledge, there are no inter-state fishing disputes ever adjudicated by the Indian Parliament. Also, there does not seem to be any bilateral fishing dispute in relation to international watercourses in the Indian subcontinent.

<sup>7</sup> [siteresources.worldbank.org/INTSOUTHASIA/.../IndusWatersTreaty1960.pdf](https://siteresources.worldbank.org/INTSOUTHASIA/.../IndusWatersTreaty1960.pdf)

transboundary or interstate agreements.<sup>8</sup> There are no provisions made for fisheries and aquaculture stakeholders to influence these instruments or to participate in their management. Nor are there any provisions made for fisheries or aquaculture in any of the subnational arrangements.

9. The 2012 National Water Policy (NWP) proposes a framework to develop legislation, institutions and a plan of action with a “unified national perspective”, where river basin is the basic hydrological unit for planning.<sup>9</sup> NWP recognizes principles such as: (i) the need to have a common integrated perspective across local, regional, state and national context; (ii) equity and social justice; (iii) good governance through transparent informed decision making; (iv) managing water as a common pool community resource held by the State under public trust doctrine to achieve food security, livelihood support and sustainable and equitable development for all; and (v) preferential allocation for personal and domestic use, subsistence and ecosystem needs. It tacitly recognizes water as a human right.

10. The Ministry of Water Resources, River Development & Ganga Rejuvenation, 2016, has developed a Draft National Water Framework Bill, 2016, which is currently (as of 9 September 2016) up on the website of the Ministry for comments. The Draft Bill is fully consistent with NWP. It seeks to bring about the prudent, wise, equitable, socially just, conflict-free, efficient, and sustainable use of water for a number of purposes, including through: (i) treating water as a common heritage held in public trust; (ii) rejuvenating river systems by ensuring *Aviral Dhara* (continuous flow), *Nirmal Dhara* (unpolluted flow) and *Swachh Kinara* (clean riverbanks); (iii) sustaining ecosystems dependent on water by protecting, regulating, managing water in a manner that is sustainable, equitable, transparent, accountable and participatory; (iv) people-centred water management, including by recognizing traditional wisdom and practices, and customary laws, and by giving a role to informal community institutions and formal institutions of local governance in decision-taking; (v) water use with due regard to land use, and land use with due regard to water use; and (vi) water use prioritization starting with personal and domestic use, followed by food security, subsistence agriculture, sustainable livelihoods, and ecosystem needs. NWP, as well as the Draft Bill, however, are silent on fair and reasonable allocation between and within consumptive and non-consumptive use of water and on accommodating livelihood interests of inland fishers.

11. Inland fisheries, like water, are on the State List (List II) and figure as well in the Sixth and Eleventh Schedules of the Constitution of India (see paragraph 6 above). Unlike marine fisheries that are spread over internal waters to territorial waters and into the exclusive economic zone (EEZ) (List I and List II) and further beyond into the high seas, inland fisheries are confined to inland waters within the shoreline enjoying absolute sovereignty. In some states, under Article 46 of the Constitution of India, access to watercourses and wetlands for fishing have been preferentially granted to **actual** fishers’ cooperatives of scheduled castes or scheduled tribes—meaning cooperatives of fishers by profession and not by caste or tribe alone—to promote their economic interests towards furtherance of the Directive Principles of State (e.g. Assam and Bihar).

12. With the repeal of the Indian Fisheries Act, 1897—the oldest environmental legislation in India—under the Repealing and Amending Act, 2015 (No. 17 of 2015),<sup>10</sup> there is no national law at present dealing with inland fisheries. However, ranging from the Punjab Fisheries Act, 1914, to the Kerala Inland Fisheries and Aqua Culture Act, 2010 (Act 15 of 2010), so far 18 states and one union territory have subnational inland fisheries legislation.<sup>11</sup> These are mainly within the framework of the repealed 1897 Act to prevent destruction of fish by explosives or poisoning and to regulate, restrict or prohibit fishing with fixed engines and gear in specified waters with the purpose of protecting fish. Leading inland fish producing states like Andhra Pradesh, Uttar Pradesh, Chhattisgarh, Odisha,

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<sup>8</sup> See Inter-State River Water Disputes Act, 1956 (IRWD Act), for example, and its amendments. Also see, River Boards Act, 1956 (Act No 49 of 1956) <http://faolex.fao.org/waterlex/index.htm>

<sup>9</sup> Government of India. 2012. National Water Policy. <http://wrmin.nic.in>

<sup>10</sup> See [lawmin.nic.in/ld/Act%2017%20of%202015.pdf](http://lawmin.nic.in/ld/Act%2017%20of%202015.pdf)

<sup>11</sup> Arunachal Pradesh, Bihar, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Puducherry (UT), Punjab, Sikkim, Uttaranchal, and West Bengal.

Assam, Telangana and Tamil Nadu, however, do not have any inland fisheries legislation.<sup>12</sup> Of the 18 states having inland fisheries legislation, only Kerala Act, 2010, makes provision for participatory management involving representatives of fishing communities by setting up Inland Fisheries Management Advisory Committees at the state and district levels toward ensuring sustainable development, protecting and preserving the fisheries sector, responsible implementation of aquaculture development and protecting the livelihoods of fishers.

#### **IV. Freshwater fish production systems in India**

13. India has the fourth largest freshwater surface area in the world after Canada, Russia and the United States. If all wetlands and watercourses within the shoreline of mainland India are taken as inland waters, then these waters extend in surface area to 314,070 km<sup>2</sup> or about 9.55 per cent of India.<sup>13</sup> Inland waters are spread throughout the country and comprise upland lakes (720,000 ha), reservoirs (3.15 million ha), freshwater ponds (2.43 million ha) and floodplain wetlands (202,000 ha) accounting for over 6.5 million ha as well as 29,000 km of river systems. Inland waters also include lagoons (190,500 ha), brackishwater ponds (1.1 million ha), estuarine wetlands (40,000 ha), estuaries (300,000 ha) and mangroves (356,000 ha) (Sugunan, V.V. pers. comm.).

14. Most<sup>14</sup> of the freshwater fish production systems in India fall within one river basin or the other. There are 113 such river basins in India, of which 14 are major basins and Ganges-Brahmaputra-Meghna basin is the most significant (FAO, 2012). Some of the largest river basins are shared between India and its neighbouring countries.<sup>15</sup> Several important river systems originate in upstream countries and then flow to other countries: the Indus River originates in China and flows to Pakistan through India; the Ganges-Brahmaputra river system originates partly in China, Nepal and Bhutan, and flows to Bangladesh through India; some minor rivers of India drain into Myanmar and Bangladesh (FAO 2012). Godavari and Krishna river basins—the largest basins after Ganges-Brahmaputra-Meghna basin—are shared across states within India.

15. The Indian inland fish production systems include: seasonal and perennial capture fisheries systems in watercourses and wetlands; culture-based fisheries systems in seasonal reservoirs and floodplain lakes; enhancement fisheries systems in permanent large reservoirs and open floodplains; and aquaculture systems (Sugunan, V.V. per. comm.). While culture-based fisheries systems are supported by stocking and almost complete recapture of farm-produced, fish seed in seasonal, closed waterbodies, enhancement fisheries systems are supported by stocking fish seed in permanent waterbodies for partial recapture.<sup>16</sup> The aquaculture systems include: (i) freshwater aquaculture and cage aquaculture systems; (ii) integrated culture systems; and (iii) coastal aquaculture systems (Sugunan, V.V. per. comm.).

16. In India, compared to marine fisheries, freshwater fish production provides accessible, acceptable and affordable animal protein to the rural population at very low levels of capital investment. While nearly 40 per cent of Indian marine capture fishery production in wet weight equivalent is exported and a significant quantity is converted to fishmeal, the entire freshwater fish production is consumed as food within the country even in coastal areas. It is a vital source of nutrition, especially for women and children, in land-locked and disadvantaged areas of the Himalayas, the Gangetic plain, the Northeast and the Deccan plateau, for example.

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<sup>12</sup> Other states without inland fisheries legislation are: Haryana, Jharkhand, Rajasthan and Tripura.

<sup>13</sup> <http://www.worldatlas.com/as/in/where-is-india.html>

<sup>14</sup> Kolleru Lake, the largest freshwater lake in India, apparently, is located between Godavari and Krishna river basins.

<sup>15</sup> FAO defines a river basin as 'the area of land drained by a river and its tributaries (the term is synonymous with drainage basin). The measurable parts of a drainage basin system include: basin area, valley side slopes, floodplains, and stream channel length'. See <http://www.fao.org/nr/water/aquastat/data/glossary/search.htm>

<sup>16</sup> See Welcomme, R.L et al. (2010) for definitions of culture-based fisheries, etc.

17. Unlike in marine fisheries, the majority of freshwater fish production systems in India have had some form of tenure rights or other, including customary, informal, or formal rights to undertake fishing or aquaculture operations.<sup>17</sup> Fishing rights, including customary rights and traditional rights and exclusive right of fishery in private waters, are a legally recognized category in inland fisheries.<sup>18</sup> There are freshwater fish production systems under private ownership, especially in some river channels and tectonic lakes (*chaur*) (Kelkar, N. per. comm). Again, unlike marine fisheries, riverine and floodplain fisheries are a source of revenue for the State in several cases.<sup>19</sup> While rights of access and use of watercourses and wetlands for fishing are determined by customary rights of indigenous communities in some cases (e.g. Arunachal Pradesh),<sup>20</sup> or reserved for fishers who are members of fishermen cooperative societies (e.g. Bihar)<sup>21</sup> or determined—against payment—by licensing, royalty, leasing and auctioning arrangements in many other cases, either to contractors who employ workers to harvest fish in designated areas<sup>22</sup> under a wage or share system, or to fishers' cooperatives (e.g. West Bengal), including women's (e.g. Bihar),<sup>23</sup> or to fishers belonging to the scheduled castes of the state or a particular community (e.g. Assam).<sup>24</sup> In some cases, these rights also include the rights to manage wetlands. Customary and informal tenure rights of fishing communities, however, have weakened over time due to threats facing fishery-based livelihoods and also due to increasing marginalization of traditional inland fishing communities. These rights, reportedly, are denied in parts of Bihar when rivers change their course, although the right to fish should not be affected by the shifting river passing over the lands of a private person.<sup>25</sup>

## V. Freshwater fish production in India

18. If fish from freshwater, brackishwater and marine capture and aquaculture production systems are combined, India produced 9.6 million tonnes of fish in 2014 and it stood behind China (62.58 million tonnes) and Indonesia (10.69 million tonnes) (FAO 2016a). The contribution of riverine capture fisheries, despite a large human dependence, is merely 5-10 per cent of the total domestic production (Kelkar, N. per. comm.). When it comes to aquaculture production from freshwater, brackishwater and marine sources, India stood behind China in the same year (4.88 million tonnes as against China's 45.47 million tonnes). In the following year (2015), freshwater fish production accounted for 66 per cent of India's total fish production of 10 million tonnes from all sources.<sup>26</sup> Most of the freshwater fish production is from freshwater aquaculture (79 per cent), particularly indigenous carp species (nearly 70 per cent). In the same year, the eastern states of Andhra Pradesh, West Bengal, Uttar Pradesh, Bihar, Chhattisgarh and Odisha accounted for over two-thirds of freshwater fish production, followed by Assam, Telangana, and Tamil Nadu.

19. Although the inland fish production areas are dispersed across India and add up to 85,000 km<sup>2</sup> in comparison with an unbroken belt of 105,000 km<sup>2</sup> of its territorial waters, the freshwater fish production is almost twice as high as that of India's marine fish production. The Indian freshwater fish production increased from a modest 218,000 tonnes in 1951 to 670,000 tonnes in 1971. It further

<sup>17</sup> See 2008 Fisheries Policy of Madhya Pradesh. <http://www.mp.gov.in/en/web/fisheries/policy> (in Hindi)

<sup>18</sup> See The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (No 30 of 2013). See [indiacode.nic.in/acts-in-pdf/302013.pdf](http://indiacode.nic.in/acts-in-pdf/302013.pdf); Also see 2015 West Bengal Fisheries Policy for recognition of customary rights. See <http://www.bengalfisheriesinvestment.org>

<sup>19</sup> For example, The Bihar Fish Jalkar Management Act, 2006. [ahd.bih.nic.in/acts/ar-01-18-03-2006.pdf](http://ahd.bih.nic.in/acts/ar-01-18-03-2006.pdf)

<sup>20</sup> See The Arunachal Pradesh Fisheries Act, 2006 (Act No. 5 of 2006) [acts.gov.in/AR/2845.pdf](http://acts.gov.in/AR/2845.pdf)

<sup>21</sup> The Bihar Fish Jalkar Management (Amendment) Act, 2010. [ahd.bih.nic.in/Acts/AR-01-28-04-2010.pdf](http://ahd.bih.nic.in/Acts/AR-01-28-04-2010.pdf)

<sup>22</sup> Kelkar, N. 2014. Two failed states. Current Conservation. Volume 8, Issue 3.

<http://www.currentconservation.org/?q=content/two-failed-states>.

There are also reported cases of contractors employing forced labour to harvest fish in some large reservoirs and river stretches of India (informal sources).

<sup>23</sup> Some women's cooperatives in Bihar reportedly are better organized and can be a model for freshwater fish production, according to some informal sources.

<sup>24</sup> The Maimal community of the Cachar District, for example, have rights similar to the scheduled castes of the state. See The Assam Fisheries Rules, 1953 <http://artassam.nic.in/Fisheries%20Department/Fisheries%20Deptt.htm>

<sup>25</sup> Conversely, if a river silts up, a fisher enjoying fishing rights cannot acquire the status of a landholder.

<sup>26</sup> See Annual Report 2015-16. <http://www.dahd.nic.in/documents/reports> (provisional estimate)

increased from 1.1 million tonnes in 1985 to 3.5 million tonnes in 2005 before almost doubling to reach 6.6 million tonnes in 2015.<sup>27</sup>

20. Assuming that the freshwater fish production estimates are reliable, there is a marked thirtyfold increase in output from freshwater fish production systems between 1951 and 2015 making more fish available for domestic consumption. This is perhaps unparalleled amongst the food production systems of India. During the same period, India's marine fish production increased only sevenfold— from 534,000 tonnes in 1951 to 1.09 million tonnes in 1971 and from 1.7 million tonnes in 1985 to 3.5 million tonnes in 2015. Similarly, total food grains production increased only fivefold—from 51 million tonnes in 1951 to 108 million tonnes in 1971 and from 146 million tonnes in 1985 to 253 million tonnes in 2015.<sup>28</sup>

21. The increase in freshwater fish production came about despite the neglect of watercourses and wetlands for capture fisheries, culture-based fisheries and enhancement fisheries and regardless of near-collapse of fisheries such as those based on diadromous species—e.g. anadromous hilsa shad (*Tenualosa ilisha*) and catadromous bhetki or Asian seabass (*Lates calcarifer*)—due to damming of major rivers (e.g. Farakka barrage across Ganges), habitat degradation, and illegal, unreported and unregulated (IUU) fishing pressure on diadromous species before they enter the rivers. Ill-planned development activities and associated anthropogenic pressures have led to indiscriminate water abstraction from watercourses, deforestation in their catchment area, river course modifications, riverbed dredging, sand mining and pollution, adversely affecting fisheries and fishery-based livelihoods.

## VI. Livelihood issues in freshwater fish production systems

22. India has the largest rural population in the world (857 million) (FAO 2016). The freshwater fish production systems provide full-time, part-time, seasonal, casual, short-tem, occasional or irregular employment and income to millions of people, especially in rural areas. Most of the jobs carried out in freshwater fish production systems can be deemed as informal employment.<sup>29</sup> There are at least 14.5 million people<sup>30</sup>—men, women and children— comprising the fishing community population of India (Government of India, 2014), of whom three-quarters (11 million) are estimated to be in freshwater fish production systems.<sup>31</sup> They belong mostly to backward classes, but in some places they belong to scheduled castes and scheduled tribes.

23. There are two million fishers, including both full-time and part-time, more or less equally divided between marine and freshwater fish production systems, including about 270,000 women employed or engaged as full-time or part-time fishers (Government of India, 2014 and Government of India, 2005). There are, as well, over a million people dependent on marine and freshwater fish production systems, fish processing and marketing, including 367,000 women (Government of India, 2014). Although women participate far more actively in jobs related to freshwater fish production than marine fisheries, their role largely remains invisible and is not sufficiently captured in census reports. The above estimates of women's employment in fisheries are believed to be considerably below their level of actual participation in these activities.

24. Considering that for every marine fisher there are 3.5 dependents and for every freshwater fisher/fish farmer there are 10 dependents, the facts suggest that: (i) freshwater fishers and fishworkers are vastly under-employed; (ii) the number of fishers and fishworkers in freshwater fish

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<sup>27</sup> <http://www.indiastat.com/table/agriculture/2/fishproduction19502016/450250/101820/data.aspx>

<sup>28</sup> <http://www.indiastat.com/table/agriculture/2/totalfoodgrains/17193/7395/data.aspx>

<sup>29</sup> It includes types of jobs such as: own-account workers, employers employed in their own informal fisheries enterprise, contributing family workers, and members of informal producers' cooperatives (ILO, 2003).

<sup>30</sup> The 2014 Handbook uses fishermen's population figures from the 17<sup>th</sup> Livestock Census, 2003.

<sup>31</sup> This figure is arrived at by deducting the marine fishing population under the Marine Fisheries Census 2005 from the 17<sup>th</sup> Livestock Census, 2003

production systems is a gross underestimate; or (iii) that people from freshwater fishing communities are also employed in activities other than fisheries and aquaculture. Riverine capture fisheries are under particularly high stress owing to the poor and regulated flows in most of India's rivers (due to dams and barrages), pollution, and social conflicts or State domination over rights and access to fishing. As a result, unlike marine fisheries that experience an in-migration phenomenon due to pull factors such as better wages and income, freshwater capture fisheries witness an out-migration phenomenon due to push factors in places like Bihar and Uttar Pradesh, especially with a significant population leaving to take up jobs in other sectors away from their domiciles (Kelkar, N. per. comm.).

25. How fishers and fishworkers are further divided into different freshwater capture fishery and culture fishery production systems is not clear. The freshwater fish production systems, in spite of out-migration, seem to support more people from the community and provide greater employment than marine fisheries. Within freshwater fish production systems, capture fishery systems, culture-based fisheries systems, and enhancement fisheries systems are believed to provide greater employment opportunities than aquaculture, albeit under low productivity regimes. While gross employment in freshwater capture fishery production systems is higher, output per worker seems to be much higher in family-based and other freshwater aquaculture operations.

26. The significance of different freshwater fish production systems as life and livelihood support mechanism is not sufficiently addressed in any policy or legal document dealing with inland fish production. It is quite likely that the vast majority of fishers and fishworkers in freshwater capture fisheries are denied proper access to health, education, sanitation, environmental protection, social security and social protection, savings, credit and insurance. They also lack conditions to carry out fishery-related activities in an environment free from crime, violence and corruption, which exacerbates their out-migration. Due to highly scattered nature of employment and lack of identity with freshwater capture fisheries, freshwater fishers and fishworkers are less organized into associations or unions than their marine counterparts.

## **VII. A governance policy for Indian freshwater fish production systems**

27. The freshwater fish production systems have far greater productive potential compared to the overfished territorial sea, considering that the average freshwater aquaculture production is currently at a modest level of two tonnes per hectare and that it can be progressively and sustainably increased to higher levels under improved conditions. Further, responsible management of freshwater sources for consumptive use, including sustainable farming and irrigation practices and adopting a basin approach to reducing fragmentation, maintaining adequate ecological flow regimes in watercourses and conserving the ecology of river basins and other freshwater lakes, could lead to enhanced food, employment and livelihood opportunities from freshwater fish production systems for riparian and lacustrine communities.

28. The freshwater fish production systems can be an engine of sustainable development in many impoverished, land-locked rural areas of India if a better balance can be established between a narrow carp-centric approach to fish production and promoting wider diversification of indigenous species under different aquaculture systems, combined with a total ban on the introduction of alien species. Strong quarantine laws are to be part of such a policy.<sup>32</sup> Promoting such a diversification approach, with elimination of alien species can be an engine of sustainable development if greater emphasis is also laid on improved capture, culture-based and enhancement fisheries production systems. A combination of these two approaches—emphasising on indigenous species and paying attention to all elements of freshwater fish production systems—can provide greater employment, income and food security to vulnerable and marginalized people, subject to these reforms being accompanied by pragmatic and equitable governance of tenure reforms to benefit small-scale producers, consistent

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<sup>32</sup> Red-bellied Pacu (*Pygocentrus nattereri*), introduced as food fish from Brazil, is already wreaking havoc in several estuarine and riverine systems across the country. Tilapia and Chinese carps and African catfish have led to grave problems.

with the 2012 Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security.<sup>33</sup>

29. It is meaningless to discuss the need for a national governance policy for freshwater fish production systems (NAGP-FFS) unless a coherent approach is adopted to address fair allocation of water and sustainable use of freshwater living resources and some metalevel policy space is created for fisheries and aquaculture, independently of agriculture and other uses. A NAGP-FFS should, therefore, be developed to engage, on the one hand, with all elements of NWP and the Draft National Water Framework Bill, 2016, for use of freshwater and dispute settlement procedures from the perspective of sustainable freshwater fish production systems. Such a policy should, on the other hand, be promoted to make visible the contribution of freshwater fish production systems to nutrition, public health, employment, food security, and poverty eradication and to gain support from the public to secure their sustainable future.

30. A NAGP-FFS should promote conservation and sustainable use of fisheries resources, adopting an ecosystem approach and should effectively deal with the impact of climate change on freshwater resources. It should help control destructive fishing practices such as the use of poison, electro-fishing, dynamite, fine-meshed nets, etc.—practices harmful for riverine biodiversity. Seasonal, spatial and species-harvest closures also need to be considered as part of the policy, in conjunction with ecological restoration of watercourses and wetlands and their biodiversity. The policy should also ensure practices for coexistence of endangered riverine wildlife [gavial (*Gavialis gangeticus*), South Asian river dolphin (*Platanista gangetica*)<sup>34</sup>, etc.] with fisheries, by reducing potential threats that fishing might cause to these animals.

31. A NAGP-FFS should seek recognition of livelihood rights of fishers, including their customary rights, and to obtain consent for institutional arrangements such as co-management, applying the subsidiarity principle, to devolve power also to traditional freshwater fishing communities and their democratic institutions. It should be developed through a ground-up, consultative and participatory process in a manner to effectively identify and address threats from inequitable water allocation regimes, upstream use of watercourses that deprive fishing grounds of essential water as well as threats facing aquatic ecosystems from pollution, river diversion, riverbed dredging and dam construction that jeopardize fishery and aquaculture-based livelihoods.

32. A NAGP-FFS should spearhead equitable allocation of freshwater resources across different freshwater fish production systems, especially to benefit life and livelihood interests of poor and marginalized fishers and fishworkers, including women. It should contribute to decent work and social protection and facilitate full integration of freshwater fish production systems, for example, into programmes under the 2005 National Rural Employment Guarantee Act (NREGA).<sup>35</sup> The need to develop a NAGP-FFS should act as an incentive for scattered and diffused freshwater fishers and fishworkers to organize and to form associations/unions to bargain fair outcomes from other more powerful groups in the contested aquatic use regime.

33. Last but not the least, the proposed NAGP-FFS should lead to the development of comprehensive legislation— a new national inland fisheries act— to promote conservation and sustainable use of aquatic living resources within a human rights-based approach, an ecosystem approach and a gender-sensitive approach, applying principles of good governance at all levels— consistent with the 2014 Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines), which was developed as a complement to the 1995 FAO Code of Conduct for Responsible Fisheries.<sup>36</sup> This, needless to say, will be the best way, especially to secure the human rights—including the human right to water—of

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<sup>33</sup> See [www.fao.org/docrep/016/i2801e/i2801e.pdf](http://www.fao.org/docrep/016/i2801e/i2801e.pdf)

<sup>34</sup> South Asian river dolphin was declared the National Aquatic Animal of India in 2009.

<sup>35</sup> Tamil Nadu has a scheme under NREGA since 2011-12 to create assets such as farm ponds for integrated fish farming.

<sup>36</sup> See [www.fao.org/3/a-i4356e.pdf](http://www.fao.org/3/a-i4356e.pdf)



disadvantaged and marginalized inland fishers and fishworkers, tribal communities and women who are dependent on freshwater ecosystem services for their life and livelihoods.

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