

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH AT PUNE
MISCELLANEOUS APPLICATION NO. 5 OF 2024(WZ)

IN

EXECUTION APPLICATION NO. 12 OF 2022 (WZ)

IN

ORIGINAL APPLICATION NO. 80 OF 2020 (WZ)

IN THE MATTER OF:

VANASHAKTI & ANR.

.....APPLICANT(S)

VERSUS

STATE OF MAHARASTRA & ORS

....RESPONDENT(S)

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4.	A copy of report of the expert committee has been annexed as Annexure C.	
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BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH AT PUNE
MISCELLANEOUS APPLICATION NO. 5 OF 2024(WZ)

IN

EXECUTION APPLICATION NO. 12 OF 2022 (WZ)

IN

ORIGINAL APPLICATION NO. 80 OF 2020 (WZ)

IN THE MATTER OF:

VANASHAKTI & ANR.

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STATE OF MAHARASTRA & ORS

.....RESPONDENT(S)

PRELIMINARY AFFIDAVIT ON BEHALF OF RESPONDENT NO.2
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

MOST RESPECTFULLY SHOWETH AS UNDER:



I, E. Thirunavukkarasu, S/o. Shri M. Elangovan aged about 57 years, presently working as Scientist "F" in the Regional Office, Nagpur, the Ministry of Environment, Forest & Climate Change (hereinafter referred as MoEF&CC), the Respondent do hereby, in my official Capacity, solemnly affirm and state on oath as follows:

1. That, I am authorized by the Competent Authority in the MoEF&CC, New Delhi and thus duly competent to swear the present affidavit on behalf of the MoEF&CC on the basis of the official records maintained therein.
2. That, the miscellaneous application No. 5 of 2024 has been filed by applicants before the Hon'ble NGT with the following prayers:-

(i). That this Hon'ble Tribunal be pleased to direct the Respondent Authorities i.e., Respondent Nos. 6 & 9 to forthwith comply with the directions in the order dated 27.02.2023 in EA No. 12 of 2022 (WZ) in O.A 80 of 2020 (WZ) and immediately ensure closure and removal of the cage culture activity in Vadivale Lake at Village Valavanti, situated in Pune District, Maharashtra and ensure that there is no reoccurrence of such cage culture practices at Vadivale lake, which is a direct source of drinking water;



(ii). That this Hon'ble Tribunal be pleased to initiate strict action against the concerned Officers of Respondent No. 6 u/s 26 of the NGT Act, 2010 for having failed to comply with the directions of this Hon'ble Tribunal in the order dated 27.02.2023 in EA No. 12 of 2022 (WZ) in O.A 80 of 2020 (WZ) with respect to closure of the polluting unit at Vadivale Lake under the Water Act, 1974 and with respect to bringing the aquaculture activity within the EIA regime;

(iii). That this Hon'ble Tribunal be pleased to restrain the Respondent Authorities from permitting the carrying out of any fish farming/aquaculture in the fresh water lake of Vadavali Lake in Village Valavanti on the KamshetKundali Road in Maval Taluka, near Village Kamshet, in Pune District;

(iv). That this Hon'ble Tribunal be pleased to pass an order directing Respondent Authorities to carry out the appropriate study at Para 17(ii) of the order dated 27.02.2023 in EA No. 12 of 2022 (WZ) in O.A 80 of 2020 (WZ); etc. ”

3. That, this Hon'ble Tribunal vide order dated 05/11/2024 in the instant matter had sought clarification from the Ministry on whether the aquaculture activity would also be covered under the EIA regime and would fall in the



domain of the MoEF&CC. A copy of order dated 05/11/2024 has been annexed as Annexure A.

4. It is respectfully submitted that the Hon'ble Tribunal vide order dated 31/05/2021 in Original Application No.80/2020(WZ) constituted an Expert Committee comprising six members, namely: (i) Regional Officer, MoEF&CC; (ii) Regional Officer, CPCB; (iii) Maharashtra State PCB; (iv) nominee of Ministry of Fisheries, Government of India; (v) Maharashtra State; and (vi) Central Inland Fisheries Research Institute. The Committee was tasked to examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated and the consent regime under the Water Act.
5. Thereafter, based on the report of the expert committee constituted in compliance of the main matter OA No. 80 of 2020, the Hon'ble Tribunal in EA No. 12 of 2022 vide order dated 27.02.2023 disposed of the matter with the following directions to the MoEF&CC,

(i). MoEF&CC shall consider bringing the cage aquaculture under the Environment Impact Assessment Regime, particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake.



A copy of order dated 27.02.2023 has been annexed as Annexure B.

6. That, Ministry in order to comply with the Judgment dated 27/02/2023 examined the report of the expert committee constituted by the Hon'ble NGT. The committee made the following recommendations which inter-alia includes:

- I. *There is need to regulate cage aquaculture under consent mechanism of the Water (Prevention and Control of Pollution) Act, 1974. Also MoEF&CC may deliberate the requirement of prior Environmental Impact Assessment in view of the suggestion made by National Fisheries Development Board (NFDB). However, such consent mechanism and EIA requirement may be regulated by categorising nos. & sizes of cage aquaculture, fish types, area of lake/reservoir, its water quality, other sources of pollution, surface runoff meeting with the reservoir etc. as per findings of study as mentioned in subsequent paragraphs.*
- II. *There is a need to conduct a study by reputed institutes in the field of fisheries and environment over a period of time considering the sizes of cage culture, cage culture area, fish types, area of lake/reservoir, its water quality, other sources of pollution, discharges, etc. to study respective environmental impacts. The study will help in regulating*



inland open waters usage for cage culture in terms of reservoir sizes, fish species, cage sizes & nos., water quality, types of feeds/chemicals/drugs to be prohibited/allowed, discharges, environmental impacts & measures to be taken, etc without affecting water quality & eco-system. The study may be coordinated by MOFAH&D in consultation with MOEF&CC and CPCB

- III. *Till the study is conducted, Fisheries Department, Government of Maharashtra, to adhere with the prevailing NFDB guidelines for the cage culture in Inland open water bodies.*

A copy of report of the expert committee has been annexed as Annexure C.

7. Thereafter, based on the recommendations of the six-member Expert Committee, the answering respondent vide letter dated 13/06/2023 requested comments from Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying (MoFAH&D) on "Whether there is a requirement to bring cage aquaculture under the ambit of EIA Notification, 2006" and to conduct the study as recommended by the Expert Committee. A copy of letter dated 13/06/2023 has been annexed as Annexure D.
8. That, the answering respondent had again vide email dated 31/10/2023 sent a reminder to MoFAH&D to provide the outcome of the study and their



comments at the earliest. A copy of email dated 31/10/2023 has been annexed as Annexure E.

9. That, the answering respondent on 14/12/2023 submitted a status report in compliance of order dated 27/02/2023 before the Hon'ble National Green Tribunal (WZ). A copy of status report dated 14/12/2023 has been annexed as Annexure F.
10. Subsequently, a D.O. letter dated 02/01/2024 was addressed to Joint Secretary, Inland Fisheries and Administration, Department of Fisheries with a request to expedite the above mentioned study. A copy of the D.O. letter dated 02/01/2024 has been annexed as Annexure G.
11. It is respectfully submitted that answering respondent participated in the meeting dated 03/07/2024 convened by MPCB in which it was informed that the study titled "*Environment Impact Assessment of cage culture in inland open waters*" is being entrusted to ICAR-CIFRI.
12. That, the answering respondent subsequent to the meeting held on 03/07/2024 vide OM dated 09/07/2024 addressed to MoFAH&D requested to ensure that ToR regarding examining the requirement of EC for cage aquaculture activities, is added in the study. A copy of the OM dated 09/07/2024 has been annexed as Annexure H.



13. That, the answering respondent herein is in receipt of a work order dated 24/09/2024 was issued to ICAR-CIFRI by the MPCB for conducting Study on Environmental Impact Assessment of Cage Culture in Inland Open waters before brining Cage Culture under Consent Mechanism with the following objectives:

- To assess the impact of cage culture on limno-chemical profiles of water and sediment.
- To assess the impact of cage culture on biotic communities.
- To frame recommendations based on the study for the consent mechanism under water act.

A copy of the Work Order dated 09/07/2024 has been annexed as Annexure I.

14. That, as per the Work Order dated 24/09/2024 issued by Maharashtra Pollution Control Board , the study is stipulated to be completed within a period of 12 months.

15. It is humbly submitted that in view of the clarification sought by the Hon'ble NGT vide order dated 05/11/2024, cage aquaculture activity does not come under the ambit of the EIA Notification, 2006. However, the answering respondent is awaiting the outcome of the study and comments on behalf of the MoFAH&D.



16. That, the answering respondent, based on the outcome the study and the comments as provided by the MoFAH&D, shall take a view on whether there is a requirement to bring cage aquaculture under the Environment Impact Assessment regime.
17. It is humbly submitted that the answering respondent without prejudice reserves his right to file an additional affidavit at a later stage, if so necessary.
18. That, it is humbly submitted that the present affidavit may kindly be taken on record and into consideration and the Hon'ble Tribunal may pass appropriate Order(s), direction(s) as deemed fit and proper under the facts and circumstances of the present case.



DEPONENT
(ई. थिरुनावुक्करसु)
(E. Thirunavukkarasu)

वैज्ञानिक 'एफ' / Scientist 'F'
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Min. of Environment, Forest and Climate Change
क्षे. कार्यालय, नागपुर-४४०००१
Regional Office, Nagpur-440001



VERIFICATION

Verified at Nagpur on 23rd this day of January, 2025 that the contents of the above affidavit are correct to my knowledge and belief based on official records and nothing material has been concealed there from.

[Handwritten Signature]

(E. Thirunavukkarasu)
(E. Thirunavukkarasu)
वैज्ञानिक 'एफ' / Scientist 'F'
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Min. of Environment, Forest and Climate Change
क्षेत्र कार्यालय, नागपुर-४४०००९
Regional Office, Nagpur-440001

NOTARIAL REG
ENTRY No. 2637
DATE 23/1/2025

SEAL OF NOTARY
Mrs. KHURANA,
NAGPUR
DIST. (M.S.)
REG. No. 6386
GOVT. OF INDIA

NOTARY
CHANCHAL KHURANA
Nagpur Dist.
(M.S.) INDIA
Regd. No.
6386
GOVT. OF INDIA

SWORN BEFORE ME ON THIS 23rd
JAY OF Jan 20 25 AT NAGPUR BY
SHRI / SMT / Ku. E. Thirunavukkarasu
R/o NAGPUR WHO HAS BEEN IDENTIFIED BY
SHRI / SMT. Arundhati Roy.
ADVOCATE, NAGPUR.

[Handwritten Signature]
NOTARY
GOVT. OF INDIA
Nagpur (M.S.) INDIA



Item No.6

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH, PUNE**

[Through Physical Hearing (with Hybrid Option)]

**MISC. APPLICATION NO.05 OF 2024 (WZ)
IN
EXECUTION APPLICATION NO.12 OF 2022
IN
ORIGINAL APPLICATION NO. 80 OF 2020**

Vanashakti & Anr.

..... **Applicants**

Versus

State of Maharashtra & Ors.

..... **Respondents**

Date of Hearing : 05.11.2024

**CORAM : HON'BLE MR. JUSTICE DINESH KUMAR SINGH, JUDICIAL MEMBER
HON'BLE DR. VIJAY KULKARNI, EXPERT MEMBER**

Applicants : Mr. Yogesh Pandey, Advocate holding for Mr. Zaman Ali, Advocate

Respondents : Mr. Aniruddha Kulkarni, Advocate for R-1(b) and R-7/CPCB
Ms. Manasi Joshi, Advocate for R-6/MPCB

ORDER

1. From the side of the executant applicant, learned counsel Mr. Yogesh Pandey, holding brief of learned counsel Mr. Zaman Ali, has appeared and states that he has e-filed common rejoinder against the reply-affidavits filed by respondent No.6-MPCB and respondent No.7-CPCB, but we do not find the same to have been filed as is informed by the Registry. Therefore, we direct the learned counsel for the applicant to re-file the same.

2. The reply affidavit dated 24.07.2024 filed by respondent No.6-MPCB states that the MPCB, in its meeting dated 21.09.2023, proposed to categorize Cage Aquaculture activity into new Green category for the time being till CPCB finalizes industry (Cage Aquaculture activity) based on outcome of proposed environmental impact study of Cate Aquaculture

activity. With respect to the Aquaculture activity brought under consent regime, it is submitted that the Concept Note was submitted by the Indian Council of Agriculture Research-Central Inland Fisheries Research Institute (ICAR-CIFRI) on “Environmental Impact Assessment of Cage culture in Inland open waters” and it has revised the proposal regarding the study to be conducted in this regard, which would be amounting to Rs.46.35 Lakhs and the same would consume about 12 months’ period for completion of study. The learned counsel for respondent No.6-MPCB states that the Work Order has been placed and within twelve months, the study would be completed and thereafter, the process would be undertaken for bringing the activity in consent regime.

3. From the side of respondent No.7-CPCB, reply-affidavit dated 23.07.2024 has been filed and in paragraph No.5 (V) thereof, it has been stated that the respondent No.6 – MPCB, vide email dated 23.01.2024, communicated that based on the 3rd minutes of industry categorization committee meeting, it has been decided to categorize the cage aquaculture activity into Green category. The learned counsel for respondent No.6 – MPCB is controverting this fact and states that this activity falls in the jurisdiction of CPCB and not MPCB. Therefore, we direct respondent No.6 – MPCB as well as respondent No. 7 – CPCB to give clarification in this regard as to who is responsible to categorize the said activity in a particular category.

4. Further, Whether the aquaculture activity would also be covered under EIA regime and would fall in the domain of respondent No.2 – MoEF&CC is also required to be clarified. However, none has appeared from the side of respondent No.2, nor any reply has been filed from their side. Therefore, we direct the Registry to send a letter to the Secretary, Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhavan, Jorbagh

Road, New Delhi, directing him/her to ensure that some counsel is engaged and represents on their behalf along with their reply-affidavit in this matter.

5. Learned counsel for the applicants states that this matter may be listed for final hearing instead of granting time of 12 months to respondent No.6-MPCB for completion of the study.

6. We direct the Registry to place this matter for next consideration/final hearing on 19.02.2025.

Dinesh Kumar Singh, JM

Dr. Vijay Kulkarni, EM

November 05, 2024
M.A. No.5/2024(WZ)
npj

Item No. 6

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH, PUNE**

(By Video Conferencing)

Execution Application No. 12/2022(WZ)

In

Original Application No. 80/2020(WZ)

Vanashakti & Anr.

.....Applicant(s)

Versus

State of Maharashtra & Ors.

....Respondent(s)

Date of hearing: 27.02.2023

**CORAM: HON'BLE MR. JUSTICE DINESH KUMAR SINGH, JUDICIAL MEMBER
HON'BLE DR. VIJAY KULKARNI, EXPERT MEMBER**

Applicant : Mr. Zaman Ali, Advocate

Respondent(s) : Mr. Rahul Garg, Advocate for R-2/MoEF&CC
Mr. Aniruddha Kulkarni, Advocate for R-1B/Env. Dept. &
R-7/CPCB
Ms. Manasi Joshi, Advocate for R-6/MPCB

ORDER

1. This Execution Application has been filed with the prayers that Respondent No. 2/MoEF&CC, Respondent No. 3/Ministry of Fishing, Animal Husbandry & Dairying through Secretary (Fisheries), Respondent No. 4/Commissioner of fisheries, Government of Maharashtra, Respondent No. 6/MPCB and Respondent No. 7/CPCB be directed to comply with the directions given by this Tribunal vide order dated 31st May, 2021 and to examine the requirement to introduce changes in the existing consent regime; these authorities be directed to re-assess the clearances granted to the Respondent No. 8/Vaidehi Randive and further the Respondent No. 8 be restrained from carrying out any fish farming/aquaculture in the fresh water of Vadavali Lake.

2. The Execution Applicant had sought execution of the order dated 31.05.2021 passed by this Tribunal in O.A. No. 80 of 2020, where-in it

was alleged that there was no policy in the State of Maharashtra to regulate the inland aquaculture, therefore, a policy was needed to be framed keeping in mind the precautionary principle. There was only regulatory framework available in the State with respect to grant of licenses for aquaculture but there was no provision made for regulating and assessing the environmental impacts of aquaculture before the grant of licenses. The aquaculture practices were being undertaken in the Vadivale Lake in Village: Valavanti situated in Pune District. As per the order dated 31st May 2021, following direction was issued by this Tribunal:-

“4. We have given due consideration to the issue raise. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies(other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six member expert committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process.”

3. This matter was first considered by us on 07.12.2022 and notices were directed to be issued to the Respondents, pursuant to which, service affidavit has been filed, as per which service of notice on all the

Respondents is sufficient. The Expert Committee which was constituted by order dated 31st May, 2022 has submitted its report, which is annexed at Page Nos. 146 to 190 of the paper book, where-in following is held:

“10. Conclusions:

- (i). *India has vast and varied inland fisheries resources that comprise of 191,024 kms of rivers and canals, 1.2million ha of floodplain lakes, 2.36 million ha of ponds of tanks and 3.15 million ha of reservoirs. Although, inland fisheries have grown, the rate of growth in terms of its potential is not yet achieved. The average fish production potential was estimated at 250 kilograms (kg) hectare(ha) in reservoirs and about 350kg/ha for wetlands. While reservoirs and freshwater aquaculture can be considered as the two main pillars of growth, another major activity in aquaculture sector called the cage/ pen culture in open waters, has shown significant growth in recent years. It offers vast potential for inland aquaculture in the country. The production potential from sustainable cage culture production is about 50 kg/m³.*

The freshwater aquaculture production systems in India comprise 2.36 million ha of ponds and tanks. In Eastern India, aquaculture is practised in ponds and tanks of less than 1 ha area, whereas in western Indian aquaculture is operated on a larger scale, with watersheds of 1525 ha.

- (ii). *Cage culture of fish a form of aquaculture where use of drug and chemicals is seldom unlikely in the landbased intensive fish culture systems. However, as per the guidelines of National Fisheries Development Board(NFDB), Hyderabad, some chemicals and drugs are permitted to use with prescribed does and mode of administration under unavoidable circumstances. In general, the only inputs in the cage culture in the inland open waters are in the form of seen (fish fingerlings) and fee. Also, since the cages are installed in open waters such as reservoirs, lakes and wetlands, the direct use of chemicals and drugs may neither be effective nor economically feasible.*

Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace and which may lead to some concern of its impact on the water bodies.

- (iii). *The issue of poultry wastes from poultry farms such as gizzards and chicken/ guts/offal in aquaculture is not relevant in case of cage culture particularly in reservoirs.*
- (iv). *Unlike Coastal Aquaculture Authority in case of coastal aquaculture, at present, there is no central regulatory authority to control the usage of chemicals and drugs in*

inland or freshwater aquaculture in the country. The supply and use of chemicals and fish medicines is uniformly regulated in the EU and supported by appropriate codes of best practice. In several other countries like Australia, Japan, China, Vietnam, USA, etc., the national regulation on the use of chemicals in aquaculture exist, however, a dedicated regulation for inland fishers and aquaculture in these countries not found.

Some provisions are made to regulate use of medicines, antibiotics, pesticides in inland aquaculture under the kerala inland Fisheries and Aqua culture Act, 2010 and the Andhra Pradesh state Aquaculture Development Authority Act, 2020.

National Fisheries Development Board (NFDB), Hyderabad (Department of Animal Husbandry, Diarying and Fisheries, Ministry of Agriculture and Farmers Welfare, Government of India) has published a guideline for cage culture in inland open water bodies of India with technical inputs from the ICAR- Central Inland Fisheries Research institute (ICAR-CIFRI), Barrackpore Kolkata. A Handbook- World Fish Center Technical Manual No. 1948 was published by Central Inland Fisheries Research Institute, ICAR, Barrackpore Kolkata. The handbook briefly states the environmental constraints of cage culture when poorly managed with respect to the discharge of nutrients.

The Aforesaid NFDB's published guideline for cage culture in inland open water bodies also:

- a) Outlines about some environmental impact due to release of excessive nutrients and accumulation in water sediment of the water body.*
 - b) Suggests a strong governance platform based on co-management principles for responsible cage culture and recommends EIA for cage culture activities as it is deleterious in terms of higher eutrophication potential due excessive nutrients loading and other chemical/pharmaceutical inputs.*
 - c) Restricts any cage culture in water bodies having an area less than < 1000 Ha.*
 - d) Emphasizes that, in any case, cage culture should not be attempted in any water body having total nitrogen concentration in the water in excess of 0.02 mg/l and 1.2 mg/l respectively.*
- (v). Department of Agriculture, Animal Husbandry, Dairy Development Fisheries, Government of Maharashtra issued Policy on 17.10.2016 for Fish farming through cage culture to increase the fish production in the State, which is further revised in 2018 and 2021 w.r.t. certain*

conditions including permission regarding cage culture and its area out of water shed area of reservoir.

As per the Central Government guidelines, cage culture activities are not permitted if the area of the reservoir is less than 1000 hectares. However, there are only 46 reservoirs having area greater than 1000 hectares in Maharashtra, permission for the cage culture aquaculture projects has been given for 2448 reservoirs in the State. The revised criteria in terms of numbers of cages, water spread area in reservoir, depth of water, etc. for cage culture in the State of Maharashtra as per G. R. Dated 26th August, 2021 has been mentioned in its Section 9 (part-A). Further, the relevant terms and conditions for cage aquaculture on contract basis may please be seen at Section 7 (SI. No. 03)(Refer para 7 above).

However, the aforesaid GR dated 28.08.2021 does not include any conditions stipulating water quality standards to be complied/maintained in reservoirs, and parameters thereto. Regarding usage of medicines, the contract conditions do not restrict on use of wholesome food for growth of fish and government approved medicines provided under expert guidance. Food and medicine should be government certified and prior permission should be taken from assistant commissioner , fish business/ fishery department. Further, toilets construction has been allowed after permission from Water Resource Department, without specifying management of discharges from such toilet.

- (vi). *As per the analysis results of water samples collected by this committee within and outside the cage aquaculture of 0.15 hectare of the average 230ha water spread area of Vadiwale Lake, the concentration of analysed parameters in water are broadly higher inside the cages followed by at 3 m distances and at 100 m distances away from the boundary of cage culture when compared to that of downfall location (l6) which is at about 2.5 km distance from cage culture (please refer Table 04). Further, the concentration of analyzed parameters in the cages of big fishes were found higher than the concentration of analysed parameters in the cages of small fishes.*

Thus, it is evident that there is discharge/ pollution load in the water body due to cage culture activities in the Vadiwale lake with fish excretory matters and addition/use of feed(nutrients) which ultimately gets dissolved/ mixed with water due to exchange of metabolite and nutrients between the cage and outside environment. It leads into discharge of trade effluent(having nutrient/feed, excretory matters, etc.) from cage culture premises into stream(natural or artificial inland water) with pollutants like in BOD, COD, Total Nitrogen, Phosphate, etc. such discharges, when not carried out in controlled manner, may likely to, create a nuisance or

render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

Further, it was also observed that:

- a) The total phosphorous and total nitrogen concentration in the water were found in excess of the aforesaid NFBD guidelines' prescribed value of 0.02 mg/l and 1.2 mg/L at various monitored locations and all the monitored locations respectively, as given at Table 04 above. The guidelines stipulated that, in any case, cage culture should not be attempted in water body having such exceedance.
 - b) When compared with CPCB's guidelines on Designated Best Use water Quality Criteria for "Class of water – D: Propagation of Wild life and Fisheries", the DO(3.8mg/L) was found slightly lower than the prescribed limit of 4 mg/L at one of the monitored locations viz. L2- inside the Cage culture Compartment of big fishes. Please refer Table 48 above.
- (vii). Water samples collected from the Pond Aquaculture in the nearby village were found be conforming to the General Discharge Standards as notified under the Environment (Protection) Act, 1986, w. r. t. Analysed parameters for discharge into land for irrigation and public sewer but didn't conforms for discharge into inland surface water. The said water samples collecting though had not reached to the stage/concentration when it needed discharge and accumulation of further concentration in the monitored water samples cannot be ruled out.
- (viii). Consent mechanism under the Water (Prevention and Control of Pollution) Act, 1974, is currently not regulated by Maharashtra Pollution Control Board. However, the above observations reveal that there is need to bring inland aquaculture fisheries into consent regime depending on size/ volume of both i.e. water bodies and aquaculture.

Further, depending on size/ volume of both (i.e. water bodies and aquaculture) and water quality of the water, there may also be need of brining the inland aquaculture under the Environmental Impact Assessment regime which has also been suggested in the aforesaid NFDB's published guideline.

A detailed study may be required in this regard to assess environmental Impacts vis-a-vis size/volume of both (i.e. water bodies and aquaculture) and water quality for prescribing consent and EIA mechanism including control on use of various feed material/ chemical/ drugs/ antibiotics/ etc. and various measures required in inland aquaculture.

11. Recommendations

- i. *There is need to regulate cage aquaculture under consent mechanism of the Water (Prevention and Control of Pollution) Act, 1974. Also MoEF&CC may deliberate the requirement of prior Environmental Impact Assessment in view of the suggestion made by NFDB. However, such consent mechanism and EIA requirement may be regulated categorising nos. & size of cage aquaculture, fish types area of lake/reservoir, its water quality, other sources of pollution, surface runoff meeting with the reservoir etc. as per findings of study as mentioned in subsequent paragraphs.*
- ii. *There is need to conduct a study by reputed institutes in the field of fisheries and environment over a period of time considering the sizes of cage culture, cage culture area, fish types, area of lake/reservoir, its water quality, other sources of pollution, discharges, etc. to study respective environmental impacts. The study will help in regulating inland open water usage for cage culture in terms of reservoir sizes fish species, cage sizes & nos., water quality, types of feeds/ chemicals/drugs to be prohibited/ allowed, discharges, environmental impacts & measures to be taken, etc. without affecting water quality & eco-system.*
The study may be coordinate by MoFH&D in consultation with MoEF&CC and CPCB.
- iii. *Till the study is conducted, Fisheries Department, Government of Maharashtra, to adhere with the prevailing NFDB guidelines for the cage culture in inland open water bodies and may prescribe the following precautionary measures while permitting aquaculture in reservoir/ lake, as well as in the existing permitted cage aquaculture.*
 - a) *Aquaculture/ Cage Culture shall not be allowed in the reservoirs that do not conform to the CPCB recommended Designated Best Use Water quality criteria for Propagation of Wild Life and Fisheries.*
 - b) *Cage culture should not be allowed in any water body having total phosphorous and total nitrogen concentration in the water of exceeds of 0.02 mg/L and 1.2 mg/L, respectively, as recommended in NFDB's published guidelines.*
 - c) *Water quality of the reservoir/ lake shall be analyzed before starting the cage culture activities and twice in a year during non- monsoon seasons during aquaculture period at pre- identified strategic locations which may be ensured by state fisheries department. Based on the analysis of water quality, if any abnormality observed, the*

same shall be reported to MPCB/ irrigation Department/ Water Supply Department.

- d) Total phosphorous, total nitrogen, chloride, calcium, magnesium and other site specific relevant parameters shall be prescribed by MPCB and State Fisheries Department for analysis of the aforesaid water quality.*
- e) Sinking fee may be prohibited for cage fish farming as it accumulates at the base and fouls the cage /reservoir environment.*
- f) Construction of toilets near the cage culture fish farming shall not be allowed unless such toilets have discharge management ensuring no discharge to the lake/ reservoir/ land and permission from the Water Resource Department is obtained.”*

4. There is no separate reply affidavits filed by Respondents except by Respondent No. 7/CPCB, which has submitted with it the Joint Committee Report, relevant portion of which has already been cited above.

5. The Applicant has filed rejoinder affidavit against the Joint Committee Report, which is annexed at page nos. 255 to 260 of the paper book, where-in it is submitted that the report ought to have stated the impact of fisheries on wholesomeness of the water, as the same was being used for drinking purposes among entire rural and urban population. The GRs of the Government of Maharashtra dated 09.03.2018 and 28.08.2021 provide for granting permission for cage culture in reservoirs/water bodies, that are less than 200 ha. in size, where-as the Central Government Guidelines mandate that no cage culture must be permitted in a water body that is less than 1000 ha. The said GR dated 28.08.2021 further dilutes the permission criteria from the earlier GR dated 09.03.2018 by allowing cage culture in average depth of water at 8 meters, where-as under earlier GR, it was 10 meters or more. The GR dated 28.08.2021 provides that the contract for aquaculture will be cancelled if the water body is found to be polluted, however, there is no

mechanism provided as to how such pollution will be identified and what would be the basic standards that a cage culture operator would be required to maintain.

6. Further, it is mentioned in the said affidavit that Joint Committee Report speaks of one Mr. Bhardwaj Yadavrao Pagare, who is carrying out cage culture activities with 24 cages, that are operational and the analysis of the sample collected from there, show violation of the standards set for “best use water use quality criteria” as per the CPCB’s Guidelines. The said activity has rendered the drinking water to be unfit, as has been noted by the Joint Committee in its report. Therefore, it is necessary to direct closure of the aquaculture activities because the Vadiwale Lake is in 230 ha. area, and is providing drinking water to as many as 28 Villages. All the recommendations, which have been made by this Committee, need to be implemented in totality.

7. The Applicant has summarized the conclusions of the Committee Report, which are as follows:

- “ (i). Cage culture is growing at a very fast pace, which may lead to some concern of its impact on the water bodies;*
- (ii). Strong governance platform as per the Central Government’s Guidelines of Cage Culture outlines about the environmental concerns and restricts any cage culture in a water body less than the size of 1000 ha.*
- (iii). Maharashtra’s Government Resolution dated 26.08.2021 does not include any conditions stipulating water quality standard to be complied/ maintained in reservoirs, and parameters thereto.*
- (iv). Maharashtra’s GR dated 26.08.2021 provides for contract conditions, which do not restrict the use of wholesome food for growth of fish and government approved medicines providing under expert guidance.*
- (v). Maharashtra’s GR dated 26.08.2021 does not state that food and medicine should be government certified and that prior permission should be taken form assistant commissioner, fish business/ fishery department.*

- (vi). *Maharashtra's GR dated 26.08.2021 allows construction of toilets inside the cage culture in the water body without specifying any standards/ parameters for discharge from such toilets.*
- (vii). *There is discharge pollution load in Vadiwale Lake due to cage culture activities and is likely to create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms as phosphorous and total nitrogen concentration were found to be in excess of the Central Government's Guidelines."*

8. In the end, the learned Counsel for the Applicant has prayed that the MPCB be directed to bring the aquaculture activity within the consent regime in the light of the conclusions drawn by the Expert Committee because of the present GR dated 26.08.2021 regulating the aquaculture activities, does not deal with environmental concerns properly. Further, it is prayed that no aquaculture activity be permitted in water bodies less than 1000 ha. in size, keeping in view the Central Government's Guidelines of 2016 and the closure order be passed in respect of Mr. Bhardwaj Yadavrao Pagare, who is carrying out cage culture activities with 24 cages in the Vadiwale Lake.

9. We have heard the arguments of the learned Counsel for the parties, perused the record and have also gone through the report, as well as the reply-affidavit filed by the CPCB.

10. We find that the Expert Committee has exhaustively dealt with the issue involved in the present case, reference to which is as follows:

- “ • *To examine whether the use of chemicals in aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005), if any, in the process be allowed and if so, how can it be regulated.*
- *To examine the modalities to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly use of chemicals, if any.*

- *To study the existing Consent Regime under the water act and whether there is need to introduce any change.”*

11. The Committee has taken into consideration large data regarding inland fisheries and aquaculture in India, inland fish production system, enhancement, different forms of the enhancements, stock enhancement (Increasing the Stock), species enhancement, environmental enhancement, other enhancements, culture based fisheries, aquaculture, cage and pen culture. In the said report, the advantages of enclosed culture system in inland fisheries and also policy of the Department of Agriculture, Animal Husbandry, Dairy Development and Fisheries, Government of Maharashtra has been summarised. It has also conducted study about the Vadiwale lake and cage culture projects in the said lake. It has been submitted in this report that the Vadiwale Lake is in 230 Hectare and 1% of the said Lake has been decided to be given on contract basis for cage culture i.e. about 2.3 hectares. The water shed area of 0.15 Hectares is allocated to Respondent No. 8/Mrs. Vaidehi Bhushan Randive for years i.e. 2017-2018 to 2023-2024, although the said project has not yet been established. Vide report dated 06.09.2018 of the Commissioner of Fisheries, Government of Maharashtra, water spread area of 0.15 hectare has been allocated to Shri Bhardwaj Yadavrao Pagare (not party) for cage culture project, which is operational with 24 cages. Further, it is mentioned that a water sample was taken to assess the impact of aquaculture-cage culture on Vadiwale Lake within and around the existing cage culture, established by Shri Bhardwaj Yadavrao Pagare and outfall into Kundalini River from Vadiwale Lake, which meets Indrayani River. The water samples were collected from cage compartments (2 nos.), 3 meter away from cage culture in east and west direction (2 nos.) and 100 meters away from cage culture (1 no.). The details of the sampling locations are given in the said report, which are as follows:-

Table- 02: Details of Sampling Locations

Sr. No.	Type Aquaculture	Location Code	Location Description
1	Cage Aquaculture	L1	Cage Culture from Small Fish Compartment.
2		L2	Cage Culture from Big Fish Compartment
3		L3	3 metres away from cage culture towards west side.
4		L4	3 meters away from cage culture towards east side.
5		L5	100 metres away from Cage Culture
6		L6	Outfall from Uksan Dam in to Kundalini river which meets Indrayani river.
7		L7	Mr. Bhushn randive Fish aquaculture.

12. The parameters analysed for water sampling are as follows:-

Sr. No.	Parameter (s)	Sr. No.	Parameter(s)
1	PH	16	O- Phosphate
2	Temperature	17	T- Phosphate
3	Turbidity	18	Sulphide
4	Biochemical Oxygen Demand (BOD)	19	Iron
5	Chemical Oxygen Demand (COD)	20	Copper
6	Dissolved Oxygen (DO)	21	Manganese
7	Total Suspended Solids (TSS)	22	Magnesium
8	Total Dissolved Solids (TDS)	23	Calcium
9	Sulphates	24	Potassium
10	Chlorides	25	Total Hardness
11	TAN	26	Faecal Coliform(FC)

12	TKN	27	Total Coliform(TC)
13	Nitrate (NO ³⁻) "k	28	Zinc
14	Nitrites (NO ²⁻)	29	Phenol
15	Phosphorus	30	Total Alkalinity

13. In the said report, the samples were also collected from the Pond Aquaculture, developed by Mr. Bhushan Randive located nearby Village: Khandashi, Taluka: Maval, District: Pune and following relevant analysis results were found:-

Sr. No	Parameters	Sampling Locations in and around Cage Culture and outfall of Vadiwale Lake						Sampling Location of the Pond
		L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	L7 Pond Aquaculture (Randive Fish Aquaculture)
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	7.24
2	TDS	226	258	224	154	186	138	92
3	SS	12	24	18	14.00	14	8	52
4	Turbidity (NTU)	1.0	1.10	1.20	1.10	1.10	1.10	1.2
5	DO	4.70	3.80	4.60	4.70	4.90	4.70	NA
6	BOD	14.00	21	13.00	14.0	11.00	4.80	35
7	COD	48.00	64	36.00	40.00	32.00	24	92
8	NH ₃ -N	0.50	0.60	0.40	0.50	0.30	0.20	0.80
9	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10	Ammonia (as total ammonia-N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.80
11	NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	1.20
12	NO ₂ -N	0.08	0.03	0.02	0.02	0.02	BDL	0.41
13	TKN	1.68	2.24	1.68	2.24	2.24	1.12	2.80
	Total Nitrogen [#]	2.65	3.06	2.22	2.93	2.74	1.89	5.21
14	Total Alkalinity	28.00	32	26	14.00	20.00	12	12
15	Hardness (Total)	62.00	64	58.00	38.00	44.00	36	30
16	Hardness (Mg ²⁺)	16	16	20.00	16	14.00	16	12
17	Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	2.92
18	Calcium	18.44	19.24	15.23	8.82	12.02	8.02	7.21
19	Phosphate (Total)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
	Total Phosphorus \$	0.2	0.033	BDL	0.033	BDL	0.067	0.47
20	Phosphate (Ortho)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
21	Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	9.10

22	Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chloride	42.49	47.49	44.99	27.49	32.49	24.99	28.99
24	Faecal Coliform**	30.00	45	25.00	25.00	20.00	17	NA
25	Total Coliform**	900	900	550	550.00	425.00	250	NA
26	Phenol	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Zinc	BDL	BDL	BDL	BDL	BDL	0.08	BDL
28	Iron	0.03	0.05	0.03	0.57	0.37	NA	0.05
29	Copper	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30	Lead	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31	Nickel	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Concentration of all the values expressed in mg/L; except pH; BDL-Below Detection Limit;

*as estimated, free ammonia was found to be BDL; the NH₃-N has been considered as Total Ammonia-N;

**expressed in (MPN/100 ml); NA-Not Analysed; NR-No Relaxation.

‡addition of all forms of Nitrogen Free Ammonia, Ammonia (as total ammonia-N), NO₃-N, NO₂-N, TKN.

§total Phosphorus calculated from Total Phosphate.

As per guideline published by NFDB Hyderabad (Annexure-II), it is mentioned that, in any case, cage culture should not be attempted in any water

body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively.

TABLE-04A: ANALYSIS RESULTS AND COMPARISON WITH DESIGNATED BEST USE WATER USE QUALITY CRITERIA OF CPCB'S GUIDELINES

Sr. No	Parameters	L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Best Designation Use Class of water-C [#]	Designated Best Use Class of Water-D [§]
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	6-9	6.5-8.5
2	DO	4.70	3.80	4.60	4.70	4.90	4.70	>4	>4
3	BOD	14.00	21	13.00	14.0	11.00	4.80	<3	NS
4	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	NS	1.2
5	Total	900	900	550	550.00	425.00	250	<5000	NS

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit;NS – Not specified

Class of Water – C: Drinking water source after conventional treatment and disinfection

Class of Water – D: Propagation of Wild Life and Fisheries

TABLE-04B: ANALYSIS RESULTS OF WATER SAMPLES AND COMPARISON WITH DRINKING WATER SPECIFICATION

Parameters	L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Drinking Water Specifications: IS 10500:2012	
							Requirement (Acceptable limit)	Permissible limit in absence of alternative source
pH	7.23	7.40	7.83	7.72	7.62	8.04	6.5-8.5	NR
TDS	226	258	224	154	186	138	500 (Max)	2000 (Max)
Turbidity	1.0	1.10	1.20	1.10	1.10	1.10	1 (Max)	5 (Max)
Ammonia (as total ammonia- N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.5 (Max)	NR
NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	45 (Max)	NR
Total	28.00	32	26	14.00	20.00	12	200 (Max)	600 (Max)
Hardness	62.00	64	58.00	38.00	44.00	36	200 (Max)	600 (Max)
Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	30 (Max)	100 (Max)
Calcium	18.44	19.24	15.23	8.82	12.02	8.02	75 (Max)	200 (Max)
Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	200(Max)	400 (Max)
Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Max)	NR
Chloride	42.49	47.49	44.99	27.49	32.49	24.99	250 (Max)	1000 (Max)
Phenol	BDL	BDL	BDL	BDL	BDL	BDL	0.001 (Max)	0.002 (Max)
Zinc	BDL	BDL	BDL	BDL	BDL	0.08	5 (Max)	15 (Max)
Iron	0.03	0.05	0.03	0.57	0.37	NA	0.3 (Max)	NR
Copper	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Max)	1.5 (Max)
Lead	BDL	BDL	BDL	BDL	BDL	BDL	0.01(Max)	NR
Nickel	BDL	BDL	BDL	BDL	BDL	BDL	0.02 (Max)	NR

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit; NR – No Relaxation.

TABLE-05: ANALYSIS RESULTS OF WATER SAMPLES OF THE POND ACQUACULTURE AND THEIR COMPARISON WITH GENERAL DISCHARGE STANDARDS NOTIFIED UNDER THE ENVIRONMENT (PROTECTION) ACT, 1986

S. No.	Parameters (All parameters are expressed in mg/L, except pH)	L7 Pond Aquaculture (Randive Fish Aquaculture)	General Standards for discharge of environmental pollutants [Schedule-VI, Rule 3A, The Environment		
			Inland surface water	Public sewer	Land for irrigation
1	pH	7.24	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
2	SS	52	100	600	200
3	BOD	35	30	350	100
4	COD	92	250	--	--
5	NH ₃ -N	0.80	50	50	--
6	Free Ammonia	BDL	5.0	--	--
7	NO ₃ -N	1.20	10	--	--
8	TKN	2.80	100	--	--
9	Sulphide	BDL	2.0	--	--
10	Phenol	BDL	1.0	5.0	--
11	Zinc	BDL	5.0	15	--
12	Iron	0.05	3.0	3.0	--

13	Copper	BDL	3.0	3.0	--
14	Lead	BDL	0.1	1.0	--
15	Nickel	BDL	3.0	3.0	--

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit.

14. Thereafter, we find that the comparisons with CPCB's designated Best Use Water Quality Criteria, Drinking Water Specifications and Guidelines published by NFDB, Hyderabad for cage culture were made.

15. After this comparison, it was found that except BOD, all other parameters exceeded in the samples of water in Vadiwale Lake due to cage culture activities, pollution load was found evident. The total phosphorous and total nitrogen concentration was also found in excess of the admissible limit.

16. In the conclusion, we find that it is recorded that there was huge pollution load in the Vadiwale Lake with fish excretory matters and also addition/use of feed (nutrients), which gets dissolved/mixed with water due to exchange of metabolite and nutrients between the cage and outside environment. It leads into the discharge of trade effluent from cage culture premises into stream with pollutants like BOD, COD, Total Nitrogen, Phosphate, etc. *It is also evident that there was need to bringing inland aquaculture under the Environment Impact Assessment regime.* Therefore, the recommendations which have been cited above by us need to be adopted in the present case.

17. In view of the above Joint Committee Report, as well as the arguments made by the learned Counsel for the parties, we are of the view that this application needs to be disposed of with the following directions and is disposed of accordingly:-

- (i). MoEF&CC shall consider bringing the cage aquaculture under the Environment Impact Assessment Regime,

particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake.

- (ii). As regards the cage aquaculture activity to be brought under consent regime, the necessary steps shall be taken by the Central Pollution Control Board (CPCB) as well as Maharashtra Pollution Control Board within three months and for that, if any study is required as suggested by the Committee, the same may be got conducted in the meantime.
- (iii). The interim measures which are proposed under clause 11 pertaining to recommendations under sub-clause (iii) (a to f) be implemented by the authorities concerned on urgent basis.
- (iv). One Mr. Bhardwaj Yadavrao Pagare was found to have conducted the cage aquaculture activity in the Vadiwale lake with 24 cages and huge pollution load is found because of that activity, therefore, we direct the MPCB to take appropriate action against him after adopting due process i.e. after giving him opportunity of hearing and take appropriate action under Water (Prevention and Control of Pollution) Act, 1974 within one month.
- (v). The compliance report shall be submitted before us at the end of six months from today and if any grievance remains thereafter to the applicant, he may approach us.

Dinesh Kumar Singh, JM

Dr. Vijay Kulkarni, EM



Annexure C

FNo.CM-13011/3/2021-TECH-RD-PUNE-RD(Pune) - 554/1148 23.01.2023

To

Sh. Naresh Pal Gangwar,
Additional Secretary, MoEF&CC,
Indira Paryavaran Bhawan,
Jor Bagh, New Delhi-110003

Sub : Report of the expert committee constituted under Hon'ble NGT Order dated 31/5/2021 of the Hon'ble NGT in Original Application No. 80/2020 (WZ) titled as Vanashakti & Anr. Versus State of Maharashtra & Ors.

Sir,

This has reference to directions of the Hon'ble NGT order dated 31.5.2021 (copy enclosed) wherein, in Para 4 the tribunal constituted a six-member Expert Committee to examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated.

It was further directed in the said order dated 31.5.2021 that report of the said committee be furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra, for further remedial measures.

In compliance with the aforesaid order of Hon'ble NGT, the Expert Committee has prepared its report and the same is attached herewith for ready reference and for necessary action in accordance with the said order of the Hon'ble NGT

This issues with the approval of the Competent Authority, CPCB.

Yours faithfully,

23/01/23

(P K Mishra)

Divisional Head

WQM -i Div.

Encl.: As above

As(NPG)-In Mtg.
Dir(VPM)

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032

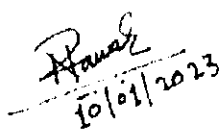
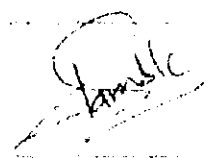

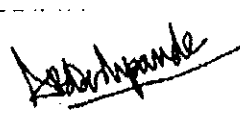


Parivesh Bhawan, East Arjun Nagar, Delhi-110032

दूरभाष/Tel: 43102030, 32305792 वेबसाइट/Website: www.cpcb.nic.in

**REPORT OF THE COMMITTEE
IN THE MATTER OF
ORIGINAL APPLICATION NO. 80 OF 2020 (WZ)
IN COMPLIANCE WITH ORDER DATED 31.05.2021
OF HON'BLE NGT RELATED TO UNREGULATED ACTIVITIES OF
AQUACULTURE IN FRESH WATER BODIES OF MAHARASHTRA**

**REPORT OF THE COMMITTEE IN THE MATTER OF ORIGINAL APPLICATION NO. 80
OF 2020 (WZ) IN COMPLIANCE WITH ORDER DATED 31.05.2021 OF HON'BLE
NGT RELATED TO UNREGULATED ACTIVITIES OF AQUACULTURE IN FRESH
WATER BODIES OF MAHARASHTRA**

Committee Members

Sr. No	Name of Member, Designation & Department	Signature
1	Dr. Nilesh Anil Pawar Deputy Director (Aquatic Quarantine) Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, New Delhi	 10/01/2023
2	Dr. Suhas Prakash Kamble Scientist (SS) and I/c Vadodara Research Station, Central Inland Fisheries Research Institute (CIFRI), Vadodara, Gujarat	
3	Shri E. Thirunavukkarasu, Scientist 'E' Integrated Regional Office, MoEF&CC, Nagpur	
4	Shri Abhay Deshpande Regional Deputy Commissioner, Ministry of Animal Husbandry, Dairy Development and Fisheries Development, Govt of Maharashtra, Pune Region	
5	Shri Bharat K. Sharma Regional Director, Central Pollution Control Board (CPCB), Regional Directorate, Pune (Nodal Agency)	
6	Shri Nitin R. Shinde Sub Regional Officer Maharashtra Pollution Control Board (MPCB), Regional Office, Pune (Nodal Agency)	

Dated: 10/1/2023

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Annexure- III A & III B	Policy of Department of Agriculture, Animal Husbandry, Dairy Development, Fisheries, Govt of Maharashtra
Annexure- IV	Order of Commissioner of Fisheries, Govt of Maharashtra, Mumbai dated 30.06.2017
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REPORT OF THE COMMITTEE IN THE MATTER OF ORIGINAL APPLICATION NO. 80 OF 2020 IN COMPLIANCE WITH ORDER DATED 31.05.2021 OF HON'BLE NGT RELATED TO UNREGULATED ACTIVITIES OF AQUACULTURE IN FRESH WATER BODIES OF MAHARASHTRA

1.0 BACKGROUND

The Original Application No. 80 of 2020 (WZ) (titled "Vanashakti & Anr. Vs. State of Maharashtra & Ors") in the Hon'ble National Green Tribunal (NGT) is related to unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra. The applicant is particularly aggrieved by the permission granted in favour of Respondent No.7, Vaidehi Randive in Vadiwale Lake in Village Valavanti on the Kamshet-Kundali Road in Maval Taluka, near Village Kamshet, in Pune District, by the Commissioner of Fisheries, Government of Maharashtra, which the applicant has assailed being against the "Precautionary" and "Sustainable Development" principles.

The applicant has alleged broadly regarding unregulated activities of aquaculture and fishery in Vadiwale Lake in Village Valavanti, Maval Taluka, near Kamshet Village Pune. Vadiwale lake is source of drinking water for nearby villages and the out fall of the lake is in Indrayani River which is again source of drinking water for 28 villages. Aquaculture activity involves use of modern techniques and harmful chemicals. Release of harmful chemicals into the lake will directly affect the human health. Apart from discharge of harmful chemicals, use of other materials like poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics also have harmful impact on water bodies. Impacts of these materials on water bodies are not taken into account and only financial aspects are considered.

The Hon'ble NGT passed an order dated 31/5/2021 in the aforesaid Original Application No. 80/2020 (WZ) on 31.05.2021 and relevant paragraph (Para-4) of the said order is reproduced below-

"...4. We have given due consideration to the issue raised. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six-member expert Committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional Officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether, in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process..."

Copy of the aforesaid order dated 31.05.2021 of the Hon'ble NGT is given at **Annexure-I.**

2.0 THE COMMITTEE

In compliance with the aforesaid order dated 31.05.2021 of the Hon'ble NGT, a committee was constituted comprising of the following officials:

Table 1: Name and Institute/Department of the Committee Members

Sr. No	Name of Member& Designation	Organization/Department
1	Mr. I.A. Siddiqui [#] Deputy Commissioner (Fisheries) and Fisheries Development Commissioner (I/c) of Department of Fisheries	Ministry of Fisheries, Animal Husbandry & Dairying, Govt. of India (MoFAHD)
2	Dr. Suhas Kamble Scientist (SS) and I/c CIFRI Research Station, Vadodara, Gujarat	Central Inland Fisheries Research Institute (CIFRI)
3	Mr. Suresh Kumar Adappa* Scientist 'E'	Integrated Regional Office, MoEF&CC, Nagpur
4	Mr. Abhay Deshpande Regional Deputy Commissioner, Pune Region	Ministry of Animal Husbandry, Dairy Development and Fisheries Development, Govt. of Maharashtra
5	Mr. Bharat K.Sharma Regional Director	Central Pollution Control Board (CPCB), Regional Directorate, Pune (Nodal Agency)
6	Mr. Nitin R. Shinde I/c Regional Officer	Maharashtra Pollution Control Board (MPCB), Regional Office, Pune (Nodal Agency)

Earlier Mr. I.A. Siddiqui who superannuated from the service of Department of Fisheries, MoFAHD, New Delhi and subsequently replaced by Dr. Nilesh Anil Pawar, Deputy Director (Aquatic Quarantine), Department of Fisheries, MoFAHD, New Delhi.

** Mr. Suresh Kumar Adappa, Scientist 'E' is replaced by Shri E. Thirunavukkarasu, Scientist 'E' due to transfer.*

3.0 SCOPE OF THE COMMITTEE

The scope of the committee in accordance with the aforesaid Hon'ble NGT order dated 31.05.2021 is as below;

- To examine whether the use of chemicals in aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005), if any, in the process be allowed and if so, how can it be regulated.
- To examine the modalities to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly use of chemicals, if any.
- To study the existing Consent Regime under the water act and whether there is need to introduce any changes.

4.0 APPROACH OF THE COMMITTEE

In compliance with the said Hon'ble NGT order, the committee adopted the following approach:

- Meetings through VC was held on 13.08.2021 to deliberate on way forward for compliance of the Hon'ble NGT order and subsequent meeting on 13.05.2022.
- Site visit of cage aquaculture in Vadiwale Lake, Village Valavanti (near Village Kamshet) Kamshet-Kundali Road, Taluka- Maval, District-Pune and pond aquaculture at Village khandashi, Taluka- Maval District- Pune and sampling of water carried on 27.08.2021.
- Collection of information from the committee members and concerned departments.
- Preparation of draft report and deliberation on the same by the committee members in meeting held through VC on 13.05.2022.

5.0 ABOUT INLAND FISHERIES AND AQUACULTURE IN INDIA

India is the third largest fish producing country and the second largest aquaculture fish producer in the world and contributes about 7% to the global fish production (FAO, 2020). The total fish production of the country during 2019-20 is around 14.16 million metric tonnes, of which nearly 73.7 % is from inland

sector and about 50% of the total production is from culture fisheries. Fisheries sector play an important role in Indian economy and provides livelihood to more than 28 million fishermen and fish farmers at the primary level and several more along the fisheries value chain (DOF, 2020). During 2018-19, fisheries sector contributed Rs. 2,12,915 crore Gross Value Added (GVA) which was around 1.24 % of Indian economy and contributed around 7.28 % in Indian Agriculture economy. The fish production from the marine sector in the country is in declining state and increasing demand for fish product is being compensated through inland sector of the country. India has vast and varied inland fisheries resources that comprise of 191,024 kms of rivers and canals, 1.2 million ha of floodplain lakes, 2.36 million ha of ponds and tanks and 3.15 million ha of reservoirs (DOF, 2020). Although, inland fisheries have grown, the rate of growth in terms of its potential is not yet achieved. The average fish production potential was estimated at 250 kilograms (kg)/hectare (ha) in reservoirs and about 350 kg/ha for wetlands. While reservoirs and freshwater aquaculture can be considered as the two main pillars of growth, another major activity in aquaculture sector called the cage/pen culture in open waters, has shown significant growth in recent years. It offers vast potential for inland aquaculture in the country. The production potential from sustainable cage culture production is about 50 kg/m³.

5.1 INLAND FISH PRODUCTION SYSTEM:

The fish production system practiced in various inland water resources are summarised in the following table:

Sl. No.	Resource type	Resource size	Fish production system
1.	Rivers and canals (Km)	191,024	Capture
2.	Reservoirs (Million ha)	3.15	Capture/Culture-based-fisheries/Stock enhancement/cage culture
3.	Pond and Tanks (Million ha)	2.36	Aquaculture
4.	Brackish water area (Million ha)	1.24	Aquaculture

5.	Floodplains wetlands (Million ha)	1.2	Culture-based fisheries/Aquaculture
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Capture fishery is the major source of fish production from Inland open waters such as river and canals, lakes, reservoirs, wetlands and estuaries. In a typical capture fishery, the wild untended stock of organisms is harvested with little human intervention on either habitat variables or the biotic communities. On the other hand, in a culture fishery, the whole operation is based on captive stocks with a high degree of effective human control over the water quality and other habitat variables. The marine fishery is the example of capture fisheries and the intensive/semi-intensive aquaculture of fish and prawn in small ponds is the typical example of culture fishery. Fishery management purely on capture fishery lines as understood in case of marine fisheries seldom operates in the inland waters of India, with the possible exception of rivers and estuaries. Most of the open waters which contribute substantially to fish production such as reservoirs, beels, boars, chauras, etc. are managed on the basis of culture-based fisheries or various forms of enhancement, which are intermediate to culture and capture fishery norms.

5.2 ENHANCEMENT

A range of management practices is collectively known as enhancement. FAO (1997) defines fisheries enhancements as technical interventions in existing aquatic resource systems, which can substantially alter the environment, institutional and economic attributes of the system. Lorenzen et al. (2001) defines it as limited interventions in the life cycle of common pool resources. Enhancement is the process by which qualitative and quantitative improvement is achieved from water bodies through exercising specific management options. The common forms of enhancement which are relevant to inland water bodies of India are stock enhancement, species enhancement, environmental enhancement, management enhancement and enhancement through new culture systems. Culture-based fishery is the most common mode of

enhancement being followed in inland water bodies in India. When the fish harvest in an open water system depends solely or mainly on artificial recruitment (stocking), it is generally referred to as culture-based fishery.

5.2.1 DIFFERENT FORMS OF ENHANCEMENTS

Enhancement can be in the form of improving the stock, changing the exploitation norms, changing craft and gear, introducing new forms of access and so on. Apart from improving the production of absolute biomass from the water bodies, it can also be in the form of interventions on access to the fishery or improvements in their monetary and aesthetic value. The common norms of enhancement, which are relevant to inland water bodies of India, are:

- ✓ Stock enhancement
- ✓ Species enhancement
- ✓ Environmental enhancement
- ✓ Habitat enhancement
- ✓ Management enhancement, and
- ✓ Enhancement through new culture systems

5.2.2 STOCK ENHANCEMENT (INCREASING THE STOCK)

Augmenting the stock of fish has been the most common management measure that is followed in the reservoirs in most countries of the world. Augmentation of the stock is necessary to prevent unwanted fish to utilize the available food niches and flourish at the cost of economically important fast-growing species to colonize all the diverse niches of the biotope is one of the necessary pre-requisites in reservoir fishery management. The main aspects of stock enhancement are selection of species of stocking, determination of stocking rate and the size at stocking. There are two types of stock enhancements viz., (1) stocking to create culture-based fisheries i.e. fisheries based predominantly on the recapture of stocked fish and (2) Stocking to enhance or supplement self-recruiting populations.

5.2.3 SPECIES ENHANCEMENT

Species enhancement is planting of economically important, fast-growing fish from outside with a view to colonizing all the diverse niches of the biotope for harvesting maximum sustainable crop from them. It can be just stocking of a new species or introductions. Introduction means one time or repeated stocking of a species accidentally or deliberately with the objective of establishing its naturalized populations (Welcomme & Bartley, 1998). This widespread management practice has more relevance to larger water bodies, where stocking and recapture on a sustainable basis is not feasible. Introduction of exotic species is a subject of hot debate due to its possible impact on the biodiversity of our aquatic ecosystems.

5.2.4 ENVIRONMENTAL ENHANCEMENT

Environmental enhancement is improvement of the nutrient status of water by the selective input of fertilizers (Sugunan, 1995, 2000). Although this is a common management option adopted in China (Sugunan, 1997), a careful consideration of the possible impact on the environment is needed before this option is resorted to in reservoirs. Most of the Indian reservoirs are being used for the irrigation, drinking water purpose and power generation and are under the different agencies of the Government and environmental enhancement is not been allowed.

5.2.5 OTHER ENHANCEMENTS

There are other forms of enhancement such as management enhancement when new management options are exercised. For example a water body can be thrown open for sport fishing to attract fishers or a community management approach can be adopted. The new culture systems such as cage and pen culture can be resorted to augment yield and increase revenue.

5.3 CULTURE-BASED FISHERIES

When the fish harvest in an open water system depends solely or mainly on artificial recruitment (stocking) it is referred to as a culture-based fishery. This management tool is particularly effective in increasing yields when recruitment of desired species is lower than the environmental carrying capacity. This is the case in certain modified ecosystems (e.g. reservoirs) or where intensive harvesting has reduced spawning stocks to very low level. Chronic recruitment limitation can also arise naturally in seasonal and or isolated freshwater bodies, or in marine habitats with poor connectivity to spawning sources (Doherty, 1999). The floodplain wetlands, the small reservoirs and a number of community water bodies in India fall under the above-mentioned situation. Thus, culture-based fishery forms an important management tool in the hands of fishery managers in India to increase production and productivity. The main focus of management here is stocking and recapture. The size at stocking, grow-out period and the size at capture are the important criteria in culture-based fishery management. In this kind of practices, no other inputs such as feed, fertilizers and chemicals are permitted.

6.0 ABOUT AQUACULTURE

Aquaculture is the farming of aquatic organisms including fish, molluscs, crustaceans and aquatic plants (FAO,1997). Aquaculture is categorised based on the environment in which the culture is done e.g. fresh water, brackish water, salt water or marine aquaculture or mariculture. In India, Freshwater aquaculture mostly practiced in land-based pond and tank systems. However, based on the culture operations freshwater aquaculture is categorised into the following culture systems:

S.N.	Category of Aquaculture	Description
i)	Open aquaculture System	Fish culture in pens, cages, long lines and raft;
ii)	Semi-closed aquaculture System	Fish culture in tanks and ponds

iii)	Closed aquaculture system	Re-circulatory aquaculture systems and raceways
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Further, based on the Input provisions freshwater aquaculture is categorised into following types:

S.N.	Category of Aquaculture	Description
i)	Extensive aquaculture	Culture of fish with minimal control, lower stocking density, low input (Seed and Fertilizers): pond culture of fish
ii)	Semi-intensive aquaculture	Fish culture with medium inputs, moderate stocking density, fertilizers and use of supplementary feed: pond fish culture.
iii)	Intensive aquaculture	Fish culture in controlled condition, higher input, high stocking density, Re-circulatory Aquaculture Systems (RAS) and Raceways.

Freshwater aquaculture industry in the country involves activities such as seed production (Hatchery: induced breeding), seed rearing (Production of stocking material) and grow-out culture (Production of table size fish). Seed production activity involves induced breeding of fishes through hatcheries, whereas seed rearing is the activity in which hatchery produced seed is reared in earthen pond or concrete tanks to get the stocking material for the grow-out culture of the species. Grow-out culture is the rearing of stocking material till it reaches the marketable size.

Fish production from aquaculture sector has also been increased to six and half folds over the last two decades, with the freshwater aquaculture contributing more than 95% of the total inland fish production. The three Indian Major Carps (IMCs), namely *Catla (Catla catla)*, *Rohu (Labea rohita)* and *Mrigal (Cirrhinus mrigala)* contribute the major chunk of the freshwater aquaculture production (around 80% of the volume), followed by the exotic carps namely, *silver carp (Hypophthalmichthys molitrix)*, *grass carp (Ctenopharyngodon idella)* and *common carp (Cyprinus carpio)* forming the second important group (Kasozi et

al., 2017). Apart from above mentioned species several other indigenous fish species such as *minor carps and barbs (Labeo fimbriatus, L. gonius, L. calbasu, Puntius sarana)*; *catfishes (Clarias batrachus, Ompok pabda)*; *Climbing Perch (Anabas testudineus)* and *Murrel (Channa striatus, C. marulius and C. punctatus)* are being cultured in small scale. Recently, exotic species such as *Striped Catfish (Pangasianodon hypophthalmus)*, *Tilapia (Oreochromis niloticus)* and *Pacu (Piaractus brachypomus)* have taken momentum in the freshwater aquaculture in India. In addition, the giant freshwater prawn (scampi) is produced in freshwater ponds and these species are widely cultivated in West Bengal, Andhra Pradesh, Telangana, Karnataka, Kerala, Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Rajasthan and Uttar Pradesh.

The freshwater aquaculture production systems in India comprise 2.36 million ha of ponds and tanks. In Eastern India, aquaculture is practiced in ponds and tanks of less than 1 ha area, whereas in Western India aquaculture is operated on a larger scale, with watersheds of 1525 ha. In Northern India, open water aquaculture is practiced and in southern India, crop irrigation ponds are used for aquaculture. Extensive (Low input) to semi-intensive (Medium input) culture system is mostly adopted in freshwater aquaculture in India. It is estimated that only about 40 percent of the available area of ponds and tanks have been utilised and an immense scope for expansion of area exists under freshwater aquaculture.

6.1 CAGE AND PEN CULTURE

Cage and Pen culture aquaculture techniques used in the open waters for the enhancement of fish production. During the last five decades, contribution of marine fish in the total fish production of the country has decreased from 71% in 1950s to 26.3 % during 2019 (www.dahd.nic.in) with a corresponding increase in inland fish production. The increase in fish production in favour of the inland sector is attributable to the growth of inland aquaculture, as contrasting to the sole dependence of capture fisheries in the marine sector. In view of the dwindling production from natural waters, both inland and marine, any substantial increase in production has to come either from inland aquaculture or

mariculture. However, freshwater aquaculture in India by and large still centres on pond-based systems. Considering the ever-increasing and often conflicting cross-sectorial demands for water and land, there are limitations for growth in pond-based aquaculture. In this context, culture of fish in enclosures such as cages and pens installed in open water bodies offer scope for increasing production obviating the need for more land-based fish farms.

Cage is an enclosed space to rear organisms in water that maintains free exchange of water with the surrounding water body. 'Pens' are essentially portions of a water body cordoned off by erecting a fence like structure. Usually, pens are enclosed portions of the lake margin, with fencing on three sides; the free fourth side being contiguous with the land. But, pen can also be away from the shore with fencing on all the four sides. The main difference between a pen and a cage is, pen bottom is never covered so that the soil water interface of the water body is not compromised. Enclosure aquaculture in the context of inland fisheries in India refers to both 'cage culture' and 'pen culture'. The cage fish farming being purely based on supplementary feeding, selection of good/best fish feed and its application in right quantity is important to achieve desirable results. It is advised that only quality floating feed is selected in order to avoid economic losses due to feed wastage and further environmental degradation which may cause eutrophication of water body.

At the moment economically viable cage culture is practiced in inland water bodies of India by growing the *exotic pangasius (Sutchi Catfish)*, *Pangasianodon hypophthalmus*. Culture of another exotic species viz., *GIFT tilapia*, a genetically improved strain of *Oreochromis niloticus* has been allowed subject to certain conditions such as: only all-male seed, sourced from authorized agencies can be used. In addition, Indian Council of Agricultural Research - Central Inland Fisheries Research Institutes (ICAR-CIFRI) has been involved in standardization of grow-out production of several regional specific fish species like *Labeo rohita*, *Catla catla*,

Ompok babda, Labeo bata, Osteobrama belangeri, Puntius ganionotus, Amur carp, Etroplus suratensis etc.

Advantages of enclosed culture systems in inland fisheries can be summarised as:

- Augmenting fish yield by optimizing the use of all available water area
- Raising fingerlings in large numbers for stocking in a cost-effective way
- Optimization of trophic structure and functions to the advantage of fish production
- Effective utilization of weed-choked water bodies and those with obstructions like tree stumps and boulders, where harvesting of wild fish is difficult
- Reducing pressure on land for farms and nurseries
- Scope to keep a captive stock within the open water bodies allowing rapid, sure, complete and easy harvesting
- Direct and easy observation of stock for feeding, growth and general health
- Considerable indirect employment opportunities.

Considering India's rich and varied open water resources like reservoirs, lakes and floodplain wetlands, enormous scope exists to increase production through enclosure aquaculture. Utilizing a modest fraction of their surface area, large and medium reservoirs can contribute a substantial quantity of fish to the total inland fish production basket. Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace giving hopes and may cause some concern.

The National Fisheries Development Board (NFDB) established in 2006 as an autonomous organization under the administrative control of the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, has already published a guideline for cage culture in inland open water

bodies of India (2016) with technical inputs from the ICAR-Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore, Kolkata, West Bengal. The said guidelines for cage culture in inland open water bodies highlights environmental considerations with regard to the release of excessive nutrients and accumulation in water sediment of the water body. Cage culture being an intensive fish rearing, the feeding rates will be higher with excessive release of nutrients in to the water body. The guideline also put emphasis on precautionary approach for Environmental Impact Assessment (EIA) in cage culture operations due to deficit in data on the environmental impacts. The guideline further recommends EIA for cage culture activities as it is deleterious in terms of higher eutrophication potential due excessive nutrient loading and other chemical/pharmaceutical inputs. The guideline suggests a strong governance platform based on co-management principles for responsible cage culture. The guideline also restricted any cage culture in water bodies having an area less than < 1000 Ha. The copy of guideline is provided at **Annexure-II**.

In addition, a technical manual 1948 entitled, "Cage Culture in Reservoirs in India was published by Central Inland Fisheries Research Institute, ICAR, Barrackpore, Kolkata, West Bengal that briefly states the environmental constraints in poorly managed cages with respect to the discharge of nutrients.

For the sustainable development of inland fisheries and freshwater aquaculture in the country, Central Government agencies such as ICAR- Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore, ICAR- Central Institute of Freshwater Aquaculture, Bhubaneswar, ICAR- Directorate of Coldwater Fisheries Research, Bhimtal and National Fisheries Development Board, Hyderabad are diligently involved in research and development and time to time publishing guidelines, package of practices and other extension material for the stakeholder of the Inland Fisheries and Aquaculture.

7.0 POLICY OF DEPARTMENT OF AGRICULTURE, ANIMAL HUSBANDRY, DAIRY DEVELOPMENT and FISHERIES, GOVT OF MAHARASHTRA

Department of Agriculture, Animal Husbandry, Dairy Development and Fisheries, Govt. of Maharashtra has issued Policy on 17.10.2016 for Fish farming through Cage Culture to increase the fish production in the State, which is further revised in 2018 and 2021 w.r.t. certain conditions including permission regarding cage culture and its area with reference to water shed area of the reservoir. The copies of the said 2016 policy and revised policy of 2021 are provided at **Annexure- III A and III B** respectively.

The salient feature of the policy w.r.t permission for cage culture in the reservoir and water pollution/contamination/monitoring are as follows-

- (1) It is mentioned in the Revised Policy (vide Govt Resolution (GR) Dated 26.08.2021) that fish farming using cage method is advanced technology which will help to increase the fish production. Cage aquaculture activities are promoted to overcome the issue of malnutrition through increase in availability of proteinaceous food, and to create employment.
- (2) As per the GR dated 17.10.2016, it was decided to give contract for cage culture project in 1 % of the water spread area in reservoirs having water spread area more than 200 hectares.

As per GR dated 09.03.2018, it was decided to give contract for cage culture project in 0.5 % of the water spread area in reservoirs having water spread area less than 200 hectares but not less than 15 hectares and having depth of the water 10 m throughout the year.

As per the Central Government guidelines cage culture activities are not permitted, if the area of the reservoir is less than 1000 hectares. However, considering there are only 46 reservoirs having area greater than 1000 hectares in the State of Maharashtra, permissions for the cage culture

aquaculture projects have been given for 2448 reservoirs available in the State.

Thereafter, Office of Commissioner of Fisheries submitted proposal to the State Government. Accordingly, new policy was issued through GR on 26.08.2021 with revised criteria which includes -

- (a) Cage aquaculture shall be permitted by Fisheries Department in 1 % of the water spread area in reservoirs having water spread area not less than 15 hectare and average depth of water is more than 08 meter throughout the year.
 - (b) Maximum cages shall be 18 in numbers and 630 m² per project proponent (Fish Farmer) and 6 cages per member in case Fishery Co-operative Society, Women's Self-help groups, Fisherman Self-help group etc. with maximum 72 cages and 2520 m².
- (3) The revised new policy is inclusive of Agreement for the cage aquaculture on contract basis (*please refer Annexure-1 of the revised new policy*). The relevant terms and conditions w.r.t. water quality/pollution mentioned in the revised new policy vide GR dated 28.08.2021 which are given as below-
- (a) Para 5 –Terms & Conditions (Condition no-17 at page no.07 of GR dated 28.08.2021) for Cage Culture Fish farming Contractor - Care should be taken to keep all relevant reservoir areas (water and land) clean. Contract will be cancelled, if the water source is found polluted as well as the surrounding area found un-cleaned. Toilets can be constructed after permission from Water Resource Department.
 - (b) Condition no. 15 (page no. 14 of GR dated 28.08.2021)- Water quality examination should be regularly conducted and its record to be maintained. It is binding on project proponent to take care/measure to avoid water pollution in the reservoir.

- (c) Condition no. 37 (page no. 17 of GR dated 28.08.2021) - Solid, Liquid or Chemicals should not be added to the reservoir which will kill/destroy, affect health, harm fishes and no any activities will be carried out which will pollute the water. There is no restriction on use of wholesome food for growth of fish and government approved medicines as per guidance of expert. Food and medicine should be government certified and prior permission should be taken from Assistant Commissioner of Fisheries, Department of Fisheries

8.0 ABOUT VADIWALE LAKE AND CAGE CULTURE PROJECTS AT VADIWALE LAKE

8.1 ABOUT VADIWALE LAKE:

Vadiwale Lake is located in village Valvanti on the Kamshet-Kundali Road in Maval Taluka, near village Kamshet, in Pune District (Latitude: 18.826829" Longitude: 73.494237"). Vadiwale Lake is one of the major lakes in the area, at an altitude of 2,200 ft above sea level. It is an artificially created lake due to the backwaters of the Uksan Dam. The outfall of Uksan Dam is the Indrayani River. The average water spread area of Vadiwale lake is 230 Hectare (2.3 km²). The location of Vadiwale Lake is shown in Image-1 & Image-2.



Image 1: Pune District and Location of Vadiwale Lake, Dist.Pune, Maharashtra

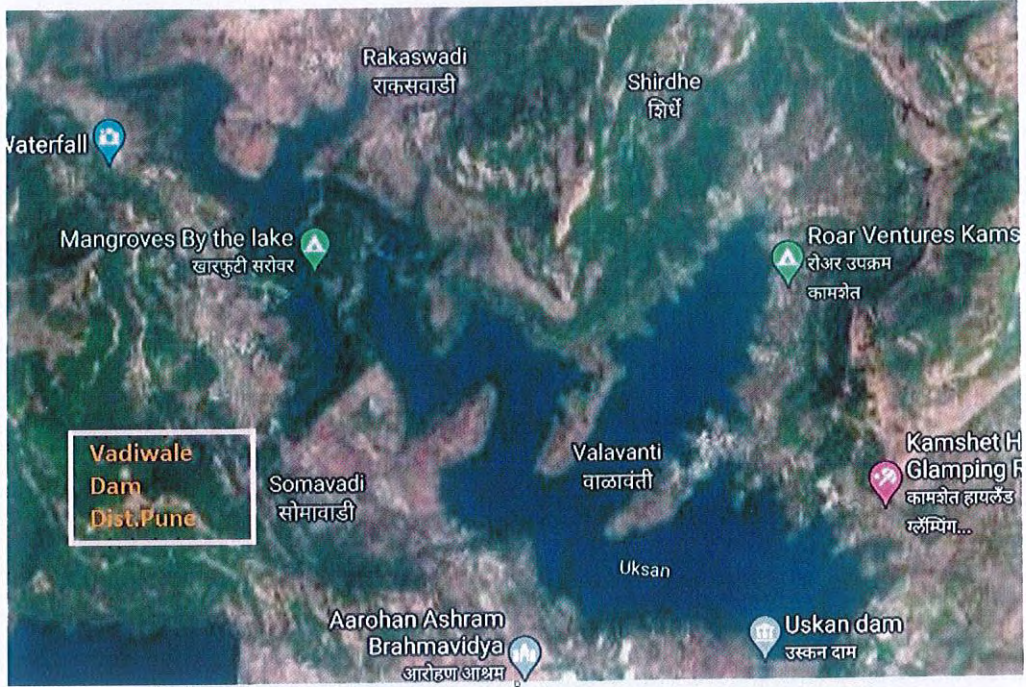


Image 2: Location of Vadiwale Lake, Dist.Pune, Maharashtra

8.2 CAGE CULTURE PROJECTS AT VADIWALE LAKE

The average water spread area of Vadiwale Lake is 230 Hectare (2.3 km²/ 23,00,000 m²). Accordingly, 1% area of the Vadiwale lake has been decided to give on contract basis for cage culture which is 2.3 Hectare (i.e. 0.023 km², 23,000 m²).

As per the order of Commissioner of Fisheries, Govt of Maharashtra, Mumbai dated 30.06.2017 (**Annexure-IV**), water shed area of 0.15 Hectare is allocated to Mrs. Vaidehi Bhushan Randive for 7 years (2017-18 to 2023-24). However, the project is not yet established.

Vide another order of the Commissioner of Fisheries, Govt of Maharashtra, Mumbai dated 06.09.2018 (**Annexure-V**), water spread area of 0.15 Hectare has been allocated to Shri. Bhardwaj Yadavrao Pagare for cage culture project. Currently, the said cage culture project is operational with 24 cages (Size of each cage 6x4x4 feet).

8.3 SITE VISIT, SAMPLING AND FINDINGS

A site visit was carried out to Vadiwale Lake on 27.08.2021 by the committee members.

During the site visit, it was observed that only one cage culture project which is developed by Shri Bhardwaj Yadavrao Pagare was operational. The aforesaid project has 24 cages and spread over an area about 0.15 Ha. Species reared in the cage culture are Pangassius sp, Common Carp and Rupchand. The feed given to the reared species is Godrej Nutifry-Premium Larval Feed (NF-0C, 1C and 2C, NF-3P(Ø 1mm), and NF-4P (Ø 2mm). Even though the permission is granted to Mrs. Vaidehi Randive for establishing the cage culture as per the order dated 30.06.2017, the project is not yet established.

The committee also visited Pond Aquaculture developed by Mr Bhushan Randive, located in the nearby village Khandashi, Taluka Maval Dist Pune.

Few images of the Cage Culture taken during the visit are given below;



Image 3: Cage Culture owned by Shri. Pagare, at Vadiwale lake

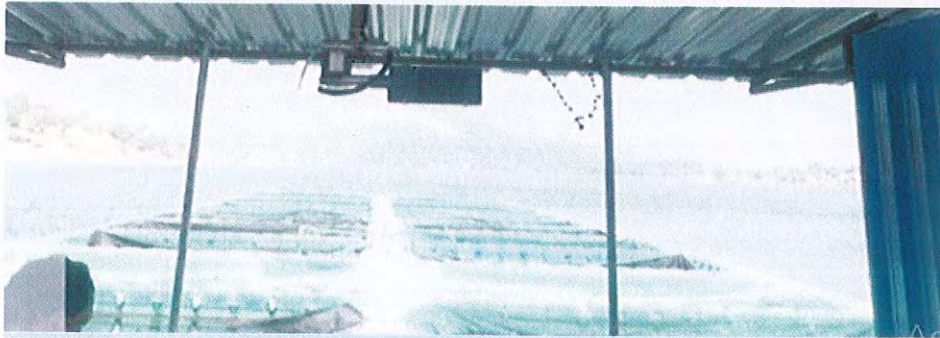


Image 4: Cages where fishes are reared

8.4 SAMPLING & MONITORING:

Grab water sampling was carried out to assess the impact of aquaculture-cage culture on water body –Vadivale lake within and around the existing cage culture established by Shri. Pagare, and outfall into Kundalini river from Vadiwale lake which meets Indrayani River.

The water samples were collected from cage compartments(2 nos.), 3 meter away from cage culture in east and west direction (2 nos.), 100 meter away from Cage Culture (1 no.) as reference, and also outfall from the Uksan Dam into stream which meets Indrayani River. Water samples from the Pond Aquaculture developed by Mr. Bhushan Randive located in the nearby village Khandashi Taluka Maval Dist Pune were also collected during the visit, although the pond water quality had not reached such a stage, where it needed to be discharged due to building up of concentration. The details of the sampling locations are provided in following **Table-2**.

TABLE-02: DETAILS OF SAMPLING LOCATIONS

Sr.No	Type Aquaculture	Location Code	Location Description
1	Cage Aquaculture	L1	Cage Culture from Small Fish Compartment
2		L2	Cage Culture from Big Fish Compartment
3		L3	3 metres away from cage culture towards west side
4		L4	3 metres away from cage culture towards east side
5		L5	100 metres away from Cage Culture
6		L6	Outfall from Uksan Dam in to Kundalini river which meets Indrayani river
7	Pond Aquaculture	L7	Mr Bhusahn Randive Fish Aquaculture

8.5 SAMPLE ANALYSIS RESULTS AND FINDINGS:

The collected water samples were analysed at Regional Laboratory, MPCB, Pune.

The samples were analysed for the following parameters:

TABLE-03: PARAMETERS ANALYZED FOR WATER SAMPLING

Sr.No.	Parameter (s)	Sr. No.	Parameter(s)
1	pH	16	O-Phosphate
2	Temperature	17	T-Phosphate
3	Turbidity	18	Sulphide
4	Biochemical Oxygen Demand (B.O.D)	19	Iron
5	Chemical Oxygen Demand (C.O.D)	20	Copper
6	Dissolved Oxygen (D.O)	21	Manganese
7	Total Suspended Solids (TSS)	22	Magnesium
8	Total Dissolved Solids (TDS)	23	Calcium
9	Sulphates	24	Potassium
10	Chlorides	25	Total Hardness
11	TAN	26	Faecal Coliform (FC)
12	TKN	27	Total Coliform (TC)
13	Nitrate (NO ³⁻)	28	Zinc
14	Nitrites (NO ²⁻)	29	Phenol
15	Phosphorus	30	Total Alkalinity

Analysis results of the aforesaid sampling carried out from and near the cage culture and outfall of Uksan Dam into Kundalini river which meets Indrayani river are provided in the **Table-04**. For references, their comparison with CPCB's Guidelines on Designated Best Use Water Quality Criteria for "Class of Water – C: Drinking water source after conventional treatment and disinfection" and "Class of Water – D: Propagation of Wild Life and Fisheries" are given in **Table-04A**. Comparison with Drinking Water Specifications (IS 10500:2012) has also been made and given in **Table-04B**.

Similarly, analysis results of the aforesaid samples collected from the Pond Aquaculture developed by Mr Bhushan Randive located in the nearby village Khandashi Taluka Maval Dist Pune, are given in **Table-05** along with comparison with General Discharge Standards notified under the Environment (Protection) Act, 1986.

TABLE-04: ANALYSIS RESULTS OF SAMPLES COLLECTED IN AND AROUND CAGE CULTURE AND OUTFALL OF VADIWALE LAKE

Sr. No	Parameters	Sampling Locations in and around Cage Culture and outfall of Vadiwale Lake							Sampling Location of the Pond Aquaculture
		L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	L7 Pond Aquaculture (Randive Fish Aquaculture)	
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	7.24	
2	TDS	226	258	224	154	186	138	92	
3	SS	12	24	18	14.00	14	8	52	
4	Turbidity (NTU)	1.0	1.10	1.20	1.10	1.10	1.10	1.2	
5	DO	4.70	3.80	4.60	4.70	4.90	4.70	NA	
6	BOD	14.00	21	13.00	14.0	11.00	4.80	35	
7	COD	48.00	64	36.00	40.00	32.00	24	92	
8	NH ₃ -N	0.50	0.60	0.40	0.50	0.30	0.20	0.80	
9	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
10	Ammonia (as total ammonia-N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.80	
11	NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	1.20	
12	NO ₂ -N	0.08	0.03	0.02	0.02	0.02	BDL	0.41	
13	TKN	1.68	2.24	1.68	2.24	2.24	1.12	2.80	
	Total Nitrogen*	2.65	3.06	2.22	2.93	2.74	1.89	5.21	
14	Total Alkalinity	28.00	32	26	14.00	20.00	12	12	

15	Hardness (Total)	62.00	64	58.00	38.00	44.00	36	30
16	Hardness (Mg ²⁺)	16	16	20.00	16	14.00	16	12
17	Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	2.92
18	Calcium	18.44	19.24	15.23	8.82	12.02	8.02	7.21
19	Phosphate (Total)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
	Total Phosphorus [§]	0.2	0.033	BDL	0.033	BDL	0.067	0.47
20	Phosphate (Ortho)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
21	Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	9.10
22	Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chloride	42.49	47.49	44.99	27.49	32.49	24.99	28.99
24	Faecal Coliform**	30.00	45	25.00	25.00	20.00	17	NA
25	Total Coliform**	900	900	550	550.00	425.00	250	NA
26	Phenol	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Zinc	BDL	BDL	BDL	BDL	BDL	0.08	BDL
28	Iron	0.03	0.05	0.03	0.57	0.37	NA	0.05
29	Copper	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30	Lead	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31	Nickel	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Concentration of all the values expressed in mg/L; except pH; BDL-Below Detection Limit;

*os estimated, free ammonia was found to be BDL; the NH₃-N has been considered as Total Ammonia-N;

**expressed in (MPN/100 ml); NA-Not Analysed; NR-No Relaxation.

addition of all forms of Nitrogen Free Ammonia, Ammonia (as total ammonia-N), NO₃-N, NO₂-N, TKN.

§total Phosphorus calculated from Total Phosphate.

As per guideline published by NFDB Hyderabad (Annexure-II), it is mentioned that, in any case, cage culture should not be attempted in any water body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively.

TABLE-04A: ANALYSIS RESULTS AND COMPARISON WITH DESIGNATED BEST USE WATER USE QUALITY CRITERIA OF CPCB'S GUIDELINES

Sr. No	Parameters	L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Best Designation Use Class of water-C [#]	Designated Best Use Class of Water-D [§]
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	6-9	6.5-8.5
2	DO	4.70	3.80	4.60	4.70	4.90	4.70	>4	>4
3	BOD	14.00	21	13.00	14.0	11.00	4.80	<3	NS
4	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	NS	1.2
5	Total Coliform**	900	900	550	550.00	425.00	250	<5000	NS

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit; NS –Not specified.

[#]Class of Water – C: Drinking water source after conventional treatment and disinfection

[§]Class of Water – D: Propagation of Wild Life and Fisheries

TABLE-04B: ANALYSIS RESULTS OF WATER SAMPLES AND COMPARISON WITH DRINKING WATER SPECIFICATION

Parameters	L1 (Inside Cage of Small fish)	L2 (inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Drinking Water Specifications: IS 10500:2012	
							Requirement (Acceptable limit)	Permissible limit in absence of alternative source
pH	7.23	7.40	7.83	7.72	7.62	8.04	6.5-8.5	NR
TDS	226	258	224	154	186	138	500 (Max)	2000 (Max)
Turbidity (NTU)	1.0	1.10	1.20	1.10	1.10	1.10	1 (Max)	5 (Max)
Ammonia (as total ammonia-N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.5 (Max)	NR
NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	45 (Max)	NR
Total Alkalinity	28.00	32	26	14.00	20.00	12	200 (Max)	600 (Max)
Hardness (Total)	62.00	64	58.00	38.00	44.00	36	200 (Max)	600 (Max)
Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	30 (Max)	100 (Max)
Calcium	18.44	19.24	15.23	8.82	12.02	8.02	75 (Max)	200 (Max)
Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	200(Max)	400 (Max)
Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Max)	NR
Chloride	42.49	47.49	44.99	27.49	32.49	24.99	250 (Max)	1000 (Max)
Phenol	BDL	BDL	BDL	BDL	BDL	BDL	0.001 (Max)	0.002 (Max)
Zinc	BDL	BDL	BDL	BDL	BDL	0.08	5 (Max)	15 (Max)
Iron	0.03	0.05	0.03	0.57	0.37	NA	0.3 (Max)	NR
Copper	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Max)	1.5 (Max)
Lead	BDL	BDL	BDL	BDL	BDL	BDL	0.01(Max)	NR
Nickel	BDL	BDL	BDL	BDL	BDL	BDL	0.02 (Max)	NR

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit; NR – No Relaxation.

TABLE-05: ANALYSIS RESULTS OF WATER SAMPLES OF THE POND AQUACULTURE AND THEIR COMPARISON WITH GENERAL DISCHARGE STANDARDS NOTIFIED UNDER THE ENVIRONMENT (PROTECTION) ACT, 1986

S. No.	Parameters are expressed in mg/L, except pH)	L7 Pond Aquaculture (Randive Fish Aquaculture)	General Standards for discharge of environmental pollutants [Schedule-VI, Rule 3A, The Environment (Protection) Rules, 1986]		
			Inland surface water	Public sewer	Land for irrigation
1	pH	7.24	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
2	SS	52	100	600	200
3	BOD	35	30	350	100
4	COD	92	250	--	--
5	NH ₃ -N ^c	0.80	50	50	--
6	Free Ammonia	BDL	5.0	--	--
7	NO ₃ -N	1.20	10	--	--
8	TKN	2.80	100	--	--
9	Sulphide	BDL	2.0	--	--
10	Phenol	BDL	1.0	5.0	--
11	Zinc	BDL	5.0	15	--
12	Iron	0.05	3.0	3.0	--
13	Copper	BDL	3.0	3.0	--
14	Lead	BDL	0.1	1.0	--
15	Nickel	BDL	3.0	3.0	--

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit.

- A. The analysis results of samples collected from the Cage Culture of Small Fish Compartment (L1) and Big Fish compartment (L2) revealed that the concentration of major water quality parameters viz, TSS, DO, BOD, COD, NH₃-N are 12 mg/L, 4.7 mg/L, 14 mg/L, 48 mg/L, and 0.5 mg/L, respectively in L1 and 24 mg/L, 3.8 mg/L, 21 mg/L, 64 mg/L, 0.6 mg/L, respectively in L2. The higher concentration of TDS, BOD, COD and NH₃-N and lower concentration of DO in L2 in comparison to L1 indicate that the water near the Big Fish compartment is more contaminated. The contamination is due to feed to the fingerlings and their drop outs/fish excretory matters.
- B. The water samples L3 and L4 were collected at 3 meters away from the aforesaid Cage Culture towards West and East side (Opposite to each other), respectively. The concentration of major water quality parameters viz. TSS, DO, BOD, COD, NH₃-N, in these samples were found to be 18.0 mg/L, 4.6 mg/L, 13.0 mg/L, 36.0 mg/L, and 0.4 mg/L, respectively in L3 and 14 mg/L, 4.7 mg/L, 14.0 mg/L, 40.0 mg/L, and 0.5 mg/L, respectively in L4. The concentrations of the aforesaid parameters were found to be almost comparable in L4 and L5, but improved as compared to samples taken from cage compartment (L1&L2).

Water sample L5 was collected at about 100 m away from the Cage Culture along the line of L4 location towards East direction. The concentration of TSS, DO, BOD, COD, and NH₃-N in L5 sample were found to be 14.0 mg/L, 4.9 mg/L, 11.0 mg/L, 32.0 mg/L, and 0.3 mg/L, respectively. The decrease in concentration of major water quality parameters viz. TDS, BOD, COD, & NH₃-N, and increase in DO, in L5 in comparison to L1, L2, L3 and L4 samples, clearly indicates contamination of water due to cage aquaculture.

- C. The concentration of TSS, DO, BOD, COD, and NH₃-N in the sample collected at the outfall of Vadiwale Lake into Kundalini river which further meets with Indrayani River were found to be 8 mg/L, 4.7 mg/L, 4.8 mg/L, 24 mg/L, and

0.2 mg/L, respectively, which are significantly lower than L1, L2, L3, L4, and L5 samples. This may be attributed to the dilution of contaminants from cage culture due to distance and carrying capacity in the lake before outfall into Kundalini river which meets with River Indrayani.

D. (i) Comparison with CPCB's Designated Best Use Water Quality Criteria

The water sample analysis results of the collected samples in Vadiwale Lake were compared with the CPCB's Designated Best Use Water Quality Criteria for different class of water quality (Table-4A). Each water sample (L1 to L6) conformed with the analysed parameters of the Class-C Water criteria (Designated-Best-Use is Drinking Water Source after conventional treatment and disinfection), except BOD exceeded the prescribed limit in all the samples. Whereas, except L2 where DO (3.8 mg/L) is slightly lower than the prescribed limit of 4 mg/L, all water samples (L1 to L6) qualified the Class-D Water criteria (Designated-Best-Use is Propagation of Wild Life and Fisheries).

(ii) Comparison with Drinking Water Specifications IS 10500:2012

The water sample analysis results were also compared with the Drinking Water Specifications IS 10500:2012 (Table-4B). The concentration of all analysed parameters for water samples L1, L3, L6 were observed to be within the acceptable limits (in absence of alternative source) of Drinking water specifications, except for Turbidity which slightly exceeded the acceptable limit (1.0 mg/L) in all samples (L1 to L6) but remained within the permissible limit (5.0 mg/L). The prescribed maximum permissible & acceptable concentration of Ammonia (as total ammonia-N) and iron in drinking water specifications IS 10500:2012 are 0.5 mg/L and 0.3 mg/L, respectively. In water sample L2, the concentration of ammonia (as total ammonia-N) exceeded the permissible & acceptable limits. L2 is the sample

taken from big fish compartment. In water samples L4 and L5, the concentration of iron exceeded the permissible & acceptable limits.

Although the water samples conform to the Designated Best Use Class-D water criteria for Propagation of Wild Life and Fisheries, except DO in L2, the discharge/pollution load in the water body due to cage culture activities in the Vadiwale lake is evident from the water sample analysis results, as the concentration of analysed parameters in water are broadly higher inside the cages followed by at 3 m distances and at 100 m distances away from the boundary of cage culture when compared to that of downfall location (L6) which is at about 2.5 km distance from cage culture. Further, the concentration of analysed parameters in the cages of big fishes were found higher than the concentration of analysed parameters in the cages of small fishes.

(iii) **Comparison with guideline published by NFDB Hyderabad for cage culture**

As per guideline published by NFDB Hyderabad (Annexure-II), it is mentioned that, in any case, cage culture should not be attempted in any water body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively. However, as per analysis results given in Table-04 above, total phosphorus is exceeding the value 0.02 mg/l at all the sampling locations of the lake -except at L3 (i.e.3-m away in west side from cage boundary) and L5 (i.e. 100 m away in east side from cage Culture). Total nitrogen concentration exceeds the said prescribed value of 1.2 mg/l at all the sampling locations.

E. Analysis results of Pond Aquaculture

Pond Aquaculture in nearby village was visited and Aquaculture fishing was found being carried out. The sample was collected from the pond where Aquaculture was in operation and analysis results are given Table-5. It is

observed that pH-7.24, TSS-52 mg/l, BOD-35 mg/l, COD-92 mg/l etc. On comparison of the pond water sample quality with the general discharge standards as prescribed in the Schedule-VI, Rule 3A of The Environment (Protection) Rules, 1986, it was observed that all analyzed parameters conform to the Inland Surface Waters discharge standards, except BOD. However, the said water samples collected had not reached to the stage/concentration when it needed discharge due to building up of concentration after sometime.

The contamination in the pond is due to feed to the fingerlings/fishes and their excretory matters. The unconsumed/excess food releases a lot of nutrients into the system and increases the organic loading.

9.0 OBSERVATIONS & FINDINGS:

9.1 OBSERVATIONS/COMMENTS W.R.T ALLEGATIONS BY APPLICANT & DIRECTIONS GIVEN IN HON'BLE NGT ORDER

A. Aquaculture activity involves use of modern techniques and harmful chemicals. Release of harmful chemicals in the lake will directly affect the human health. Apart from discharge of harmful chemicals other key materials like poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics also have harmful impact on water bodies. Impacts of these materials on water bodies are not taken into account only financial aspects are considered.

As per order of Hon'ble NGT in this matter-

...

"Examine whether in Inland Fisheries, chemicals are allowed to be used and if so how it can be regulated. Need to ensure protection of environment in the process of aquaculture activities in water bodies by use of modern techniques, particularly use of chemicals if any."

i) Use of Chemicals in Inland Aquaculture in India

Aquaculture has been practiced in India in both freshwater and coastal saline waters since long time. These were characteristically low-input, low-production systems depending on natural seed collection from the wild, with stocking in natural ponds, or impounding in large water bodies without any further management measures. During last three decades, aquaculture has slowly but steadily transformed itself into a profitable business activity. In freshwater carp culture, production rates of up to 15 t/ha/yr have been attained, and in shrimp culture, yields of about 8 t/ha/crop have been achieved. Compared to coastal aquaculture, freshwater carp culture is widespread in the country, particularly in the states of Andhra Pradesh, West Bengal, Madhya Pradesh, Punjab, Uttar Pradesh, Orissa and Bihar, and now it is spreading in almost all states of the country. Basically, aquaculture in India is largely of the extensive type and primarily related to carp farming. However, due to increased demand for fish in the country, there has been an emergence of large-scale commercial, semi-intensive culture of carps in a few states, especially in Andhra Pradesh. With the increase in productivity in semi-intensive carp culture, semi-intensive or intensive shrimp farms, and related hatchery operations, there has been increased usage of artificial inputs in the form of chemicals. The various chemicals having use in grow-out farming and hatchery operations in both freshwater and coastal aquaculture in India can be classified into the following broad categories-

- water/soil treatment products
- disinfectants, piscicides
- herbicides
- organic fertilizers
- inorganic fertilizers
- feed additives
- therapeutants, and
- anesthetics.

The usage of chemicals and risk associated with use of these chemicals are given in **Annexure-VI & VII**, respectively.

Chemical use in freshwater aquaculture is generally related with intensive fish farming and at moment the area under semi-intensive and intensive fish farming is gradually increasing while in case of inland cage culture the use of chemicals is of no use especially when it is being practiced in medium or large reservoir. As per the guidelines published by National Fisheries Development Board (NFDB), in case of inland cage culture, the use of antibiotics and chemicals is forbidden, however under exceptional circumstances, the use of four drugs and chemical such as Chloramine-T, Formalin, Oxytetra-cyclinedihydrate and Florfenicol are permitted to use with recommended dose and administration mode of Immersion and Medicated feed. As per Condition no. 37 (page no. 17) mentioned in the new revised policy of Fisheries Department, Govt of Maharashtra (**Annexure-III B**) given in the Agreement for the contract of Cage culture- Solid, Liquid or Chemicals should not be added to reservoir which will kill/destroy, affect health, harm fishes and no any activities will be carried out which will pollute the water. There is no restriction on use of wholesome food for growth of food and government approved medicines as per guidance of expert. Food and medicine should be government certified and prior permission should be taken from Assistant Commissioner of Fisheries, Department of Fisheries.

Although, the use of chemicals in inland cage culture or freshwater aquaculture is limited, but it is of environmental concern. Unlike Coastal Aquaculture Authority in case of coastal aquaculture, at present, there is no central regulatory authority to control the usage of chemicals and drugs in inland or freshwater aquaculture in the country. Some provisions are made to regulate use of medicines, antibiotics, pesticides in inland aquaculture under The Kerala Inland Fisheries and Aqua Culture Act, 2010 and The Andhra Pradesh State Aquaculture Development Authority Act, 2020. The supply and use of chemicals and fish medicines is uniformly regulated in the EU and supported by appropriate codes of best practice. A number of codes of practice that include reference to the use

of medicines have been produced both at a European level and in member states (Costello et al., 2001). In several other countries like Australia, Japan, China, Vietnam, USA, etc., the national regulation on the use of chemicals in aquaculture exist, however, a dedicated regulation for inland fisheries and aquaculture in these countries not found.

- ii) **Impact of discharge of chemicals, poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics etc., that are key to aquaculture farming**

The issue raised by the applicant is of environmental concern, however, it has to be seen that what kind of chemicals are being used in the cage culture in the Vadivale lake, Pune. The claim made by the applicant may be based on the literature on use of chemicals in different land-based intensive aquaculture systems whereas, the farming system in question is Cage Fish Farming; a form of open water aquaculture. Also, no specific information on the kind of chemicals used in the cage culture operation in Vadivale lake is provided by the Applicant. Cage culture of fish is a form of open water aquaculture system where use of drugs and chemicals is seldom unlike in the other semi-closed aquaculture systems at intensive scale. However, as per the guidelines of National Fisheries Development Board (NFDB), Hyderabad some chemicals and drugs are permitted to be used with prescribed dose and mode of administration under unavoidable circumstances. In general, the only inputs in the cage culture in inland open waters are in the **form of seed (fish fingerlings) and feed**. Also, since the cages are installed in open waters such as reservoirs, lakes and wetlands, the direct use of chemicals and drugs is neither effective nor economically feasible.

The use of some chemicals, drugs and antibiotics is being practised in land based intensive freshwater aquaculture, however, the impact of such chemicals on the environment is of scientific interest and needs to be studied. The Inland freshwater aquaculture is mostly practiced in seasonal ponds or in the ponds constructed on the barren agriculture land and the discharge of water into the

environment is negligible or zero due to scarcity of freshwater in most part of the country.

In some states including Maharashtra fish farming is being practiced in the polythene lined ponds constructed basically for irrigation. This pond water is nutrient rich due to left over feed and faeces of the fish which is used for agriculture crops, however, parameters of concern present in such nutrient rich water require to be studied. However, it is to be noted that this practice is part of Integrated Farming System (IFS) where output of one system is used as input for another system to utilize the resources efficiently and sustainably. The Govt. of India is widely promoting IFS as a sustainable farming system for farm income consistency and livelihood security.

Regarding allegation about use of poultry wastes from poultry farms such as gizzards and chicken guts/offal in aquaculture, is not relevant in case of cage culture particularly cage culture in reservoirs. Generally, poultry waste is used as feed for the carnivorous fish species such as *Clarius gariepinus* (African catfish) whose culture is already banned in the country and regulated by the State Fisheries Departments.

Currently there are no scientific studies on the environmental impacts of chemical and drugs used in cage culture in inland open waters in India and hence it would not be appropriate to comment on its impacts on environment. There is need of such studies from reputed institute in the field over a period of time considering the sizes of cage culture, no of cage culture area, fish types, area of lake/reservoir, etc.

9.2 OBSERVATIONS BASED ON CAGE CULTURE PERMISSION ON CONTRACT BASIS BY COMMISSIONER OF FISHERIES, GOVT OF MAHARASHTRA AND CAGE CULTURE AQUACULTURE OPERATION AT VADIVALE LAKE

A. Department of Agriculture, Animal Husbandry, Dairy Development, Fisheries, Govt. of Maharashtra issued Policy on 17.10.2016 for Fish farming through Cage Culture to increase the fish production in the State, which is

further revised in 2018 and 2021 w.r.t certain conditions including permission regarding cage culture and its area out of water shed area of reservoir. As per the Central Government Guidelines, cage culture activities are not permitted if the area of the reservoir is less than 1000 hectares. However, considering there are only 46 reservoirs having area greater than 1000 hectares in the State of Maharashtra, permission for the cage culture aquaculture projects has been given for 2448 reservoirs available in the State. As per new policy issued vide GR dated 26.08.2021 with revised criteria such as-

- (a) Cage aquaculture shall be permitted by Fishery Department in 1 % of the water spread area in reservoirs having water spread area not less than 15 hectare and average depth of water is more than 08 meter throughout the year.
 - (b) Maximum cages shall be 18 in numbers and 630 m² per project proponent (Fish Farmer) and 6 cages per member in case Fishery Co-operative Society, Women's Self-help groups, Fisherman Self-help group etc with maximum 72 cages and 2520 m².
- B. During the site visit on 27.08.2021, only one cage aquaculture was seen established by Shri. Bhardwaj Yadavrao Pagare which was found operational. The aforesaid cage culture has 24 cages and spread over an area about 0.15 Ha. Species reared in the cage culture were Pangassius S.P, Common Carp and Rupchand. **The feed given to the reared species is Godrej Nutifry-Premium Larval Feed (NF- 0C, 1C and 2C, NF-3P(Ø 1mm) and NF-4P (Ø 2mm).**
- C. No use of any chemicals, medicine, antibiotics, poultry manure, chemical manures, and other waste products from poultry farms such as gizzards and chicken guts was observed during the visit.

9.3 THE EXISTING CONSENT REGIME UNDER THE WATER ACT AND WHETHER THERE IS NEED TO INTRODUCE ANY CHANGES

The conditions related to water quality and pollution are given in the new revised policy issued by Fisheries Department, Govt. of Maharashtra vide GR dated 28.08.2021. The conditions which are mentioned in the aforesaid policy are-

- a) Care should be taken to keep all relevant reservoir areas (water and land) clean. Contract would be cancelled, if the water source is found polluted as well as the surrounding area found un-cleaned.
- b) Water quality should be regularly conducted and it's record to be maintained. It is binding on project proponent to care/measure to avoid water pollution in the reservoir.

However, aforesaid GR dated 28.08.2021 does not include any conditions stipulating water quality standards to be complied/maintained in reservoirs, where aquaculture cage culture is carried out, and parameters thereto. Further, cage culture is not regulated through consent mechanism by Maharashtra State Pollution Control Board.

The analysis results reveal that water gets polluted due to aquaculture activity in Vadiwale lake due to addition/use of feed (nutrients) which ultimately gets dissolved/mixed with water due to exchange of metabolite and nutrients between the cage and outside environment.

Thus, there occurs discharge of trade effluent (having nutrient/feed, excretory matters, etc.) from cage culture premises into stream (natural or artificial inland water) with pollutants like in BOD, COD, Total Nitrogen, Phosphate, etc. Such discharges, when not carried out in controlled manner, may likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

The relevant portion of the Section-25 of the Water (Prevention & Control of Pollution) Act, 1974, is given below-

"25. Restrictions on new outlets and new discharges —

(1) Subject to the provisions of this section, no person shall, without the previous consent of the State Board, —

(a) establish or take any steps to establish any industry, operation or process, or any treatment and disposal system or any extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land (such discharge being hereafter in this section referred to as discharge of sewage); or

.....

.....

(4) The State Board may —

(a) grant its consent referred to in sub-section (1), subject to such conditions as it may impose, being—

.....

.....

(ii) in the case of a new discharge, conditions as to the nature and composition, temperature, volume or rate of discharge of the effluent from the land or premises from which the discharge or new discharge is to be made; and

(iii) that the consent will be valid only for such period as may be specified in the order, and any such conditions imposed shall be binding on any person establishing or taking any steps to establish any industry, operation or process, or treatment and disposal system of extension or addition thereto, or using the new or altered outlet, or discharging the effluent from the land or premises aforesaid; or

....."

Therefore, the applicability of consent under Section-25 may be applicable in reservoir/lake and may be enforced by MPCB. However, such applicability of consent may be implemented depending on the sizes of cage culture, no of cage culture area, fish types, volume of water & area of lake/reservoir, its water quality, other sources of pollution, surface runoff meeting with the reservoir etc. for which there may require a detailed study.

9.4 VADIWALE LAKE IS SOURCE OF DRINKING WATER FOR NEARBY VILLAGES AND THE OUTFALL OF THE LAKE IS IN INDRAYANI RIVER WHICH IS AGAIN SOURCE OF DRINKING WATER FOR 28 VILLAGES.

The outfall from Vadiwale lake is used for irrigation and drinking purposes after certain distances after confluence of other streams also as informed by official of Irrigation department. The same may have potential to either improve/deteriorate the water quality. Gram panchayat take water from the Vadiwale lake and supply to nearby villages after chlorination. Therefore, the irrigation department/water supply department may ensure that water being supplied after such treatment meets the prescribed standards of water quality and if required, further other treatment may also be imparted so as to meet with the prescribed standards.

10. CONCLUSIONS

- (i) India has vast and varied inland fisheries resources that comprise of 191,024 kms of rivers and canals, 1.2 million ha of floodplain lakes, 2.36 million ha of ponds and tanks and 3.15 million ha of reservoirs. Although, inland fisheries have grown, the rate of growth in terms of its potential is not yet achieved. The average fish production potential was estimated at 250 kilograms (kg)/hectare (ha) in reservoirs and about 350 kg/ha for wetlands. While reservoirs and freshwater aquaculture can be considered as the two main pillars of growth, another major activity in aquaculture sector called the cage/pen culture in open waters, has shown significant growth in recent

years. It offers vast potential for inland aquaculture in the country. The production potential from sustainable cage culture production is about 50 kg/m³.

The freshwater aquaculture production systems in India comprise 2.36 million ha of ponds and tanks. In Eastern India, aquaculture is practiced in ponds and tanks of less than 1 ha area, whereas in Western India aquaculture is operated on a larger scale, with watersheds of 1525 ha.

- (ii) Cage culture of fish is a form of aquaculture where use of drugs and chemicals is seldom unlikely in the land based intensive fish culture systems. However, as per the guidelines of National Fisheries Development Board (NFDB), Hyderabad, some chemicals and drugs are permitted to use with prescribed dose and mode of administration under unavoidable circumstances. In general, the only inputs in the cage culture in the inland open waters are in the form of seed (fish fingerlings) and feed. Also, since the cages are installed in open waters such as reservoirs, lakes and wetlands, the direct use of chemicals and drugs may neither be effective nor economically feasible.

Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace and which may lead to some concern of its impact on the water bodies.

- (iii) The issue of poultry wastes from poultry farms such as gizzards and chicken guts/offal in aquaculture is not relevant in case of cage culture particularly in reservoirs.

- (iv) Unlike Coastal Aquaculture Authority in case of coastal aquaculture, at present, there is no central regulatory authority to control the usage of chemicals and drugs in inland or freshwater aquaculture in the country. The supply and use of chemicals and fish medicines is uniformly regulated in the

EU and supported by appropriate codes of best practice. In several other countries like Australia, Japan, China, Vietnam, USA, etc., the national regulation on the use of chemicals in aquaculture exist, however, a dedicated regulation for inland fisheries and aquaculture in these countries not found.

Some provisions are made to regulate use of medicines, antibiotics, pesticides in inland aquaculture under the Kerala Inland Fisheries and Aqua Culture Act, 2010 and the Andhra Pradesh State Aquaculture Development Authority Act, 2020.

National Fisheries Development Board (NFDB), Hyderabad (Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt. of India) has published a guideline for cage culture in inland open water bodies of India with technical inputs from the ICAR-Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore, Kolkata. A Handbook- World Fish Center Technical Manual No. 1948 was published by Central Inland Fisheries Research Institute, ICAR, Barrackpore, Kolkata. The handbook briefly states the environmental constraints of cage culture when poorly managed with respect to the discharge of nutrients.

The aforesaid NFDB's published guideline for cage culture in inland open water bodies also:

- (a) outlines about some environmental impact due to release of excessive nutrients and accumulation in water sediment of the water body.
- (b) suggests a strong governance platform based on co-management principles for responsible cage culture and recommends EIA for cage culture activities as it is deleterious in terms of higher eutrophication potential due excessive nutrient loading and other chemical/pharmaceutical inputs.
- (c) restricts any cage culture in water bodies having an area less than < 1000 Ha.

- (d) emphasizes that, in any case, cage culture should not be attempted in any water body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively

Copy of the said guidelines is given at **Annexure-II**.

- (v) Department of Agriculture, Animal Husbandry, Dairy Development, Fisheries, Govt. of Maharashtra issued Policy on 17.10.2016 for Fish farming through Cage Culture to increase the fish production in the State, which is further revised in 2018 and 2021 w.r.t certain conditions including permission regarding cage culture and its area out of water shed area of reservoir.

As per the Central Government Guidelines, cage culture activities are not permitted if the area of the reservoir is less than 1000 hectares. However, there are only 46 reservoirs having area greater than 1000 hectares in Maharashtra, permission for the cage culture aquaculture projects has been given for 2448 reservoirs in the State. The revised criteria in terms of numbers of cages, water spread area in reservoir, depth of water, etc. for cage culture in the State of Maharashtra as per G.R dated 26th August 2021 has been mentioned in its section 9 (Part-A) . Further, the relevant terms and conditions for cage aquaculture on contract basis may please be seen at Section 7 (Sl. No.03) (Refer para 7 above)

However, the aforesaid GR dated 28.08.2021 does not include any conditions stipulating water quality standards to be complied/maintained in reservoirs, and parameters thereto. Regarding usage of medicines, the contract conditions do not restrict on use of wholesome food for growth of fish and government approved medicines provided under expert guidance. Food and medicine should be government certified and prior permission should be taken from assistant commissioner, fish business/ fishery department. Further, toilets construction has been allowed after

permission from Water Resource Department, without specifying management of discharges from such toilet.

- (vi) As per the analysis results of water samples collected by this committee within and outside the cage aquaculture of 0.15 Hectare of the average 230 ha water spread area of Vadiwale Lake, the concentration of analysed parameters in water are broadly higher inside the cages followed by at 3 m distances and at 100 m distances away from the boundary of cage culture when compared to that of downfall location (L6) which is at about 2.5 km distance from cage culture (please refer **Table 04**). Further, the concentration of analysed parameters in the cages of big fishes were found higher than the concentration of analysed parameters in the cages of small fishes.

Thus, it is evident that there is discharge/pollution load in the water body due to cage culture activities in the Vadiwale lake with fish excretory matters and addition/use of feed (nutrients) which ultimately gets dissolved/mixed with water due to exchange of metabolite and nutrients between the cage and outside environment. It leads into discharge of trade effluent (having nutrient/feed, excretory matters, etc.) from cage culture premises into stream (natural or artificial inland water) with pollutants like in BOD, COD, Total Nitrogen, Phosphate, etc. Such discharges, when not carried out in controlled manner, may likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

Further, it was also observed that:

- (a) The total phosphorous and total nitrogen concentration in the water were found in excess of the aforesaid NFBD guidelines' prescribed value of 0.02

mg/L and 1.2 mg/L at various monitored locations and all the monitored locations respectively, as given at **Table 04** above. The guidelines stipulate that, in any case, cage culture should not be attempted in water body having such exceedance.

(b) When compared with CPCB's guidelines on Designated Best Use Water Quality Criteria for "Class of Water – D: Propagation of Wild Life and Fisheries", the DO (3.8 mg/L) was found slightly lower than the prescribed limit of 4 mg/L at one of the monitored locations viz. L2 – inside the Cage Culture Compartment of big fishes. Please refer **Table 4B** above.

(vii) Water samples collected from the Pond Aquaculture in the nearby village were found to be conforming to the General Discharge Standards as notified under the Environment (Protection) Act, 1986, w.r.t. analysed parameters for discharge into land for irrigation and public sewer but didn't conform for discharge into inland surface water. The said water samples collected though had not reached to the stage/concentration when it needed discharge and accumulation of further concentration in the monitored water samples cannot be ruled out.

(viii) Consent mechanism under the Water (Prevention and Control of Pollution) Act, 1974, is currently not regulated by Maharashtra Pollution Control Board. However, the above observations reveal that there is need to bring inland aquaculture fisheries into consent regime depending on size/volume of both i.e. water bodies and aquaculture.

Further, depending on size/volume of both (i.e. water bodies and aquaculture) and water quality of the water, there may also be need of bringing the inland aquaculture under the Environmental Impact Assessment regime which has also been suggested in the aforesaid NFDB's published guideline.

A detailed study may be required in this regard to assess environmental impacts vis-à-vis size/volume of both (i.e. water bodies and aquaculture)

and water quality for prescribing consent and EIA mechanism including control on use of various feed material/chemicals/drugs/antibiotics/etc. and various measures required in inland aquaculture.

11. RECOMMENDATIONS

- I. There is need to regulate cage aquaculture under consent mechanism of the Water (Prevention and Control of Pollution) Act, 1974. Also MoEF&CC may deliberate the requirement of prior Environmental Impact Assessment in view of the suggestion made by NFDB. However, such consent mechanism and EIA requirement may be regulated categorising nos. & sizes of cage aquaculture, fish types, area of lake/reservoir, its water quality, other sources of pollution, surface runoff meeting with the reservoir etc. as per findings of study as mentioned in subsequent paragraphs.

- II. There is a need to conduct a study by reputed institutes in the field of fisheries and environment over a period of time considering the sizes of cage culture, cage culture area, fish types, area of lake/reservoir, its water quality, other sources of pollution, discharges, etc. to study respective environmental impacts. The study will help in regulating inland open waters usage for cage culture in terms of reservoir sizes, fish species, cage sizes & nos., water quality, types of feeds/chemicals/drugs to be prohibited/allowed, discharges, environmental impacts & measures to be taken, etc. without affecting water quality & eco-system.

The study may be coordinated by MoFAH&D in consultation with MoEF&CC and CPCB.

- III. Till the study is conducted, Fisheries Department, Government of Maharashtra, to adhere with the prevailing NFDB guidelines for the cage

culture in Inland open water bodies and may prescribe the following precautionary measures while permitting aquaculture in reservoir/lake, as well as in the existing permitted cage aquaculture;

- (a) Aquaculture/Cage Culture shall not be allowed in the reservoirs that do not conform to the CPCB recommended Designated Best Use Water quality criteria for Propagation of Wild Life and Fisheries.
- (b) Cage culture should not be allowed in any water body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively, as recommended in NFDB's published guideline.
- (c) Water quality of the reservoir/lake shall be analysed before starting the cage culture activities and twice in a year during non-monsoon seasons during aquaculture period at pre-identified strategic locations which may be ensured by state fisheries department. Based on the analysis of water quality, if any abnormality observed, the same shall be reported to MPCB/Irrigation Department/Water Supply Department.
- (d) Total phosphorous, total nitrogen, chloride, calcium, magnesium and other site specific relevant parameters shall be prescribed by MPCB and State Fisheries Department for analysis of the aforesaid water quality.
- (e) Sinking feed may be prohibited for cage fish farming as it accumulates at the base and fouls the cage/reservoir environment.
- (f) Construction of toilets near the cage culture fish farming shall not be allowed unless such toilets have discharge management ensuring no discharge to the lake/reservoir/land and permission from the Water Resource Department is obtained.

-00xx00-

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292/2021/TECH-RD (Pune)

Item No. 03

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 80/2020 (WZ)

Vanashakti & Anr.

Applicant(s)

Versus

State of Maharashtra & Ors.

Respondent(s)

Date of hearing: 31.05.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant(s): Mr. Zaman Ali, Advocate

ORDER

1. Grievance in this application is against unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra. Particular grievance has been raised in the context of permission granted in favour of respondent no. 7, Vaidehi Randive in Vadivale Lake in Village Valavanti on the Kamshet-Kundali Road in Maval Taluka, near Village Kamshet, in Pune District, by the Commissioner of Fisheries, Government of Maharashtra.

2. The applicants have assailed the impugned permission as being against the "Precautionary" and "Sustainable Development" principles. Aquaculture activities, with modern techniques involve use of harmful chemicals. In the process, such chemicals are and released in the lakes and other water bodies concerned. In the present case, permission has been given for aquaculture activities in *Vadivale* Lake in Pune District. The

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lake is a source of drinking water to the nearby villages. Outfall of the lake is in the Indrayani River which is source of drinking water for 28 villages.

3. The applicant has referred to the policy decisions of the Fisheries Department, Government of Maharashtra to submit that the same does not consider environmental aspects. They consider only financial aspects. Reference is made to GO dated 15.10.2001 for permitting fishing in lakes of the size above 200 hectares. It does not consider harmful impact of discharge of harmful chemicals, poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics etc., that are key to aquaculture farming. The applicants have also referred to the Coastal Aquaculture Authority Act, 2005 to regulate coastal aquaculture in coastal areas enacted in the light of the Judgment of the Hon'ble Supreme Court in *S. Jagannath v. Union of India* [(1997) 2 SCC 87]. Under the said Act, environmental safeguards are laid down for permitting aquaculture in coastal areas. However, there are no safeguard laid down for permitting such activities in inland waters. The applicant has relied upon a report of the National Bank for Agriculture and Rural Development (NBARD), Mumbai, under the title "The Use of Chemicals in Aquaculture in India". Further reference has been made to the guidelines framed by the Ministry of Fishing, Government of India titled "Guidelines for Cage Culture in Inland Open Water Bodies of India" noticing the environmental facts arising out of such activities in open water bodies. Further reference is made to the study conducted by the Madras University titled "Environment and Social Conflicts of Aquaculture in Tamil Nadu and Andhra Pradesh." The applicants have submitted that 2005 Act should apply to all aquaculture activities. It is stated that adverse impact of aqua culture activities in *Vadivale* Lake has been found in a report titled "Assessment

292/2021/TECH-RD (Pune)

of Water Quality Index of Indrayani River, Alandi, Pune” published in 2018 in International Journal of Science, Engineering and Technology Research.

4. We have given due consideration to the issue raised. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six-member expert Committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional Officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process.

5. Since we have not found it necessary to issue notice having regard to the nature of the order, we give liberty to the respondents to move this Tribunal in case they are aggrieved.

The application is disposed of.

A copy of this order be forwarded to the MoEF&CC, the CPCB, the Maharashtra State PCB, the Ministries of Fishing, Govt. of India and Maharashtra Govt. and Central Inland Fisheries Research Institute by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

M. Sathyanarayanan, JM

Brijesh Sethi, JM

Dr. Nagin Nanda, EM

May 31, 2021
Original Application No. 80/2020 (WZ)
SN



Guidelines for Cage Culture in Inland Open Water Bodies of India



Department of Animal Husbandry, Dairying & Fisheries

Ministry of Agriculture and Farmers Welfare, Government of India
Krishi Bhavan, New Delhi - 110 001

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Guidelines for Cage Culture in Inland Open Water Bodies of India

1. Background

Cage aquaculture, though relatively new to the inland aquaculture scenario of the country, brings in new opportunities for optimizing fish production from the reservoirs and lakes, and also developing new skills among fishers and entrepreneurs to enhance their earnings. However, unplanned expansion of any activity can lead to adverse impacts in terms of environmental integrity and social equity. Recognizing this, a 'National Level Committee to Develop Guidelines for Cage Culture in Inland Open Waters' (NCGCC) was constituted on 25 April 2016 with a mandate (a) to assess the potential of this culture system to contribute to increased production, employment, income generation and other benefits, (b) to assess the possible environmental and socio-economic impact, (c) to suggest precautions to be taken, and (d) to suggest the modes of propagating and scaling up of this technology to optimize benefits on a sustainable manner.

The Committee in its first meeting held at Hyderabad on 14 June 2016, noted a glaring lack of data required for developing such guidelines, especially with regard to the environmental and social impact of cage culture activities. Nevertheless, it has resolved to formulate guidelines by making use of the available information at Institutes and also utilizing the secondary information sourced from the public domain. Although some research projects have been initiated to assess the environmental impact of cage culture, it would take some time before these efforts yield any meaningful results. Therefore, the Committee decided to develop advice on environmental impacts through an intensive effort to gather and process the information through a brainstorming by all known experts on the subject and to finalize the guidelines in six months. In the meantime, a need was felt to develop an interim set of advice making use of the available knowledge on the subject. Responding to this need, the Committee met on 30 July 2016 at the ICAR-Central Inland Fisheries Research Institute, the Institute where most of the research on cage culture has taken place. This report is the outcome of the deliberations made by the experts on the subject and the members of the National Level Committee to bring out an interim set of guidelines.

2. Objectives

The main objective of this document is to inform the national efforts being made to promote cage culture in the inland open water bodies like reservoirs and floodplain wetlands in the country, which inter alia advises how to leverage cage culture:

- 1) to augment fish production from lakes and reservoirs in a responsible manner, without affecting the livelihood of the traditional/local fishing communities;
- 2) to increase per capita fish protein availability in the country;
- 3) to enhance the income and livelihood security of the fishers depending on inland fisheries resources; and
- 4) to ensure that the growth of aquaculture is:
 - a) inclusive and sustainable,
 - b) in harmony with principles of ecological integrity and natural resource conservation, and
 - c) not in conflict with the genuine interests of other users of the water and land resources.

3. Purpose, Scope and Coverage

The guidelines contained in this document are addressed to all stakeholders including, Farmers, SHGs, Cooperative Societies, Other community organizations, Business Process Development Facilitators (BDFs), Farmer Producer Organizations (FPOs), Fisheries Departments of the States, Department of Animal Husbandry Dairying and Fisheries, Government of India and its Institutes, Research Organizations, Environmentalists.

At present, India does not have an umbrella agency that oversees/regulates freshwater aquaculture activities or implements Guidelines/ Best Management Practices (BMPs). Equally glaring is the lack of a uniform policy across the country that governs freshwater aquaculture. Thus, there is no scope for these guidelines to be readily implemented at this stage. However, efforts are on to put in place some policy and a regulatory framework. For instance, a draft 'Policy Framework for Aquaculture Development in India' was submitted by the Central Marine Fisheries Research Institute to the Department of Animal Husbandry Dairying and Fisheries in 2014. This draft policy paper, though focussed heavily on mariculture, lays down the basic structure for a national level policy on aquaculture and proposes a 'District Level Task Force' to implement Guidelines and BMPs. Thus, despite the absence of any scope for direct application, these guidelines can be useful to those who will formulate aquaculture policies in future. In any case, the present guidelines can (a) guide the Departments/Agencies of the State and Central Governments in formulating development plans based on cage culture, (b) inform policies to be framed in future, and (c) guide farmers and entrepreneurs for practicing responsible cage culture in the country and (d) advise the District Level Task Force (as proposed in the draft policy).

Aspects covered under this document are: (1) Relevance and scope for cage culture in inland open waters, (2) Definition of cage and cage culture, (3) Cage size, shape and materials, (4) Site selection, (5) Cage maintenance, (6) Species selection, (7) Stocking density, (8) Feed and Feeding and FCR, (9) Fish health monitoring, (10) Safety measures, (11) Market, Post-harvest facilities and infrastructure, (12) Environmental precautions and impact assessment, (13) Carrying capacity, (14) Ownership, (15) Beneficiaries, (16) Governance, (17) and (18) Social relevance.

4. Relevance and Scope for Cage Culture in Inland Open Waters

During the last five decades, contribution of marine fish in the total production of the country has decreased from 71% in 1950s to 35% during 2014-15 (www.dahd.nic.in) with a corresponding increase in inland fish production. This shift in catch structure in favour of the inland segment is attributable to the growth of inland aquaculture, as opposed to the sole dependence of capture fisheries in the marine counterpart. In view of the dwindling production from natural waters, both inland and marine, any substantial increase in production has to come either from inland aquaculture or mariculture. Inland aquaculture presently contributes 4.4 million tonnes (in 2014) of fish annually (FAO-SOFIA, 2016); with the three Indian major carps *viz.*, catla (*Catla catla*), rohu (*Labeo rohita*) and mrigal (*Cirrhinus mrigala*) constituting 87% of the production. Several variants of carp culture such as wastewater-recycled culture, integrated agriculture aquaculture (IAA) and many short-term culture practices are also available. However, freshwater aquaculture in India by and large still centres on pond-based systems.

Considering the ever-increasing and often conflicting cross-sectoral demands for water and land, there are limitations for growth in pond-based aquaculture. In this context, culture of fish in enclosures such as cages and pens installed in open water bodies offer scope for increasing production obviating the need for more land-based fish farms. Considering india's rich and varied open water resources like reservoirs, lakes and floodplain wetlands, enormous scope exists to increase production through enclosure aquaculture. Utilizing a modest fraction of their surface area, large and medium reservoirs can contribute a substantial quantity of fish to the total inland fish production basket. Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace giving hopes and also causing some concern.

India has 3.15 million ha of reservoirs and more than 5.0 lakh ha of floodplain wetlands (*beels, jheels, mauns, pats, etc.*) spread across the numerous river basins in the country. The present fish yield from reservoirs is low, to the tune of about 82 kg/ha (Jha, *et al.*, 2013), in spite of their high production potential (500 kg/ha, 250 kg/ha and 100 kg/ha in small, medium and large reservoirs, respectively). Similar is the case with floodplain wetlands, where the present yield has been estimated at 400-800 kg/ha, against the production potential of 1500-2500 kg/ha (Sugunan and Sinha, 2001). Harvesting is a major problem in most of the reservoirs and lakes in the country as most of them are either weed-choked or having obstructions in the form of boulders or tree stumps limiting operation of many a fishing gear. Presence of predators often results in high natural mortality of stocked fishes causing low productivity (Sugunan, 2000). This, coupled with poor utilization of all food niches available in these ecosystems in the absence of efficient fish grazers, is mainly responsible for low fish yield from these ecosystems. It is prudent, therefore, to explore alternate production tools to augment fish yield. Thus, enclosure culture systems have a definite role to play in augmenting fish production from inland open waters in India especially the reservoirs and floodplain lakes. These can overcome many production constraints in lakes and reservoirs by maintaining a captive stock, growing it on artificial feeds, protecting it from predators and enabling harvesting at will.

It has now been established beyond doubt that a major reason for the low productivity of Indian reservoirs is poor stocking compliance. Small and shallow reservoirs and lakes are managed on the principle of culture-based fisheries and therefore need to be stocked with advance fingerlings in appropriate numbers in order to get the desired production level. According to one estimate, >3000 million fingerlings of size 80-100 mm are required annually to stock reservoirs alone in India (Jha, *et al.*, 2013). But, due to non-availability of advanced fingerlings, vast majority of Indian reservoirs remain understocked. Available land-based nurseries are inadequate to meet the huge demand that emanates from the culture-based fisheries of reservoirs. Pens and cages erected in reservoirs can be effectively used as nurseries to raise stocking material to obviate the necessity of constructing land-based nurseries which are cost-intensive. Studies conducted in many States across the country have shown that *in situ* production of fingerlings has resulted in better stocking compliance and resultant high yields (Sugunan and Katiha, 2004).

Advantages of enclosed culture systems in inland fisheries can be summarised as:

- Augmenting fish yield by optimizing the use of all available water area
- Raising fingerlings in large numbers for stocking in a cost effective way

- Optimization of trophic structure and functions to the advantage of fish production
- Effective utilization of weed-choked water bodies and those with obstructions like tree stumps and boulders, where harvesting of wild fish is difficult
- Reducing pressure on land for farms and nurseries
- Scope to keep a captive stock within the open water bodies allowing rapid, sure, complete and easy harvesting
- Direct and easy observation of stock for feeding, growth and general health
- Considerable indirect employment opportunities.

5. Cage Culture - Definitions

Cage is an enclosed space to rear organisms in water that maintains free exchange of water with the surrounding water body. 'Pens' are essentially portions of a water body cordoned off by erecting a fence like structure. Usually pens are enclosed portions of the lake margin, with fencing on three sides; the free fourth side being contiguous with the land. But, pen can also be away from the shore with fencing on all the four sides. The main difference between a pen and a cage is: pen bottom is never covered so that the soil water interface of the water body is not compromised. Enclosure aquaculture in the context of inland fisheries in India refers to both 'cage culture' and 'pen culture'. This document deals exclusively with cage culture.

6. Shape of Cages and Cage Materials to be Used

The cages are generally enclosed on all sides, except for leaving an opening at the top for feeding and handling the stock. They can be positioned at the bottom, middle or surface of the water column, but floating cages are very popular and easy to manage. Cages are of many shapes (round, square or rectangular). While round cages with a cylindrical net, supported by circle-shaped support frames, are extensively used for sea cage culture in India, cube-shaped, rectangular/square cages are used in reservoirs. Both round and rectangular cages are equally good from production point of view and their choice is mainly based on other considerations such as endurance (against turbulence), life, cost, availability of materials, convenience in assembling and transporting the components. However, it must be kept in mind that it is not easy to mobilize floating cranes and other logistic support for moving and installing huge structures in inland water bodies. Round cages are considered more suitable for choppy waters with wave- and wind-driven turbulence.

Size of a cage for fish culture in reservoirs can vary, but often multiple units are installed as a battery of cages with catwalks for easy access to the fish stock and floating huts. However, from operational and planning purposes, a cage with the dimensions: 6m (length) x 4m (width) x 4m (height) is considered as a standard unit and a battery comprises 6, 12 or 24 such cages, as per requirement. The cages in a battery are arranged in caterpillar design for better exchange of water thereby facilitating relatively high dissolved oxygen.

Durable and stable cage materials are essential for achieving better results. A cage comprises hard frames as support and nylon nettings as cage body. It is desirable to have environment-friendly, HACCP (Hazard Analysis and Critical Control Points) protocol compliant, rust-free materials for cage fabrication. Commonly used materials for cage frames are bamboos, mild steel (MS), galvanized iron (GI), poly-vinyl chloride (PVC) and virgin-grade HDPE (High Density

Polyethylene) (for runner-based & pontoon-based frames). The bamboo based frames are not recommended for commercial cage fish farming due to their poor longevity and strength to withstand turbulence

Knotless nylon nets are recommended for cage fabrication. The net mesh size recommended for rearing fry of *Pangasianodon hypophthalmus* is 10 to 12 mm and that for fingerling to marketable size is 20 to 30 mm. (In case of IMC, the mesh size should be 5 mm for fry and 10 mm for fingerling). Protective net may be put above the cage to avoid crop loss due to predation by birds (Table 1).

Table I. Recommended Cage Net specifications for culture of *Pangasianodon hypophthalmus*

Type of Nets	Specification (Ply)	*Mesh Size (mm)
Fingerling Growing Nets (knotless)	10-12	10-15
Grow-out Nets (knotless)	20-30	30-40
Predator or Outer Nets	25-30	35-40
Bird Protection Nets	18-20	60-80

*Mesh Bar (knot to knot) is half the length of mesh size (stretched mesh)

Separate cages are needed for nursery rearing and grow-outs. Normally, 30% of the cages in a battery are earmarked for *in situ* rearing of fingerlings (stocking materials); the rest being grow-out cages. Special care is needed on mooring/anchoring of the cage structure to avoid displacement or damage to the structure. Anchoring needs to be done diagonally opposite at the four corners of the cage structure by providing heavy sinkers such as anchors or black stones having a dimension of 0.5 m x 1.0 m (not less than 40 kg in weight) tied with strong nylon rope.

7. Site Selection

7.1 Selection of Water Body

Due to ecological reasons, cage culture in rivers is discouraged world over. In India, the riverine ecosystems are already under severe stress resulting in habitat loss/degradation due to a number of reasons such as dams, water abstraction, low flows, river training and pollution from industrial, domestic and agricultural runoff. Cage culture in a water-starved stream will add further stress to the ecosystem and therefore cage culture is not recommended in rivers. Subject to other conditions, it can be practiced in estuaries, lagoons, lakes, and large/medium reservoirs. Large, deep reservoirs and lakes need to be chosen for cage culture, leaving aside small and shallow water bodies for the following reasons:

1. Small and shallow water bodies are very productive and usually suited for free-ranching as there is no constraint in harvesting the fishes.
2. Predators are not a big problem.
3. Such water bodies are suitable for practicing culture-based capture fisheries, managed on the basis of annual stocking and harvesting.
4. Small and shallow waters are generally rich in nutrients and the sunlight penetrates down to the bottom resulting in high rate of primary production. Cage culture involves high input of nutrients in the form of feed. This coupled with the high rate of deposition of fish excretory matters result in high rate of nutrient input to the system causes eutrophication. This will lead to the disruption of natural ecosystem processes and causing irreparable damage to the system.

5. Small reservoirs do not have sufficient depths for the cages to remain afloat during the lean season. If water level recedes and goes beneath the critical level, the crop will be destroyed.

Therefore:

- *Cage culture shall be allowed in water bodies having a surface area 1,000 ha or more at FRL. (Exception to this can be made only in case of 'very deep abandoned mines', which are less than 1000 ha in area, but too deep for practicing culture-based fisheries, subject to all other conditions prescribed in this document).*
- *Cage culture shall be allowed in reservoirs with an average depth of 10 m (Average depth is calculated as: Area in hectares divided by water holding capacity in m³).*
- *The cage site at the reservoir should have at least 10 m depth round the year.*

7.2 Site Selection

Criteria for site selection are based on safety of the location and smooth culture operations avoiding or minimising user conflicts. Thus, the sites to be avoided are: (1) places with turbulence and excessive wave/wind action, (2) bad water quality, (3) water bodies with obstructions and heavy weed infestation, (4) low depth, (5) difficult to access the site and logistic considerations and (6) nearness to dense human habitation, dams, tourist spots, industries and polluting industries. Areas of fish nursery and breeding grounds, sensitive areas like wildlife habitat including birds nesting, socio-culturally important areas like pilgrimage centres, water bodies for public use like drinking water, cleaning, navigation, etc, and protected aquatic reserves, sanctuaries, etc. are also to be avoided. The ideal locations for siting cages in large and medium reservoirs are the protected bays/coves to avoid damage due to strong wind action. However, some mild turbulence always helps exchange of metabolites and nutrients between the cage and outside environment.

By using these basic criteria, water bodies or specific locations within a water body can be chosen for cage culture. This information can be included in a map to be prepared at district and State level. The State Department of Fisheries should take initiatives of their own to select the suitable reservoirs and the sites therein for cage fish farming and draw-up maps in GIS platform to facilitate easy planning. However, if necessary they can take the advice of experts from the concerned ICAR and Central Institutes.

7.3 Depth and Water Quality

Depth is an important criterion for selecting the reservoir and also the cage site. The reservoir should have at least 10 metres of mean depth and the cage site needs a water depth of at least 10 metres round the year. A clearance of 6 metres will be always needed from the cage bottom to the floor of the water body.

As the cage culture operations will tend to increase nutrient load, BOD and COD in the water bodies, care must be taken to pre-assess the water quality of the location. Excessive nutrient load from cage culture inputs, especially feeds can create eutrophic conditions with disastrous consequences to the ecosystem. It needs to be ensured that the water body is either oligotrophic (low nutrient content) or mesotrophic (moderate nutrient content) before starting the cage culture. Although generally, Indian reservoirs are either mesotrophic or oligotrophic in nature,

those water bodies receiving effluents or drained by rich catchments can show eutrophic tendencies. If cage culture is practiced in such eutrophic reservoirs, the leftover feed and the metabolic wastes from the stock can cause eutrophication. Therefore, it is necessary to conduct an Environment Impact Assessment (EIA) before cages are installed in reservoirs. The ICAR research Institutes have the capacity to make rapid EIAs. Estimation of chlorophyll, nutrients (nitrates and phosphates) and Secchi Disc transparency can give sufficient clue to the trophic status of a water body. *In any case, cage culture should not be attempted in any water body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively.*

8. Cage Maintenance

Anti-corrosive paint should be applied to GI/MS cages to prevent rusting and to increase the durability. Cage should be cleaned at 15-days interval to avoid net clogging. After shifting the stock to another cage, each cage is taken out, sun-dried and cleaned thoroughly by scrubbing/water-jet wash to remove debris and fouling organisms. *In situ* cleaning using water jets is not advised as it will dislodge the pathogenic organisms throwing them into cages to infect the fish. Additional *hapas*/nets may be maintained for this purpose or to meet other emergency situation. The physico-chemical parameters of water should be recorded regularly as a part of water quality monitoring.

9. Species

At the moment economically viable cage culture is practiced in inland water bodies of India by growing the exotic pangasius (Sutchi Catfish), *Pangasianodon hypophthalmus*. Culture of another exotic species *viz.*, GIFT tilapia, a genetically improved strain of *Oreochromis niloticus* has been allowed subject to certain conditions such as: only all-male seed, sourced from authorized agencies can be used. However, culture of tilapia has not picked up in any appreciable manner. In the absence of any adoptable technology to culture indigenous species, culture of exotic pangasius and GIFT tilapia certified/supplied by authorized agencies are allowed. However, cage culture of more species drawn from the indigenous species-pool needs to be encouraged at all levels. Depending on just one or two species will be unsustainable in the long run and the high density culture practice of exotic pangasius can invite major disease issues in future. Considering the consistent demand for species of high economic and nutritive value, coupled with the regional preference (for some species), the following indigenous species need to be inducted into the cage culture domain: *Labeo bata*, *L. rohita* (Jayanti rohu), *Osteobrama belangeri* (*pengba*), *Ompok bimaculatus* (*pabda*), *Anabas testudineus* (*koi*), *Pangasius pangasius*, *Puntius sarana*, *Lates calcarifer* (*bhetki*), *Chanos chanos* (milk fish), *Etroplus suratensis*, *Chitala chitala* (featherback), Murrels (*Channa striata*, *C. marulius*), *Wallago attu* and shellfish *Macrobrachium rosenbergii*. At the present level of technology, cage culture of the indigenous species mentioned above is not economically viable although they have good market and consumer preference. Sometimes, *Labeo rohita* is stocked in the outer nets of the cages @ 10-15 advanced fingerlings (> 100mm) per cage. By virtue of its browsing habit, rohu cleans the algal growth over the nets, besides giving some additional fish biomass.

Apart from Pangasianodon hypophthalmus and GIFT Tilapia, all other exotic species (including illegally introduced fishes) are strictly prohibited for cage culture.

10. Stock Management

10.1 Culture of *Pangasianodon hypophthalmus*

The fish seed for stocking should be sourced from authentic and reliable agencies, subject to government stipulations. Proper records on seed sourcing shall be maintained and the seed should be quarantined and acclimatized and bathed in 3 mg/L KMnO₄ (as prophylactic treatment on need basis) before stocking. The size at stocking and optimum stocking density vary according to requirements, depending on growth and survival. However, stocking density for *P. hypophthalmus* range from 500 to 700 nos./m³ of 20 mm size fry for rearing to fingerlings. For grow-out, the stocking density is in the range of 60 to 100 nos./m³ of fingerlings (50-60 mm size). The stocking material is better transported to the cage site in water loaded open tank with frequent stirring. Stock maintenance involves periodic sampling to assess the growth and general health condition. The culture period of *P. hypophthalmus* is generally 7-8 months.

(For raising fingerlings of Indian major carps, fry measuring above 25 mm length are suitable for rearing in cages. The size at stocking and stocking density of Indian major carps and other indigenous species shall be need-based as these have not been standardized yet. To raise fingerlings for culture of Indian major carps, it is always better to stock 50 mm fry as these will grow faster and survival rate would be higher. Harvesting can be done after rearing for 60 days. However, this depends on natural productivity and supplementary feeding. It is helpful if land-based nurseries are available near a reservoir or a cluster of them for rearing fry to fingerlings. Pen culture is ideal for raising stocking material of IMC, but all reservoirs do not have the ideal conditions for taking up pen culture.)

The cage fish farming being purely based on supplementary feeding, selection of good/best fish feed and its application in right quantity is important to achieve desirable results. It is advised that only quality floating feed is selected. Sinking feed is totally unsuitable for cage fish farming as it accumulates at the base and fouls the cage/reservoir environment. The rate of feeding for *Pangasianodon hypophthalmus* is given in Table II.

Table II. Feed requirement of *Pangasianodon hypophthalmus* in Cage Culture

Stage	Feed	Protein Requirement	Feeding Rate (% of Fish Body Weight)
Fry to Fingerling	Crumble Floating Feed (0.5 -1.0 mm)	30 to 35%	Less than 10% body wt., 4-5 times a day
Fingerling to Table Fish	Pellet Floating Feed (Above 1.0 mm)	25 to 30%	First 2 months 5% body wt., twice a day. From 3 rd to 5 th month 3% body wt., twice a day or as required. From 6 th month onward 2% body wt., twice a day or as required.

10.2 Culture of GIFT Tilapia

Rajiv Gandhi Centre of Aquaculture (RGCA) has developed culture technologies for GIFT Tilapia (*Oreochromis niloticus*) and Sea Bass (*Lates calcarifer*). Details of cage specifications and feeding for GIFT Tilapia are given below (Table III to V).

Table III. Specifications of Net Cage for Tilapia Culture

Net Cage Specifications	Fish Weight
Fish net cage without top cover made of HDPE 0.75/16mm mesh size webbings with rope (Cage size : 5m x 5m x 5m)	50 - 150 grams
Fish net cage without top cover made of HDPE 1.25/20mm mesh size webbing with rope (Cage size : 5m x 5m x 5m)	150 – 250 grams
Fish net cage without top cover made of HDPE 1.25/24mm mesh size webbing with rope (Cage size : 5m x 5m x 5m)	250 – 500 grams, till harvest

Table IV. Stock Management of Tilapia

Items	Details
Cage Size	5m x 5m x 4m
*Mesh Sizes	16 mm, 20 mm, 24 mm
Body weight, Feed Pellet Size & Protein Content	50-150 grams – 2 mm (28% protein) 150-500 grams – 3 mm (28% protein) 500-600 grams – 4 mm (25% protein) 600 grams and above – 5 mm (22% protein)
Stocking Density	40/m ³
Cage Changing	Fortnightly
Nursery	Not permitted in Reservoirs; minimum stockable size is 50 grams

*Mesh Bar (knot to knot) is half the length of mesh size (stretched mesh size)

Table V. Feeding Chart for Tilapia

S. No.	ABW (g)	Feeding rate (% of Body Weight)	Culture Phase
1	1-5	8%	Nursery Rearing
2	6-10	6%	
3	10-15	5.5%	
4	15-20	4%	
5	20-50	4.0 - 2.5%	
6	50-100	2.5 - 1.7%	Growout Rearing
7	100-200	1.7 - 1.3%	
8	200-300	1.3 - 1.0%	
9	300-500	1.0 - 0.9%	
10	500-700	0.9 - 0.8%	
11	>700	1.8 - 0.6%	

10.3 Culture of Sea Bass *Lates clacarifer*

Recommended cage materials, mesh size, maintenance of biomass and feeding of Sea Bass in Cage Culture in Inland Waters (Reservoirs & Dams) are given in Table VI, VII and VIII).

11. Fish Health Monitoring

As fish health monitoring involves maintaining hygienic and healthy culture environments, it is important to source seed and feed from authorized and genuine agencies that follow high standards. Usage of suitable quality feed, maintenance of optimum stocking densities, adoption of preventive measures such as prophylactic treatment before stocking, regular monitoring of stock and periodic cleaning of cages will avoid outbreak of diseases and stock loss.

Table VI. Type and Number of Net Cages required for Sea Bass Culture

Sl. No.	Particulars of Cage	No. of Cages Required (%)
1	500PE/8 ply/12 mm (knot to knot)	6
2	500PE/8 ply/16 mm (knot to knot)	8
3	500PE/8 ply/20 mm (knot to knot)	10
4	500PE/8 ply/24 mm (knot to knot)	12
5	500PE/8 ply/32 mm (knot to knot)	16
6	500PE/8 ply/38 mm (knot to knot)	23
7	500PE/8 ply/44 mm (knot to knot)	25

Additional 30% Cages of 38 mm and 44 mm mesh bar (knot to knot) are required as standby because 12 mm and 16 mm mesh bar size cages are not used when the fish attain harvestable size.

Note: Irrespective of the cage size the mesh sizes vary as given in Table

Table VII. Cage Mesh Size and Biomass Capacity for different sizes of Sea Bass

Size of Fish (cm)	Wt of Fish (g)	Cage Mesh* (mm)	Biomass (kg/cu. m)
10.0 - 12.0	13.0 - 23.0	12.0	2.5 - 3.0
12.0 - 14.0	23.0 - 53.5	12.0	3.0 - 3.5
14.0 - 16.0	53.5 - 76.0	16.0	3.5 - 4.0
16.0 - 18.0	76.0 - 105.0	16.0	4.0 - 4.5
18.0 - 20.0	105.0 - 140.0	20.0	4.5 - 5.0
20.0 - 22.0	140.0 - 180.0	24.0	5.0 - 5.5
22.0 - 24.0	180.0 - 230.0	24.0	5.5 - 6.0
24.0 - 26.0	230.0 - 280.0	24.0	6.0 - 6.5
26.0 - 30.0	280.0 - 350.0	32.0	6.5 - 7.0
30.0 - 32.0	350.0 - 420.0	32.0	7.0 - 7.5
32.0 - 34.0	420.0 - 500.0	38.0	7.5 - 8.0
34.0 - 36.0	500.0 - 600.0	38.0	8.0 - 9.0
36.0 - 38.0	600.0 - 700.0	38.0	9.0 - 10.0
38.0 - 40.0	700.0 - 820.0	44.0	10.0 - 11.0
40.0 - 43.0	820.0 - 1000.0	44.0	11.0 - 12.0

*Mesh Bar (knot to knot) is half the length of mesh size (stretched mesh)

Table VIII Feeding of Sea Bass

Size of Fish (cm)	Av. Wt. (g)	Feed Type	Pellet Size (mm)	Feeding Rate (% Body Wt.)
9-10	9.7-13.0	Floating	2.0-2.2	5.0
10-12	16.0-23.0	Floating	3.0	4.8
12-16	23.0-53.5	Floating	4.0	4.6
16-18	53.5-76.0	Floating	4.0	4.4
18-20	76.0-105.0	Floating	6.0	4.2
20-22	105.0-140.0	Floating	6.0	3.8
22-24	140.0-180.0	Floating	8.0	3.6
24-26	180.0-230.0	Floating	8.0	3.2
26-28	230.0-280.0	Floating	10.0	3.0
28-30	280.0-350.0	Floating	10.0	2.8
30-32	350.0-420.0	Floating	10.0	2.6
32-34	420.0-500.0	Floating	12.0	2.4
34-36	510.0-600.0	Floating	12.0	2.2
36-38	600.0-700.0	Floating	12.0	2.0
38-40	700.0-820.0	Floating	14.0	1.8
40-43	820.0-1000	Floating	14.0	1.8

As far as possible, use of antibiotics and chemical should be avoided. However, in the event of it becoming necessary under exceptional circumstances, the use should be judicious and *it must be clearly understood that only approved drugs/chemicals, permitted by Government regulatory authorities (See Table IX) at standard doses shall be used.*

In case of severe infection, the fish should be removed from the cages and buried/incinerated/bleached. Health of the fishes stocked in cages must be monitored at monthly interval and proper treatment measures must be adopted in case of disease outbreak, (if any). Standard doses of chemicals like $KMnO_4$ and formalin can be used for dip treatment. In case of bacterial disease, Oxytetracycline (OTC) and its derivatives can be administered through feed or other modes. These are the only antibiotics allowed for fish culture in cages. A record on incidence of fish disease and control measures adopted including medicines used should be maintained. In case of disease outbreak, the State Fisheries Department or National Institutes (one of the eight fisheries research Institutes under ICAR (other Central Government labs like NABL accredited aquaculture lab of RGCA) or any laboratory belonging to the State governments can be approached.

Table IX. Drugs and Chemicals allowed to be used in Cage Aquaculture

Drug/Chemical	Recommended Dose	Indications	Administration
Chlor-amine-T	20 milligrams per litre static bath once per day for 60 minutes on consecutive or alternate days for 3 days	Columnaris disease associated with <i>Flavobacterium columnare</i>	Immersion
Formalin	External parasites 250µL/L for 1-hour	Control of external protozoa (<i>Chilodonella</i> spp., <i>Costia</i> spp., <i>Epistylis</i> spp., <i>Ichthyophthirius</i> spp. <i>Scyphidia</i> spp. and <i>Trichodina</i> spp.) and the monogenetic trematode parasites (<i>Cleidodiscus</i> spp., <i>Dactylogyrus</i> spp., and <i>Gyrodactylus</i> spp.) on all finfish	Immersion
Oxytetracycline dihydrate	Catfish – 2.5 to 3.75 g Oxytetracycline/50 kg of fish for 10 days through feed (Active ingredients: 200 g Oxytetracycline/ 0.5 kg)	Control of <i>Hemophilus piscium</i> , Furunculosis caused by <i>Aeromonas salmonicida</i> , Bacterial hemorrhagic septicemia caused by <i>Aeromonas liquefaciens</i> , and <i>Pseudomonas</i> disease	Medicated feeds
Florfenicol	10 mg Florfenicol/kg of fish/day for 10 consecutive days through feed (Active ingredients: 500 g of Florfenicol/kg)	Control of <i>Flavobacterium psychrophilum</i> and <i>Aeromonas salmonicida</i> , <i>Streptococcus iniae</i> , <i>Flavobacterium columnare</i>	Medicated feeds

12. Safety Measures

Cage culture involves working in a risky environment and therefore, all security measures should be taken to avoid injury and loss of life while installing cages and working in cages to manage the stock (rearing the fishes). Adequate number of lifebuoys/ other life-saving equipment should be provided at the cages and in vessels used for approaching (managing) the cages. Similarly, the workers should wear life-jackets all the time while working in water and cages. Emergency life-saving kits and first-aid boxes should be provided at the cages/boats/floating huts or field camps. The international conventions related to 'safety at sea' and procedures prescribed in the FAO-Code of Conduct for Responsible Fisheries (FAO-CCRF) will be the guiding principles for safety measures (<http://www.fao.org/docrep/005/v9878e/v9878e00.HTM>). The cage stock needs to be protected from poaching/ trespassing by keeping efficient watch and ward.

13. Market, Harvesting and Post-Harvest Management

The feeding should be stopped 2 days prior to harvesting. If antibiotics were used during the culture period, sufficient withdrawal period may be given before harvest. It is advisable that the

harvesting of stock may be done in phased manner like larger fish first, especially to avoid glut in the market, to avoid low price for the harvested fish and get a better market price. Records of harvest should be maintained at the site. Cage culture is a high-intensive culture practice that could result in harvest of large quantities of fish at a time. Growth of this segment of fish production without a planned link to a whole value chain approach, could result in marketing problems and post-harvest losses. It is essential to have a post-harvest and marketing strategy before launching cage culture ventures on a large-scale. The large-scale cage production centres should either have their own facilities or have linkages for:

- Proper harvesting gadgets
- Fish holding and storage
- Live fish transport
- Post-harvest processing centres like fillet plants
- Market chain including E-markets.

In any case, it is advisable for all cage units (including small units) to have a small ice-making device at each cage site for preservation of the harvest before being transported for storage or to the market. There should be at least one insulated van at site for transportation of fish. Efforts may also be made to create live/preserved fish sale outlets at strategically important points in nearby cities for better return.

14. Environmental Precautions and Assessment

Cage culture is a relatively new area of fish production in India and its environmental impacts are not fully understood. There are models for assessing the environmental impact in terms of nutrient loading developed in other countries. But these models are not directly applicable in India due to the difference in environmental regimes under which these have been developed, especially the variations in temperature and trophic status. Efforts are on to develop such models in India, but the results will not be available in short time. Nevertheless, the cage culture activities are growing at a very fast rate causing concerns, especially when viewed in the light of our bad experience with coastal aquaculture in the 1980s and 1990's when unregulated growth without addressing environmental concerns have resulted in disastrous consequences to ecosystems.

Following the guidelines of the FAO-CCRF for dealing with data-deficient systems, our policy towards EIA of cage culture should be based on a precautionary approach and hence the limitations on phosphates and nitrates values as given in para 7.3 above. Accordingly, the following measures need to be adopted for cage culture projects:

1. Major environmental threats from cage aquaculture include the release of excessive nutrient that accumulate in water and sediments.
2. With the aim of protecting aquaculture operations from excessive nutrient loading in water and sediments and also to protect the environment from the harmful effects of cage culture (eutrophication and chemical/pharmaceutical inputs), Environmental Impact Assessment is necessary before clearing cage culture projects. This will be done/facilitated by competent authorities/organisations, following the standard procedure. States should exercise greater control over cage aquaculture operations through appropriate governing procedures.

3. The State governments should demarcate, list and notify water bodies that are suitable for cage culture on the basis of its trophic characteristics and other criteria of site selection (as given above at 7.1, 7.2, 7.3 above) and upload the list of water bodies and their suitability on GIS platform with the help of concerned institutions.
4. It will be mandatory for the cage culture operators to record the water quality parameters like Dissolved Oxygen, pH, CO₂ and Total Alkalinity, inside and outside the cages from the day-one of the operation, keeping in view the need for long-term environmental impact. Any increase in nutrients level away from the cage area should be taken as a warning.
5. It will be mandatory for the cage culture operators to collect data on the trophic status in and around the cages as well as the areas away from the cages, periodically and report to the authorities to assess the impacts in terms of nutrient loading. Studies on other chemical and physical quality parameters of water and sediments also shall be undertaken as per the risk perception.
6. NFDB and Central Organizations will build capacities of States to interpret such data and arrive at conclusion.

15. Carrying Capacity and Limit of Cage Numbers

Carrying capacity of a water body to hold cages is the most vital input for decision making in cage culture. But, unfortunately we are not in a position to arrive at carrying capacity levels with precision due to paucity of data. Therefore, our policy on carrying capacity has to be based on a precautionary approach. Provisions of FAO-Code of Conduct for Responsible Fisheries (<http://www.fao.org/docrep/005/v9878e/v9878e00.HTM>) clearly stipulates to follow the 'precautionary approach' while dealing with data deficient systems. Accordingly, taking into account, the general trend of nutrients in Indian reservoirs and possibility of nutrient loading from cage culture, the following carrying capacities have been developed on a precautionary approach basis (Table X):

Table X. Limits set for Cage Culture in Reservoirs

Reservoir Area (ha)	Maximum Number of Cages Allowed*
< 1000	Not allowed
1001 to 2000	500
2001 to 3000	1000
3001 to 4000	1500
4001 to 5000	1900
5001 to 10000	3000
>10000	5000

*As Stand-alone or in Batteries (of 6, 12 or 24 Cage Units), as required

*One Cage Unit is 6m x 4m x 4m

16. Ownership, Beneficiaries and Governance

Unlike the land-based aquaculture undertaken on private land, cage culture is practiced in common property resources. Therefore, the question – who owns the cages installed in reservoirs needs an important consideration. While answering the question, the following facts need to be considered:

- (a) Almost all large and medium reservoirs in the country are owned by the government or government agencies and fishers fish these water bodies as common property resource with free or almost free access.
- (b) Fish produced from the reservoirs is essentially a natural resource and the traditional and local fishers communities have the 'natural primary rights' to this resource.
- (c) Livelihoods of many poor people depend on catching fish from reservoirs.
- (d) Reservoir fishing is used sometimes as a means to rehabilitate the people ousted from the dam project sites.

Considering the above facts, it is essential to ensure that expansion of cage culture do not impair the livelihoods and income of the fishers. Cage culture can adversely impact the interests of local fishers by denying access to fishing grounds, obstructing their pathways, and decline in fish catch if cage culture affects the natural productivity of the water body. At the same time, it is equally important to utilize the additional fish production potential through cage culture. Considering the need to avoid conflicts, the best way to achieve the goal is to empower the fishers to take up this activity collectively without conflicts. Following a purely revenue approach by allowing individual investors and corporate houses to undertake cage culture will be against the spirit of inclusive growth and can create social tension. Thus, the community (or a group of members of the community) should own the cages as a common property and they should be the beneficiaries of this technology.

A strong governance platform based on co-management principles is essential for responsible cage culture operations to be undertaken by the community. But the existing Fishermen Cooperative Societies have poor track record of functioning as a responsible entity to work as a group. This throws a big challenge on the government to organize and empower the fisher communities and develop capacity among them to enable them to take up cage culture. SHGs, Cooperative Societies, FPOs or other such groups should be given licenses to undertake cage culture. *Under any special circumstances, if a private entrepreneur or investor is to be brought to the scene, government through strong policies, should protect the interest of the local fishers and fisher communities, who have the primary rights to the natural resource. A Conflict Management Cell should be established to address complaints.*

17. Social Relevance

Cage culture in inland open waters is a fast growing activity and it could have many environmental and social impacts, which may not be predictable. But adequate precautions need to be taken to ensure that it should not lead to any such issues in future. The ultimate goal should be increased fish production through environmentally sustainable and socially inclusive means. The additional income generated from the reservoirs through the growth of cage culture should be shared by the fisher community rather than an investor walking away with all the benefits and the fishers get only the wages. The social impact should be additional income and improved standard of living for one of the weakest sections of our society. This should be the ideal social impact of cage culture operations apart from the increased availability of fish.

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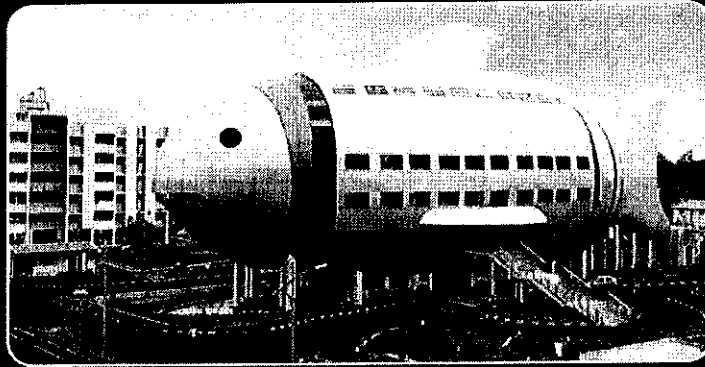
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महाराष्ट्र शासन

**कृषि, पशुसंवर्धन, दुग्धव्यवसाय विकास व मत्स्यव्यवसाय विभाग,
शासन निर्णय क्र. मत्स्यवि-२०१६/प्र.क्र.१८/पदुम-१३**

दिनांक: १७ ऑक्टोबर, २०१६

वाचा:- १) आयुक्त मत्स्यव्यवसाय यांचा क्र. मत्स्य/भू/ताम/०२०१०५/२९/२०१६,
दिनांक ४.७.२०१६ चा प्रस्ताव.

प्रस्तावना:-

राज्यातील कुपोषणाची समस्या हाताळण्यासाठी प्रोटीनयुक्त खादयपदार्थांची उपलब्धता वाढविणेची अत्यंत आवश्यकता आहे. मासे हे प्रोटीनयुक्त खादयपदार्थ म्हणून अतिशय महत्वाचा घटक आहे. राज्यातील मत्स्य उत्पादन वाढीस लागून उच्च प्रतीचे प्रोटीन उपलब्धता वाढविण्यासाठी मत्स्यव्यवसाय विभाग प्रयत्नशील आहे. यासाठी बंदिस्त पिंजरा पध्दतीने मत्स्यसंवर्धन करणे ही उच्च तंत्रज्ञानावर आधारीत पध्दत असून, त्याद्वारे प्रति हेक्टरी अधिक मत्स्योत्पादन मिळू शकते. मत्स्यव्यवसाय विभागामार्फत सध्या राज्यामध्ये एकूण २५७९ जलाशय ठेक्याने देण्याची कार्यवाही करण्यात येत आहे. सदर जलाशयांचे एक टक्के जलविस्तार क्षेत्राचा वापर करून सदर क्षेत्रामध्ये पिंजरा पध्दतीने मत्स्य उत्पादन घेतल्यास ठेक्याने दिलेल्या जलाशयाच्या जलविस्तार क्षेत्रावर ठेकेदाराच्या मासेमारी अधिकारावर कोणतीही बाधा येत नाही व कोणताही विपरीत परिणाम होत नाही. पिंजरा पध्दतीने मत्स्य पालनामुळे मत्स्यबीज उत्पादन, बर्फ कारखाना, मत्स्य खाद्य उत्पादन, कोल्ड स्टोरेज, मत्स्य वाहतूक इत्यादि उद्योगांसाठी चालना मिळून यासाठी उत्पादन व विक्रीसाठी लागणारे कुशल व अकुशल कामगार मिळून जवळपास (३०,०००) लोकांना रोजगार उपलब्ध होणार आहे. यास्तव, राज्यातील एकूण उपलब्ध जलाशयांमध्ये पिंजरा पध्दतीने मत्स्योत्पादन प्रकल्प स्थापित करून मत्स्यव्यवसायाकरीता पिंजरा पध्दतीने मत्स्यसंवर्धन करण्यासाठी धोरण लागू करण्याच्या अनुषंगाने शासनाने पुढीलप्रमाणे निर्णय घेतला आहे.

शासन निर्णय:-

पिंजरा पध्दतीने मत्स्य संवर्धनासाठी मत्स्यव्यवसाय विभागांतर्गत ठेक्याने देण्यात येणाऱ्या २०० हेक्टर वरील जलाशयांमध्ये मत्स्यसंवर्धन करण्यास परवानगी देण्यात येईल. पिंजरा पध्दतीने मत्स्यसंवर्धन विकास संबंधी धोरणांतर्गत आयुक्त मत्स्यव्यवसाय यांनी दरवर्षी आदिवासी विकास विभाग, मानव विकास योजना इत्यादि मधील लाभार्थी, पिंजरा पध्दतीने मत्स्योत्पादन करणाऱ्या संघटना, विविध संस्था, जिल्हा मच्छिमार संघटना, मत्स्यबीज उत्पादक, मत्स्य खाद्य उत्पादक, पिंजरा उत्पादक यांच्यासह कार्यशाळा घ्यावी व त्यादरम्यान या योजनेंतर्गत इच्छूक गुंतवणूकदार (शासकीय अनुदान व आधारित नसलेल्या) व्यक्ती/संस्था यांच्याकडून वर्तमान पत्रात जाहिरातीद्वारे अर्ज मागवून घेण्याची कार्यवाही करावी.

१. पिंजरा पध्दतीने मत्स्योत्पादनासाठी जलाशय ठेका देण्यासाठी निविदेबाबत कार्य पध्दती

आयुक्त मत्स्यव्यवसाय राज्यातील पात्र जलाशयांची यादी प्रसिध्द करतील व पारदर्शक पध्दतीने वर्तमानपत्रात जाहिरात देऊन पात्र व्यक्ती/विविध संस्था यांच्याकडून विहित पध्दतीने निविदा मागविण्यात येतील आणि उच्चतम निविदाधारकास निविदा मंजूर करण्यात येईल. त्यासाठी ठेक्याने देण्यासाठी आकारण्यात येणारी न्यूनतम ठेका रक्कम (offset price) १५०० चौ.मि. क्षेत्रात पिंजरा बांधकामासाठी लागणाऱ्या जलक्षेत्राची किंमत प्रथमवर्ष रु.५०,००० इतकी राहिल. यासाठी वेळोवेळी ठेका किंमती ठरविण्याचे व त्यात वाढ करण्याचे अधिकार प्रधान सचिव (पदुम) यांच्या अध्यक्षतेखालील समितीस राहतील सदर समिती स्थापन करण्याचे आदेश स्वतंत्रपणे निर्गमित करण्यात येईल. सदर प्रक्रिया राबविताना खालील लाभार्थींना प्राधान्य देण्यात येईल.

अ) १००% स्थानिक मच्छिमारांची प्राथमिक मच्छिमार सहकारी संस्था, १००% स्थानिक आदिवासी मच्छिमारांची प्राथमिक मच्छिमार सहकारी संस्था तसेच ज्या प्रकल्प ग्रस्ताना पर्यायी शेतजमिन वितरीत करण्यात आलेली नाही किंवा मोबदला देण्यात आलेला नाही अशा १००% प्रकल्पग्रस्तांची प्राथमिक मच्छिमार सहकारी संस्था इत्यादिना ठेका वितरित करताना अग्रक्रम देण्यात येईल.

(ब) मत्स्यसंवर्धन पिंजऱ्यासाठी अर्ज करतेवेळी प्रकल्प अहवालाप्रमाणे (DPR) अर्जदाराकडे प्रकल्पाकरिता लागणा-या निधीच्या नियोजनाप्रमाणे स्वताःच्या भांडवलाची रक्कम असणे आवश्यक राहिल. अर्जदार संस्था असल्यास संस्थेकडे स्वताःच्या भांडवलापोटी राखीव निधी (Reserves & Surplus) असणे आवश्यक राहिल. संस्थेकडे आवश्यक राखीव निधी (Reserves & Surplus) नसण्याच्या परिस्थितीत सभासदांकडून अतिरिक्त भांडवल उभारणे, तसेच नविन सभासदांची नोंदणी करणे, त्यांच्याकडून भागभांडवलाची रक्कम गोळा केल्यावर त्यांना भागभांडवल प्रमाणपत्र दिल्यावर ती संस्था अर्ज करण्यास पात्र ठरेल. स्वताःच्या भागभांडवलामध्ये शासनमान्य वित्तीय संस्थेकडून (Non-Banking Financial Institution), उदा. SFAC, SIDBI प्राप्त भाग भांडवल (Venture Capital/ Sub-ordinate Loan) व शासकिय योजनेअंतर्गत देय अनुदानाचाही समावेश समजण्यात येईल.

२. पिंजरा बांधकामाबाबत अटी

प्रकल्पांतर्गत एकूण जलाशयाच्या १% क्षेत्र पिंजरा प्रकल्पासाठी संबंधितांच्या ताब्यात देण्यात येईल. याशिवाय पिंजरा बॅटरीचे चारही बाजूने विहित निकषाप्रमाणे आयुक्त मत्स्य यांच्यामार्फत वेळोवेळी निर्गमित केलेल्या आदेशाप्रमाणे मोकळी जागा सोडणे आवश्यक राहिल. या जलक्षेत्रात जास्तीत जास्त ६x४x४ या आकाराचे ४८ केज बांधकाम करणे आवश्यक राहिल.

३. कालावधी

पिंजरा पध्दतीने मत्स्यसंवर्धनासाठी देण्यात आलेल्या ठेक्याचा सर्वसाधारण कालावधी सात वर्षांचा राहिल. आदिवासी उपयोजना भागात, पेसा अधिनियमांतर्गत असलेल्या भागात व नक्शाल प्रभावित तालुक्यात सदर कालावधी आठ वर्षांचा राहिल. सदर कालावधीत तीन वर्ष वाढविण्याचे अधिकार आयुक्त मत्स्यव्यवसाय यांना राहतील. त्याबाबतच्या अटी शर्ती स्वतंत्रपणे निर्गमित करण्यात येतील. सदर कालावधीत गुंतवणूकदाराने कर्ज परतफेड न केल्यामुळे प्रकल्प अनुत्पादक मालमत्ता (Non-Performing Asset) जाहीर करण्यात आला असल्यास किंवा ठेकेदाराची मालमत्ता बँकेने जप्त केल्याचे घोषित केल्यास अशा ठेकेदारांना देण्यात आलेल्या पिंजऱ्याचे ठेके रद्द केले जातील.

४. बांधकाम

पिंजऱ्याचे जास्तीत जास्त बांधकाम १५०० चौ.मि.इतके मर्यादित ठेवणे बंधनकारक राहिल. पिंजऱ्यामध्ये मत्स्यबोटुकली साठवणूक करण्यासाठी, मत्स्यजिरे ते मत्स्यबोटुकलीत वाढ करण्याकरीता प्रकल्प क्षेत्राच्या जवळ असलेल्या जागामध्ये मत्स्यबीज संवर्धन तलाव बांधकाम करून घेण्यासाठी आयुक्त मत्स्यव्यवसाय विभाग यांनी जलयुक्त शिवार योजना व रोजगार हमी योजना (MNREGA) अशा शासकीय योजनेचा जास्तीत जास्त लाभ घेण्यासाठी आवश्यक पावले उचलणे अपेक्षित आहे. संबंधित ठेकेदारास मत्स्यसंवर्धन तलावामध्ये बोटुकली गोळा करण्यासाठी आऊटलेट दरवाजे (Sluice Gate) बांधणे मत्स्यपिंज-याची नियतकालिक देखभाल करणे इत्यादीची संपूर्ण जबाबदारी ठेकेदाराची राहिल. प्रकल्प क्षेत्रावर कर्मचारी यांचेसाठी शेड बांधकाम, स्वच्छता गृह बांधकाम इत्यादि तसेच कोणतेही इतर बांधकाम करण्याची जबाबदारी ठेकेदाराची राहिल.

पिंजरा पध्दतीने मत्स्यसंवर्धन करणा-या ठेकेदारांना मत्स्यखाद्य, जाळी, प्रकल्पासाठी लागणा-या साहित्याकरिता, स्टोरेज व कर्मचारी यांच्याकरिता स्वच्छतागृह बांधणे इत्यादी कामाकरिता तसेच, जलाशयामधील पिंजऱ्याकडे जाण्यायेण्यासाठी बिगर यांत्रिकी/यांत्रिकी नौका वापरण्यास परवानगी मिळवून देण्याची जबाबदारी संबंधित सहाय्यक आयुक्त मत्स्यव्यवसाय विभाग यांच्यावर सोपविण्यात येईल.

५. राखीव क्षेत्राव्यतिरिक्त उपलब्ध असलेल्या पिंजरा प्रकल्पांतर्गत निविदेमध्ये सूट देण्याची पध्दत-

जलाशयामधील पिंजरा प्रकल्पांतर्गत (cages) जलक्षेत्राचा जाहिर निविदा करण्याचे प्रस्तावित आहे. तथापि मुद्दा क्र. (१-अ) मध्ये नमुद वर्गवारीतील अर्जदारांना न्यूनतम ठेका रक्कमेमध्ये १०% पर्यंत सूट अनुज्ञेय राहिल. ठेका दिलेल्या अर्जदारांना मिळालेला ठेका पोट-ठेकेदारांना हस्तांतरित करता येवू नये, याकरिता व्यक्तिगत अर्जदारांनी स्वतःच्या बँकेचा खाते क्रमांक, पॅनकार्ड नंबर, आधारकार्ड नंबर अर्जामध्ये नमूद करणे आवश्यक आहे. तसेच, संस्था

अर्जदार असल्यास, अर्जदार संस्थेनी संस्थेचा पॅन नंबर, बँक खाते नंबर, व संस्थेच्या संचालक मंडळाच्या सर्व सदस्यांचे पॅन नंबर व आधार क्रमांक अर्जामध्ये नमुद करणे आवश्यक राहिल व प्रवर्तक सदस्य (Promoter Members) यांना ठेक्याच्या मुदतीत संस्थेचे सदस्यत्व सोडता येणार नाही.

६. पिंजरा मत्स्यसंवर्धनाच्या कार्यक्रमाद्वारे मिळणा-या महसुलाबाबत कार्यवाही-

पिंजरा मत्स्यसंवर्धन कार्यक्रमाद्वारे मिळणारा महसूल महाराष्ट्र मत्स्योद्योग विकास महामंडळ यांच्या खाती जमा करावा व त्याचा उपयोग पिंजरा पध्दतीने साठवणूक करण्यासाठी लागणा-या मत्स्यबीज उत्पादनाची सुविधा निर्माण करण्याकरिता तसेच महामंडळाकडे असलेल्या मत्स्यबीज उत्पादन केंद्र व मत्स्यबीज संवर्धन तलाव यांचे बांधकाम अथवा देखभाल दुरुस्ती करणे बंधनकारक राहिल.

आवश्यकतेनुसार कुशल कामगारांची उपलब्धता वाढविण्याकरिता कौशल्य विकास संबंधी प्रशिक्षण कार्यक्रमावर खर्च करण्याची परवानगी राहिल. प्रशिक्षणाच्या वेळेस इतर शैक्षणिक संस्थांमधून प्रशिक्षित वैज्ञानिक यांना प्रशिक्षणासाठी निमंत्रण दिल्यास त्यांना द्यावयाचे मानधन या महसूलामधून महामंडळाने अदा करावे. आयुक्त मत्स्यव्यवसाय यांनी पिंजरा ठेक्याने देण्याची कार्यवाही व जाहीर लिलावामुळे होणा-या प्रसिध्दीचा खर्च इ., करिता तज्ञांना निमंत्रित केल्यास या कामासाठी महामंडळाने या निधीतूनच खर्च करणे अपेक्षित आहे.

७. पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांकरिता आवश्यक अटी-शर्ती

- अ. पिंजरा पध्दतीने देण्यात आलेले ठेके, उपठेक्याने देण्याची परवानगी देण्यात येणार नाही. ठेका उपठेक्याने दिल्यास त्याचा ठेका रद्द करण्यात येईल.
- आ. पिंजरा पध्दतीने देण्यात आलेल्या ठेक्याचे ठेकेदाराने स्वतःच्या पिंजऱ्यामध्ये मत्स्यसंवर्धन करणे बंधनकारक राहिल. त्यांनी अधिकार नसताना खुल्या जलाशयामध्ये मासेमारी करू नये. तसे केल्यास त्यांचा ठेका रद्द करण्यात येईल.
- इ. पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदाराने, त्यांच्या पिंजऱ्यावर काम करणाऱ्या कामगारास कामगार कायद्यांतर्गत किमान वेतनापेक्षा कमी वेतन अदा करू नये, सदर वेतन कामगारांचे बँक खाते काढून त्याला आधारकार्ड UIDAI नंबरचा आधार घेऊन त्यांच्या बँक खातेमध्ये जमा करण्यात यावे. त्यांना कायदेशीर तरतुदी प्रमाणे EPF, ESIS इत्यादी योजनेचा लाभ देणे आवश्यक राहिल. तसेच, ठेकेदारांनी त्यांच्या खर्चाने प्रधान मंत्री सुरक्षा विमा योजने अंतर्गत सर्व कामगारांचा विमा काढणे बंधनकारक राहिल.
- ई. ठेकेदाराने त्यांचे व त्यांच्या कामगारांच्या सुरक्षिततेच्या दृष्टीकोनातून पिंजरा प्रकल्पावर लाईफ सेविंग जॅकेट व इतर प्रथमोपचाराची साधने ठेवणे बंधनकारक राहिल.

उ. ठेकेदाराने प्रकल्पाच्या परिसरात बेकायदेशिररित्या कोणत्याही प्रकारचे अवैध कार्यक्रम करू नयेत तसेच प्रकल्पाच्या सुरक्षितेतला बाधा निर्माण होईल, असे कृत्य झाल्यास सदर पिंजरा पध्दतीचा ठेका रद्द करण्यात येईल.

८. कुशल कामगार व कौशल्य प्रशिक्षण निर्मितीचा कार्यक्रम-

पिंजरा पध्दतीने मत्स्यसंवर्धन करण्यासाठी उच्च तंत्रज्ञानाच्या कुशल कामगार पर्याप्त संख्येत उपलब्ध करून देण्यासाठी कौशल्य विकास कार्यक्रम व इतर प्रशिक्षण कार्यक्रमाची सर्व जबाबदारी महाराष्ट्र मत्स्योद्योग विकास महामंडळ यांच्यावर सोपविण्याचे प्रस्तावित आहे. याकरिता भारतीय कृषि अनुसंधान (ICAR) यांच्या अंतर्गत असलेली संस्था, जसे CIFRI, CIFA इत्यादि, महाराष्ट्र पशु व मत्स्यविज्ञान विद्यापीठ, नागपूर (MAFSU) व राज्यातील मत्स्यविज्ञान महाविद्यालय यांची मदत घेण्याची परवानगी राहिल. महामंडळाने त्यांनी निर्माण केलेल्या पिंजऱ्याबाबत प्रशिक्षण देण्याची सोय उपलब्ध करून देणे अपेक्षित आहे.

९. पिंजरा पध्दतीसाठी जलाशयामधील जलक्षेत्र निवडणे व पाण्याचे पृथक्करण करणे

पिंजरा पध्दतीसाठी जलाशयामधील १% जलक्षेत्र निवडणे व पाण्याचे पृथक्करण करणे याची जबाबदारी सहाय्यक आयुक्त मत्स्यव्यवसाय यांची राहिल. जलाशयामधील १% जलक्षेत्र निवडणे तसेच पाण्याचे परिक्षण करणे याकरिता भारतीय कृषि अनुसंधान यांच्या अंतर्गत असलेली CIFRI, CIFA इत्यादि, राज्यातील मत्स्यविज्ञान महाविद्यालय, महाराष्ट्र पशु व मत्स्य विज्ञान विद्यापीठ, नागपूर (MAFSU) यांचे सहकार्य घेण्यात यावे.

१०. पिंजरा पध्दतीने मत्स्यसंवर्धन करण्यासाठी मत्स्यबोटुकली व मत्स्यखाद्य यांची उपलब्धता वाढविणे

मत्स्यबोटुकली, मत्स्यखाद्य यांची उपलब्धता वाढविणेसाठी उत्पादक कंपन्यांची माहिती उपलब्ध करून देण्याची जबाबदारी महाराष्ट्र मत्स्योद्योग विकास महामंडळ यांच्यावर राहिल.

११. राज्यामध्ये अवर्षण अथवा अतिवृष्टी या प्रसंगी पिंजरा पध्दतीने ठेकेदारास मिळणारी सवलत

राज्यामध्ये अवकाळी दुष्काळ पडल्यास अथवा अतिवृष्टी झाल्यास महसूल विभागाच्या सन १९७६ च्या तसेच त्यानंतर वेळोवेळी निर्गमित करण्यात येणाऱ्या अवर्षण व अतिवृष्टीच्या शासन निर्णयानुसार पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांना १ वर्ष विनामुल्य वाढ देण्यात येईल.

१२. पिंजरा पध्दतीने ठेक्याने देण्यात आलेल्या ठेक्यामध्ये काही वाद विवाद झाल्यास करावयाची कार्यवाही

पिंजरा पध्दतीने ठेका देण्याच्या प्रक्रियेत अथवा ठेका दिल्यानंतरच्या कालावधीत कोणताही वाद उद्भवल्यास या वादासंदर्भात आयुक्त मत्स्यव्यवसाय हे अपिलीय प्राधिकारी राहतील तसेच प्रधान सचिव (पदुम) हे पुनर्विलोकन प्राधिकारी राहतील.

सदर शासन निर्णय महाराष्ट्र शासनाच्या www.maharashtra.gov.in या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा संकेतांक २०१६१०१७१७३७०३२१०१ असा आहे. हा आदेश डिजीटल स्वाक्षरीने साक्षांकित करुन काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने,

**Chitrakala
Suryawanshi**

Digitally signed by Chitrakala Suryawanshi
DN: c=IN, o=Government Of Maharashtra, ou=Agriculture
And ADF Department, postalCode=400032,
st=Maharashtra,
2.5.4.20=b61aaca1243458a7300585877d01b18c73211c3f
79c97f57bd06e1e79a2a57ae, cn=Chitrakala Suryawanshi
Date: 2016.10.17 18:43:26 +05'30'

(चि.नि.सुर्यवंशी)

सहसचिव, महाराष्ट्र शासन

प्रति,

१. मा.राज्यपाल यांचे सचिव
२. मा.मुख्यमंत्री यांचे प्रधान सचिव
३. मा.उपमुख्यमंत्री यांचे प्रधान सचिव
४. सर्व मा.मंत्री/राज्यमंत्री यांचे खाजगी सचिव
५. मा.मुख्यसचिव, महाराष्ट्र राज्य
६. अप्पर मुख्य सचिव (महसूल) मंत्रालय मुंबई-३२.
७. प्रधान सचिव (वित्त) मंत्रालय मुंबई-३२.
८. प्रधान सचिव (वने) मंत्रालय मुंबई-३२.
९. प्रधान सचिव (ग्रामविकास) मंत्रालय मुंबई-३२.
१०. सचिव (सहकार) मंत्रालय मुंबई-३२.
११. प्रधान सचिव (आदिवासी विकास) मंत्रालय मुंबई-३२.
१२. प्रधान सचिव (सामाजिक न्याय) मंत्रालय मुंबई-३२.
१३. सचिव (जलसंपदा) मंत्रालय मुंबई-३२.
१४. सचिव (लक्षेवि) मंत्रालय मुंबई-३२.
१५. आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई
१६. आयुक्त सहकार पुणे
१७. सर्व विभागीय आयुक्त
१८. सर्व जिल्हाधिकारी
१९. सर्व मुख्य कार्यकारी अधिकारी, जिल्हा परिषद
२०. व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ, मुंबई

पृष्ठ ७ पैकी ६

२१. सर्व आयुक्त, महानगरपालिका
२२. कार्यकारी संचालक, महाराष्ट्र कृष्णाखोरे विकास महामंडळ सिंचन भवन पुणे
२३. कार्यकारी संचालक, महाराष्ट्र गोदावरी मराठवाडा पाटबंधारे विकास महामंडळ, औरंगाबाद
२४. कार्यकारी संचालक, महाराष्ट्र विदर्भ पाटबंधारे विकास महामंडळ, नागपूर
२५. कार्यकारी संचालक, महाराष्ट्र तापी पाटबंधारे विकास महामंडळ, जळगांव
२६. कार्यकारी संचालक, कोकण पाटबंधारे विकास महामंडळ ठाणे.
२७. सर्व उपायुक्त, मत्स्यव्यवसाय
२८. सर्व विभागीय सहआयुक्त निबंधक सहकारी संस्था
२९. उपनिबंधक सहकारी संस्था (मत्स्य) आयुक्त मत्स्यव्यवसाय यांचे कार्यालय मुंबई
३०. सर्व जिल्हा सहाय्यक निबंधक, सहकारी संस्था (दुग्ध)
३१. सर्व जिल्हा मत्स्यव्यवसाय विकास अधिकारी
३२. महालेखापाल (लेखापरिक्षक/लेखा अनुज्ञेयता) मुंबई/नागपूर
३३. वित्त विभाग (व्यय-२) मंत्रालय मुंबई-३२.
३४. सर्व कृषि व पदुम विभागातील कार्यासने/निवड नस्ती

Annexure-IIIB

राज्यातील मत्स्य उत्पादनात वाढ करण्यासाठी पिंजरा पद्धतीने मत्स्य संवर्धन करण्याबाबत सुधारित धोरण.

महाराष्ट्र शासन

कृषि, पशुसंवर्धन, दुग्धव्यवसाय व मत्स्यव्यवसाय विभाग,

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मंत्रालय, मुंबई -४०० ०३२.

दिनांक: २६ ऑगस्ट, २०२१

वाचा:-

- १) शासन निर्णय क्र. मत्स्यवि-२०१६/प्र. क्र.९८/पदुम-१३, दि. १७/१०/२०१६
- २) शासन शुद्धीपत्रक क्र. मत्स्यवि-२०१६/प्र.क्र.९८/पदुम-१३, दि. ०९/०३/२०१८
- ३) केंद्र शासनाच्या मार्गदर्शक सूचना "Revised Guidelines for Responsible farming of Tilapia in India" माहे एप्रिल २०२०
- ४) "प्रधानमंत्री मत्स्यसंपदा योजना" अंतर्गत "पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता" केंद्र शासनाच्या सुधारीत मार्गदर्शक सूचना, दि. ०६/११/२०२०
- ५) आयुक्त मत्स्यव्यवसाय यांचा प्रस्ताव क्र. मत्स्य/भू/०२०१२५/८५/२०२० दि. १९/११/२०२०

प्रस्तावना:-

बंदिस्त पिंजरा पद्धतीने मत्स्यसंवर्धन करणे ही उच्च तंत्रज्ञानावर आधारीत पद्धत असून, त्याद्वारे अधिक मत्स्योत्पादन मिळू शकते. सबब राज्यातील कुपोषणाची समस्या हाताळण्याकरीता प्रथिनयुक्त खाद्य पदार्थांची उपलब्धता वाढविण्याकरीता पिंजरा पद्धतीने मत्स्य संवर्धन प्रकल्प स्थापित करून रोजगार निर्मितीच्या उद्देशाने राज्यातील मत्स्य उत्पादनात वाढ करण्यासाठी पिंजरा पद्धतीने मत्स्यसंवर्धन करण्याबाबत (वाचा क्र. १) येथील शासन निर्णयान्वये २०० हेक्टर वरील जलाशयांमध्ये एकूण जलाशयाच्या १% जलक्षेत्र तसेच (वाचा क्र. २) येथील शासन शुद्धीपत्रकान्वये २०० हेक्टर खालील परंतु १५ हेक्टर पेक्षा कमी नसलेल्या व किमान १० मीटर खोली असलेल्या जलाशयांत एकूण जलाशयाच्या ०.५% जलक्षेत्र पिंजरा प्रकल्पासाठी भाडेपट्टीने मत्स्यसंवर्धकास देण्याबाबत निर्णय घेण्यात आला आहे. केंद्र शासनाच्या मार्गदर्शक सूचनांमध्ये नमूद १००० हेक्टर खालील जलाशयांमध्ये पिंजरा मत्स्यसंवर्धन करण्याची परवानगी देण्यात आलेली नाही. परंतु राज्यात १००० हेक्टर वरील जलाशयांची संख्या कमी (४६) असल्याने राज्यातील उपलब्ध २४४८ जलाशयांमध्ये पिंजरा पद्धतीने मत्स्य संवर्धन प्रकल्प राबविण्यास परवानगी देण्यात आलेली आहे. सदर धोरणामधील त्रुटी लक्षात घेवून आयुक्त मत्स्यव्यवसाय कार्यालयाने (वाचा क्र. ५) अन्वये उपरोक्त धोरणामध्ये करावयाच्या बदलांच्या अनुषंगाने प्रस्ताव शासनास सादर केला आहे. सबब या अनुषंगाने तलाव/जलाशयांमध्ये पिंजरा पद्धतीने मत्स्यसंवर्धन करणेबाबत यापूर्वीचे संदर्भ क्र.

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१ व २ अन्वये निर्गमित धोरण अधिक्रमित करुन सुधारीत धोरण निश्चित करण्याची बाब शासनाच्या विचाराधीन होती.

शासन निर्णय:-

शासन या निर्णयाद्वारे तलाव/जलाशयांमध्ये पिंजरा पद्धतीने मत्स्यसंवर्धन करणेबाबत शासन निर्णय दि. १७/१०/२०१६ व शासन शुद्धीपत्रक दि. ०९/०३/२०१८ अन्वये निर्गमित धोरण अधिक्रमित करुन या शासन निर्णयान्वये सुधारीत निकषांसह नवीन धोरणास मान्यता देत आहे.

पिंजरा पद्धतीने मत्स्य संवर्धनासाठी मत्स्यव्यवसाय विभागांतर्गत ठेक्याने देण्यात येणाऱ्या १५ हेक्टर पेक्षा कमी नसलेल्या सर्व जलाशयांत (ज्या जलाशयांची पाण्याची वर्षभर किमान ०८ मीटर पेक्षा जास्त सरासरी खोली असेल असे जलाशय) एकूण जलाशयाच्या १% जलक्षेत्रामध्ये परवानगी देण्यात येईल. सर्व जलाशयांकरीता पिंजरा उभारणी संख्या कमाल १८ पिंजरे, ६३० चौ.मी जलक्षेत्र प्रति वैयक्तिक मत्स्यसंवर्धक तसेच मत्स्यसंवर्धक सहकारी संस्था/महिला स्वयं सहायता गट/मच्छीमार स्वयं सहायता गट/संयुक्त दाईत्व गट ई. असल्यास पिंजरा उभारणी संख्या ६ पिंजरे प्रति सदस्य या प्रमाणात कमाल ७२ पिंजरे, २५२० चौ.मी जलक्षेत्र याप्रमाणे निश्चित करण्यात येत आहे. याबाबत पिंजरा पद्धतीने मत्स्यसंवर्धन विकास संबंधी धोरणांतर्गत आयुक्त मत्स्यव्यवसाय यांनी आदिवासी विकास विभाग, मानव विकास योजना इ. मधील लाभार्थी, पिंजरा पद्धतीने मत्स्य उत्पादन करणाऱ्या संघटना, विविध संस्था, जिल्हा मच्छीमार संघटना, मत्स्यबीज उत्पादक, मत्स्य खाद्य उत्पादक, पिंजरा उत्पादक, इच्छुक गुंतवणुकदार (शासकीय अनुदानावर आधारित असलेल्या व नसलेल्या) व्यक्ती/संस्था यांच्याकडून वर्तमानपत्रातील जाहिरातीद्वारे परिपूर्ण अर्ज मागवून घेण्याची कार्यवाही करावी.

१. पिंजरा पद्धतीने मत्स्यसंवर्धनासाठी जलक्षेत्र ठेक्याने देण्यासाठी कार्यपद्धती:-

आयुक्त मत्स्यव्यवसाय वर्तमानपत्रातील जाहिरातीद्वारे पारदर्शक पद्धतीने राज्यातील पात्र जलाशयांची यादी प्रसिद्ध करतील व पात्र व्यक्ती/संस्था यांच्याकडून विहित पद्धतीने परिपूर्ण अर्ज मागविण्यात येतील. १५ हेक्टर पेक्षा कमी जलक्षेत्र नसलेल्या सर्व जलाशयांतील १% जलक्षेत्रापैकी ७०% जलक्षेत्र शासकीय योजनांतर्गत अनुदान अर्जातील लाभार्थ्यांकरीता व उर्वरित ३०% जलक्षेत्र विनाअनुदानीत अर्जातील लाभार्थ्यांकरीता राखीव ठेवण्यात येईल. लाभार्थ्यांची निवड करताना "प्रथम येणाऱ्यास प्रथम प्राधान्य" या तत्त्वानुसार खाली नमुद प्राधान्य क्रमानुसार निवड करण्यात येईल. प्रत्येक वैयक्तिक लाभार्थ्यांस आधार कार्ड आणि राष्ट्रीयकृत बँकेत खाते असणे अनिवार्य असेल. पिंजरा जलक्षेत्र वापर भाडे प्रति पिंजरा रु. ४०००/- प्रति वर्ष इतके असेल. यासाठी वेळोवेळी ठेका किंमत ठरविण्याचे व त्यात वाढ करण्याचे अधिकार मुद्दा क्र. १० अन्वये स्थापन सचिव/प्रधान सचिव (पदुम) यांच्या अध्यक्षतेखालील समितीस राहतील.

पृष्ठ १८ पैकी २

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राज्यातील जे तलाव/जलाशय मत्स्यव्यवसाय आयुक्तालयाच्या अधिनस्त आहेत अशा तलाव/जलाशयांमधील पिंजरा मत्स्यसंवर्धन प्रकल्पांची जबाबदारी मत्स्यव्यवसाय आयुक्तालयाची असेल तर जे तलाव/जलाशय महाराष्ट्र मत्स्योद्योग विकास महामंडळाच्या अधिनस्त आहेत अशा तलाव/जलाशयांमधील पिंजरा मत्स्यसंवर्धन प्रकल्पांची जबाबदारी महाराष्ट्र मत्स्योद्योग विकास महामंडळाची असेल.

सदर प्रक्रिया राबविताना लाभार्थी निवडीबाबत खालीलप्रमाणे प्राधान्यक्रम राहिल-

- अ) स्थानिक मच्छिमारांची प्राथमिक मच्छिमार सहकारी संस्था
- ब) स्थानिक आदिवासी मच्छिमारांची प्राथमिक मच्छिमार सहकारी संस्था
- क) प्रकल्पग्रस्तांना पर्यायी शेतजमीन किंवा मोबदला देण्यात आलेला नाही अशा प्रकल्पग्रस्तांची प्राथमिक मच्छिमार सहकारी संस्था

विनाअनुदानीत पिंजरा पद्धतीने मत्स्यसंवर्धन करणेकरीता विशिष्ट तलाव/जलाशयाकरीता जलक्षेत्र उपलब्ध नसल्यास अर्जदार लाभार्थ्यांच्या अनुमतीने इतर जलाशयांमध्ये विनाअनुदानीत लाभार्थ्यांसाठी १% जलक्षेत्रापैकी ३०% राखीव जलक्षेत्र उपलब्ध असल्यास अशा जलाशयांमध्ये पिंजरा प्रकल्प देण्याचे प्रस्तावित असेल.

२. पिंजरा बांधकामाबाबत अटी:-

प्रकल्पांतर्गत एकूण जलाशयाच्या जलक्षेत्राच्या अनुषंगाने १% जलक्षेत्र पिंजरा पद्धतीने मत्स्यसंवर्धनासाठी राखीव ठेवण्यात येईल. त्यापैकी १८ पिंजऱ्यांकरीता, ६३० चौ.मी जलक्षेत्र प्रति वैयक्तिक लाभार्थी मत्स्यसंवर्धक तसेच मत्स्यसंवर्धक सहकारी संस्था/महिला स्वयं सहायता गट/मच्छिमार स्वयं सहायता गट/संयुक्त दाईत्व गट ई. असल्यास ६ पिंजरे प्रति सदस्य या प्रमाणात कमाल ७२ पिंजऱ्यांकरीता, २५२० चौ.मी. जलक्षेत्र याप्रमाणे वितरीत करण्यात येईल. याशिवाय पिंजरा बॅटरीचे चारही बाजूने विहित निकषांप्रमाणे आयुक्त मत्स्यव्यवसाय यांच्यामार्फत वेळोवेळी निर्गमित केलेल्या आदेशाप्रमाणे मोकळी जागा सोडणे आवश्यक राहिल. या जलक्षेत्रात ६x४x४ मी. या आकाराचे आयताकृती अथवा वर्तुळाकार आकाराचे (९६ घन मीटर आकारमानाचे) पिंजरा उभारणी करणे आवश्यक राहिल. पिंजरा उभारणीसाठी GI (C-टाईप) पाईप/पंटुन (virgin) साहित्याचाच वापर करणे बंधनकारक राहिल. तसेच १८ पिंजऱ्यांकरीता २४० ड्रम आणि ७२ पिंजऱ्यांकरीता ९६० ड्रम जोडणे अनिवार्य राहिल.

३. कालावधी:-

पिंजरा पद्धतीने मत्स्यसंवर्धनासाठी देण्यात आलेल्या ठेक्याचा सर्वसाधारण कालावधी दहा वर्षांचा राहिल. नमुद कालावधीस कमाल दोन वर्षांची मुदतवाढ देण्याचे अधिकार आयुक्तस्तरीय

पृष्ठ १८ पैकी ३

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पिंजरा मत्स्यसंवर्धन जलक्षेत्र वाटप समितीस राहतील (एकावेळी एक वर्षाची मुदतवाढ देण्यात येईल). त्याबाबतच्या अटी व शर्ती स्वतंत्रपणे निर्गमित करण्यात येतील. सदर ठेका कालावधीत गुंतवणूकदाराने कर्ज परतफेड न केल्यामुळे प्रकल्प अनुत्पादक मालमत्ता (Non-Performing Asset) जाहीर करण्यात आला असल्यास किंवा ठेकेदाराची मालमत्ता बँकेने जप्त केल्याचे घोषित केल्यास अशा ठेकेदारांना देण्यात आलेल्या पिंजऱ्याचे ठेके रद्द केले जातील. वैयक्तिक लाभार्थ्यांच्या मृत्यु किंवा कायम अपंगत्वाच्या स्थितीत त्याच्या कायदेशीर वारसाच्या नावे उर्वरित कालावधीसाठी पिंजरा प्रकल्प संबंधित जिल्ह्याचे सहायक आयुक्त मत्स्यव्यवसाय यांच्या अनुमतीने हस्तांतरित करता येऊ शकेल. कालावधी संपुष्टात आल्यानंतर सदर जलक्षेत्र दुसऱ्या लाभार्थ्यांस देण्यासाठी उपलब्ध राहील.

४. महसुलाबाबत कार्यवाही:-

जे तलाव/जलाशय आयुक्त मत्स्यव्यवसाय यांचे अधिनस्त आहेत त्या तलाव/जलाशयांमधील पिंजरा मत्स्यसंवर्धन कार्यक्रमाद्वारे मिळणारा महसूल (जलक्षेत्र वापर भाडे) आयुक्त मत्स्यव्यवसाय कार्यालयाकडे जमा होईल आणि जे तलाव/जलाशय महाराष्ट्र मत्सोद्योग विकास महामंडळ यांचे अधिनस्त आहेत अशा तलाव/जलाशयांमधील पिंजरा मत्स्यसंवर्धन कार्यक्रमाद्वारे मिळणारा महसूल (जलक्षेत्र वापर भाडे) महाराष्ट्र मत्सोद्योग विकास महामंडळाकडे जमा होईल.

आयुक्त मत्स्यव्यवसाय कार्यालयाच्या अधिनस्त तलाव/जलाशयांद्वारे प्राप्त उत्पन्नापैकी (जलक्षेत्र वापर भाडे) ७५% उत्पन्न संबंधित जिल्ह्यातील सहायक आयुक्त मत्स्यव्यवसाय यांचेमार्फत तलाव ठेका धोरणांतर्गत निर्मित "मत्स्यव्यवसाय विकास निधीमध्ये" भरणा करण्यात यावा. तथापि महाराष्ट्र मत्सोद्योग विकास महामंडळाच्या अधिनस्त तलाव/जलाशयांद्वारे प्राप्त उत्पन्नापैकी (जलक्षेत्र वापर भाडे) ७५% उत्पन्न राज्यातील मत्स्योत्पादन वाढीकरीता महामंडळाच्या खाती जमा करण्यात यावे. सदर निधीचा विनियोग कशाप्रकारे करावा याकरीता मुद्दा क्र. १०(अ) अन्वये स्थापित राज्यस्तरीय समितीद्वारे विहित बाबी व स्वतंत्र निकष निश्चित करण्यात येतील.

तसेच जमा होणाऱ्या उत्पन्नापैकी (जलक्षेत्र वापर भाडे) उर्वरित २५% उत्पन्न सिंचन/जलसंपदा विभागास अदा करण्यात यावे.

५. पिंजरा पद्धतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांकरिता आवश्यक अटी-शर्ती:-

१) लाभार्थी चे वय १८ ते ६० वर्ष या वयोगटातील असणे आवश्यक आहे. मत्स्यविज्ञान क्षेत्रातील पदविका, पदवी, पदव्युत्तर पदवीधर तसेच शासनमान्य संस्था उदा. CIFE, CIFRI, NFDB व मत्स्य महाविद्यालय इ. यांचेद्वारे अल्प कालावधीचे प्रशिक्षण अशाप्रकारे उच्चतम शिक्षण अर्हतेच्या व्यक्तीस प्राधान्य असेल. (प्रशिक्षण प्रमाणपत्र निविदा भरतेवेळी सादर करणे आवश्यक आहे).

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- २) पिंजरा संवर्धनाकरीता अनुदानीत/विनाअनुदानीत पिंजरा मत्स्यसंवर्धकांस एका कुटुंबामधुन एकाच लाभार्थ्यास (रक्त नात्यातील कुटुंबातील एक याप्रमाणे आई/वडील/ भाऊ/ बहीण/ पती/पत्नी) तसेच एकाच जलाशयाकरीता पिंजरा मत्स्यसंवर्धन प्रकल्पास अनुमती राहिल.
- ३) प्रकल्प आराखड्यानुसार पिंजरा संवर्धनाकरीता प्रधानमंत्री मत्स्यसंपदा योजनेअंतर्गत नमूद एका कुटुंबामधुन एकाच लाभार्थ्यास (रक्त नात्यातील कुटुंबातील एक याप्रमाणे आई/वडील/ भाऊ/बहीण/पती/पत्नी) तसेच एकाच जलाशयाकरीता पिंजरा अनुदानाचा लाभ देय राहिल. तथापि यशस्वी मत्स्योत्पादन घेतल्यास आयुक्त मत्स्यव्यवसाय कार्यालयाच्या मान्यतेनुसार स्वखर्चाने प्रकल्प निर्माण करण्यास पात्र राहतील.
- ४) पिंजरा संवर्धनाकरीता ठेका मंजूर केल्यानंतर प्रकल्प कार्यान्वित ठेवण्यासाठी विहित केलेल्या कालावधीकरीता प्रकल्प कार्यान्वित ठेवणे प्रकल्प धारकास बंधनकारक राहिल. जर प्रकल्प अर्धवट कालावधी मध्ये बंद केला तर प्रकल्प धारकांच्या नावे असलेल्या स्थावर मालमत्तेमधुन लाभार्थ्यास दिलेल्या अनुदानाची वसुली करण्यात येईल.
- ५) पिंजरा पद्धती मत्स्यसंवर्धक वैयक्तिक लाभार्थी/मच्छिमार सहकारी संस्था/संघ/मच्छिमार स्वयं सहाय्यता गट/संयुक्त दायित्व गट हे मत्स्यव्यवसाय विभागाचे थकबाकीदार नसावे.
- ६) वित्त पुरवठ्याबाबत:-
 - अ). लाभार्थी स्वनिधीतुन खर्च करत असल्यास त्याने बँक खात्यामध्ये जमा रकमेचे विवरणपत्र सादर करणे बंधनकारक राहिल.
 - ब). वित्तीय संस्थेमार्फत अर्थपुरवठा होत असल्यास वित्तीय संस्था/राष्ट्रीयकृत बँकेकडुन वित्तीय पुरवठा करणार असल्याबाबतचे लेखी पत्र सादर करणे आवश्यक राहिल.
 - क). प्रकल्पधारकाने प्रकल्प रकमेनुसार ३ वर्षांचे Bank Statement सादर करणे बंधनकारक राहिल.
- ७) पिंजरा पद्धतीने मत्स्यसंवर्धन करणेकरीता करारनामा करणे:-
 - अ). पिंजरा पद्धतीने मत्स्यसंवर्धन प्रकल्पाकरीता जलक्षेत्र वाटप मंजूरी आदेश प्राप्त झाल्यापासून १ महिन्याच्या कालावधीत संबंधित मत्स्यसंवर्धक यांनी रु. २००/- व शासन वेळोवेळी ठरविल त्या मुद्रांक शुल्काच्या स्टॅम्प पेपरवर परिशिष्ट-१ येथे नमूद केल्याप्रमाणे विहित करारनामा करुन देणे संबंधित मत्स्यसंवर्धकांस बंधनकारक राहिल.
 - ब). नमूद केल्याप्रमाणे विहित नमुन्यात करारनामा प्राप्त झाल्यापासून १ महिन्याच्या कालावधीत सदरहू करारनामा अंतिम करणे आयुक्तस्तरीय पिंजरा जलक्षेत्र वाटप समितीस बंधनकारक राहिल. अपवादात्मक परिस्थितीत वाजवी कारणास्तव पिंजरा मत्स्यसंवर्धन करारनामा अंतिम करण्यास विलंब झाल्याबाबत आयुक्त मत्स्यव्यवसाय यांची खात्री पटल्यास ते १ महिन्याची वाढीव मुदत देवू शकतील.

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- क). सदरहू करारपत्राच्या अटी/शर्तीचा भंग केल्यास संबंधित पिंजरा पद्धती प्रकल्प मत्स्यसंवर्धक यांचा जलक्षेत्र भाडेपट्टी ठेका मुदतपूर्व रद्द करण्यात येईल.
- ८) पिंजरा पद्धतीने मत्स्यसंवर्धन करतांना भाडेपट्टी ठेक्याने घेतलेल्या जलक्षेत्रामध्ये एका वर्षात पिंजरा उभारणी करणे आवश्यक आहे. एक वर्ष कालावधीत पिंजरा प्रकल्प उभारणी न केल्यास जलक्षेत्र भाडेपट्टी ठेका आपोआप रद्द होऊन भरणा केलेली ठेका रक्कम जप्त करण्यात येईल. स्वतंत्रपणे ठेका रद्द करण्याची कार्यवाही करण्याची गरज असणार नाही. तथापि लाभार्थ्यांना अधिकारक्षेत्र नसणाऱ्या बाबींमुळे पिंजरा प्रकल्प उभारण्यास विलंब झाल्यास व विशिष्ट कालावधीत (एक वर्षात) पिंजरा उभारणी न केल्यास जास्तीत जास्त सहा महिन्यांची मुदतवाढ ही एक वर्ष कालावधी संपण्याच्या आधी संबंधित प्रादेशिक उपायुक्त मत्स्यव्यवसाय देऊ शकतील.
- ९) पिंजरा पद्धतीने मत्स्यसंवर्धन करणाऱ्या सर्व मत्स्यसंवर्धकांस प्रमाणित असलेल्या मत्स्यबीज निर्मिती केंद्रातून मत्स्यबीज खरेदी करणे आवश्यक राहिल, तसेच मत्स्यबीज व मत्स्यखाद्य कोटून व किती प्रमाणात आणले तसेच पिंजरा मत्स्यसंवर्धनाद्वारे होणाऱ्या उत्पादनाचा मासिक अहवाल विहित नमुन्यात संबंधित जिल्हा मत्स्यव्यवसाय कार्यालयास दर तीन महिन्यात ई-मेल द्वारे अथवा प्रत्यक्ष सादर करणे बंधनकारक राहिल.
- १०) पिंजरा मत्स्यसंवर्धन प्रकल्पात तिलापिया प्रजातीच्या माशांचे संवर्धन करण्याकरिता संबंधित मत्स्यसंवर्धकांस राज्यस्तरीय देखरेख व सूकाणू समिती (State Level Steering Cum Monitotring Committee) ची मान्यता घेणे आवश्यक आहे.
- ११) पिंजरा पद्धतीने मत्स्यसंवर्धन करणेकरिता केंद्र शासनाच्या ICAR-CIFRI, ICAR-CIFE, ICAR-CIFA, NFDB, केंद्र शासनाचा मत्स्यव्यवसाय विभाग यांचेकडून मान्यता प्राप्त मत्स्य प्रजाती यांचेच संवर्धन करणे आवश्यक राहिल. तलाव/जलाशयाच्या जैविक विविधतेस घातक असणाऱ्या मत्स्य प्रजातींचे संवर्धन करण्यास सक्त मनाई राहिल.
- १२) पिंजरा मत्स्यसंवर्धनासाठी आवश्यक असणाऱ्या मत्स्यबीजाची योग्य वाढ होऊन ते पिंजरा मत्स्यसंवर्धनासाठी संचयन करणे आवश्यक राहिल. या करिता जलसिंचन विभागाच्या मालकीच्या जमिनीवर मत्स्यबीज वाढीसाठी संगोपन तलाव खोदकाम करण्यासाठी जलसिंचन विभागाची परवानगी घेणे आवश्यक राहिल.
- १३) पिंजरा पद्धतीने मत्स्यसंवर्धनासाठी ठेक्याने देण्यात आलेले जलक्षेत्र उपठेक्याने देता येणार नाही. जलक्षेत्राचा ठेका उपठेक्याने दिल्यास संबंधित ठेकेदाराचा ठेका रद्द करण्यात येईल.
- १४) संबंधित ठेकेदाराने पिंजरा पद्धतीने मत्स्यसंवर्धन करण्यासाठी ठेक्याने देण्यात आलेल्या जलक्षेत्रामध्येच मत्स्यसंवर्धन करणे बंधनकारक राहिल. त्यांनी अधिकार नसताना खुल्या तलाव/जलाशय जलक्षेत्रामध्ये मासेमारी करू नये तसे आढळल्यास त्यांचा ठेका रद्द करण्यात येईल.

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- १५) पिंजरा पद्धतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदाराने संबंधित पिंजरा प्रकल्पावरती काम करणाऱ्या कामगारांस कामगार कायद्या अंतर्गत किमान वेतनापेक्षा कमी वेतन अदा करू नये. संबंधित पिंजरा प्रकल्प धारकाने सदर वेतन कामगारांचे बँक खाते काढून त्याला आधारकार्ड UIDAI नंबरचा आधार घेऊन त्यांच्या बँक खात्यामध्ये जमा करावे. त्यांना कायदेशीर तरतुदी प्रमाणे EPF, ESIS इत्यादी योजनेचा लाभ देणे आवश्यक राहिल. तसेच, ठेकेदाराने पिंजरा मत्स्यसंवर्धन प्रकल्पावर काम करणाऱ्या कामगारांची नोंदणी प्रधानमंत्री मत्स्यसंपदा योजने अंतर्गत "मच्छिमारांना विमाछत्र" या योजने अंतर्गत करणे बंधनकारक राहिल.
- १६) पिंजरा मत्स्यसंवर्धनासाठी जमिनीपासून जलाशयात पिंजरा उभारणी केलेल्या ठिकाणी जाण्या-येण्यासाठी, मत्स्यखाद्य व आवश्यक साधन सामुग्रीची ने-आण करण्यासाठी नौकेची व्यवस्था करणे आवश्यक आहे. ठेकेदाराने स्वतःच्या व त्याच्या पिंजरा मत्स्यसंवर्धन प्रकल्पावर काम करणाऱ्या कामगारांच्या सुरक्षिततेच्या दृष्टीने सदर नौकेवर व पिंजरा प्रकल्पावर जीवरक्षक साधने, लाईफ सेविंग जॅकेट, रिंग बोया, सोलर एलईडी व इतर प्रथमोपचाराची साधने पुरविणे बंधनकारक राहिल.
- १७) सर्व संबंधित जलाशय क्षेत्र (पाणी व जमीन) स्वच्छ ठेवण्याची काळजी घ्यावी. पाण्याचा स्रोत प्रदुषित केल्यास, तसेच परिसरात घाण निर्माण करण्यास जबाबदार आढळल्यास सदर ठेका रद्द होईल. सिंचन विभागाची अनुमती घेऊन प्रसाधनगृह इत्यादीची व्यवस्था करता येईल.
- १८) ठेकेदाराने प्रकल्पाच्या परिसरात बेकायदेशीररित्या कोणत्याही प्रकारचे अवैध कार्यक्रम करू नयेत तसेच प्रकल्पाच्या सुरक्षिततेला बाधा निर्माण होईल, असे कृत्य झाल्यास सदर पिंजरा मत्स्यसंवर्धन ठेका रद्द करण्यात येईल.
- १९) मत्स्यसंवर्धनासाठी केंद्र शासनाने प्रतिबंधित केलेली प्रतिजैवके वापरण्यास मनाई राहिल.
- २०) प्रादेशिक विभाग निहाय पिंजरा पद्धती मत्स्यसंवर्धनाचा आढावा दर ३ महिन्यांच्या कालावधी मध्ये आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई हे घेतील. पूर्ण विभागाचा पिंजरा पद्धती मत्स्यसंवर्धनाचा आढावा दर ६ महिन्यांच्या कालावधी मध्ये सचिव/प्रधान सचिव (पदुम), मंत्रालय, मुंबई हे घेतील.
- २१) खुल्या तलाव/जलाशय ठेकेदाराने पिंजरा मत्स्यसंवर्धन करणाऱ्या ठेकेदारास नौका ने-आण करण्याच्या मार्गावर मासेमारी जाळी/इतर कोणत्याही मार्गाने अडथळा करता येणार नाही.

६. पिंजरा पद्धतीसाठी जलाशयामधील जलक्षेत्र निवडणे व पाण्याचे पृथक्करण करणे:-

पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता संबंधित जलाशयामधील १% जलक्षेत्र भाडेपट्टीने देण्याकरीता जिल्हानिहाय पिंजरा क्षमता बाबत तलावांच्या क्षेत्राची माहिती देण्याची जबाबदारी संबंधित जिल्ह्याच्या सिंचन विभागाची असेल. त्याआधारे संबंधित जिल्ह्याचे सहायक आयुक्त मत्स्यव्यवसाय पिंजरा पद्धतीने मत्स्यसंवर्धन योजनेची जाहिरात देतील. तसेच उपरोक्त प्रमाणे

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जलक्षेत्र निवडणे व पाण्याचे पृथक्करण करण्याची जबाबदारी संबंधित जिल्ह्याच्या सहायक आयुक्त मत्स्यव्यवसाय यांची राहिल.

७. राज्यामध्ये अवर्षण अथवा अतिवृष्टी या प्रसंगी पिंजरा पद्धतीने ठेकेदारास मिळणारी सवलत:-

राज्यामध्ये अवकाळी दुष्काळ (अवर्षण) पडल्यास अथवा अतिवृष्टी झाल्यास पिंजरा पद्धतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांना महसूल विभागाच्या सन १९७६ च्या तसेच यानंतर वेळोवेळी निर्गमित करण्यात येणाऱ्या अवर्षण व अतिवृष्टीच्या शासन निर्णयानुसार अथवा एक वर्ष विनामुल्य वाढ यापैकी उचित लाभ देण्यात येईल. अवर्षण व अतिवृष्टी याबाबतचा लाभ देण्याचा अधिकार आयुक्तस्तरीय पिंजरा मत्स्यसंवर्धन जलक्षेत्र वाटप समितीस राहिल.

८. पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता देण्यात आलेल्या ठेक्याबाबत वाद उद्भवल्यास अवलंबवयाची कार्यपद्धती:-

पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता जलक्षेत्र भाडेपट्टी ठेक्याने देण्याच्या प्रक्रियेत अथवा ठेका दिल्यानंतरच्या कालावधीत या अनुषंगाने उद्भवणाऱ्या वादांसंदर्भात दाद मागण्याकरिता संबंधितास संधी उपलब्ध राहिल. याबाबत प्रधान सचिव (पदुम) हे अपिलीय प्राधिकारी राहतील तसेच मा. मंत्री (मत्स्यव्यवसाय) हे पुनरिक्षण/पुनर्विलोकन प्राधिकारी राहतील. मात्र अपिल/पुनरिक्षण अर्जावर एकदा घेतलेला निर्णय अंतिम राहिल. अपिलार्थी यांच्यासाठी अपिल दाखल करावयाचा कालावधी हा ६० दिवसांचा राहिल, तसेच याबाबतचे पुनर्विलोकन करावयाचे झाल्यास यासाठीचा कालावधी ९० दिवसांचा राहिल.

९. संकिर्ण:-

सुधारीत शासन निर्णयात काहीही नमुद असले तरी सदरहू शासन निर्णय लागू होण्यापूर्वी ज्या मत्स्यसंवर्धकांना/संस्थांना पूर्वीच्या शासन निर्णयान्वये पिंजरा पद्धतीने मत्स्यसंवर्धनाकरिता ठेका मंजूर झाला असेल अथवा प्रकल्प सुरू असतील यांमध्ये मंजूर कालावधीपर्यंत काहीही बदल होणार नाही. सदरहू मंजूर पिंजरा मत्स्यसंवर्धन ठेका कालावधी संपुष्टात आल्यानंतर सदरचे जलक्षेत्र सुधारीत धोरणान्वये ठेक्याने देणेकरीता उपलब्ध होईल.

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१०. पिंजरा पद्धतीने मत्स्यसंवर्धन करणे करीता खालीलप्रमाणे समितीची रचना करण्यात येत आहे:-

अ): सचिव/प्रधान सचिव (पदुम) यांचे अध्यक्षतेखाली खालीलप्रमाणे राज्यस्तरीय समिती स्थापन करण्यात येत आहे-

अ. क्र.	पदनाम	समितीमधील पद
१.	प्रधान सचिव (पदुम), कृषि व पदुम विभाग, मंत्रालय, मुंबई	अध्यक्ष
२.	प्रधान सचिव (सिंचन), सिंचन विभाग, मुंबई	सदस्य
३.	आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई	सदस्य
४.	व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ, मुंबई	सदस्य
५.	उपसचिव (मत्स्य), कृषि व पदुम विभाग, मंत्रालय, मुंबई	सदस्य
६.	सह आयुक्त मत्स्यव्यवसाय (भूजल), आयुक्तालय, मुंबई	सदस्य सचिव

उपरोक्त समितीची अधिकार कक्षा खालीलप्रमाणे राहिल-

- १) पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता वेळोवेळी ठेका किंमत ठरविणे व त्यात वाढ करणे.
- २) पिंजरा पद्धती धोरण व धोरणाच्या अनुषंगाने करावयाचे बदल आणि नियोजन करणे.
- ३) पिंजरा पद्धतीने मत्स्यसंवर्धन अंतर्गत तलाव/जलाशयांद्वारे प्राप्त महसूलापैकी (जलक्षेत्र वापर भाडे) ७५% महसूलाचा विनियोग करण्याकरीता बाबी व याबाबतचे निकष यांची निश्चिती करणे.

ब). आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई यांचे अध्यक्षतेखाली खालीलप्रमाणे आयुक्तस्तरीय पिंजरा जलक्षेत्र वाटप समिती स्थापन करण्यात येत आहे-

अ. क्र.	पदनाम	समितीमधील पद
१.	आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई	अध्यक्ष
२.	व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ, मुंबई	सदस्य
३.	उपसचिव (मत्स्य), कृषि व पदुम विभाग, मंत्रालय, मुंबई	सदस्य
४.	उपसचिव (जलसंपदा विभाग), मंत्रालय, मुंबई	सदस्य
५.	उपसचिव (वित्त विभाग), मंत्रालय, मुंबई	सदस्य
६.	सह आयुक्त मत्स्यव्यवसाय (भूजल), आयुक्तालय, मुंबई	सदस्य

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७.	संबंधित प्रादेशिक उपायुक्त मत्स्यव्यवसाय	सदस्य
८.	उपनिबंधक, सहकारी संस्था (मत्स्य), आयुक्तालय, मुंबई	सदस्य
९.	सहायक संचालक (वित्त), आयुक्तालय, मुंबई	सदस्य
१०.	सहायक आयुक्त मत्स्यव्यवसाय (भूजल), आयुक्तालय, मुंबई	सदस्य सचिव

उपरोक्त समितीची अधिकार कक्षा खालीलप्रमाणे राहिल-

- १) पिंजरा पद्धतीने मत्स्यसंवर्धन अंतर्गत पिंजरा प्रकल्प उभारणीकरीता पात्र तलाव/जलाशय जागेची निश्चिती करणे.
- २) पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता १५ हेक्टरवरील पात्र जलाशयांतील १% जलक्षेत्राचे मुद्दा क्र. १ येथे नमुद कार्यपद्धतीनुसार वाटप करणे.
- ३) १५ हेक्टरवरील पात्र तलाव/जलाशयांमध्ये मत्स्य संवर्धनासाठी २ वर्षांची मुदतवाढ देणे.
- ४) आयुक्त मत्स्यव्यवसाय कार्यालयाच्या अधिनस्त तलाव/जलाशयांद्वारे प्राप्त उत्पन्नापैकी "मत्स्यव्यवसाय विकास निधीमध्ये" भरणा करण्यात येणारे (जलक्षेत्र वापर भाडे) ७५% महसूल राज्यस्तरीय समितीद्वारे निश्चित करण्यात आलेल्या विहित बाबींवर खर्च करणे.
- ५) अवर्षण व अतिवृष्टी याबाबतचा लाभ देणे.

सदर शासन निर्णय महाराष्ट्र शासनाच्या www.maharashtra.gov.in या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा संकेतांक २०२१०८२६१७३६५३३८०१ असा आहे. हा आदेश डिजीटल स्वाक्षरीने साक्षांकित करुन काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने,

Shrinivas Jagannath
Shastri

Digitally signed by Shrinivas Jagannath Shastri
DN: c=IN, o=Personal, ou=2388,
serialNumber=64891, postalCode=410210, st=Maharashtra,
serialNumber=002719ac7e7ab3a50d817c95c44e3e3229c0cb01263b1
7590061081d2337, cn=Shrinivas Jagannath Shastri
Date: 2021.08.26 18:39:48 +05'10'

(श्रीनिवास शास्त्री)

उपसचिव, महाराष्ट्र शासन

प्रति,

- १) मा. राज्यपाल यांचे सचिव
- २) मा. मुख्यमंत्री यांचे प्रधान सचिव
- ३) मा. उपमुख्यमंत्री यांचे प्रधान सचिव
- ४) सर्व मा. मंत्री/राज्यमंत्री यांचे खाजगी सचिव
- ५) अप्पर मुख्य सचिव (महसूल) मंत्रालय, मुंबई-३२
- ६) प्रधान सचिव (वित्त), मंत्रालय, मुंबई-३२
- ७) प्रधान सचिव (आदिवासी विकास), मंत्रालय, मुंबई-३२

पृष्ठ १८ पैकी १०

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- ८) प्राधान सचिव (सामाजिक न्याय), मंत्रालय, मुंबई-३२
- ९) सचिव (जलसंपदा) मंत्रालय, मुंबई-३२
- १०) सचिव (लक्षेवि), मंत्रालय, मुंबई-३२
- ११) आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई
- १२) व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ
- १३) सर्व प्रादेशिक उपआयुक्त, मत्स्यव्यवसाय
- १४) उपनिबंधक सहकारी संस्था (मत्स्य), आयुक्त मत्स्यव्यवसाय यांचे कार्यालय, मुंबई
- १५) सर्व सहाय्यक आयुक्त मत्स्यव्यवसाय
- १६) महालेखापाल (लेखापरिक्षक/लेखा अनुज्ञेयता) मुंबई/नागपूर
- १७) वित्त विभाग (व्यय-२) मंत्रालय मुंबई-३२
- १८) निवड नस्ती (कार्यासन पदुम-१३)

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परिशिष्ट-१

मत्स्यव्यवसाय विभागाच्या जलाशयातील १% जलक्षेत्र पिंजरा पध्दतीने
मत्स्यसंवर्धन प्रकल्पासाठी ठेका पध्दतीने देणेसंबंधीचा करारनामा

जलाशयाचे नाव ता..... जि.....

- अ) हा करारनामा दि. रोजी प्रथम पक्षकार आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई, तारापोरवाला मत्स्यालय, नेताजी सुभाष रोड, चर्नी रोड, मुंबई-४०० ००२ याचे पुढे "शासन" म्हणून उल्लेख केला आहे व या संज्ञेत संदर्भावरून इतर अर्थ होत नसल्यास त्यांचे उत्तराधिकारी व त्यांनी नेमलेल्या व्यक्ती यांचा समावेश होतो. यांच्यात
- आणि**
- ब) द्वितीय पक्षकार श्री. पत्ता..... यांचा यात यापुढे "ठेकेदार" म्हणून उल्लेख करण्यात आलेला आहे व यासोबत संदर्भावरून इतर अर्थ होत नसल्यास त्याचे वारस, मृत्यु पत्रानुसार व्यवस्था ठेवणारे व वहिवाट चालविणारे यांचा समावेश होतो.
- क) मत्स्यव्यवसाय विभागाच्या या जलाशयावरील पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्पासाठी चौ. मि. जलक्षेत्र वर्षासाठी ठेका पध्दतीने देणेबाबत वर्तमान पत्रात जाहिरात प्रसिध्द करण्यात आली होती. यानुसार द्वितीय पक्षकार श्री. यांनी भरलेला परिपूर्ण अर्ज शासनाने स्विकारलेला आहे.
- ड) जिल्ह्यातील जलाशय या नावाने ओळखल्या जाणाऱ्या जलाशयाच्या एकूण जलक्षेत्रापैकी चौ. मि. जलक्षेत्रात (ज्याचा यात यापुढे "जलक्षेत्र" म्हणून उल्लेख करण्यात आला आहे). पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्प उभारण्याची परवानगी तसेच त्यांची योग्य रीतीने अंमलबजावणी करण्यासाठी या जलक्षेत्रासाठी जेवढ्या जमिनीवर जाणे आवश्यक असेल तेवढ्या जमिनीवर जाण्याच्या व तेथून ये जा करण्याची सवलत तसेच इतर कोणत्याही मान्यता असलेल्या रस्त्याने अथवा पायवाटेने जरूर भासल्यास, सदरहु जलाशया भोवतालच्या सरकारी जमिनीतून पायी जाण्याची सवलत शासन दि. पासून दि. पर्यंत किंवा सदरहु ठेका रितसर सुरु आहे तोपर्यंत ठेकेदारास देण्यात येत आहे.
- इ) सदरहु जलक्षेत्र पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्पासाठी ठेकेदाराने प्रतिवर्षी ठेका रक्कम खाली नमुद केल्याप्रमाणे वर्षनिहाय देण्याचे मान्य केले आहे. दरवर्षी ठेका रक्कम नवीन वर्ष सुरु

पृष्ठ १८ पैकी १२

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होण्याच्या आधी म्हणजेच दिनांक पुर्वी आयुक्त मत्स्यव्यवसाय/महामंडळाकडे भरणा करणे ठेकेदारास बंधनकारक राहिल. त्याची शेवटची तारीख पुढील प्रमाणे असेल.

अ.क्र.	वर्ष	रुपये व दिनांक
१)	पहिले वर्ष २०२१-२२	रु., दि.
२)	दुसरे वर्ष २०२२-२३	रु., दि.
३)	तिसरे वर्ष २०२३-२४	रु., दि.
४)	चौथे वर्ष २०२४-२५	रु., दि.
५)	पाचवे वर्ष २०२५-२६	रु., दि.
६)	सहावे वर्ष २०२६-२७	रु., दि.
७)	सातवे वर्ष २०२७-२८	रु., दि.
८)	आठवे वर्ष २०२८-२९	रु., दि.
९)	नववे वर्ष २०२९-३०	रु., दि.
१०)	दहावे वर्ष २०३०-३१	रु., दि.

वरीलप्रमाणे १० वर्षांची एकूण ठेका रक्कम रु. /- इतकी राहिल.

फ) पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांनाकरिता आवश्यक अटी/शर्ती दोन्ही पक्षकारांना मान्य असून त्यां खालिलप्रमाणे आहे.

- १) ठेकेदाराची निविदा मंजूर झाल्यानंतर सदर प्रकल्पाकरिता आवश्यक असणारे परवाने मिळविणेसाठी (आवश्यक असल्यास) सहाय्यक आयुक्त मत्स्यव्यवसाय मदत करतील.
- २) पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्पासाठी देण्यात आलेल्या जलक्षेत्राचा ठेका, उपठेक्याने देण्याची परवानगी नाही. उपठेक्याने दिल्यास त्याचा ठेका रद्द करण्यात येईल व कोणतीही नुकसान भरपाई शासनाकडून दिली जाणार नाही.
- ३) ठेकेदारास सदरहु पिंजरा पध्दतीने मत्स्यसंवर्धन हे फक्त शासन मान्य मत्स्यबीजाकरीताच करता येईल. तिलापिया किंवा इतर प्रतिबंधित मत्स्यप्रजातीचे संवर्धन करता येणार नाही. शासन मान्य तिलापिया प्रजातीचे मत्स्यसंवर्धन करावयाचे असल्यास रितसर या करीता गठीत समितीची मान्यता घेण्यात यावी.
- ४) पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्प देण्यात आलेला ठेका ठेकेदारानी स्वतःच्या पिंजऱ्यामध्ये मत्स्यसंवर्धन करणे बंधनकारक राहिल. त्यांनी अधिकार नसताना खुल्या जलाशयामध्ये मासेमारी करू नये. तसे केल्यास त्यांचा ठेका रद्द करण्यात येईल. ज्या ठेकेदारास जलक्षेत्र ठेक्याने दिलेला आहे त्यास कोणतीही तक्रार करणेची संधी देण्यात येवू नये.
- ५) पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदाराने, त्यांच्या पिंजऱ्यावर काम करणाऱ्या कामगारास कामगार कायद्यांतर्गत किमान वेतनापेक्षा कमी वेतन अदा करण्यात येऊ नये.

पृष्ठ १८ पैकी १३

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- ६) ठेकेदाराने त्यांचे व त्यांच्या कामगारांच्या सुरक्षिततेच्या दृष्टीकोनातून पिंजरा प्रकल्पावर लाईफ सेविंग जॅकेट व इतर प्रथमोपचाराची साधने ठेवणे बंधनकारक राहिल.
- ७) ठेकेदाराने प्रकल्पाचे परिसरात बेकायदेशिररित्या कोणत्याही प्रकारचे अवैध कार्यक्रम करू नये. तसेच जलाशय प्रकल्पाच्या सुरक्षिततेत बाधा निर्माण होईल, असे कृत्य झाल्यास सदर पिंजरा पध्दतीचा ठेका रद्द करण्यात येईल.
- ८) ठेकेदारास मंजूर झालेल्या चौ. मी. जलक्षेत्रात जास्तीत जास्त ६x४x४ आकाराचे किंवा या संदर्भात शासन निर्गमित करेल त्या आदेशाप्रमाणे पिंजरा प्रकल्प बांधकामाची परवानगी राहिल.
- ९) केजच्या एका बॅटरीच्या चारही बाजूने विहित निकषाप्रमाणे आयुक्त मत्स्यव्यवसाय यांच्यामार्फत वेळोवेळी निर्गमित केलेल्या आदेशाप्रमाणे मोकळी जागा सोडणे आवश्यक राहिल.
- १०) पिंजरा मत्स्यसंवर्धनासाठी आवश्यक असलेले मत्स्यबीज, मत्स्यबोटुकली तयार करण्यासाठी निर्माण केलेल्या संगोपन तलावामध्ये बोटुकली गोळा करण्यासाठी आऊटलेट दरवाजे (Sluice Gate) बांधणे, मत्स्यजिऱ्यांची नियतकालिक देखभाल करणे, इ. संपूर्ण जबाबदारी ठेकेदाराची राहिल. तसेच प्रकल्प क्षेत्रावरील कर्मचारी यांचेसाठी शेड बांधकाम, स्वच्छता गृह बांधकाम इत्यादी तसेच इतर कोणतेही आवश्यक बांधकाम करण्याची जबाबदारी ठेकेदाराची राहिल याची नोंद घ्यावी.
- ११) जलक्षेत्र ठेक्याने घेतल्यानंतर संबंधीत ठेकेदाराने सहा महिन्यांच्या आत उत्पादन सुरु केले पाहिजे.
- १२) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना वापरण्यात येणारे मत्स्यखाद्य, औषधे व साहित्य सामुग्री यांची विहित नमुन्यात नोंदवही ठेवणे आवश्यक आहे. प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना प्रतिबंधित कंपनी/दर्जाची साहित्य, औषधे व मत्स्यखाद्य इ. वापरण्यात येवू नये.
- १३) पिंजरा मत्स्यसंवर्धनामध्ये संवर्धन केलेल्या मत्स्यप्रजाती बाबतच्या आयातीचा, संवर्धन, मरतुक व मत्स्योत्पादनाचा दैनिक अहवालाच्या नोंदी विहित नोंदवहीत ठेवण्यात याव्यात व त्याबाबतचा मासिक अहवाल संबंधित सहायक आयुक्त मत्स्यव्यवसाय कार्यालयात न चुकता सादर करावा.
- १४) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना प्रत्येक प्रकल्पावर जिवरक्षक साधने ठेवणे व त्याचा वापर करणे अनिवार्य राहिल.
- १५) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना पाण्याची गुणवत्ता वेळोवेळी तपासून त्याची नोंदवही ठेवणे आवश्यक राहिल. जलाशयाचे पाणी प्रदुषित होणार नाही याची दक्षता प्रकल्पधारकाने घेणे बंधनकारक राहिल.
- १६) सदर पिंजरा पध्दतीच्या प्रकल्पातील ठेकेदाराच्या वतीने मासे पकडणाऱ्या व्यक्तींना ओळखपत्र द्यावेत इतर कोणत्याही व्यक्तीस सदरहू प्रकल्पातील मासे पकडण्याची मुभा

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- अथवा परवानगी देऊ नये. त्याची नोंद वेळोवेळी सहायक आयुक्त मत्स्यव्यवसाय यांचेकडे करावी.
- १७) सदरहु ठेक्याची अंमलबजावणी करतांना मत्स्यव्यवसाय विभागाच्या सक्षम अधिकाऱ्यांनी वेळोवेळी दिलेल्या निर्देशांचे पालन करावे.
- १८) सदर पिंजरा पद्धतीच्या प्रकल्पाचा उपयोग फक्त मत्स्यपालनासाठी, मत्स्यसंवर्धनासाठी आणि मत्स्यव्यवसायासाठी करावा याशिवाय इतर कोणत्याही कारणसाठी करू नये.
- १९) कोणत्याही कारणामुळे सदरहु पिंजरा पद्धतीच्या प्रकल्पातील पाण्याची पातळी कमी अगर जास्त झाल्यास तसेच नैसर्गिक आपत्ती अगर अतिवृष्टीमुळे मासळीचे/मासेमारी साधनांचे/पिंजरा प्रकल्पाचे नुकसान झाल्यास शासन त्यास जबाबदार राहणार नाही. त्यामुळे कोणतेही नुकसान सोसावे लागल्यास त्याबद्दल कोणतीही नुकसान भरपाई अथवा मुदत वाढ निविदाधारकास शासनाकडून मागता येणार नाही.
- २०) सदरहु पिंजरा पद्धतीच्या प्रकल्पातील जलाशयाचे पाणी वापरण्याचा हक्क असलेल्या कोणत्याही व्यक्तीस ते पाणी वापरण्यास प्रतिबंध करू नये किंवा प्रकल्पातील पिण्याच्या पाण्यावर कोणत्याही प्रकारचा प्रतिकूल परिणाम होईल असे कृत्य करू नये. पिंजऱ्यातील पाण्यामध्ये प्राणवायु भरपूर राहिल याची खबरदारी ठेकेदाराने घ्यावी. तसेच इतर घटक तपासण्यासाठी यंत्रसामुग्री ठेवण्यात यावी.
- २१) शासनाच्या मालकीची जंगले, सदरहु जलाशयाचे किनारे, कुंपण, सांडवा व इतर मालमत्ता यांची कोणतेही नुकसान करू नये. सदरहु जलाशयाचे कोणतेही नुकसान झाल्यास सहायक आयुक्त मत्स्यव्यवसाय, किंवा सक्षम अधिकाऱ्याने ठरविल्या प्रमाणे शासनाकडे नुकसान भरपाई भरावी लागेल.
- २२) सदर पिंजरा पद्धतीच्या प्रकल्पातील अथवा लगतच्या भागात येणारे पशु, पक्षी यांची हानी किंवा शिकार करू नये. असे करून त्यांची मरतुक झाल्यास त्यास ठेकेदार सर्वस्वी जबाबदार राहिल व प्रकरणाचे गांभीर्य लक्षात घेऊन योग्य ती कायदेशीर कारवाई करण्यात येईल.
- २३) निविदा धारकाने पिंजरा पद्धतीच्या प्रकल्प घेतल्यानंतर प्रकल्पातील मासळी मेली किंवा चोरीस गेली व निविदाधारकास आर्थिक नुकसान झाले म्हणून कोठल्याही प्रकारच्या तक्रारीचा विचार केली जाणार नाही.
- २४) ठेकेदाराने पिंजरा पद्धतीच्या मत्स्य संवर्धन प्रकल्पाचे नुकसान होऊ नये म्हणून त्या साहित्याचा स्वखर्चाने विमा उतरविण्यात यावा. तसेच संपूर्ण प्रकल्पाचे वेळोवेळी सुरक्षा ऑडीट करणे बंधनकारक राहिल. तसेच प्रक्रीयामध्ये कार्यरत सर्व कामगार, कर्मचारी यांचा रितसर विमा उतरावा.
- २५) ठेकेदाराने प्रकल्पातील मत्स्यउत्पादनासंबंधीची आकडेवारी दरमहा सहायक आयुक्त मत्स्यव्यवसाय, प्रादेशिक उपआयुक्त मत्स्यव्यवसाय कार्यालयाकडे विहित प्रपत्रात पाठवावी. जर विहित स्वरूपाची माहिती निर्धारित कालावधीत न सादर केल्यास करारनामा रद्द करण्यात येईल. त्यामुळे होणाऱ्या आर्थिक नुकसानीस ठेकेदार स्वतः जबाबदार राहिल.

पृष्ठ १८ पैकी १५

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- २६) पिंजरा पद्धतीच्या प्रकल्पामध्ये बोटीचा उपयोग फक्त मासे वाहतुकीसाठीच करण्यात यावा. तसेच कोणत्याही प्रकारच्या बेकायदेशीर साहित्यांची वाहतूक करण्यात येऊ नये. बोटीचा उपयोग केवळ मासे/मत्स्यखाद्य व प्रकल्पामध्ये काम करणारे कामगार यांचे वाहतुकीसाठी रितसर संबंधित विभागाची परवानगी घेवून करावा. इतर कारणासाठी करता येणार नाही. जर तसा वापर करण्यात आल्यास त्याची संपूर्ण जबाबदारी ठेकेधारकाची राहिल. मासे वाहतुकीसाठी वापरण्यात येणाऱ्या बोटीतून प्रवासी वाहतूक करता येणार नाही. जर अशा बोट वाहतूकीमुळे कोणत्याही प्रकारच्या अपघात होऊन जिवित अथवा वित्तहानी झाल्यास त्याची संपूर्ण जबाबदारी सर्वस्वी ठेकेधारकाची राहिल व शासन अशा हानीबाबत व नुकसान भरपाई बाबत जबाबदार राहणार नाही.
- २७) पर्यटनासाठी बोटीचा वापर करण्यास सक्त मनाई आहे.
- २८) सदर पिंजरा पद्धतीच्या प्रकल्पाची अगर भागाची अकरमात हानी झाल्यास त्याहानीबद्दल नुकसान भरपाई देण्यास शासन जबाबदार असणार नाही याची जबाबदारी व नुकसान भरपाईची जबाबदारी ठेकेदाराची राहिल.
- २९) सदर पिंजरा पद्धतीच्या प्रकल्पासाठी जलक्षेत्राची ठेका रक्कम अथवा तिचा कोणताही भाग देय तारखेपासून ३० (तीस) दिवस थकलेला असेल तर तिचा औपाचारिकरित्या मागणी करण्यात आलेली असो वा नसो, अशी मागणी ही थकबाकी म्हणून धरली जाईल व त्यावर निविदाधारकास देय तारखेपासून २०% दंडनिय व्याज आकारण्यात येईल.
- ३०) ठेक्याची रक्कम देय तारखेपासून ६० (साठ) दिवसात भरणा न केल्यास कोणतेही कारण न देता सदर प्रकल्पाचा ठेका देण्याची मुदत आपोआप संपुष्टात येऊन ठेका रद्द समजण्यात येईल. तसेच सुरक्षा अनामत रक्कम जप्त करण्यात येईल.
- ३१) निविदाधारकास न्यायालयाकडून दिवाळखोर ठरविण्यात आल्यास अथवा त्याचा धंदा बंद करण्यात आला तर सदरहू ठेका रद्द करण्यात येईल.
- ३२) आपल्या कृत्यापासून निविदाधारकास मिळणारा फायदा दुसऱ्याच्या नांवे करून दिला तर किंवा पोट निविदाधारक नेमण्यात आला तर सदरहू ठेका हा रद्द करण्यात येईल.
- ३३) पिंजरा पद्धतीच्या प्रकल्पात मत्स्यबीज संवर्धन करण्यात आले नाही तर सदरहू ठेका हा रद्द करण्यात येईल.
- ३४) पिंजरा पद्धतीच्या प्रकल्पात जलक्षेत्राची ठेका रक्कम शासनाने सुचना देवून ही भरणा करण्यात आली नाही किंवा वर नमुद केलेल्या कोणत्याही अटीचा निविदाधारकाकडून भंग झाला किंवा मुदतीपूर्वी ठेका संपुष्टात आल्यास ठेक्याच्या ठरलेल्या मुदतीसाठी सदरहू प्रकल्पाचा ठेका दुसऱ्या कोणत्याही व्यक्तीस अगर सहकारी संस्थेस लिलावाने अथवा खाजगी कराराने देण्याचा हक्क शासनास आहे. त्यायोगे शासनास कोणतेही नुकसान सोसावे लागल्यास अशाप्रकारे सोसावे लागलेले नुकसान निविदाधारकाकडून नियमांप्रमाणे वसूल करण्यात येईल. सदरहू रक्कम आणि तत्सम येणे असलेली कोणतीही इतर रक्कम भरण्यास ठेकादाराने कसूर केल्यास शासनास उपलब्ध असलेल्या इतर उपाययोजनेस बाधा न येता सदरहू रक्कम जमीन महसुलाची थकबाकी म्हणून वसूल करण्यात येईल.

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- ३५) ठेकेदाराने पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्पास बाधा आणल्यास अथवा शासनासोबत केलेल्या करारनाम्यातील अटी व शर्तीचे पालन न केल्यास ठेका रद्द करण्यात आल्यास सुरक्षा अनामत रक्कम जप्त करण्यात येईल.
- ३६) निविदाधारकांनी निविदेमध्ये सादर केलेली माहिती कोणत्याही क्षणी खोटी असल्याचे आढळून आल्यास सादरहू करार रद्द करून अनामत/सुरक्षा रक्कम जप्त करण्यात येईल.
- ३७) सादरहू जलाशयातील मासे नष्ट होतील, आजारी पडतील किंवा त्यांना इजा पोहचेल अथवा ज्यामुळे सादरहू जलाशयातील पाणी दुषित किंवा खराब होईल, अशा कोणत्याही प्रकारचा घन, द्रव किंवा रासायनिक पदार्थ सादरहू जलाशयात टाकू नये किंवा जलाशयाचे पाणी खराब होईल असे कोणतेही कृत्य अथवा गोष्ट करू नये. परंतु मासे वाढीसाठी सकस आहार व शासनमान्य संबंधीत मासे संवर्धक औषधी तज्ञांच्या मार्गदर्शनानुसार वापरण्यास हरकत नाही. माशांना सकस आहार किंवा संवर्धक औषधी देतांना ते शासन प्रमाणित असावीत. तसेच त्याबाबत सहाय्यक आयुक्त मत्स्यव्यवसाय यांचेकडून पूर्वपरवानगी घेणे आवश्यक आहे.
- ३८) शासनाचा जलाशयावर पूर्ण ताबा असून करार मुदती मध्ये शासनामार्फत कार्यान्वित असलेली व कार्यान्वित होणारी कामे अबाधित राहतील. मग या करीता शासनास सादरहू ठेका मुदतपूर्वी संपुष्टात आणावा लागला तरी त्यास ठेकेदाराचा विरोध राहणार नाही.
- ३९) ठेकेदाराने सादरहू ठेका रितसर घेतल्यानंतर या संदर्भात कोणताही वादविवाद निर्माण झाल्यास त्याविषयी संबंधितांना प्रचलित शासन निर्णयानुसार विहित मुदतीत प्रधान सचिव (पदुम) यांचेकडे अपिल अर्ज तसेच मा. मंत्री (मत्स्यव्यवसाय) यांचेकडे पुनरिक्षण/पुनर्विलोकन अर्ज दाखल करता येईल.

वरील अटी व शर्ती आणि सुचना मी/आम्ही काळजीपूर्वक वाचल्या असून त्या निविदामधील अटी व शर्ती मला / आम्हाला मान्य आहेत.

महाराष्ट्र राज्याचे मा.राज्यपाल यांच्या वतीने मा., आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई यांनी सही करून आपल्या कार्यालयाच्या शिक्का वठवला आहे /प्रधिकृत अधिकारी, सहाय्यक आयुक्त मत्स्यव्यवसाय (तां.) यांनी शिक्का वठवला आहे.

शासन निर्णय क्रमांक: मत्स्यवि-२०१६/प्र.क्र. ९८/पदुम-१३

करारनामा करून घेणार/देणार

ठेकेदाराची स्वाक्षरी

नांव- श्री.

पत्ता-

.....

.....

प्राधिकृत अधिकारी

सहायक आयुक्त मत्स्यव्यवसाय

(तांत्रिक),.....

साक्षीदार

१) नांव- श्री.

स्वाक्षरी

पत्ता-

.....

.....

२) नांव- श्री.

स्वाक्षरी

पत्ता-

.....

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Email :- commfishmaha@gmail.com

Website :- http://fisheries.maharashtra.gov.in

जा.क्र.मत्स्य/भू/०२०१९६/१२०/२०१६/भाग-२

दिनांक :- ३०/०६/२०१७

कार्यालयीन आदेश क्र. १३

विषय :- राज्यातील मत्स्योत्पादनात वाढ करण्यासाठी पिंजरा पध्दतीने मत्स्यसंवर्धनासाठी २०० हेक्टर वरील जलाशयातील १% जलक्षेत्र ठेक्याने देणेबाबत.
वडिवळे (२३० हेक्टर), जि.पुणे

संदर्भ :- १) निविदा समितीची दि.०६/०६/२०१७ ची बैठक

२) निविदा प्रक्रिया जा.क्र.मत्स्य/भू/०२०१९६/१२०/२०१६/भाग-२, दि.०६/०५/२०१७

उपरोक्त संदर्भिय क्र.२ अन्वये निविदा प्रक्रियेनुसार राज्यातील मत्स्यउत्पादनात वाढ करण्यासाठी पिंजरा पध्दतीने मत्स्यसंवर्धनासाठी वडिवळे (२३० हेक्टर), जि.पुणे मधील १५०० चौ.मी. जलक्षेत्र ७ वर्ष ठेक्याने देण्याकरिता प्राप्त झालेली निविदा राज्यस्तरीय निविदा समितीसमोर दि.०६/०६/२०१७ रोजी उघडण्यात आल्या. यामध्ये श्रीमती वैदेही भूषण रणदिवे यांना ७ वर्षे भाडेपट्टीने देणेसाठीची समितीने मान्यता प्रदान केलेली आहे. निविदेतील ७ वर्षे ठेका रकमेचा तपशील खालीलप्रमाणे.

जलाशयाचे नांव : वडिवळे (२३० हेक्टर), जि.पुणे

न्यूनतम ठेका रक्कम रु.५०,०००/- प्रतिवर्ष

अ. क्र.	निविदाकाराचे नाव	रुपये
१	सन २०१७-१८ पहिले वर्ष	
२	सन २०१८-१९ दुसरे वर्ष	५०,०००/-
३	सन २०१९-२० तिसरे वर्ष	५१,०००/-
४	सन २०२०-२१ चौथे वर्ष	५१,५००/-
५	सन २०२१-२२ पाचवे वर्ष	५२,०००/-
६	सन २०२२-२३ सहावे वर्ष	५२,०००/-
७	सन २०२३-२४ सातवे वर्ष	५२,५००/-
	एकूण	५३,०००/-
		रु. ३,६२,०००/-

वडिवळे (२३० हेक्टर), जि.पुणे मधील १५०० चौ.मी. जलक्षेत्र ७ वर्ष पिंजरा मत्स्यसंवर्धनासाठी भाडेपट्टीने देण्याकरिता खालील प्रमाणे पूर्तता करण्यात यावी.

- सुरक्षा अनामत रकमेपोटी रु.११,०००/- चा डी.डी. ठेकेदाराने व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ, मुंबई यांचे नाव काढून प्रथम जमा करावा.
- पहिल्या वर्षाची ठेका रक्कम भरणा केल्यानंतर १५०० चौ.मी. जलक्षेत्र ठेक्याने देण्यासाठीचा करारनामा करून घ्यावा. सहायक आयुक्त मत्स्यव्यवसाय, पुणे यांना आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई यांच्या वतीने करार करणेसाठी प्राधिकृत करण्यात येत आहे.

(माहिद/बोर्डक)

आयुक्त मत्स्यव्यवसाय,

महाराष्ट्र राज्य, मुंबई

दि. ३०/०६/२०१७

प्रत :-

- श्रीमती वैदेही भूषण रणदिवे यांनी रु. ११,०००/- ची सुरक्षा अनामत रक्कम व पहिल्या वर्षाची ठेका रक्कम रु. ५०,०००/- महाराष्ट्र मत्स्योद्योग विकास महामंडळ मर्यादित, मुंबई यांचेकडे भरणा करावी.
- प्रादेशिक उपआयुक्त मत्स्यव्यवसाय, पुणे
- सहाय्यक आयुक्त मत्स्यव्यवसाय, पुणे यांना सुचित करण्यात येते की, उपरोक्त दोन्ही रकमा ठेकेदाराने भरणा केल्यानंतर सोबतच्या पत्रात नमूद केल्याप्रमाणे ठेकेदारासोबत विहित नमुन्यातील करार रु.२००/- च्या स्टॅम्प पेपरवर करून घ्यावा. कराराची छायाप्रत व केलेल्या कार्यवाहीचा अहवाल १५ दिवसात मुख्य कार्यालयास सादर करण्यात यावा.
- कार्यकारी अभियंता, पुणे पाटबंधारे विभाग, जि.पुणे यांना माहितीस्तव.
- व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ मर्यादित, मुंबई.



महाराष्ट्र शासन

आयुक्त मत्स्यव्यवसाय

यांचे कार्यालय तारापोरवाला मत्स्यालय, नेताजी सुभाष मार्ग, चर्नी रोड, मुंबई ४०० ००२

GOVERNMENT OF MAHARASHTRA

COMMISSIONER OF FISHERIES.

Taraporevala Aquarium, Netaji Subhash Road, Charni Road, Mumbai 400 002

Email :- commfishmaha@gmail.com

Website :- <http://fisheries.maharashtra.gov.in>

दिनांक :- १२/०९/२०१८

जा.क्र.मत्स्य/भू/०२०१०३/२९/२०१७

प्रति,

मा. व्यवस्थापकीय संचालक,

महाराष्ट्र मत्स्योद्योग विकास महामंडळ मर्यादित, मुंबई.

विषय :- पिंजरा पध्दतीने मत्स्यसंवर्धन करण्याबाबत धोरण २०० हेक्टर खालील जलाशयातील ०.५% जलक्षेत्र पिंजरा प्रकल्पासाठी ठेक्याने देणेबाबत. वडिवळे जलाशय जि.पुणे, व कडवा जलाशय जि.नाशिक जलाशयातील केज कल्चर, ठेका रक्कम / सुरक्षा अनामत रक्कम जमा करणेबाबत.

महोदय,

उपरोक्त विषयी आपणांस कळविण्यात येते की, वडिवळे जलाशय जि.पुणे, व कडवा जलाशय जि.नाशिक हे राज्यातील मत्स्योत्पादनात वाढ करण्यासाठी पिंजरा पध्दतीने मत्स्यसंवर्धन करण्याकरीता श्री.भारद्वाज यादवराव पगारे व सौ.सुनिता भारद्वाज पगारे, जानकी मु.संसरी, पो.देवळाली कॅम्प, ता.जि.नाशिक यांना कंत्राटी पध्दतीने चालविण्यास दिले आहे. सोबत कार्यालयीन आदेश माहितीस्तव सादर.

सादर केंद्राकरीता प्रथम वर्षाची ठेका रक्कम रु.५३,०२६/- (अक्षरी रु.त्रेपन्न हजार सव्वीस मात्र) व सुरक्षा अनामत रक्कम रु.११,०००/- (अक्षरी रु.अकरा हजार मात्र) श्री.भारद्वाज यादवराव पगारे व ठेका रक्कम रु.५२,५१२/- (अक्षरी रु.वाचन्न हजार पाचशे बारा मात्र) व सुरक्षा अनामत रक्कम रु.१४,०००/- (अक्षरी रु.चौदा हजार मात्र) सौ.सुनिता भारद्वाज पगारे यांनी घनादेशाद्वारे या कार्यालयास भरणे केली आहे. रक्कमेचे डिमांड ड्राफ्ट असे एकूण-४ मूळ डिमांड ड्राफ्ट या सोबत पाठविण्यात येत आहेत. पाठविण्यात येत असलेल्या डिमांड ड्राफ्टचा तपशील खालीलप्रमाणे.

अ क्र	निविदा धारकाचे नाव	जलाशय	सुरक्षा अनामत रक्कम	ठेका रक्कम भरल्याचा D.D.चा तपशिल		ठेका रक्कम	सुरक्षा अनामत भरल्याचे D.D. चा तपशिल	
				क्रमांक	दिनांक		क्रमांक	दिनांक
१.	श्री.भारद्वाज यादवराव पगारे	वडिवळे जि.पुणे,	११,०००/-	३८०५९६	१२/०९/२०१८	५३,०२६/-	३८०५९४	१२/०९/२०१८
२.	सौ.सुनिता भारद्वाज पगारे	कडवा जि.नाशिक	१४,०००/-	३८०५९५	१२/०९/२०१८	५२,५१२/-	३८०५९३	१२/०९/२०१८

आपला

(अजिंथ्य पाटील)

(अजिंथ्य पाटील)

सहाय्यक आयुक्त मत्स्यव्यवसाय,
(मत्स्यबीज), मुंबई.

सहपत्र :- डिमांड ड्राफ्ट-४

Recd
 12-09-2018

Maharashtra Fisheries Development Corporation Ltd., Mumbai

महाराष्ट्र शासन
आयुक्त मत्स्यव्यवसाय,
यांचे कार्यालय तारापोरवाला मत्स्यालय, नेताजी सुभाष रोड, चर्मी रोड, मुंबई-४०० ००२.
GOVERNMENT OF INDIA
COMMISSIONER OF FISHERIES,
Office the Taraporewala Aquarium, Netaji Subhash Road, Charni Road, Mumbai-400 002.
Email :- commfishmaha@gmail.com Website :- <http://fisheries.maharashtra.gov.in>
दिनांक :- ०६/०९/२०१८

जा.क्र. मत्स्य/भू/०२०११६/१२०/७९६/(१०)/२०१६ भाग-३

प्रति
सहाय्यक आयुक्त मत्स्यव्यवसाय,

पुणे/नाशिक

विषय :- राज्यातील मत्स्योत्पादनात वाढ करण्यासाठी पिंजरा पध्दतीने मत्स्यसंवर्धनासाठी २०० हेक्टर वरील जलाशयातील १% व २०० हेक्टर खालील जलाशयातील ०.५% जलक्षेत्र ठेक्याने देणेबाबत.

- संदर्भ :- १) निविदा क्र.मत्स्य/भू/०२०११६/१२०/२०१६, भाग -३ दि.२३/०२/२०१८
२) निविदा क्र.मत्स्य/भू/०२०११९/१४९/२०१८, दि.१६/०३/२०१८
३) निविदा समितीची दि.०४/०६/२०१८ व दि. २४/०७/२०१८, ची बंटक.

उपरोक्त विषयी आपणांस कळविण्यात येते की, सोबतच्या प्रपत्रातील अ.क्र. १ ते ४५ प्रकल्पधारकांना १५०० चौ.मी. /७५० चौ.मी. जलक्षेत्र हे दि.०१/०९/२०१८ पासून पुढील ७ वर्ष (३१/०८/२०२५) व ८ वर्षांकरिता (३१/०८/२०२६).पर्यंत पिंजरा पध्दतीने मत्स्यसंवर्धन करण्यासाठी ठेक्याने देण्यात आले आहे. त्याबाबत करावयाच्या करारपत्राची प्रत सोबत पाठविण्यात येत आहे. करारावर आयुक्त मत्स्यव्यवसाय यांचे वतीने स्वाक्षरी करण्यासाठी संबंधित जिल्ह्याचे सहाय्यक आयुक्त मत्स्यव्यवसाय यांना प्राधिकृत करण्यात येत आहे. संबंधित जिल्ह्याचे सहाय्यक आयुक्त मत्स्यव्यवसाय यांनी त्याप्रमाणे स्वाक्षरी करावी व त्याप्रमाणे केलेल्या करारपत्राची छायाप्रत मुख्य कार्यालयास सादर करावी. तसेच खालीलप्रमाणे सूचनांचे पालन संबंधित प्रकल्पधारका कडून करून घ्यावे.

- १) करारपत्रातील अटी व शर्तीचे पालन होईल याची खबरदारी घ्यावी.
- २) कराराच्या कार्यवाहीमध्ये संबंधित जलाशयाचे कार्यकारी अधियंता, पाटबंधारे विभाग, अथवा त्यांचे प्रतिनिधी यांची मदत घ्यावी. साक्षीदार म्हणून त्यांच्या स्वाक्षऱ्या घ्याव्यात.
- ३) प्रत्येक प्रकल्पधारकास त्यास मंजूर झालेल्या एका बॅटरीसाठी २०० हेक्टर वरील जलाशयामधील १५०० चौ.मि. जलक्षेत्रात जास्तीत ६X४X४ आकाराचे ४८ पिंजरे बांधकामाची परवानगी राहिल. तसेच २०० हेक्टर खालील जलाशयामधील एका बॅटरीसाठी ७५० चौ.मि.जलक्षेत्रात जास्तीत जास्त ६X४X४ आकाराचे २४ पिंजरे बांधकामाची परवानगी राहिल.
- ४) मंजूर करण्यात आलेल्या ४८/२४ केजच्या एका बॅटरीच्या चारही बाजूने विहित निकषाप्रमाणे मोकळी जागा सोडणे आवश्यक राहिल.
- ५) पिंजरा मत्स्यसंवर्धनासाठी आवश्यक असलेले मत्स्यबीज, मत्स्यबोटुकली तयार करण्यासाठी निर्माण केलेल्या संगोपन तलावामध्ये बोटुकली गोळा करण्यासाठी आऊटलेट दरवाजे (Sluice Gate) बांधणे. मत्स्यजिन्यांची नियतकालिक देखभाल करणे, इ. संपूर्ण जबाबदारी ठेकेदाराची राहिल. तसेच प्रकल्प क्षेत्रावरील कर्मचारी यांचेसाठी शेड बांधकाम, स्वच्छता गृह बांधकाम इत्यादी तसेच इतर कोणतेही आवश्यक बांधकाम करण्याची जबाबदारी ठेकेदाराची राहिल याची नोंद घ्यावी.
- ६) जलक्षेत्र ठेक्याने घेतल्यानंतर संबंधित ठेकेदाराने सहा महिन्यांच्या आत उत्पादन सुरु केले पाहिजे.

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- ७) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना वापरण्यात येणारे मत्स्यखादय, औषधे व मार्गदर्शक सामग्री यांची विहित नमुन्यात नोंदवही ठेवणे आवश्यक आहे.
- ८) पिंजरा मत्स्यसंवर्धनामध्ये संवर्धन केलेल्या मत्स्यप्रजाती बाबतच्या आघातांचा, संवर्धन प्रकल्प व मत्स्यउत्पादनाचा दैनिक अहवालाच्या नोंदी नोंदवहीत ठेवण्यात याव्यात व त्याबाबतचा मार्गदर्शक अहवाल संबंधित सहायक आयुक्त मत्स्यव्यवसाय कार्यालयात न चुकता सादर करावा.
- ९) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना प्रत्येक प्रकल्पावर जिवरक्षक साधने ठेवणे व त्याचा वापर करणे अनिवार्य राहिल.
- १०) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना पाण्याची गुणवत्ता वेळोवेळी तपासून त्याची नोंदवही ठेवणे आवश्यक राहिल. जलाशयाचे पाणी प्रदुषित होणार नाही याची दक्षता प्रकल्पधारकाने घेणे बंधकारक राहिल.
- ११) संबंधित प्रकल्पाची आवश्यकतेनुसार पाहणी/तपासणी मत्स्यव्यवसाय विभागाच्या अधिकाऱ्या मार्फत वेळोवेळी करण्यात येईल.
- १२) राज्यातील मत्स्यउत्पादनात वाढ करण्यासाठी पिंजरा पध्दतीने मत्स्यसंवर्धन करण्याबाबतच्या शासन निर्णय क्र.मत्स्यवि-२०१६/प्र.क्र.९८/पदुम-१३, दि.१७ ऑक्टोबर, २०१६ व शासन निर्णय क्र.मत्स्यवि-२०१६/प्र.क्र.९८/पदुम-१३, ९ मार्च, २०१८ च्या अटी, शर्ती व मार्गदर्शक सूचनाप्रमाणे कार्यवाही करावी. वरीलप्रमाणे कार्यवाही करून केलेल्या कार्यवाहीचा अहवाल उलट-टपाली सादर करावा.

सहपत्र: वरीलप्रमाणे

स्थळप्रतिवर मा.आयुक्त महोदयांची स्वाक्षरी आहे.



(अर्जक्य वि.पाटील)

सहाय्यक आयुक्त मत्स्यव्यवसाय, (मत्स्यबीज)
महाराष्ट्र राज्य, मुंबई.

प्रत :-

- १) प्रादेशिक उपआयुक्त मत्स्यव्यवसाय, मुंबई /पुणे/ नाशिक/ औरंगाबाद/अमरावती/ लातूर
- २) कार्यकारी अभियंता, जलाशय
- ३) व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ मर्यादित, मुंबई.
- ४) समीर शिंदे, १२४ तथास्तु हनुमान कॉलनी, वासिंद (पूर्व), जवळ शहापूर, ठाणे-४२१६०४
- ५) इंडेपेस्का अॅक्वाकल्चर प्रा.लि., पहिला मजला, टॉवर-१, कर्मीशियल-२, कोहिनूर सिटी, किरोळ रोड, समोर एलबीएस, कुर्ला (पश्चिम), मुंबई-४०००७०.
- ६) मे.जी.एस.के. फिशरीज, ए-४४४, रोड नं.३७, समोर रोड नं.२८, जवळ रबर प्रॉडक्ट्स कंपनी, रामनगर वागळे इस्टेट, ठाणे (पश्चिम)-४००६०४.
- ७) श्री.संतोष महादेव सकपाळ, मु.सती, पो.पिंपळी, ता.चिपळून, जि.रत्नागिरी.
- ८) श्री.गौरव मंगेश पंडीत, पंडीतवाडी, मु.पो.सोलगांव, ता.राजापूर, जि.रत्नागिरी.
- ९) श्री.भारद्वाज यादवराव पगारे, मु.संसरी गांव, पो.देवळातनी कॅम्प, जि.नाशिक.
- १०) मे.रोहन एन्टरप्रायजेस, शैलेश टॉवर, फ्लॅट नं.३, औधगांव, पुणे-४११००७.
- ११) श्री.संकेत रामदास भोसले, फ्लॅट नं.६०४, बॉटर्स एज, पिंपळे-निलख, पुणे-४११०२७.
- १२) श्री.अभिनव विरेंद्र सक्सेना, सी-१९ कोणार्क स्फेंडर, वडगावशेरी, पुणे-१४
- १३) श्रीमती ज्योती नितीन भुजबळ, एल-२, २०४ ब्रम्हा सन सिटी, वडगावशेरी, पुणे.
- १४) श्री.गौरव शंकर शर्मा, ए-१, ३०२, खराडी, पुणे.
- १५) श्री.महमद मक्सुद अन्सारी, जी-७०६, पिंपळे सौदागर, पुणे.
- १६) श्री.नितीन गोविंद भुजबळ, एल-२, २०४ ब्रम्हा सन सिटी, वडगावशेरी, पुणे.
- १७) श्रीमती दिव्या गौरव शर्मा, ए-१, ३०२, खराडी, पुणे.

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D:\New Cage Culture-2017-18 (Part-4)\Cage culture (1% to 5%) -work order (Recovered) doc

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Annexure-VI

USE OF CHEMICALS IN AQUACULTURE

Inorganic Fertilizers

Chemical	Purpose	Dose (Kg/ha)	Remark
Nitrogen:			
Urea (H_2NCONH_2) (Kg/ha)	Fertilization	150-300	Applied alternately with organic manure at 15-d interval
Ammonium sulphate ($(NH_4)_2SO_4$)		300-600	
Sodium nitrate ($NaNO_3$), potassium nitrate (KNO_3) and calcium nitrate ($Ca(NO_3)_2$)		20-30	
Phosphorus:			
Triple superphosphate	Fertilization	50-150	Applied alternately with organic manure at 15-d interval
Single super phosphates		150-400	
Mono and di ammonium phosphates		5-10	
Phosphoric acid		5-10	
Other:			
Potassium chloride or muriate of potash (KCl)	Fertilization	1-2	1-4 weeks interval
Sodium silicate (Na_2SiO_3)		1-5	2 weeks interval
Fertilizer enhancers (e.g., Humate, Nutrisphere-N)		10-100	1 Month interval

Soil and Water treatment

Chemical	Purpose	Dose	Remark
Liming material:			
Agricultural limestone (pulverized $CaCO_3$)	Correcting pH	380-1690	Dose depend on the pH of soil and water
Burnt lime (CaO or $CaO \cdot MgO$)		270-1130	
Hydrated lime ($Ca(OH)_2$ or $Ca(OH)_2 \cdot Mg(OH)_2$)		340-1610	
Oxidants:			
Potassium permanganate ($KMnO_4$)		2-8 ppm/ha	

Hydrogen peroxide (H ₂ O ₂) or calcium peroxide (CaO ₂)	controlling phytoplankton, killing disease organisms, or oxidizing bottom soils	Upto 100 kg/ha	Hypochlorite can form carcinogenic compounds trihalomethanes (THMs) and chlorinated hydrocarbons during oxidation of organic matter.
Calcium hypochlorite (Ca(OCl) ₂)		30 ppm before stocking 0.1 ppm if animals	
Sodium, potassium, or calcium nitrate (NaNO ₃ , KNO ₃ , or Ca(NO ₃) ₂)		5-10 ppm	
Coagulants:			
Aluminum sulfate or alum (Al ₂ (SO ₄) ₃ ·18H ₂ O)	Reduces turbidity	15-40 ppm	Applied before manuring
Ferric chloride (FeCl ₃)		15-40 ppm	
Calcium sulfate or gypsum (CaSO ₄ ·2H ₂ O)		250-500 ppm	
Soil reformers:			
Sulfurbacter	Reduces soil pH	75-120 kg/ha	Applied in wet soil and sun dried 2-3 d Dose depends on soil
Health stone/zeolite	Reactivates soil/promotes algal growth/absorbs fouling materials	250-1000 kg/ha 250-1000 kg/ha	

Algicides and herbicides

Chemical	Purpose	Dose	Remark	
Copper sulfate (CuSO ₄ ·2H ₂ O)	To reduce the abundance of nuisance aquatic plants and phytoplankton	0.5-2 ppm	Used as Algicides	
Chelated copper compounds		0.2-1 ppm		
Simazine (C ₇ H ₁₂ ClN ₅ ; 1,3,5-triazine herbicide)		0.25-1 ppm		
Potassium ricinoleate (KC ₁₈ H ₃₄ O ₃)		0.25-1 ppm	Emergent weeds	
2,4-D		5-10 kg/ha		
Diuron (3-(3,4-dichlorophenyl)-1,1-dimethylurea)		10-15 kg/ha		Submerged weeds
Ammonia		1-2% aq. Soln.		Floating weeds
Paraquat (N,N'-dimethyl-4,4'-bipyridinium dichloride)	0.2 kg/ha	Floating weeds		

Piscicides

Chemical	Purpose	Dose	Remark
Teaseed cake (10 -15 % saponin)	To kill unwanted fishes and other aquatic animals	75- 100 ppm	
Mahua oil cake (4 -6 % saponin)		200-250 ppm	
Derris root powder (5% Rotenone)		5-10 ppm	
Calcium hydroxide + Ammonium sulfate		10 ppm	Applied in 1: 4 ratio
Bleaching powder		150-250 Kg/ha	
		Not advisable	High residual toxicity
Chlorinated hydrocarbons			
Ammonium fertilizer		0.01 kg of urea/ m ³	

Disinfectants

Chemical	Purpose	Dose	Remark
Bleaching powder/Bleach liquor	Disinfection	25-30 ppm	Toxicity lasts 7-8 d
Quaternary ammonium		1 (soft water) – 4 (hard water) ppm	Non-corrosive, inactivated by normal soaps
Iodine		1-2 ppm	Toxic (Elemental I ₂)
Ozone		3 ppm	Degrade rapidly
Formalin		15-25 ppm	Half-life is about 2-3 days (longer in non-aerated water)
Potassium permanganate (KMnO ₄)		1-5 ppm	

Chemotherapeutants

Chemical	Purpose	Remark
Antibacterial agents:		
Nitrofurans (Furazolidone)	Antibacterial and anti protozoal	Treatment through feed
Macrolides	Gram positive bacteria	Erythromycin the only macrolide used in fish farming

Phenolics (Chloramphenicol, thiamphenicol and florphenicol)	Antibacterial (Broad spectrum antibiotic)	Banned in Aquaculture
4- Quinolones	Antibacterial (Broad spectrum antibiotic)	Quinolones inhibit the bacterial enzyme DNA-gyrase which results in breaks in the DNA
Sulphonamides (Trimethoprim and ormetoprim)	Antibacterial (Broad spectrum antibiotic)	Immersion feasible as absorbed through gills
Tetracyclines (Oxytetracyclin and chlorotetracycline)	Antibacterial (Broad spectrum antibiotic)	OTC cheaper than other antibacterial agents
Other than Antibacterial agents:		
Acriflavine	Antibacterial and for external protozoan	Mixture of euflavine and proflavine
Copper compounds (Aquatrine)	External protozoan and filamentous bacterial disease in shrimps	Induce molting in shrimps by reducing cuticular fouling by filamentous bacteria
Dimetridazole/metronidazole	Antiprotozoal	Favored more strongly by aquarium trade
Formalin	Antifungal and ectoparasites	Global use. Most often in hatchery systems.
Malachite green	Antiprotozoal and antifungal	Principally used in hatcheries
Methylene blue	Antifungal and antiprotozoal	-
Ivermectin	Ectoparasites	-
Potassium permanganate (KMnO ₄)	Antifungal	-
Trifluralin (Treflan)	Antifungal	Used in hatcheries
Malathion/Dichlorvos (Nuvan)	Ectoparasites	-

ANNEXURE- VII

USE OF CHEMICALS IN AQUACULTURE

Inorganic Fertilizers

Chemical	Purpose	Dose (Kg/ha)	Remark
Nitrogen:			
Urea (H_2NCONH_2) (Kg/ha)	Fertilization	150-300	Applied alternately with organic manure at 15-d interval
Ammonium sulphate ($(NH_4)_2SO_4$)		300-600	
Sodium nitrate ($NaNO_3$), potassium nitrate (KNO_3) and calcium nitrate ($Ca(NO_3)_2$)		20-30	
Phosphorus:			
Triple superphosphate	Fertilization	50-150	Applied alternately with organic manure at 15-d interval
Single super phosphates		150-400	
Mono and di ammonium phosphates		5-10	
Phosphoric acid		5-10	
Other:			
Potassium chloride or muriate of potash (KCl)	Fertilization	1-2	1-4 weeks interval
Sodium silicate (Na_2SiO_3)		1-5	2 weeks interval
Fertilizer enhancers (e.g., Humate, Nutrisphere-N)		10-100	1 Month interval

Soil and Water treatment

Chemical	Purpose	Dose	Remark
Liming material:			
Agricultural limestone (pulverized $CaCO_3$)	Correcting pH	380-1690	Dose depend on the pH of soil and water
Burnt lime (CaO or $CaO \cdot MgO$)		270-1130	
Hydrated lime ($Ca(OH)_2$ or $Ca(OH)_2 \cdot Mg(OH)_2$)		340-1610	
Oxidants;			
Potassium permanganate ($KMnO_4$)		2-8 ppm/ha	

Hydrogen peroxide (H ₂ O ₂) or calcium peroxide (CaO ₂)	controlling phytoplankton, killing disease organisms, or oxidizing bottom soils	Upto 100 kg/ha	Hypochlorite can form carcinogenic compounds trihalomethanes (THMs) and chlorinated hydrocarbons during oxidation of organic matter.
Calcium hypochlorite (Ca(OCl) ₂)		30 ppm before stocking 0.1 ppm if animals	
Sodium, potassium, or calcium nitrate (NaNO ₃ , KNO ₃ , or Ca(NO ₃) ₂)		5-10 ppm	
Coagulants:			
Aluminum sulfate or alum (Al ₂ (SO ₄) ₃ ·18H ₂ O)	Reduces turbidity	15-40 ppm	Applied before manuring
Ferric chloride (FeCl ₃)		15-40 ppm	
Calcium sulfate or gypsum (CaSO ₄ ·2H ₂ O)		250-500 ppm	
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Health stone/zeolite	Reactivates soil/promotes algal growth/absorbs fouling materials	250-1000 kg/ha 250-1000 kg/ha	

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Simazine (C ₇ H ₁₂ ClN ₅ ; 1,3,5-triazine herbicide)		0.25-1 ppm	
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2,4-D		5-10 kg/ha	Emergent weeds
Diuron (3-(3,4-dichlorophenyl)-1,1-dimethylurea)		10-15 kg/ha	Submerged weeds
Ammonia		1-2% aq. Soln.	Floating weeds
Paraquat (N,N'-dimethyl-4,4'-bipyridinium dichloride)	0.2 kg/ha	Floating weeds	

Piscicides

Chemical	Purpose	Dose	Remark
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Derris root powder (5% Rotenone)		5-10 ppm	
Calcium hydroxide + Ammonium sulfate		10 ppm	Applied in 1: 4 ratio
Bleaching powder		150-250 Kg/ha	
		Not advisable	High residual toxicity
Chlorinated hydrocarbons			
Ammonium fertilizer		0.01 kg of urea/ m ³	

Disinfectants

Chemical	Purpose	Dose	Remark
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Formalin		15-25 ppm	Half-life is about 2-3 days (longer in non-aerated water)
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Chemotherapeutants

Chemical	Purpose	Remark
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Malachite green	Antiprotozoal and antifungal	Principally used in hatcheries
Methylene blue	Antifungal and antiprotozoal	-
Ivermectin	Ectoparasites	-
Potassium permanganate (KMnO ₄)	Antifungal	-
Trifluralin (Treflan)	Antifungal	Used in hatcheries
Malathion/Dichlorvos (Nuvan)	Ectoparasites	-

Item No. 03

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 80/2020 (WZ)

Vanashakti & Anr.

Applicant(s)

Versus

State of Maharashtra & Ors.

Respondent(s)

Date of hearing: 31.05.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant(s): Mr Zaman Ali, Advocate

ORDER

1. Grievance in this application is against unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra. Particular grievance has been raised in the context of permission granted in favour of respondent no. 7, Vaidehi Randive in Vadivale Lake in Village Valavanti on the Kamshet-Kundali Road in Maval Taluka, near Village Kamshet, in Pune District, by the Commissioner of Fisheries. Government of Maharashtra.

2. The applicants have assailed the impugned permission as being against the "Precautionary" and "Sustainable Development" principles. Aquaculture activities, with modern techniques involve use of harmful chemicals. In the process, such chemicals are and released in the lakes and other water bodies concerned. In the present case, permission has been given for aquaculture activities in *Vadivale* Lake in Pune District. The

lake is a source of drinking water to the nearby villages. Outfall of the lake is in the Indrayani River which is source of drinking water for 28 villages.

3. The applicant has referred to the policy decisions of the Fisheries Department, Government of Maharashtra to submit that the same does not consider environmental aspects. They consider only financial aspects. Reference is made to GO dated 15.10.2001 for permitting fishing in lakes of the size above 200 hectares. It does not consider harmful impact of discharge of harmful chemicals, poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics etc., that are key to aquaculture farming. The applicants have also referred to the Coastal Aquaculture Authority Act, 2005 to regulate coastal aquaculture in coastal areas enacted in the light of the Judgment of the Hon'ble Supreme Court in *S. Jagannath v. Union of India* [(1997) 2 SCC 87]. Under the said Act, environmental safeguards are laid down for permitting aquaculture in coastal areas. However, there are no safeguard laid down for permitting such activities in inland waters. The applicant has relied upon a report of the National Bank for Agriculture and Rural Development (NBARD), Mumbai, under the title "The Use of Chemicals in Aquaculture in India". Further reference has been made to the guidelines framed by the Ministry of Fishing, Government of India titled "Guidelines for Cage Culture in Inland Open Water Bodies of India" noticing the environmental facts arising out of such activities in open water bodies. Further reference is made to the study conducted by the Madras University titled "Environment and Social Conflicts of Aquaculture in Tamil Nadu and Andhra Pradesh." The applicants have submitted that 2005 Act should apply to all aquaculture activities. It is stated that adverse impact of aqua culture activities in *Vadivale* Lake has been found in a report titled "Assessment

5. Since we have not found it necessary to issue notice having regard to the nature of the order, we give liberty to the respondents to move this Tribunal in case they are aggrieved.

The application is disposed of.

A copy of this order be forwarded to the MoEF&CC, the CPCB, the Maharashtra State PCB, the Ministries of Fishing, Govt. of India and Maharashtra Govt. and Central Inland Fisheries Research Institute by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

M. Sathyanarayanan, JM

Brijesh Sethi, JM

Dr. Nagin Nanda, EM

May 31, 2021
Original Application No. 80/2020 (WZ)
SN

of Water Quality Index of Indrayani River, Alandi, Pune” published in 2018 in International Journal of Science, Engineering and Technology Research.

4. We have given due consideration to the issue raised. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six-member expert Committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional Officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process.

F. No. IA3-3/32/2023-IA.III (E-209560)
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan
Aliganj, Jor Bagh Road
New Delhi – 110003

Date: 13th June, 2023

To

Joint Secretary (Inland Fisheries and Administration)
Department of Fisheries
Room No. 482
Krishi Bhawan, New Delhi – 110001
Email: sagar.mehra@nic.in

Subject: Directions of the Hon'ble NGT(WZ) in EA No. 12 in OA No. 80 of 2020 titled Vanashakti & Anr. Vs State of Maharashtra & Ors – seeking inputs reg.

Sir,

This is in reference to the Order of the Hon'ble Tribunal on 27/02/2023 (*annexed herewith*) in EA No. 12 of 2022 titled Vanashakti & Anr. Vs State of Maharashtra & Ors wherein it has been inter-alia directed that,

“MoEF&CC shall consider bringing the cage aquaculture under the Environment Impact Assessment Regime, particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake”

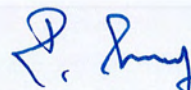
2. In the above referred main matter, the Hon'ble NGT vide Order dated 31/05/2021(*annexed herewith*) has constituted a six-member Expert Committee comprising Regional Officer, MoEF&CC, Regional Officer, CPCB, the Maharashtra State PCB, Ministry of Fishing and Maharashtra State and the Central Inland Fisheries Research Institute to examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated and look into the consent regime under the Water Act, 1974.

3. The Committee vide its report (*annexed herewith*) had recommended that there is a need to conduct a study by reputed institutes in the field of fisheries and environment over a period of time considering the sizes of cage culture, cage culture area, fish types, area of lake/reservoir, its water quality, other sources of pollution, discharges, etc. to study respective environmental impacts. The study will help in regulating inland open waters usage for cage culture in terms of reservoir sizes, fish species, cage sizes & nos., water quality, types of feeds/chemicals/drugs to be prohibited/allowed, discharges, environmental impacts & measures to be taken, etc without affecting water quality & eco-system. The study may be coordinated by MOFAH&D in consultation with MoEF&CC and CPCB.

4. In view of the above, it is kindly requested that the study may be conducted at the earliest and inputs/comments may be provided as to whether there is a requirement to bring cage aquaculture under the ambit of EIA Notification, 2006, *particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake.*

5. This is issued with approval of Competent Authority.

Encl: as above


13/02/23
(Sundar Ramanathan)
Scientist 'E'

Copy for information to:


1. Senior PPS, JS(SKB)
2. Guard File

Email

sharmishtha.shukla@govcontractor.in

Reminder 1. Directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr Vs. State of Maharashtra & Ors-Seeking inputs

From: sharmishtha.shukla <sharmishtha.shukla@nic.in> Tue, Oct 31, 2023 04:31

Subject: Reminder 1. Directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr Vs. State of Maharashtra & Ors-Seeking inputs regarding 

To: Sagar Mehra <sagamehra@nic.in>, Joint Secretary Inland <js-inland@do.gov.in>

Cc: Sundar Ramanathan <sundar@nic.in>, D.Marcus Knight <m.knight@gov.in>

Reply To: sharmishtha.shukla <sharmishtha.shukla@nic.in>

Sir,

Please refer to the trailing mail. In this regard, it is to inform you that the MoEF&CC has not received the comments on your behalf regarding the directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr vs. State of Maharashtra & Ors., as sought by the MoEF&CC vide OM dated 13/06/2023 (*enclosed herewith*). Further, the undersigned has been directed to request you to provide your comments at the earliest for taking further necessary action in the matter.

Thanking you

Your sincerely

Sharmishtha Shukla

LEGAL ASSOCIATE (POLICY)

Ministry of Environment, Forest and Climate Change

Government of India,

Indira Parayavaran Bhawan

Jor Bagh Road, Aliganj,

New Delhi Pin-110003

From: "UNTUN KUMAR SINGH" <tk.singh@gov.in>

To: "Sagar Mehra" <sagar.mehra@nic.in>

Cc: "Sujit Kumar Bajpayee" <sujit.baju@gov.in>, "Sundar Ramanathan" <r.sundar@nic.in>, "J.D.Marcus Knight" <m.knight@gov.in>, "sharmishtha shukla" <sharmishtha.shukla@nic.in>

Sent: Tuesday, June 13, 2023 5:37:56 PM

Subject: Directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr Vs. State of Maharashtra & Ors-Seeking inputs regarding

Respected Sir(s)/Madam

I am directed to forward herewith the letter No. IA3-3/32/2023-IA.III dated 13/06/2023 alongwith Annexures regarding Directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr Vs. State of Maharashtra & Ors-Seeking inputs please

regards

{P}
{SEP}

TK SINGH

Assistant Section Officer

CRZ SECTOR, IA.III SECTION

Ministry of Environment, Forests and Climate Change

Indira Paryavaran Bhawan, Jorbagh Road,

New Delhi-110003

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 **Annexure 2-Committee Report.pdf**

6 MB

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 **Annexure 1-order dated 27-02-2023 and 31-05-2021.pdf**

10 MB

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 **IA3-3-32-2023-IAIII dated 13-06-2023.pdf**

4 MB

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{SEP}



Case Title	Vanashakti Vs. STATE OF MAHARASHTRA
Miscellaneous No.	2704138006722022/5
Transaction id	2700410155362023
Bank Transaction id	1412230027337
Payment Date	2023-12-14 00:00:00.0
Amount	830 Rs.
Status	SUCCESS

S. No.	File Name	Party Name	Location	Document Type
1	EA No 12 of 2022 Status Report MOEF.pdf	Ministry of Environment Forest and Climate Change	PUNE (WESTERN ZONE BENCH)	Reports

BEFORE THE NATIONAL GREEN TRIBUNAL

WESTERN BENCH AT PUNE

E.A. No. 12 of 2022 in O.A. No. 80 of 2020

IN THE MATTER OF:-

VANSHAKTI & ANR.

.... APPLICANT(S)

VERSUS

STATE OF MAHARASHTRA & ORS.

...RESPONDENT(S)

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Rahul Garg

Counsel for MoEF&CC

PLACE: PUNE

DATE: 14/12/2023

Status Report in Compliance to Hon'ble NGT order dated 27.02.2023 in E.A. no. 12 of 2022 in O.A. No. 80 of 2020- Vanashakti & Anr. Vs State of Maharashtra & Ors before the Hon'ble National Green Tribunal, (WB) at Pune.

A. Introduction-

The applicants filed OA No. 80 of 2020 titled Vanashakti & Anr. Vs State of Maharashtra & Ors. against unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra particularly against the permission granted by the Commissioner of Fisheries, Government of Maharashtra for aquaculture activities in Vadivale Lake in Pune District, Maharashtra.

1. Hon'ble NGT orders-

i. The Hon'ble NGT vide Order dated 31.05.2021 constituted a six-member Expert Committee comprising Regional Officer, MoEF&CC, Regional Officer, CPCB, the Maharashtra State PCB, Ministry of Fishing and Maharashtra State and the Central Inland Fisheries Research Institute to examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated and look into the consent regime under the Water Act. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures.

The copy of aforesaid NGT order dated 31.05.2021 is marked and annexed at **Annexure-1**.

ii. Accordingly, an expert committee report has been submitted by CPCB on 10.01.2023 wherein the committee has made the following recommendations which inter-alia include-

I. There is need to regulate cage aquaculture under consent mechanism of the Water (Prevention and Control of Pollution) Act, 1974. Also MoEF&CC may deliberate the requirement of prior Environmental Impact Assessment in view of the suggestion made by NFDB. However, such consent mechanism and EIA requirement may be regulated categorising nos. & sizes of cage aquaculture, fish types, area of lake/reservoir, its water quality, other sources of pollution, surface runoff meeting with the reservoir etc. as per findings of study as mentioned in subsequent paragraphs.

II. There is a need to conduct a study by reputed institutes in the field of fisheries and environment over a period of time considering the sizes of cage culture, cage culture area, fish types, area of lake/reservoir, its water quality, other sources of pollution, discharges, etc. to study respective environmental impacts. The study will help in regulating inland open waters usage for cage culture in terms of reservoir sizes, fish species, cage sizes & nos., water quality, types of feeds/chemicals/drugs to be prohibited/allowed, discharges, environmental impacts & measures to be taken, etc.

without affecting water quality & eco-system. The study may be coordinated by MoFAH&D in consultation with MoEF&CC and CPCB.

III. Till the study is conducted, Fisheries Department, Government of Maharashtra, to adhere with the prevailing NFDB guidelines for the cage culture in Inland open water bodies and may prescribe the following precautionary measures while permitting aquaculture in reservoir/lake, as well as in the existing permitted cage aquaculture;

iii. Thereafter, by considering the report of the expert committee constituted in compliance of the above said matter the Hon'ble Tribunal on 27.02.2023 in EA No. 12 of 2022 titled Vanashakti & Anr. Vs State of Maharashtra & Ors inter-alia directed that,

“(i) MoEF&CC shall consider bringing the cage aquaculture under the Environment Impact Assessment Regime, particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake”

.....

(v) The compliance report shall be submitted before us at the end of six months from today and if any grievance remains thereafter to the applicant, he may approach us.”

The copy of aforesaid NGT order dated 27.02.2023 is marked and annexed at **Annexure-II**.

B. Action taken-

i. In compliance to aforesaid order, based on the recommendations of the Expert Committee, the Ministry of Environment Forest & Climate Change (MoEF&CC) vide letter dated 13.06.2023 Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying (MoFAH&D) have been requested for their comments on "Whether there is a requirement to bring cage aquaculture under the ambit of EIA Notification, 2006" and to conduct the study as recommended by the Joint Committee.

The copy of letter dated 13.06.2023 is marked and annexed at **Annexure-III**.

ii. It is submitted that the Ministry has not received any inputs/comments on behalf of the Department of Fisheries. The Ministry has again vide email dated 31.10.2023 sent a reminder to Department of Fisheries to provide the outcome of the study and their comments at the earliest.

The copy of reminder mail dated 31.10.2023 is marked and annexed at **Annexure-IV**.

C. Submission on follow-up action-

It is respectfully submitted that the Ministry is awaiting desired inputs/comments on behalf of the Department of Fisheries. The Hon'ble Tribunal may like to take on record the information

submitted by MoEFCC, through this Status Report, and pass such further and other order as this Hon'ble Tribunal may deems fit and proper and thus render Justice. The Ministry shall further coordinate with Department of Fisheries and file additional information made available to it.

Item No. 03

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 80/2020 (WZ)

Vanashakti & Anr.

Applicant(s)

Versus

State of Maharashtra & Ors.

Respondent(s)

Date of hearing: 31.05.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant(s): Mr. Zaman Ali, Advocate

ORDER

1. Grievance in this application is against unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra. Particular grievance has been raised in the context of permission granted in favour of respondent no. 7, Vaidehi Randive in Vadivale Lake in Village Valavanti on the Kamshet-Kundali Road in Maval Taluka, near Village Kamshet, in Pune District, by the Commissioner of Fisheries, Government of Maharashtra.

2. The applicants have assailed the impugned permission as being against the "Precautionary" and "Sustainable Development" principles. Aquaculture activities, with modern techniques involve use of harmful chemicals. In the process, such chemicals are and released in the lakes and other water bodies concerned. In the present case, permission has been given for aquaculture activities in *Vadivale* Lake in Pune District. The

lake is a source of drinking water to the nearby villages. Outfall of the lake is in the Indrayani River which is source of drinking water for 28 villages.

3. The applicant has referred to the policy decisions of the Fisheries Department, Government of Maharashtra to submit that the same does not consider environmental aspects. They consider only financial aspects. Reference is made to GO dated 15.10.2001 for permitting fishing in lakes of the size above 200 hectares. It does not consider harmful impact of discharge of harmful chemicals, poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics etc., that are key to aquaculture farming. The applicants have also referred to the Coastal Aquaculture Authority Act, 2005 to regulate coastal aquaculture in coastal areas enacted in the light of the Judgment of the Hon'ble Supreme Court in *S. Jagannath v. Union of India* [(1997) 2 SCC 87]. Under the said Act, environmental safeguards are laid down for permitting aquaculture in coastal areas. However, there are no safeguard laid down for permitting such activities in inland waters. The applicant has relied upon a report of the National Bank for Agriculture and Rural Development (NBARD), Mumbai, under the title "The Use of Chemicals in Aquaculture in India". Further reference has been made to the guidelines framed by the Ministry of Fishing, Government of India titled "Guidelines for Cage Culture in Inland Open Water Bodies of India" noticing the environmental facts arising out of such activities in open water bodies. Further reference is made to the study conducted by the Madras University titled "Environment and Social Conflicts of Aquaculture in Tamil Nadu and Andhra Pradesh." The applicants have submitted that 2005 Act should apply to all aquaculture activities. It is stated that adverse impact of aqua culture activities in *Vadivale* Lake has been found in a report titled "Assessment

of Water Quality Index of Indrayani River, Alandi, Pune” published in 2018 in International Journal of Science, Engineering and Technology Research.

4. We have given due consideration to the issue raised. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six-member expert Committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional Officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process.

5. Since we have not found it necessary to issue notice having regard to the nature of the order, we give liberty to the respondents to move this Tribunal in case they are aggrieved.

The application is disposed of.

A copy of this order be forwarded to the MoEF&CC, the CPCB, the Maharashtra State PCB, the Ministries of Fishing, Govt. of India and Maharashtra Govt. and Central Inland Fisheries Research Institute by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

M. Sathyanarayanan, JM

Brijesh Sethi, JM

Dr. Nagin Nanda, EM

May 31, 2021
Original Application No. 80/2020 (WZ)
SN

Item No. 6

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH, PUNE**

(By Video Conferencing)

Execution Application No. 12/2022(WZ)
In
Original Application No. 80/2020(WZ)

Vanashakti & Anr.

.....Applicant(s)

Versus

State of Maharashtra & Ors.

....Respondent(s)

Date of hearing: 27.02.2023

**CORAM: HON'BLE MR. JUSTICE DINESH KUMAR SINGH, JUDICIAL MEMBER
HON'BLE DR. VIJAY KULKARNI, EXPERT MEMBER**

Applicant : Mr. Zaman Ali, Advocate
Respondent(s) : Mr. Rahul Garg, Advocate for R-2/MoEF&CC
Mr. Aniruddha Kulkarni, Advocate for R-1B/Envnt. Dept. &
R-7/CPCB
Ms. Manasi Joshi, Advocate for R-6/MPCB

ORDER

1. This Execution Application has been filed with the prayers that Respondent No. 2/MoEF&CC, Respondent No. 3/Ministry of Fishing, Animal Husbandry & Dairying through Secretary (Fisheries), Respondent No. 4/Commissioner of fisheries, Government of Maharashtra, Respondent No. 6/MPCB and Respondent No. 7/CPCB be directed to comply with the directions given by this Tribunal vide order dated 31st May, 2021 and to examine the requirement to introduce changes in the existing consent regime; these authorities be directed to re-assess the clearances granted to the Respondent No. 8/Vaidehi Randive and further the Respondent No. 8 be restrained from carrying out any fish farming/aquaculture in the fresh water of Vadavali Lake.

2. The Execution Applicant had sought execution of the order dated 31.05.2021 passed by this Tribunal in O.A. No. 80 of 2020, where-in it

was alleged that there was no policy in the State of Maharashtra to regulate the inland aquaculture, therefore, a policy was needed to be framed keeping in mind the precautionary principle. There was only regulatory framework available in the State with respect to grant of licenses for aquaculture but there was no provision made for regulating and assessing the environmental impacts of aquaculture before the grant of licenses. The aquaculture practices were being undertaken in the Vadivale Lake in Village: Valavanti situated in Pune District. As per the order dated 31st May 2021, following direction was issued by this Tribunal:-

“4. We have given due consideration to the issue raise. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies(other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six member expert committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process.”

3. This matter was first considered by us on 07.12.2022 and notices were directed to be issued to the Respondents, pursuant to which, service affidavit has been filed, as per which service of notice on all the

Respondents is sufficient. The Expert Committee which was constituted by order dated 31st May, 2022 has submitted its report, which is annexed at Page Nos. 146 to 190 of the paper book, where-in following is held:

“10. Conclusions:

- (i). *India has vast and varied inland fisheries resources that comprise of 191,024 kms of rivers and canals, 1.2million ha of floodplain lakes, 2.36 million ha of ponds of tanks and 3.15 million ha of reservoirs. Although, inland fisheries have grown, the rate of growth in terms of its potential is not yet achieved. The average fish production potential was estimated at 250 kilograms (kg) hectare(ha) in reservoirs and about 350kg/ha for wetlands. While reservoirs and freshwater aquaculture can be considered as the two main pillars of growth, another major activity in aquaculture sector called the cage/ pen culture in open waters, has shown significant growth in recent years. It offers vast potential for inland aquaculture in the country. The production potential from sustainable cage culture production is about 50 kg/m³.*

The freshwater aquaculture production systems in India comprise 2.36 million ha of ponds and tanks. In Eastern India, aquaculture is practised in ponds and tanks of less than 1 ha area, whereas in western Indian aquaculture is operated on a larger scale, with watersheds of 1525 ha.

- (ii). *Cage culture of fish a form of aquaculture where use of drug and chemicals is seldom unlikely in the landbased intensive fish culture systems. However, as per the guidelines of National Fisheries Development Board(NFDB), Hyderabad, some chemicals and drugs are permitted to use with prescribed does and mode of administration under unavoidable circumstances. In general, the only inputs in the cage culture in the inland open waters are in the form of seen (fish fingerlings) and fee. Also, since the cages are installed in open waters such as reservoirs, lakes and wetlands, the direct use of chemicals and drugs may neither be effective nor economically feasible.*

Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace and which may lead to some concern of its impact on the water bodies.

- (iii). *The issue of poultry wastes from poultry farms such as gizzards and chicken/ guts/offal in aquaculture is not relevant in case of cage culture particularly in reservoirs.*
- (iv). *Unlike Coastal Aquaculture Authority in case of coastal aquaculture, at present, there is no central regulatory authority to control the usage of chemicals and drugs in*

inland or freshwater aquaculture in the country. The supply and use of chemicals and fish medicines is uniformly regulated in the EU and supported by appropriate codes of best practice. In several other countries like Australia, Japan, China, Vietnam, USA, etc., the national regulation on the use of chemicals in aquaculture exist, however, a dedicated regulation for inland fishers and aquaculture in these countries not found.

Some provisions are made to regulate use of medicines, antibiotics, pesticides in inland aquaculture under the kerala inland Fisheries and Aqua culture Act, 2010 and the Andhra Pradesh state Aquaculture Development Authority Act, 2020.

National Fisheries Development Board (NFDB), Hyderabad (Department of Animal Husbandry, Diarying and Fisheries, Ministry of Agriculture and Farmers Welfare, Government of India) has published a guideline for cage culture in inland open water bodies of India with technical inputs from the ICAR- Central Inland Fisheries Research institute (ICAR-CIFRI), Barrackpore Kolkata. A Handbook- World Fish Center Technical Manual No. 1948 was published by Central Inland Fisheries Research Institute, ICAR, Barrackpore Kolkata. The handbook briefly states the environmental constraints of cage culture when poorly managed with respect to the discharge of nutrients.

The Aforesaid NFDB's published guideline for cage culture in inland open water bodies also:

- a) Outlines about some environmental impact due to release of excessive nutrients and accumulation in water sediment of the water body.*
 - b) Suggests a strong governance platform based on co-management principles for responsible cage culture and recommends EIA for cage culture activities as it is deleterious in terms of higher eutrophication potential due excessive nutrients loading and other chemical/pharmaceutical inputs.*
 - c) Restricts any cage culture in water bodies having an area less than < 1000 Ha.*
 - d) Emphasizes that, in any case, cage culture should not be attempted in any water body having total nitrogen concentration in the water in excess of 0.02 mg/l and 1.2 mg/l respectively.*
- (v). Department of Agriculture, Animal Husbandry, Dairy Development Fisheries, Government of Maharashtra issued Policy on 17.10.2016 for Fish farming through cage culture to increase the fish production in the State, which is further revised in 2018 and 2021 w.r.t. certain*

conditions including permission regarding cage culture and its area out of water shed area of reservoir.

As per the Central Government guidelines, cage culture activities are not permitted if the area of the reservoir is less than 1000 hectares. However, there are only 46 reservoirs having area greater than 1000 hectares in Maharashtra, permission for the cage culture aquaculture projects has been given for 2448 reservoirs in the State. The revised criteria in terms of numbers of cages, water spread area in reservoir, depth of water, etc. for cage culture in the State of Maharashtra as per G. R. Dated 26th August, 2021 has been mentioned in its Section 9 (part-A). Further, the relevant terms and conditions for cage aquaculture on contract basis may please be seen at Section 7 (SI. No. 03)(Refer para 7 above).

However, the aforesaid GR dated 28.08.2021 does not include any conditions stipulating water quality standards to be complied/maintained in reservoirs, and parameters thereto. Regarding usage of medicines, the contract conditions do not restrict on use of wholesome food for growth of fish and government approved medicines provided under expert guidance. Food and medicine should be government certified and prior permission should be taken from assistant commissioner , fish business/ fishery department. Further, toilets construction has been allowed after permission from Water Resource Department, without specifying management of discharges from such toilet.

- (vi). *As per the analysis results of water samples collected by this committee within and outside the cage aquaculture of 0.15 hectare of the average 230ha water spread area of Vadiwale Lake, the concentration of analysed parameters in water are broadly higher inside the cages followed by at 3 m distances and at 100 m distances away from the boundary of cage culture when compared to that of downfall location (l6) which is at about 2.5 km distance from cage culture (please refer Table 04). Further, the concentration of analyzed parameters in the cages of big fishes were found higher than the concentration of analysed parameters in the cages of small fishes.*

Thus, it is evident that there is discharge/ pollution load in the water body due to cage culture activities in the Vadiwale lake with fish excretory matters and addition/use of feed(nutrients) which ultimately gets dissolved/ mixed with water due to exchange of metabolite and nutrients between the cage and outside environment. It leads into discharge of trade effluent(having nutrient/feed, excretory matters, etc.) from cage culture premises into stream(natural or artificial inland water) with pollutants like in BOD, COD, Total Nitrogen, Phosphate, etc. such discharges, when not carried out in controlled manner, may likely to, create a nuisance or

render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

Further, it was also observed that:

- a) The total phosphorous and total nitrogen concentration in the water were found in excess of the aforesaid NFBD guidelines' prescribed value of 0.02 mg/l and 1.2 mg/L at various monitored locations and all the monitored locations respectively, as given at Table 04 above. The guidelines stipulated that, in any case, cage culture should not be attempted in water body having such exceedance.
 - b) When compared with CPCB's guidelines on Designated Best Use water Quality Criteria for "Class of water – D: Propagation of Wild life and Fisheries", the DO(3.8mg/L) was found slightly lower than the prescribed limit of 4 mg/L at one of the monitored locations viz. L2- inside the Cage culture Compartment of big fishes. Please refer Table 48 above.
- (vii). Water samples collected from the Pond Aquaculture in the nearby village were found be conforming to the General Discharge Standards as notified under the Environment (Protection) Act, 1986, w. r. t. Analysed parameters for discharge into land for irrigation and public sewer but didn't conforms for discharge into inland surface water. The said water samples collecting though had not reached to the stage/concentration when it needed discharge and accumulation of further concentration in the monitored water samples cannot be ruled out.
- (viii). Consent mechanism under the Water (Prevention and Control of Pollution) Act, 1974, is currently not regulated by Maharashtra Pollution Control Board. However, the above observations reveal that there is need to bring inland aquaculture fisheries into consent regime depending on size/ volume of both i.e. water bodies and aquaculture.

Further, depending on size/ volume of both (i.e. water bodies and aquaculture) and water quality of the water, there may also be need of brining the inland aquaculture under the Environmental Impact Assessment regime which has also been suggested in the aforesaid NFDB's published guideline.

A detailed study may be required in this regard to assess environmental Impacts vis-a-vis size/volume of both (i.e. water bodies and aquaculture) and water quality for prescribing consent and EIA mechanism including control on use of various feed material/ chemical/ drugs/ antibiotics/ etc. and various measures required in inland aquaculture.

11. Recommendations

- i. *There is need to regulate cage aquaculture under consent mechanism of the Water (Prevention and Control of Pollution) Act, 1974. Also MoEF&CC may deliberate the requirement of prior Environmental Impact Assessment in view of the suggestion made by NFDB. However, such consent mechanism and EIA requirement may be regulated categorising nos. & size of cage aquaculture, fish types area of lake/reservoir, its water quality, other sources of pollution, surface runoff meeting with the reservoir etc. as per findings of study as mentioned in subsequent paragraphs.*
- ii. *There is need to conduct a study by reputed institutes in the field of fisheries and environment over a period of time considering the sizes of cage culture, cage culture area, fish types, area of lake/reservoir, its water quality, other sources of pollution, discharges, etc. to study respective environmental impacts. The study will help in regulating inland open water usage for cage culture in terms of reservoir sizes fish species, cage sizes & nos., water quality, types of feeds/ chemicals/drugs to be prohibited/ allowed, discharges, environmental impacts & measures to be taken, etc. without affecting water quality & eco-system.*
The study may be coordinate by MoFH&D in consultation with MoEF&CC and CPCB.
- iii. *Till the study is conducted, Fisheries Department, Government of Maharashtra, to adhere with the prevailing NFDB guidelines for the cage culture in inland open water bodies and may prescribe the following precautionary measures while permitting aquaculture in reservoir/ lake, as well as in the existing permitted cage aquaculture.*
 - a) *Aquaculture/ Cage Culture shall not be allowed in the reservoirs that do not conform to the CPCB recommended Designated Best Use Water quality criteria for Propagation of Wild Life and Fisheries.*
 - b) *Cage culture should not be allowed in any water body having total phosphorous and total nitrogen concentration in the water of exceeds of 0.02 mg/L and 1.2 mg/L, respectively, as recommended in NFDB's published guidelines.*
 - c) *Water quality of the reservoir/ lake shall be analyzed before starting the cage culture activities and twice in a year during non- monsoon seasons during aquaculture period at pre- identified strategic locations which may be ensured by state fisheries department. Based on the analysis of water quality, if any abnormality observed, the*

same shall be reported to MPCB/ irrigation Department/ Water Supply Department.

d) Total phosphorous, total nitrogen, chloride, calcium, magnesium and other site specific relevant parameters shall be prescribed by MPCB and State Fisheries Department for analysis of the aforesaid water quality.

e) Sinking fee may be prohibited for cage fish farming as it accumulates at the base and fouls the cage /reservoir environment.

f) Construction of toilets near the cage culture fish farming shall not be allowed unless such toilets have discharge management ensuring no discharge to the lake/ reservoir/ land and permission from the Water Resource Department is obtained.”

4. There is no separate reply affidavits filed by Respondents except by Respondent No. 7/CPCB, which has submitted with it the Joint Committee Report, relevant portion of which has already been cited above.

5. The Applicant has filed rejoinder affidavit against the Joint Committee Report, which is annexed at page nos. 255 to 260 of the paper book, where-in it is submitted that the report ought to have stated the impact of fisheries on wholesomeness of the water, as the same was being used for drinking purposes among entire rural and urban population. The GRs of the Government of Maharashtra dated 09.03.2018 and 28.08.2021 provide for granting permission for cage culture in reservoirs/water bodies, that are less than 200 ha. in size, where-as the Central Government Guidelines mandate that no cage culture must be permitted in a water body that is less than 1000 ha. The said GR dated 28.08.2021 further dilutes the permission criteria from the earlier GR dated 09.03.2018 by allowing cage culture in average depth of water at 8 meters, where-as under earlier GR, it was 10 meters or more. The GR dated 28.08.2021 provides that the contract for aquaculture will be cancelled if the water body is found to be polluted, however, there is no

mechanism provided as to how such pollution will be identified and what would be the basic standards that a cage culture operator would be required to maintain.

6. Further, it is mentioned in the said affidavit that Joint Committee Report speaks of one Mr. Bhardwaj Yadavrao Pagare, who is carrying out cage culture activities with 24 cages, that are operational and the analysis of the sample collected from there, show violation of the standards set for “best use water use quality criteria” as per the CPCB’s Guidelines. The said activity has rendered the drinking water to be unfit, as has been noted by the Joint Committee in its report. Therefore, it is necessary to direct closure of the aquaculture activities because the Vadiwale Lake is in 230 ha. area, and is providing drinking water to as many as 28 Villages. All the recommendations, which have been made by this Committee, need to be implemented in totality.

7. The Applicant has summarized the conclusions of the Committee Report, which are as follows:

- “ (i). Cage culture is growing at a very fast pace, which may lead to some concern of its impact on the water bodies;*
- (ii). Strong governance platform as per the Central Government’s Guidelines of Cage Culture outlines about the environmental concerns and restricts any cage culture in a water body less than the size of 1000 ha.*
- (iii). Maharashtra’s Government Resolution dated 26.08.2021 does not include any conditions stipulating water quality standard to be complied/ maintained in reservoirs, and parameters thereto.*
- (iv). Maharashtra’s GR dated 26.08.2021 provides for contract conditions, which do not restrict the use of wholesome food for growth of fish and government approved medicines providing under expert guidance.*
- (v). Maharashtra’s GR dated 26.08.2021 does not state that food and medicine should be government certified and that prior permission should be taken form assistant commissioner, fish business/ fishery department.*

- (vi). *Maharashtra's GR dated 26.08.2021 allows construction of toilets inside the cage culture in the water body without specifying any standards/ parameters for discharge from such toilets.*
- (vii). *There is discharge pollution load in Vadiwale Lake due to cage culture activities and is likely to create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms as phosphorous and total nitrogen concentration were found to be in excess of the Central Government's Guidelines."*

8. In the end, the learned Counsel for the Applicant has prayed that the MPCB be directed to bring the aquaculture activity within the consent regime in the light of the conclusions drawn by the Expert Committee because of the present GR dated 26.08.2021 regulating the aquaculture activities, does not deal with environmental concerns properly. Further, it is prayed that no aquaculture activity be permitted in water bodies less than 1000 ha. in size, keeping in view the Central Government's Guidelines of 2016 and the closure order be passed in respect of Mr. Bhardwaj Yadavrao Pagare, who is carrying out cage culture activities with 24 cages in the Vadiwale Lake.

9. We have heard the arguments of the learned Counsel for the parties, perused the record and have also gone through the report, as well as the reply-affidavit filed by the CPCB.

10. We find that the Expert Committee has exhaustively dealt with the issue involved in the present case, reference to which is as follows:

- “ • *To examine whether the use of chemicals in aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005), if any, in the process be allowed and if so, how can it be regulated.*
- *To examine the modalities to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly use of chemicals, if any.*

- *To study the existing Consent Regime under the water act and whether there is need to introduce any change.”*

11. The Committee has taken into consideration large data regarding inland fisheries and aquaculture in India, inland fish production system, enhancement, different forms of the enhancements, stock enhancement (Increasing the Stock), species enhancement, environmental enhancement, other enhancements, culture based fisheries, aquaculture, cage and pen culture. In the said report, the advantages of enclosed culture system in inland fisheries and also policy of the Department of Agriculture, Animal Husbandry, Dairy Development and Fisheries, Government of Maharashtra has been summarised. It has also conducted study about the Vadiwale lake and cage culture projects in the said lake. It has been submitted in this report that the Vadiwale Lake is in 230 Hectare and 1% of the said Lake has been decided to be given on contract basis for cage culture i.e. about 2.3 hectares. The water shed area of 0.15 Hectares is allocated to Respondent No. 8/Mrs. Vaidehi Bhushan Randive for years i.e. 2017-2018 to 2023-2024, although the said project has not yet been established. Vide report dated 06.09.2018 of the Commissioner of Fisheries, Government of Maharashtra, water spread area of 0.15 hectare has been allocated to Shri Bhardwaj Yadavrao Pagare (not party) for cage culture project, which is operational with 24 cages. Further, it is mentioned that a water sample was taken to assess the impact of aquaculture-cage culture on Vadiwale Lake within and around the existing cage culture, established by Shri Bhardwaj Yadavrao Pagare and outfall into Kundalini River from Vadiwale Lake, which meets Indrayani River. The water samples were collected from cage compartments (2 nos.), 3 meter away from cage culture in east and west direction (2 nos.) and 100 meters away from cage culture (1 no.). The details of the sampling locations are given in the said report, which are as follows:-

Table- 02: Details of Sampling Locations

Sr. No.	Type Aquaculture	Location Code	Location Description
1	Cage Aquaculture	L1	Cage Culture from Small Fish Compartment.
2		L2	Cage Culture from Big Fish Compartment
3		L3	3 metres away from cage culture towards west side.
4		L4	3 meters away from cage culture towards east side.
5		L5	100 metres away from Cage Culture
6		L6	Outfall from Uksan Dam in to Kundalini river which meets Indrayani river.
7		L7	Mr. Bhushn randive Fish aquaculture.

12. The parameters analysed for water sampling are as follows:-

Sr. No.	Parameter (s)	Sr. No.	Parameter(s)
1	PH	16	O- Phosphate
2	Temperature	17	T- Phosphate
3	Turbidity	18	Sulphide
4	Biochemical Oxygen Demand (BOD)	19	Iron
5	Chemical Oxygen Demand (COD)	20	Copper
6	Dissolved Oxygen (DO)	21	Manganese
7	Total Suspended Solids (TSS)	22	Magnesium
8	Total Dissolved Solids (TDS)	23	Calcium
9	Sulphates	24	Potassium
10	Chlorides	25	Total Hardness
11	TAN	26	Faecal Coliform(FC)

12	TKN	27	Total Coliform(TC)
13	Nitrate (NO ³⁻) “κ	28	Zinc
14	Nitrites (NO ²⁻)	29	Phenol
15	Phosphorus	30	Total Alkalinity

13. In the said report, the samples were also collected from the Pond Aquaculture, developed by Mr. Bhushan Randive located nearby Village: Khandashi, Taluka: Maval, District: Pune and following relevant analysis results were found:-

Sr. No	Parameters	Sampling Locations in and around Cage Culture and outfall of Vadiwale Lake						Sampling Location of the Pond
		L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	L7 Pond Aquaculture (Randive Fish Aquaculture)
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	7.24
2	TDS	226	258	224	154	186	138	92
3	SS	12	24	18	14.00	14	8	52
4	Turbidity (NTU)	1.0	1.10	1.20	1.10	1.10	1.10	1.2
5	DO	4.70	3.80	4.60	4.70	4.90	4.70	NA
6	BOD	14.00	21	13.00	14.0	11.00	4.80	35
7	COD	48.00	64	36.00	40.00	32.00	24	92
8	NH ₃ -N	0.50	0.60	0.40	0.50	0.30	0.20	0.80
9	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10	Ammonia (as total ammonia-N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.80
11	NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	1.20
12	NO ₂ -N	0.08	0.03	0.02	0.02	0.02	BDL	0.41
13	TKN	1.68	2.24	1.68	2.24	2.24	1.12	2.80
	Total Nitrogen [#]	2.65	3.06	2.22	2.93	2.74	1.89	5.21
14	Total Alkalinity	28.00	32	26	14.00	20.00	12	12
15	Hardness (Total)	62.00	64	58.00	38.00	44.00	36	30
16	Hardness (Mg ²⁺)	16	16	20.00	16	14.00	16	12
17	Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	2.92
18	Calcium	18.44	19.24	15.23	8.82	12.02	8.02	7.21
19	Phosphate (Total)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
	Total Phosphorus \$	0.2	0.033	BDL	0.033	BDL	0.067	0.47
20	Phosphate (Ortho)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
21	Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	9.10

22	Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chloride	42.49	47.49	44.99	27.49	32.49	24.99	28.99
24	Faecal Coliform**	30.00	45	25.00	25.00	20.00	17	NA
25	Total Coliform**	900	900	550	550.00	425.00	250	NA
26	Phenol	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Zinc	BDL	BDL	BDL	BDL	BDL	0.08	BDL
28	Iron	0.03	0.05	0.03	0.57	0.37	NA	0.05
29	Copper	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30	Lead	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31	Nickel	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Concentration of all the values expressed in mg/L; except pH; BDL-Below Detection Limit;

*as estimated, free ammonia was found to be BDL; the NH₃-N has been considered as Total Ammonia-N;

**expressed in (MPN/100 ml); NA-Not Analysed; NR-No Relaxation.

‡addition of all forms of Nitrogen Free Ammonia, Ammonia (as total ammonia-N), NO₃-N, NO₂-N, TKN.

§total Phosphorus calculated from Total Phosphate.

As per guideline published by NFDB Hyderabad (Annexure-II), it is mentioned that, in any case, cage culture should not be attempted in any water

body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively.

TABLE-04A: ANALYSIS RESULTS AND COMPARISON WITH DESIGNATED BEST USE WATER USE QUALITY CRITERIA OF CPCB'S GUIDELINES

Sr. No	Parameters	L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Best Designation Use Class of water-C#	Designated Best Use Class of Water-D [§]
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	6-9	6.5-8.5
2	DO	4.70	3.80	4.60	4.70	4.90	4.70	>4	>4
3	BOD	14.00	21	13.00	14.0	11.00	4.80	<3	NS
4	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	NS	1.2
5	Total	900	900	550	550.00	425.00	250	<5000	NS

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit;NS – Not specified

Class of Water – C: Drinking water source after conventional treatment and disinfection

Class of Water – D: Propagation of Wild Life and Fisheries

TABLE-04B: ANALYSIS RESULTS OF WATER SAMPLES AND COMPARISON WITH DRINKING WATER SPECIFICATION

Parameters	L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Drinking Water Specifications: IS 10500:2012	
							Requirement (Acceptable limit)	Permissible limit in absence of alternative source
pH	7.23	7.40	7.83	7.72	7.62	8.04	6.5-8.5	NR
TDS	226	258	224	154	186	138	500 (Max)	2000 (Max)
Turbidity	1.0	1.10	1.20	1.10	1.10	1.10	1 (Max)	5 (Max)
Ammonia (as total ammonia- N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.5 (Max)	NR
NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	45 (Max)	NR
Total	28.00	32	26	14.00	20.00	12	200 (Max)	600 (Max)
Hardness	62.00	64	58.00	38.00	44.00	36	200 (Max)	600 (Max)
Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	30 (Max)	100 (Max)
Calcium	18.44	19.24	15.23	8.82	12.02	8.02	75 (Max)	200 (Max)
Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	200(Max)	400 (Max)
Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Max)	NR
Chloride	42.49	47.49	44.99	27.49	32.49	24.99	250 (Max)	1000 (Max)
Phenol	BDL	BDL	BDL	BDL	BDL	BDL	0.001 (Max)	0.002 (Max)
Zinc	BDL	BDL	BDL	BDL	BDL	0.08	5 (Max)	15 (Max)
Iron	0.03	0.05	0.03	0.57	0.37	NA	0.3 (Max)	NR
Copper	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Max)	1.5 (Max)
Lead	BDL	BDL	BDL	BDL	BDL	BDL	0.01(Max)	NR
Nickel	BDL	BDL	BDL	BDL	BDL	BDL	0.02 (Max)	NR

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit; NR – No Relaxation.

TABLE-05: ANALYSIS RESULTS OF WATER SAMPLES OF THE POND ACQUACULTURE AND THEIR COMPARISON WITH GENERAL DISCHARGE STANDARDS NOTIFIED UNDER THE ENVIRONMENT (PROTECTION) ACT, 1986

S. No.	Parameters (All parameters are expressed in mg/L, except pH)	L7 Pond Aquaculture (Randive Fish Aquaculture)	General Standards for discharge of environmental pollutants [Schedule-VI, Rule 3A, The Environment		
			Inland surface water	Public sewer	Land for irrigation
1	pH	7.24	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
2	SS	52	100	600	200
3	BOD	35	30	350	100
4	COD	92	250	--	--
5	NH ₃ -N	0.80	50	50	--
6	Free Ammonia	BDL	5.0	--	--
7	NO ₃ -N	1.20	10	--	--
8	TKN	2.80	100	--	--
9	Sulphide	BDL	2.0	--	--
10	Phenol	BDL	1.0	5.0	--
11	Zinc	BDL	5.0	15	--
12	Iron	0.05	3.0	3.0	--

13	Copper	BDL	3.0	3.0	--
14	Lead	BDL	0.1	1.0	--
15	Nickel	BDL	3.0	3.0	--

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit.

14. Thereafter, we find that the comparisons with CPCB's designated Best Use Water Quality Criteria, Drinking Water Specifications and Guidelines published by NFDB, Hyderabad for cage culture were made.

15. After this comparison, it was found that except BOD, all other parameters exceeded in the samples of water in Vadiwale Lake due to cage culture activities, pollution load was found evident. The total phosphorous and total nitrogen concentration was also found in excess of the admissible limit.

16. In the conclusion, we find that it is recorded that there was huge pollution load in the Vadiwale Lake with fish excretory matters and also addition/use of feed (nutrients), which gets dissolved/mixed with water due to exchange of metabolite and nutrients between the cage and outside environment. It leads into the discharge of trade effluent from cage culture premises into stream with pollutants like BOD, COD, Total Nitrogen, Phosphate, etc. *It is also evident that there was need to bringing inland aquaculture under the Environment Impact Assessment regime.* Therefore, the recommendations which have been cited above by us need to be adopted in the present case.

17. In view of the above Joint Committee Report, as well as the arguments made by the learned Counsel for the parties, we are of the view that this application needs to be disposed of with the following directions and is disposed of accordingly:-

- (i). MoEF&CC shall consider bringing the cage aquaculture under the Environment Impact Assessment Regime,

particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake.

- (ii). As regards the cage aquaculture activity to be brought under consent regime, the necessary steps shall be taken by the Central Pollution Control Board (CPCB) as well as Maharashtra Pollution Control Board within three months and for that, if any study is required as suggested by the Committee, the same may be got conducted in the meantime.
- (iii). The interim measures which are proposed under clause 11 pertaining to recommendations under sub-clause (iii) (a to f) be implemented by the authorities concerned on urgent basis.
- (iv). One Mr. Bhardwaj Yadavrao Pagare was found to have conducted the cage aquaculture activity in the Vadiwale lake with 24 cages and huge pollution load is found because of that activity, therefore, we direct the MPCB to take appropriate action against him after adopting due process i.e. after giving him opportunity of hearing and take appropriate action under Water (Prevention and Control of Pollution) Act, 1974 within one month.
- (v). The compliance report shall be submitted before us at the end of six months from today and if any grievance remains thereafter to the applicant, he may approach us.

Dinesh Kumar Singh, JM

Dr. Vijay Kulkarni, EM

February 27, 2023
Execution Application No. 12/2022(WZ) In
Original Application No. 80/2020(WZ)
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F. No. IA3-3/32/2023-IA.III (E-209560)
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

Indira Paryavaran Bhawan
Aliganj, Jor Bagh Road
New Delhi – 110003

Date: 13th June, 2023

To

Joint Secretary (Inland Fisheries and Administration)
Department of Fisheries
Room No. 482
Krishi Bhawan, New Delhi – 110001
Email: sagar.mehra@nic.in

Subject: Directions of the Hon'ble NGT(WZ) in EA No. 12 in OA No. 80 of 2020 titled Vanashakti & Anr. Vs State of Maharashtra & Ors – seeking inputs reg.

Sir,

This is in reference to the Order of the Hon'ble Tribunal on 27/02/2023 (*annexed herewith*) in EA No. 12 of 2022 titled Vanashakti & Anr. Vs State of Maharashtra & Ors wherein it has been inter-alia directed that,

“MoEF&CC shall consider bringing the cage aquaculture under the Environment Impact Assessment Regime, particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake”


2. In the above referred main matter, the Hon'ble NGT vide Order dated 31/05/2021(*annexed herewith*) has constituted a six-member Expert Committee comprising Regional Officer, MoEF&CC, Regional Officer, CPCB, the Maharashtra State PCB, Ministry of Fishing and Maharashtra State and the Central Inland Fisheries Research Institute to examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated and look into the consent regime under the Water Act, 1974.

3. The Committee vide its report (*annexed herewith*) had recommended that there is a need to conduct a study by reputed institutes in the field of fisheries and environment over a period of time considering the sizes of cage culture, cage culture area, fish types, area of lake/reservoir, its water quality, other sources of pollution, discharges, etc. to study respective environmental impacts. The study will help in regulating inland open waters usage for cage culture in terms of reservoir sizes, fish species, cage sizes & nos., water quality, types of feeds/chemicals/drugs to be prohibited/allowed, discharges, environmental impacts & measures to be taken, etc without affecting water quality & eco-system. The study may be coordinated by MOFAH&D in consultation with MoEF&CC and CPCB.

4. In view of the above, it is kindly requested that the study may be conducted at the earliest and inputs/comments may be provided as to whether there is a requirement to bring cage aquaculture under the ambit of EIA Notification, 2006, *particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake.*

5. This is issued with approval of Competent Authority.

Encl: as above


(Sundar Ramanathan)
Scientist 'E'

Copy for information to:

1. Senior PPS, JS(SKB)
2. Guard File



भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FOREST
& CLIMATE CHANGE

Regional Office (WCZ)
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V N AMBADE
Deputy Director General of Forests (Central)

F. No. CC- 319/RON/2021-NGP/ 11482

Dated 26.04.2023

Dear *Sujit*

This relates to the Original Application No. 80 of 2020 titled as Vanashakti & Anr. Vs State of Maharashtra & Ors, relating to unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra.

2. The Hon'ble NGT vide its order dated 31.05.2021 (**Annexure-I**) has constituted a Six Member Committee to examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. It was further directed in the said order dated 31.5.2021 that report of the said committee be furnished to the Secretary, MoEF&CC and the Chief Secretary Maharashtra, for further remedial measures. In compliance with the aforesaid order of Hon'ble NGT, the Expert Committee has prepared its report and the same was submitted by the Regional Directorate CPCB, Pune (Nodal Agency) to Ministry as well as the Chief Secretary, Government of Maharashtra on 23.01.2023. Copy of the letter is enclosed at **Annexure-II**.

3. Further, based on the report submitted by the Committee, an Order was passed by Hon'ble NGT on 27.02.2023 with certain directions. Copy of the Order is enclosed at Annexure-III. Following direction is for the Ministry:

" (i). MoEF&CC shall consider bringing the cage aquaculture under the Environment Impact Assessment Regime, particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake.

(v). The compliance report shall be submitted before us at the end of six months from today and if any grievance remains thereafter to the applicant, he may approach us."

4. In view of the above, it is requested that the direction of Hon'ble NGT may kindly be considered for compliance in time.

Best wishes.

Yours sincerely

26/4/2023
(V N AMBADE)

Deputy Director General of Forests (Central)

Encl: as above

To
Shri Sujit Kumar Bajpayee, Joint Secretary
Ministry of Environment, Forest and Climate Change
1st Floor, Prithvi Block, Indira Paryavaran Bhawan
Jorbagh, New Delhi-3

O/o Joint Secretary (SKB)
Dy. No. 914823
Date 02/05/23

Item No. 03

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 80/2020 (WZ)

Vanashakti & Anr.

Applicant(s)

Versus

State of Maharashtra & Ors.

Respondent(s)

Date of hearing: 31.05.2021**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant(s): Mr. Zaman Ali, Advocate

ORDER

1. Grievance in this application is against unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra. Particular grievance has been raised in the context of permission granted in favour of respondent no. 7, Vaidehi Randive in Vadivale Lake in Village Valavanti on the Kamshet-Kundali Road in Maval Taluka, near Village Kamshet, in Pune District, by the Commissioner of Fisheries, Government of Maharashtra.

2. The applicants have assailed the impugned permission as being against the "Precautionary" and "Sustainable Development" principles. Aquaculture activities, with modern techniques involve use of harmful chemicals. In the process, such chemicals are and released in the lakes and other water bodies concerned. In the present case, permission has been given for aquaculture activities in *Vadivale* Lake in Pune District. The

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292/2021/TECH-RD (Pune)

lake is a source of drinking water to the nearby villages. Outfall of the lake is in the Indrayani River which is source of drinking water for 28 villages.

3. The applicant has referred to the policy decisions of the Fisheries Department, Government of Maharashtra to submit that the same does not consider environmental aspects. They consider only financial aspects. Reference is made to GO dated 15.10.2001 for permitting fishing in lakes of the size above 200 hectares. It does not consider harmful impact of discharge of harmful chemicals, poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics etc., that are key to aquaculture farming. The applicants have also referred to the Coastal Aquaculture Authority Act, 2005 to regulate coastal aquaculture in coastal areas enacted in the light of the Judgment of the Hon'ble Supreme Court in *S. Jagannath v. Union of India* [(1997) 2 SCC 87]. Under the said Act, environmental safeguards are laid down for permitting aquaculture in coastal areas. However, there are no safeguard laid down for permitting such activities in inland waters. The applicant has relied upon a report of the National Bank for Agriculture and Rural Development (NBARD), Mumbai, under the title "The Use of Chemicals in Aquaculture in India". Further reference has been made to the guidelines framed by the Ministry of Fishing, Government of India titled "Guidelines for Cage Culture in Inland Open Water Bodies of India" noticing the environmental facts arising out of such activities in open water bodies. Further reference is made to the study conducted by the Madras University titled "Environment and Social Conflicts of Aquaculture in Tamil Nadu and Andhra Pradesh." The applicants have submitted that 2005 Act should apply to all aquaculture activities. It is stated that adverse impact of aqua culture activities in *Vadivale* Lake has been found in a report titled "Assessment

of Water Quality Index of Indrayani River, Alandi, Pune" published in 2018 in International Journal of Science, Engineering and Technology Research.

4. We have given due consideration to the issue raised. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six-member expert Committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional Officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process.

292/2021/TECH-RD (Pune)

5. Since we have not found it necessary to issue notice having regard to the nature of the order, we give liberty to the respondents to move this Tribunal in case they are aggrieved.

The application is disposed of.

A copy of this order be forwarded to the MoEF&CC, the CPCB, the Maharashtra State PCB, the Ministries of Fishing, Govt. of India and Maharashtra Govt. and Central Inland Fisheries Research Institute by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

M. Sathyanarayanan, JM

Brijesh Sethi, JM

Dr. Nagin Nanda, EM

May 31, 2021
Original Application No. 80/2020 (WZ)
SN

Item No. 6

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
WESTERN ZONE BENCH, PUNE**

(By Video Conferencing)

Execution Application No. 12/2022(WZ)
In
Original Application No. 80/2020(WZ)

Vanashakti & Anr.

.....Applicant(s)

Versus

State of Maharashtra & Ors.

....Respondent(s)

Date of hearing: 27.02.2023

**CORAM: HON'BLE MR. JUSTICE DINESH KUMAR SINGH, JUDICIAL MEMBER
HON'BLE DR. VIJAY KULKARNI, EXPERT MEMBER**

Applicant	:	Mr. Zaman Ali, Advocate
Respondent(s)	:	Mr. Rahul Garg, Advocate for R-2/MoEF&CC Mr. Aniruddha Kulkarni, Advocate for R-1B/Env. Dept. & R-7/CPCB Ms. Manasi Joshi, Advocate for R-6/MPCB

ORDER

1. This Execution Application has been filed with the prayers that Respondent No. 2/MoEF&CC, Respondent No. 3/Ministry of Fishing, Animal Husbandry & Dairying through Secretary (Fisheries), Respondent No. 4/Commissioner of fisheries, Government of Maharashtra, Respondent No. 6/MPCB and Respondent No. 7/CPCB be directed to comply with the directions given by this Tribunal vide order dated 31st May, 2021 and to examine the requirement to introduce changes in the existing consent regime; these authorities be directed to re-assess the clearances granted to the Respondent No. 8/Vaidehi Randive and further the Respondent No. 8 be restrained from carrying out any fish farming/aquaculture in the fresh water of Vadavali Lake.

2. The Execution Applicant had sought execution of the order dated 31.05.2021 passed by this Tribunal in O.A. No. 80 of 2020, where-in it

Page 1 of 17

was alleged that there was no policy in the State of Maharashtra to regulate the inland aquaculture, therefore, a policy was needed to be framed keeping in mind the precautionary principle. There was only regulatory framework available in the State with respect to grant of licenses for aquaculture but there was no provision made for regulating and assessing the environmental impacts of aquaculture before the grant of licenses. The aquaculture practices were being undertaken in the Vadivale Lake in Village: Valavanti situated in Pune District. As per the order dated 31st May 2021, following direction was issued by this Tribunal:-

"4. We have given due consideration to the issue raise. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies(other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six member expert committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process."

3. This matter was first considered by us on 07.12.2022 and notices were directed to be issued to the Respondents, pursuant to which, service affidavit has been filed, as per which service of notice on all the

Respondents is sufficient. The Expert Committee which was constituted by order dated 31st May, 2022 has submitted its report, which is annexed at Page Nos. 146 to 190 of the paper book, where-in following is held:

"10. Conclusions:

- (i). *India has vast and varied inland fisheries resources that comprise of 191,024 kms of rivers and canals, 1.2million ha of floodplain lakes, 2.36 million ha of ponds of tanks and 3.15 million ha of reservoirs. Although, inland fisheries have grown, the rate of growth in terms of its potential is not yet achieved. The average fish production potential was estimated at 250 kilograms (kg) hectare(ha) in reservoirs and about 350kg/ha for wetlands. While reservoirs and freshwater aquaculture can be considered as the two main pillars of growth, another major activity in aquaculture sector called the cage/ pen culture in open waters, has shown significant growth in recent years. It offers vast potential for inland aquaculture in the country. The production potential from sustainable cage culture production is about 50 kg/m².*

The freshwater aquaculture production systems in India comprise 2.36 million ha of ponds and tanks. In Eastern India, aquaculture is practised in ponds and tanks of less than 1 ha area, whereas in western Indian aquaculture is operated on a larger scale, with watersheds of 1525 ha.

- (ii). *Cage culture of fish a form of aquaculture where use of drug and chemicals is seldom unlikely in the landbased intensive fish culture systems. However, as per the guidelines of National Fisheries Development Board(NFDB), Hydrabad, some chemicals and drugs are permitted to use with prescribed does and mode of administration under unavoidable circumstances. In general, the only inputs in the cage culture in the inland open waters are in the form of seen (fish fingerlings) and fee. Also, since the cages are installed in open waters such as reservoirs, lakes and wetlands, the direct use of chemicals and drugs may neither be effective nor economically feasible.*

Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace and which may lead t some concern of its impact on the water bodies.

- (iii). *The issue of poultry wastes from poultry farms such as gizzards and chicken/ guts/offal in aquaculture is not relevant in case of cage culture particularly in reservoirs.*
- (iv). *Unlike Coastal Aquaculture Authority in case of coastal aquaculture, at present, there is no central regulatory authority to control the usage of chemicals and drugs in*

inland or freshwater aquaculture in the country. The supply and use of chemicals and fish medicines is uniformly regulated in the EU and supported by appropriate codes of best practice. In several other countries like Australia, Japan, China, Vietnam, USA, etc., the national regulation on the use of chemicals in aquaculture exist, however, a dedicated regulation for inland fishers and aquaculture in these countries not found.

Some provisions are made to regulate use of medicines, antibiotics, pesticides in inland aquaculture under the Kerala inland Fisheries and Aqua culture Act, 2010 and the Andhra Pradesh state Aquaculture Development Authority Act, 2020.

National Fisheries Development Board (NFDB), Hyderabad (Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Government of India) has published a guideline for cage culture in inland open water bodies of India with technical inputs from the ICAR- Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore Kolkata. A Handbook- World Fish Center Technical Manual No. 1948 was published by Central Inland Fisheries Research Institute, ICAR, Barrackpore Kolkata. The handbook briefly states the environmental constraints of cage culture when poorly managed with respect to the discharge of nutrients.

The Aforesaid NFDB's published guideline for cage culture in inland open water bodies also:

- a) Outlines about some environmental impact due to release of excessive nutrients and accumulation in water sediment of the water body.*
 - b) Suggests a strong governance platform based on co-management principles for responsible cage culture and recommends EIA for cage culture activities as it is deleterious in terms of higher eutrophication potential due excessive nutrients loading and other chemical/pharmaceutical inputs.*
 - c) Restricts any cage culture in water bodies having an area less than < 1000 Ha.*
 - d) Emphasizes that, in any case, cage culture should not be attempted in any water body having total nitrogen concentration in the water in excess of 0.02 mg/l and 1.2 mg/l respectively.*
- (v) Department of Agriculture, Animal Husbandry, Dairy Development Fisheries, Government of Maharashtra issued Policy on 17.10.2016 for Fish farming through cage culture to increase the fish production in the State, which is further revised in 2018 and 2021 w.r.t. certain*

conditions including permission regarding cage culture and its area out of water shed area of reservoir.

As per the Central Government guidelines, cage culture activities are not permitted if the area of the reservoir is less than 1000 hectares. However, there are only 46 reservoirs having area greater than 1000 hectares in Maharashtra, permission for the cage culture aquaculture projects has been given for 2448 reservoirs in the State. The revised criteria in terms of numbers of cages, water spread area in reservoir, depth of water, etc. for cage culture in the State of Maharashtra as per G. R. Dated 26th August, 2021 has been mentioned in its Section 9 (part-A). Further, the relevant terms and conditions for cage aquaculture on contract basis may please be seen at Section 7 (Sl. No. 03)(Refer para 7 above).

However, the aforesaid GR dated 28.08.2021 does not include any conditions stipulating water quality standards to be complied/maintained in reservoirs, and parameters thereto. Regarding usage of medicines, the contract conditions do not restrict on use of wholesome food for growth of fish and government approved medicines provided under expert guidance. Food and medicine should be government certified and prior permission should be taken from assistant commissioner, fish business/ fishery department. Further, toilets construction has been allowed after permission from Water Resource Department, without specifying management of discharges from such toilet.

- (vi). As per the analysis results of water samples collected by this committee within and outside the cage aquaculture of 0.15 hectare of the average 230ha water spread area of Vadiwale Lake, the concentration of analysed parameters in water are broadly higher inside the cages followed by at 3 m distances and at 100 m distances away from the boundary of cage culture when compared to that of downfall location (16) which is at about 2.5 km distance from cage culture (please refer Table 04). Further, the concentration of analyzed parameters in the cages of big fishes were found higher than the concentration of analysed parameters in the cages of small fishes.

Thus, it is evident that there is discharge/ pollution load in the water body due to cage culture activities in the Vadiwale lake with fish excretory matters and addition/use of feed(nutrients) which ultimately gets dissolved/ mixed with water due to exchange of metabolite and nutrients between the cage and outside environment. It leads into discharge of trade effluent(having nutrient/feed, excretory matters, etc.) from cage culture premises into stream(natural or artificial inland water) with pollutants like in BOD, COD, Total Nitrogen, Phosphate, etc. such discharges, when not carried out in controlled manner, may likely to, create a nuisance or

render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

Further, it was also observed that:

- a) The total phosphorous and total nitrogen concentration in the water were found in excess of the aforesaid NFBD guidelines' prescribed value of 0.02 mg/l and 1.2 mg/L at various monitored locations and all the monitored locations respectively, as given at Table 04 above. The guidelines stipulated that, in any case, cage culture should not be attempted in water body having such exceedance.
 - b) When compared with CPCB's guidelines on Designated Best Use water Quality Criteria for "Class of water - D: Propagation of Wild life and Fisheries", the DO(3.8mg/L) was found slightly lower than the prescribed limit of 4 mg/L at one of the monitored locations viz. L2- inside the Cage culture Compartment of big fishes. Please refer Table 48 above.
- (vii). Water samples collected from the Pond Aquaculture in the nearby village were found be conforming to the General Discharge Standards as notified under the Environment (Protection) Act, 1986, w. r. t. Analysed parameters for discharge into land for irrigation and public sewer but didn't conforms for discharge into inland surface water. The said water samples collecting though had not reached to the stage/concentration when it needed discharge and accumulation of further concentration in the monitored water samples cannot be ruled out.
- (viii). Consent mechanism under the Water (Prevention and Control of Pollution) Act, 1974, is currently not regulated by Maharashtra Pollution Control Board. However, the above observations reveal that there is need to bring inland aquaculture fisheries into consent regime depending on size/ volume of both i.e. water bodies and aquaculture.

Further, depending on size/ volume of both (i.e. water bodies and aquaculture) and water quality of the water, there may also be need of brining the inland aquaculture under the Environmental Impact Assessment regime which has also been suggested in the aforesaid NFDB's published guideline.

A detailed study may be required in this regard to assess environmental Impacts vis-a-vis size/volume of both (i.e. water bodies and aquaculture) and water quality for prescribing consent and EIA mechanism including control on use of various feed material/ chemical/ drugs/ antibiotics/ etc. and various measures required in inland aquaculture.

11. Recommendations

- i. *There is need to regulate cage aquaculture under consent mechanism of the Water (Prevention and Control of Pollution) Act, 1974. Also MoEF&CC may deliberate the requirement of prior Environmental Impact Assessment in view of the suggestion made by NFDB. However, such consent mechanism and EIA requirement may be regulated categorising nos. & size of cage aquaculture, fish types area of lake/reservoir, its water quality, other sources of pollution, surface runoff meeting with the reservoir etc. as per findings of study as mentioned in subsequent paragraphs.*
- ii. *There is need to conduct a study by reputed institutes in the field of fisheries and environment over a period of time considering the sizes of cage culture, cage culture area, fish types, area of lake/reservoir, its water quality, other sources of pollution, discharges, etc. to study respective environmental impacts. The study will help in regulating inland open water usage for cage culture in terms of reservoir sizes fish species, cage sizes & nos., water quality, types of feeds/ chemicals/drugs to be prohibited/ allowed, discharges, environmental impacts & measures to be taken, etc. without affecting water quality & eco-system.*
The study may be coordinate by MoFH&D in consultation with MoEF&CC and CPCB.
- iii. *Till the study is conducted, Fisheries Department, Government of Maharashtra, to adhere with the prevailing NFDB guidelines for the cage culture in inland open water bodies and may prescribe the following precautionary measures while permitting aquaculture in reservoir/ lake, as well as in the existing permitted cage aquaculture.*
 - a) *Aquaculture/ Cage Culture shall not be allowed in the reservoirs that do not conform to the CPCB recommended Designated Best Use Water quality criteria for Propagation of Wild Life and Fisheries.*
 - b) *Cage culture should not be allowed in any water body having total phosphorous and total nitrogen concentration in the water of exceeds of 0.02 mg/L and 1.2 mg/L, respectively, as recommended in NFDB's published guidelines.*
 - c) *Water quality of the reservoir/ lake shall be analyzed before starting the cage culture activities and twice in a year during non- monsoon seasons during aquaculture period at pre- identified strategic locations which may be ensured by state fisheries department. Based on the analysis of water quality, if any abnormality observed, the*

same shall be reported to MPCB/ irrigation Department/ Water Supply Department.

d) Total phosphorous, total nitrogen, chloride, calcium, magnesium and other site specific relevant parameters shall be prescribed by MPCB and State Fisheries Department for analysis of the aforesaid water quality.

e) Sinking fee may be prohibited for cage fish farming as it accumulates at the base and fouls the cage /reservoir environment.

f) Construction of toilets near the cage culture fish farming shall not be allowed unless such toilets have discharge management ensuring no discharge to the lake/ reservoir/ land and permission from the Water Resource Department is obtained."

4. There is no separate reply affidavits filed by Respondents except by Respondent No. 7/CPCB, which has submitted with it the Joint Committee Report, relevant portion of which has already been cited above.

5. The Applicant has filed rejoinder affidavit against the Joint Committee Report, which is annexed at page nos. 255 to 260 of the paper book, where-in it is submitted that the report ought to have stated the impact of fisheries on wholesomeness of the water, as the same was being used for drinking purposes among entire rural and urban population. The GRs of the Government of Maharashtra dated 09.03.2018 and 28.08.2021 provide for granting permission for cage culture in reservoirs/water bodies, that are less than 200 ha. in size, where-as the Central Government Guidelines mandate that no cage culture must be permitted in a water body that is less than 1000 ha. The said GR dated 28.08.2021 further dilutes the permission criteria from the earlier GR dated 09.03.2018 by allowing cage culture in average depth of water at 8 meters, where-as under earlier GR, it was 10 meters or more. The GR dated 28.08.2021 provides that the contract for aquaculture will be cancelled if the water body is found to be polluted, however, there is no

mechanism provided as to how such pollution will be identified and what would be the basic standards that a cage culture operator would be required to maintain.

6. Further, it is mentioned in the said affidavit that Joint Committee Report speaks of one Mr. Bhardwaj Yadavrao Pagare, who is carrying out cage culture activities with 24 cages, that are operational and the analysis of the sample collected from there, show violation of the standards set for "best use water use quality criteria" as per the CPCB's Guidelines. The said activity has rendered the drinking water to be unfit, as has been noted by the Joint Committee in its report. Therefore, it is necessary to direct closure of the aquaculture activities because the Vadiwale Lake is in 230 ha. area, and is providing drinking water to as many as 28 Villages. All the recommendations, which have been made by this Committee, need to be implemented in totality.

7. The Applicant has summarized the conclusions of the Committee Report, which are as follows:

- " (i). Cage culture is growing at a very fast pace, which may lead to some concern of its impact on the water bodies;
- (ii). Strong governance platform as per the Central Government's Guidelines of Cage Culture outlines about the environmental concerns and restricts any cage culture in a water body less than the size of 1000 ha.
- (iii). Maharashtra's Government Resolution dated 26.08.2021 does not include any conditions stipulating water quality standard to be complied/ maintained in reservoirs, and parameters thereto.
- (iv). Maharashtra's GR dated 26.08.2021 provides for contract conditions, which do not restrict the use of wholesome food for growth of fish and government approved medicines providing under expert guidance.
- (v). Maharashtra's GR dated 26.08.2021 does not state that food and medicine should be government certified and that prior permission should be taken from assistant commissioner, fish business/ fishery department.

- (vi). *Maharashtra's GR dated 26.08.2021 allows construction of toilets inside the cage culture in the water body without specifying any standards/ parameters for discharge from such toilets.*
- (vii). *There is discharge pollution load in Vadiwale Lake due to cage culture activities and is likely to create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms as phosphorous and total nitrogen concentration were found to be in excess of the Central Government's Guidelines."*

8. In the end, the learned Counsel for the Applicant has prayed that the MPCB be directed to bring the aquaculture activity within the consent regime in the light of the conclusions drawn by the Expert Committee because of the present GR dated 26.08.2021 regulating the aquaculture activities, does not deal with environmental concerns properly. Further, it is prayed that no aquaculture activity be permitted in water bodies less than 1000 ha. in size, keeping in view the Central Government's Guidelines of 2016 and the closure order be passed in respect of Mr. Bhardwaj Yadavrao Pagare, who is carrying out cage culture activities with 24 cages in the Vadiwale Lake.

9. We have heard the arguments of the learned Counsel for the parties, perused the record and have also gone through the report, as well as the reply-affidavit filed by the CPCB.

10. We find that the Expert Committee has exhaustively dealt with the issue involved in the present case, reference to which is as follows:

- To examine whether the use of chemicals in aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005), if any, in the process be allowed and if so, how can it be regulated.*
- To examine the modalities to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly use of chemicals, if any.*

- *To study the existing Consent Regime under the water act and whether there is need to introduce any change.”*

11. The Committee has taken into consideration large data regarding inland fisheries and aquaculture in India, inland fish production system, enhancement, different forms of the enhancements, stock enhancement (Increasing the Stock), species enhancement, environmental enhancement, other enhancements, culture based fisheries, aquaculture, cage and pen culture. In the said report, the advantages of enclosed culture system in inland fisheries and also policy of the Department of Agriculture, Animal Husbandry, Dairy Development and Fisheries, Government of Maharashtra has been summarised. It has also conducted study about the Vadiwale lake and cage culture projects in the said lake. It has been submitted in this report that the Vadiwale Lake is in 230 Hectare and 1% of the said Lake has been decided to be given on contract basis for cage culture i.e. about 2.3 hectares. The water shed area of 0.15 Hectares is allocated to Respondent No. 8/Mrs. Vaidehi Bhushan Randive for years i.e. 2017-2018 to 2023-2024, although the said project has not yet been established. Vide report dated 06.09.2018 of the Commissioner of Fisheries, Government of Maharashtra, water spread area of 0.15 hectare has been allocated to Shri Bhardwaj Yadavrao Pagare (not party) for cage culture project, which is operational with 24 cages. Further, it is mentioned that a water sample was taken to assess the impact of aquaculture-cage culture on Vadivale Lake within and around the existing cage culture, established by Shri Bhardwaj Yadavrao Pagare and outfall into Kundalini River from Vadiwale Lake, which meets Indrayani River. The water samples were collected from cage compartments (2 nos.), 3 meter away from cage culture in east and west direction (2 nos.) and 100 meters away from cage culture (1 no.). The details of the sampling locations are given in the said report, which are as follows:-

Table- 02: Details of Sampling Locations

Sr. No.	Type Aquaculture	Location Code	Location Description
1	Cage Aquaculture	L1	Cage Culture from Small Fish Compartment.
2		L2	Cage Culture from Big Fish Compartment
3		L3	3 metres away from cage culture towards west side.
4		L4	3 meters away from cage culture towards east side.
5		L5	100 metres away from Cage Culture
6		L6	Outfall from Uksan Dam in to Kundalini river which meets Indrayani river.
7		L7	Mr. Bhushn randive Fish aquaculture.

12. The parameters analysed for water sampling are as follows:-

Sr. No.	Parameter (s)	Sr. No.	Parameter(s)
1	PH	16	O- Phosphate
2	Temperature	17	T- Phosphate
3	Turbidity	18	Sulphide
4	Biochemical Oxygen Demand (BOD)	19	Iron
5	Chemical Oxygen Demand (COD)	20	Copper
6	Dissolved Oxygen (DO)	21	Manganese
7	Total Suspended Solids (TSS)	22	Magnesium
8	Total Dissolved Solids (TDS)	23	Calcium
9	Sulphates	24	Potassium
10	Chlorides	25	Total Hardness
11	TAN	26	Faecal Coliform(FC)

12	TKN	27	Total Coliform(TC)
13	Nitrate (NO ³⁻) "k	28	Zinc
14	Nitrites (NO ²⁻)	29	Phenol
15	Phosphorus	30	Total Alkalinity

13. In the said report, the samples were also collected from the Pond Aquaculture, developed by Mr. Bhushan Randive located nearby Village: Khandashi, Taluka: Maval, District: Pune and following relevant analysis results were found:-

Sr. No	Parameters	Sampling Locations in and around Cage Culture and outfall of Vadiwale Lake						Sampling Location of the Pond
		L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	7.24
2	TDS	226	258	224	154	186	138	92
3	SS	12	24	18	14.00	14	8	52
4	Turbidity (NTU)	1.0	1.10	1.20	1.10	1.10	1.10	1.2
5	DO	4.70	3.80	4.60	4.70	4.90	4.70	NA
6	BOD	14.00	21	13.00	14.0	11.00	4.80	35
7	COD	48.00	64	36.00	40.00	32.00	24	92
8	NH ₃ -N	0.50	0.60	0.40	0.50	0.30	0.20	0.80
9	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10	Ammonia (as total ammonia-N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.80
11	NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	1.20
12	NO ₂ -N	0.08	0.03	0.02	0.02	0.02	BDL	0.41
13	TKN	1.68	2.24	1.68	2.24	2.24	1.12	2.80
	Total Nitrogen*	2.65	3.06	2.22	2.93	2.74	1.89	5.21
14	Total Alkalinity	28.00	32	26	14.00	20.00	12	12
15	Hardness (Total)	62.00	64	58.00	38.00	44.00	36	30
16	Hardness (Mg ²⁺)	16	16	20.00	16	14.00	16	12
17	Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	2.92
18	Calcium	18.44	19.24	15.23	8.82	12.02	8.02	7.21
19	Phosphate (Total)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
	Total Phosphorus \$	0.2	0.033	BDL	0.033	BDL	0.067	0.47
20	Phosphate (Ortho)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
21	Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	9.10

22	Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chloride	42.49	47.49	44.99	27.49	32.49	24.99	28.99
24	Faecal Coliform**	30.00	45	25.00	25.00	20.00	17	NA
25	Total Coliform**	900	900	550	550.00	425.00	250	NA
26	Phenol	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Zinc	BDL	BDL	BDL	BDL	BDL	0.08	BDL
28	Iron	0.03	0.05	0.03	0.57	0.37	NA	0.05
29	Copper	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30	Lead	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31	Nickel	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Concentration of all the values expressed in mg/L; except pH; BDL-Below Detection Limit;

*as estimated, free ammonia was found to be BDL; the NH₃-N has been considered as Total Ammonia-N;

**expressed in (MPN/100 ml); NA-Not Analysed; NR-No Relaxation.

*addition of all forms of Nitrogen Free Ammonia, Ammonia (as total ammonia-N), NO₃-N, NO₂-N, TKN.

*total Phosphorus calculated from Total Phosphate.

As per guideline published by NFDB Hyderabad (Annexure-II), it is mentioned that, in any case, cage culture should not be attempted in any water

body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively.

TABLE-04A: ANALYSIS RESULTS AND COMPARISON WITH DESIGNATED BEST USE WATER USE QUALITY CRITERIA OF CPCB'S GUIDELINES

Sr. No	Parameters	L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Best Designation Use Class of water-C*	Designate d Best Use Class of Water-D [§]
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	6-9	6.5-8.5
2	DO	4.70	3.80	4.60	4.70	4.90	4.70	>4	>4
3	BOD	14.00	21	13.00	14.0	11.00	4.80	<3	NS
4	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	NS	1.2
5	Total	900	900	550	550.00	425.00	250	<5000	NS

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit; NS – Not specified

Class of Water – C: Drinking water source after conventional treatment and disinfection

Class of Water – D: Propagation of Wild Life and Fisheries

TABLE-04B: ANALYSIS RESULTS OF WATER SAMPLES AND COMPARISON WITH DRINKING WATER SPECIFICATION

Parameters	L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Drinking Water Specifications: IS 10500:2012	
							Requirement (Acceptable limit)	Permissible limit in absence of alternative source
pH	7.23	7.40	7.83	7.72	7.62	8.04	6.5-8.5	NR
TDS	226	258	224	154	186	138	500 (Max)	2000 (Max)
Turbidity	1.0	1.10	1.20	1.10	1.10	1.10	1 (Max)	5 (Max)
Ammonia (as total ammonia- N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.5 (Max)	NR
NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	45 (Max)	NR
Total	28.00	32	26	14.00	20.00	12	200 (Max)	600 (Max)
Hardness	62.00	64	58.00	38.00	44.00	36	200 (Max)	600 (Max)
Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	30 (Max)	100 (Max)
Calcium	18.44	19.24	15.23	8.82	12.02	8.02	75 (Max)	200 (Max)
Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	200(Max)	400 (Max)
Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Max)	NR
Chloride	42.49	47.49	44.99	27.49	32.49	24.99	250 (Max)	1000 (Max)
Phenol	BDL	BDL	BDL	BDL	BDL	BDL	0.001 (Max)	0.002 (Max)
Zinc	BDL	BDL	BDL	BDL	BDL	0.08	5 (Max)	15 (Max)
Iron	0.03	0.05	0.03	0.57	0.37	NA	0.3 (Max)	NR
Copper	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Max)	1.5 (Max)
Lead	BDL	BDL	BDL	BDL	BDL	BDL	0.01(Max)	NR
Nickel	BDL	BDL	BDL	BDL	BDL	BDL	0.02 (Max)	NR

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit; NR – No Relaxation.

TABLE-05: ANALYSIS RESULTS OF WATER SAMPLES OF THE POND ACQUACULTURE AND THEIR COMPARISON WITH GENERAL DISCHARGE STANDARDS NOTIFIED UNDER THE ENVIRONMENT (PROTECTION) ACT, 1986

S. No.	Parameters (All parameters are expressed in mg/L, except	L7 Pond Aquaculture (Randive Fish Aquaculture)	General Standards for discharge of environmental pollutants [Schedule-VI, Rule 3A, The Environment		
			Inland surface water	Public sewer	Land for irrigation
1	pH	7.24	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
2	SS	52	100	600	200
3	BOD	35	30	350	100
4	COD	92	250	--	--
5	NH ₃ -N	0.80	50	50	--
6	Free Ammonia	BDL	5.0	--	--
7	NO ₃ -N	1.20	10	--	--
8	TKN	2.80	100	--	--
9	Sulphide	BDL	2.0	--	--
10	Phenol	BDL	1.0	5.0	--
11	Zinc	BDL	5.0	15	--
12	Iron	0.05	3.0	3.0	--

13	Copper	BDL	3.0	3.0	--
14	Lead	BDL	0.1	1.0	--
15	Nickel	BDL	3.0	3.0	--

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit.

14. Thereafter, we find that the comparisons with CPCB's designated Best Use Water Quality Criteria, Drinking Water Specifications and Guidelines published by NFDB, Hyderabad for cage culture were made.

15. After this comparison, it was found that except BOD, all other parameters exceeded in the samples of water in Vadiwale Lake due to cage culture activities, pollution load was found evident. The total phosphorous and total nitrogen concentration was also found in excess of the admissible limit.

16. In the conclusion, we find that it is recorded that there was huge pollution load in the Vadiwale Lake with fish excretory matters and also addition/use of feed (nutrients), which gets dissolved/mixed with water due to exchange of metabolite and nutrients between the cage and outside environment. It leads into the discharge of trade effluent from cage culture premises into stream with pollutants like BOD, COD, Total Nitrogen, Phosphate, etc. It is also evident that there was need to bringing inland aquaculture under the Environment Impact Assessment regime. Therefore, the recommendations which have been cited above by us need to be adopted in the present case.

17. In view of the above Joint Committee Report, as well as the arguments made by the learned Counsel for the parties, we are of the view that this application needs to be disposed of with the following directions and is disposed of accordingly:-

- (i). MoEF&CC shall consider bringing the cage aquaculture under the Environment Impact Assessment Regime,

particularly, in view of the fact that huge pollution is found to have been caused due to this activity in the Vadivale lake.

- (ii). As regards the cage aquaculture activity to be brought under consent regime, the necessary steps shall be taken by the Central Pollution Control Board (CPCB) as well as Maharashtra Pollution Control Board within three months and for that, if any study is required as suggested by the Committee, the same may be got conducted in the meantime.
- (iii). The interim measures which are proposed under clause 11 pertaining to recommendations under sub-clause (iii) (a to f) be implemented by the authorities concerned on urgent basis.
- (iv). One Mr. Bhardwaj Yadavrao Pagare was found to have conducted the cage aquaculture activity in the Vadiwale lake with 24 cages and huge pollution load is found because of that activity, therefore, we direct the MPCB to take appropriate action against him after adopting due process i.e. after giving him opportunity of hearing and take appropriate action under Water (Prevention and Control of Pollution) Act, 1974 within one month.
- (v). The compliance report shall be submitted before us at the end of six months from today and if any grievance remains thereafter to the applicant, he may approach us.

Dinesh Kumar Singh, JM

Dr. Vijay Kulkarni, EM

February 27, 2023
Execution Application No. 12/2022(WZ) In
Original Application No. 80/2020(WZ)
P.Kr



FNo.CM-13011/3/2021-TECH-RD-PUNE-RD(Pune) - 554/1148 23.01.2023

To

Sh. Naresh Pal Gangwar,
Additional Secretary, MoEF&CC,
Indira Paryavaran Bhawan,
Jor Bagh, New Delhi-110003

Sub : Report of the expert committee constituted under Hon'ble NGT Order dated 31/5/2021 of the Hon'ble NGT in Original Application No. 80/2020 (WZ) titled as Vanashakti & Anr. Versus State of Maharashtra & Ors.

Sir,

This has reference to directions of the Hon'ble NGT order dated 31.5.2021 (copy enclosed) wherein, in Para 4 the tribunal constituted a six-member Expert Committee to examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated.

It was further directed in the said order dated 31.5.2021 that report of the said committee be furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra, for further remedial measures.

In compliance with the aforesaid order of Hon'ble NGT, the Expert Committee has prepared its report and the same is attached herewith for ready reference and for necessary action in accordance with the said order of the Hon'ble NGT.

This issues with the approval of the Competent Authority, CPCB.

Yours faithfully,

23/01/23

(P K Mishra)

Divisional Head
WQM -i Div.

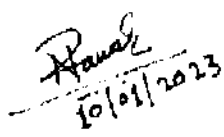
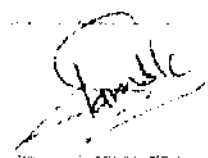

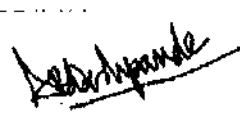


Encl.: As above

As (NPG) - In Mktg.
Dir (VPM)

**REPORT OF THE COMMITTEE
IN THE MATTER OF
ORIGINAL APPLICATION NO. 80 OF 2020 (WZ)
IN COMPLIANCE WITH ORDER DATED 31.05.2021
OF HON'BLE NGT RELATED TO UNREGULATED ACTIVITIES OF
AQUACULTURE IN FRESH WATER BODIES OF MAHARASHTRA**

**REPORT OF THE COMMITTEE IN THE MATTER OF ORIGINAL APPLICATION NO. 80
OF 2020 (WZ) IN COMPLIANCE WITH ORDER DATED 31.05.2021 OF HON'BLE
NGT RELATED TO UNREGULATED ACTIVITIES OF AQUACULTURE IN FRESH
WATER BODIES OF MAHARASHTRA**

Committee Members

Sr. No	Name of Member, Designation & Department	Signature
1	Dr. Nilesh Anil Pawar Deputy Director (Aquatic Quarantine) Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, New Delhi	 10/01/2023
2	Dr. Suhas Prakash Kamble Scientist (SS) and I/c Vadodara Research Station, Central Inland Fisheries Research Institute (CIFRI), Vadodara, Gujarat	
3	Shri E. Thirunavukkarasu, Scientist 'E' Integrated Regional Office, MoEF&CC, Nagpur	
4	Shri Abhay Deshpande Regional Deputy Commissioner, Ministry of Animal Husbandry, Dairy Development and Fisheries Development, Govt of Maharashtra, Pune Region	
5	Shri Bharat K. Sharma Regional Director, Central Pollution Control Board (CPCB), Regional Directorate, Pune (Nodal Agency)	
6	Shri Nitin R. Shinde Sub Regional Officer Maharashtra Pollution Control Board (MPCB), Regional Office, Pune (Nodal Agency)	

Dated: 10/1/2023

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Annexure- II	Guideline for cage culture in inland open water bodies published by national Fisheries Development Board (NFDB), Dept. of Animal Husbandry, Dairying & Fisheries, GoI
Annexure- III A & III B	Policy of Department of Agriculture, Animal Husbandry, Dairy Development, Fisheries, Govt of Maharashtra
Annexure- IV	Order of Commissioner of Fisheries, Govt of Maharashtra, Mumbai dated 30.06.2017
Annexure- V	Order Commissioner of Fisheries, Govt of Maharashtra, Mumbai dated 06.09.2018
Annexure -VI	Usage of chemicals and risk associated with use of these chemicals
Annexure - VII	Usage of chemicals and risk associated with use of these chemicals

REPORT OF THE COMMITTEE IN THE MATTER OF ORIGINAL APPLICATION NO. 80 OF 2020 IN COMPLIANCE WITH ORDER DATED 31.05.2021 OF HON'BLE NGT RELATED TO UNREGULATED ACTIVITIES OF AQUACULTURE IN FRESH WATER BODIES OF MAHARASHTRA

1.0 BACKGROUND

The Original Application No. 80 of 2020 (WZ) (titled "Vanashakti & Anr. Vs. State of Maharashtra & Ors") in the Hon'ble National Green Tribunal (NGT) is related to unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra. The applicant is particularly aggrieved by the permission granted in favour of Respondent No.7, Vaidehi Randive in Vadiwale Lake in Village Valavanti on the Kamshet-Kundali Road in Maval Taluka, near Village Kamshet, in Pune District, by the Commissioner of Fisheries, Government of Maharashtra, which the applicant has assailed being against the "Precautionary" and "Sustainable Development" principles.

The applicant has alleged broadly regarding unregulated activities of aquaculture and fishery in Vadiwale Lake in Village Valavanti, Maval Taluka, near Kamshet Village Pune. Vadiwale lake is source of drinking water for nearby villages and the out fall of the lake is in Indrayani River which is again source of drinking water for 28 villages. Aquaculture activity involves use of modern techniques and harmful chemicals. Release of harmful chemicals into the lake will directly affect the human health. Apart from discharge of harmful chemicals, use of other materials like poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics also have harmful impact on water bodies. Impacts of these materials on water bodies are not taken into account and only financial aspects are considered.

The Hon'ble NGT passed an order dated 31/5/2021 in the aforesaid Original Application No. 80/2020 (WZ) on 31.05.2021 and relevant paragraph (Para-4) of the said order is reproduced below-

"...4. We have given due consideration to the issue raised. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six-member expert Committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional Officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether, in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process..."

Copy of the aforesaid order dated 31.05.2021 of the Hon'ble NGT is given at **Annexure-I.**

2.0 THE COMMITTEE

In compliance with the aforesaid order dated 31.05.2021 of the Hon'ble NGT, a committee was constituted comprising of the following officials:

Table 1: Name and Institute/Department of the Committee Members

Sr. No	Name of Member & Designation	Organization/Department
1	Mr. I.A. Siddiqui [#] Deputy Commissioner (Fisheries) and Fisheries Development Commissioner (I/c) of Department of Fisheries	Ministry of Fisheries, Animal Husbandry & Dairying, Govt. of India (MoFAHD)
2	Dr. Suhas Kamble Scientist (SS) and I/c CIFRI Research Station, Vadodara, Gujarat	Central Inland Fisheries Research Institute (CIFRI)
3	Mr. Suresh Kumar Adappa* Scientist 'E'	Integrated Regional Office, MoEF&CC, Nagpur
4	Mr. Abhay Deshpande Regional Deputy Commissioner, Pune Region	Ministry of Animal Husbandry, Dairy Development and Fisheries Development, Govt. of Maharashtra
5	Mr. Bharat K.Sharma Regional Director	Central Pollution Control Board (CPCB), Regional Directorate, Pune (Nodal Agency)
6	Mr. Nitin R. Shinde I/c Regional Officer	Maharashtra Pollution Control Board (MPCB), Regional Office, Pune (Nodal Agency)

Earlier Mr. I.A. Siddiqui who superannuated from the service of Department of Fisheries, MoFAHD, New Delhi and subsequently replaced by Dr. Nilesh Anil Pawar, Deputy Director (Aquatic Quarantine), Department of Fisheries, MoFAHD, New Delhi.

** Mr. Suresh Kumar Adappa, Scientist 'E' is replaced by Shri E. Thirunavukkarasu, Scientist 'E' due to transfer.*

3.0 SCOPE OF THE COMMITTEE

The scope of the committee in accordance with the aforesaid Hon'ble NGT order dated 31.05.2021 is as below;

- To examine whether the use of chemicals in aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005), if any, in the process be allowed and if so, how can it be regulated.
- To examine the modalities to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly use of chemicals, if any.
- To study the existing Consent Regime under the water act and whether there is need to introduce any changes.

4.0 APPROACH OF THE COMMITTEE

In compliance with the said Hon'ble NGT order, the committee adopted the following approach:

- Meetings through VC was held on 13.08.2021 to deliberate on way forward for compliance of the Hon'ble NGT order and subsequent meeting on 13.05.2022.
- Site visit of cage aquaculture in Vadiwale Lake, Village Valavanti (near Village Kamshet) Kamshet-Kundali Road, Taluka- Maval, District-Pune and pond aquaculture at Village khandashi, Taluka- Maval District- Pune and sampling of water carried on 27.08.2021.
- Collection of information from the committee members and concerned departments.
- Preparation of draft report and deliberation on the same by the committee members in meeting held through VC on 13.05.2022.

5.0 ABOUT INLAND FISHERIES AND AQUACULTURE IN INDIA

India is the third largest fish producing country and the second largest aquaculture fish producer in the world and contributes about 7% to the global fish production (FAO, 2020). The total fish production of the country during 2019-20 is around 14.16 million metric tonnes, of which nearly 73.7 % is from inland

sector and about 50% of the total production is from culture fisheries. Fisheries sector play an important role in Indian economy and provides livelihood to more than 28 million fishermen and fish farmers at the primary level and several more along the fisheries value chain (DOF, 2020). During 2018-19, fisheries sector contributed Rs. 2,12,915 crore Gross Value Added (GVA) which was around 1.24 % of Indian economy and contributed around 7.28 % in Indian Agriculture economy. The fish production from the marine sector in the country is in declining state and increasing demand for fish product is being compensated through inland sector of the country. India has vast and varied inland fisheries resources that comprise of 191,024 kms of rivers and canals, 1.2 million ha of floodplain lakes, 2.36 million ha of ponds and tanks and 3.15 million ha of reservoirs (DOF, 2020). Although, inland fisheries have grown, the rate of growth in terms of its potential is not yet achieved. The average fish production potential was estimated at 250 kilograms (kg)/hectare (ha) in reservoirs and about 350 kg/ha for wetlands. While reservoirs and freshwater aquaculture can be considered as the two main pillars of growth, another major activity in aquaculture sector called the cage/pen culture in open waters, has shown significant growth in recent years. It offers vast potential for inland aquaculture in the country. The production potential from sustainable cage culture production is about 50 kg/m³.

5.1 INLAND FISH PRODUCTION SYSTEM:

The fish production system practiced in various inland water resources are summarised in the following table:

Sl. No.	Resource type	Resource size	Fish production system
1.	Rivers and canals (Km)	191,024	Capture
2.	Reservoirs (Million ha)	3.15	Capture/Culture-based-fisheries/Stock enhancement/cage culture
3.	Pond and Tanks (Million ha)	2.36	Aquaculture
4.	Brackish water area (Million ha)	1.24	Aquaculture

5.	Floodplains wetlands (Million ha)	1.2	Culture-based fisheries/Aquaculture
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Capture fishery is the major source of fish production from Inland open waters such as river and canals, lakes, reservoirs, wetlands and estuaries. In a typical capture fishery, the wild untended stock of organisms is harvested with little human intervention on either habitat variables or the biotic communities. On the other hand, in a culture fishery, the whole operation is based on captive stocks with a high degree of effective human control over the water quality and other habitat variables. The marine fishery is the example of capture fisheries and the intensive/semi-intensive aquaculture of fish and prawn in small ponds is the typical example of culture fishery. Fishery management purely on capture fishery lines as understood in case of marine fisheries seldom operates in the inland waters of India, with the possible exception of rivers and estuaries. Most of the open waters which contribute substantially to fish production such as reservoirs, beels, boars, chauris, etc. are managed on the basis of culture-based fisheries or various forms of enhancement, which are intermediate to culture and capture fishery norms.

5.2 ENHANCEMENT

A range of management practices is collectively known as enhancement. FAO (1997) defines fisheries enhancements as technical interventions in existing aquatic resource systems, which can substantially alter the environment, institutional and economic attributes of the system. Lorenzen et al. (2001) defines it as limited interventions in the life cycle of common pool resources. Enhancement is the process by which qualitative and quantitative improvement is achieved from water bodies through exercising specific management options. The common forms of enhancement which are relevant to inland water bodies of India are stock enhancement, species enhancement, environmental enhancement, management enhancement and enhancement through new culture systems. Culture-based fishery is the most common mode of

enhancement being followed in inland water bodies in India. When the fish harvest in an open water system depends solely or mainly on artificial recruitment (stocking), it is generally referred to as culture-based fishery.

5.2.1 DIFFERENT FORMS OF ENHANCEMENTS

Enhancement can be in the form of improving the stock, changing the exploitation norms, changing craft and gear, introducing new forms of access and so on. Apart from improving the production of absolute biomass from the water bodies, it can also be in the form of interventions on access to the fishery or improvements in their monetary and aesthetic value. The common norms of enhancement, which are relevant to inland water bodies of India, are:

- ✓ Stock enhancement
- ✓ Species enhancement
- ✓ Environmental enhancement
- ✓ Habitat enhancement
- ✓ Management enhancement, and
- ✓ Enhancement through new culture systems

5.2.2 STOCK ENHANCEMENT (INCREASING THE STOCK)

Augmenting the stock of fish has been the most common management measure that is followed in the reservoirs in most countries of the world. Augmentation of the stock is necessary to prevent unwanted fish to utilize the available food niches and flourish at the cost of economically important fast-growing species to colonize all the diverse niches of the biotope is one of the necessary pre-requisites in reservoir fishery management. The main aspects of stock enhancement are selection of species of stocking, determination of stocking rate and the size at stocking. There are two types of stock enhancements viz., (1) stocking to create culture-based fisheries i.e. fisheries based predominantly on the recapture of stocked fish and (2) Stocking to enhance or supplement self-recruiting populations.

5.2.3 SPECIES ENHANCEMENT

Species enhancement is planting of economically important, fast-growing fish from outside with a view to colonizing all the diverse niches of the biotope for harvesting maximum sustainable crop from them. It can be just stocking of a new species or introductions. Introduction means one time or repeated stocking of a species accidentally or deliberately with the objective of establishing its naturalized populations (Welcomme & Bartley, 1998). This widespread management practice has more relevance to larger water bodies, where stocking and recapture on a sustainable basis is not feasible. Introduction of exotic species is a subject of hot debate due to its possible impact on the biodiversity of our aquatic ecosystems.

5.2.4 ENVIRONMENTAL ENHANCEMENT

Environmental enhancement is improvement of the nutrient status of water by the selective input of fertilizers (Sugunan, 1995, 2000). Although this is a common management option adopted in China (Sugunan, 1997), a careful consideration of the possible impact on the environment is needed before this option is resorted to in reservoirs. Most of the Indian reservoirs are being used for the irrigation, drinking water purpose and power generation and are under the different agencies of the Government and environmental enhancement is not been allowed.

5.2.5 OTHER ENHANCEMENTS

There are other forms of enhancement such as management enhancement when new management options are exercised. For example a water body can be thrown open for sport fishing to attract fishers or a community management approach can be adopted. The new culture systems such as cage and pen culture can be resorted to augment yield and increase revenue.

5.3 CULTURE-BASED FISHERIES

When the fish harvest in an open water system depends solely or mainly on artificial recruitment (stocking) it is referred to as a culture-based fishery. This management tool is particularly effective in increasing yields when recruitment of desired species is lower than the environmental carrying capacity. This is the case in certain modified ecosystems (e.g. reservoirs) or where intensive harvesting has reduced spawning stocks to very low level. Chronic recruitment limitation can also arise naturally in seasonal and or isolated freshwater bodies, or in marine habitats with poor connectivity to spawning sources (Doherty, 1999). The floodplain wetlands, the small reservoirs and a number of community water bodies in India fall under the above-mentioned situation. Thus, culture-based fishery forms an important management tool in the hands of fishery managers in India to increase production and productivity. The main focus of management here is stocking and recapture. The size at stocking, grow-out period and the size at capture are the important criteria in culture-based fishery management. In this kind of practices, no other inputs such as feed, fertilizers and chemicals are permitted.

6.0 ABOUT AQUACULTURE

Aquaculture is the farming of aquatic organisms including fish, molluscs, crustaceans and aquatic plants (FAO,1997). Aquaculture is categorised based on the environment in which the culture is done e.g. fresh water, brackish water, salt water or marine aquaculture or mariculture. In India, Freshwater aquaculture mostly practiced in land-based pond and tank systems. However, based on the culture operations freshwater aquaculture is categorised into the following culture systems:

S.N.	Category of Aquaculture	Description
i)	Open aquaculture System	Fish culture in pens, cages, long lines and raft;
ii)	Semi-closed aquaculture System	Fish culture in tanks and ponds

iii)	Closed aquaculture system	Re-circulatory aquaculture systems and raceways
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Further, based on the input provisions freshwater aquaculture is categorised into following types:

S.N.	Category of Aquaculture	Description
i)	Extensive aquaculture	Culture of fish with minimal control, lower stocking density, low input (Seed and Fertilizers): pond culture of fish
ii)	Semi-intensive aquaculture	Fish culture with medium inputs, moderate stocking density, fertilizers and use of supplementary feed: pond fish culture.
iii)	Intensive aquaculture	Fish culture in controlled condition, higher input, high stocking density, Re-circulatory Aquaculture Systems (RAS) and Raceways.

Freshwater aquaculture industry in the country involves activities such as seed production (Hatchery: induced breeding), seed rearing (Production of stocking material) and grow-out culture (Production of table size fish). Seed production activity involves induced breeding of fishes through hatcheries, whereas seed rearing is the activity in which hatchery produced seed is reared in earthen pond or concrete tanks to get the stocking material for the grow-out culture of the species. Grow-out culture is the rearing of stocking material till it reaches the marketable size.

Fish production from aquaculture sector has also been increased to six and half folds over the last two decades, with the freshwater aquaculture contributing more than 95% of the total inland fish production. The three Indian Major Carps (IMCs), namely *Catla (Catla catla)*, *Rohu (Labeo rohita)* and *Mrigal (Cirrhinus mrigala)* contribute the major chunk of the freshwater aquaculture production (around 80% of the volume), followed by the exotic carps namely, *silver carp (Hypophthalmichthys molitrix)*, *grass carp (Ctenopharyngodon idella)* and *common carp (Cyprinus carpio)* forming the second important group (Kasozi et

al., 2017). Apart from above mentioned species several other indigenous fish species such as *minor carps and barbs (Labeo fimbriatus, L. gonius, L. calbasu, Puntius sarana)*; *catfishes (Clarias batrachus, Ompok pabda)*; *Climbing Perch (Anabas testudineus)* and *Murrel (Channa striatus, C. marulius and C. punctatus)* are being cultured in small scale. Recently, exotic species such as *Striped Catfish (Pangasianodon hypophthalmus)*, *Tilapia (Oreochromis niloticus)* and *Pacu (Piaractus brachipomus)* have taken momentum in the freshwater aquaculture in India. In addition, the giant freshwater prawn (scampi) is produced in freshwater ponds and these species are widely cultivated in West Bengal, Andhra Pradesh, Telangana, Karnataka, Kerala, Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Rajasthan and Uttar Pradesh.

The freshwater aquaculture production systems in India comprise 2.36 million ha of ponds and tanks. In Eastern India, aquaculture is practiced in ponds and tanks of less than 1 ha area, whereas in Western India aquaculture is operated on a larger scale, with watersheds of 1525 ha. In Northern India, open water aquaculture is practiced and in southern India, crop irrigation ponds are used for aquaculture. Extensive (Low input) to semi-intensive (Medium input) culture system is mostly adopted in freshwater aquaculture in India. It is estimated that only about 40 percent of the available area of ponds and tanks have been utilised and an immense scope for expansion of area exists under freshwater aquaculture.

6.1 CAGE AND PEN CULTURE

Cage and Pen culture aquaculture techniques used in the open waters for the enhancement of fish production. During the last five decades, contribution of marine fish in the total fish production of the country has decreased from 71% in 1950s to 26.3 % during 2019 (www.dahd.nic.in) with a corresponding increase in inland fish production. The increase in fish production in favour of the inland sector is attributable to the growth of inland aquaculture, as contrasting to the sole dependence of capture fisheries in the marine sector. In view of the dwindling production from natural waters, both inland and marine, any substantial increase in production has to come either from inland aquaculture or

mariculture. However, freshwater aquaculture in India by and large still centres on pond-based systems. Considering the ever-increasing and often conflicting cross-sectorial demands for water and land, there are limitations for growth in pond-based aquaculture. In this context, culture of fish in enclosures such as cages and pens installed in open water bodies offer scope for increasing production obviating the need for more land-based fish farms.

Cage is an enclosed space to rear organisms in water that maintains free exchange of water with the surrounding water body. 'Pens' are essentially portions of a water body cordoned off by erecting a fence like structure. Usually, pens are enclosed portions of the lake margin, with fencing on three sides; the free fourth side being contiguous with the land. But, pen can also be away from the shore with fencing on all the four sides. The main difference between a pen and a cage is, pen bottom is never covered so that the soil water interface of the water body is not compromised. Enclosure aquaculture in the context of inland fisheries in India refers to both 'cage culture' and 'pen culture'. The cage fish farming being purely based on supplementary feeding, selection of good/best fish feed and its application in right quantity is important to achieve desirable results. It is advised that only quality floating feed is selected in order to avoid economic losses due to feed wastage and further environmental degradation which may cause eutrophication of water body.

At the moment economically viable cage culture is practiced in inland water bodies of India by growing the *exotic pangasius (Sutchi Catfish)*, *Pangasianodon hypophthalmus*. Culture of another exotic species viz., *GIFT tilapia*, a genetically improved strain of *Oreochromis niloticus* has been allowed subject to certain conditions such as: only all-male seed, sourced from authorized agencies can be used. In addition, Indian Council of Agricultural Research - Central Inland Fisheries Research Institutes (ICAR-CIFRI) has been involved in standardization of grow-out production of several regional specific fish species like *Labea rohita*, *Catla catla*,

Ompok babda, Labeo bata, Osteobrama belangeri, Puntius gonionotus, Amur corp, Etroplus suratensis etc.

Advantages of enclosed culture systems in inland fisheries can be summarised as:

- Augmenting fish yield by optimizing the use of all available water area
- Raising fingerlings in large numbers for stocking in a cost-effective way
- Optimization of trophic structure and functions to the advantage of fish production
- Effective utilization of weed-choked water bodies and those with obstructions like tree stumps and boulders, where harvesting of wild fish is difficult
- Reducing pressure on land for farms and nurseries
- Scope to keep a captive stock within the open water bodies allowing rapid, sure, complete and easy harvesting
- Direct and easy observation of stock for feeding, growth and general health
- Considerable indirect employment opportunities.

Considering India's rich and varied open water resources like reservoirs, lakes and floodplain wetlands, enormous scope exists to increase production through enclosure aquaculture. Utilizing a modest fraction of their surface area, large and medium reservoirs can contribute a substantial quantity of fish to the total inland fish production basket. Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace giving hopes and may cause some concern.

The National Fisheries Development Board (NFDB) established in 2006 as an autonomous organization under the administrative control of the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, has already published a guideline for cage culture in inland open water

bodies of India (2016) with technical inputs from the ICAR-Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore, Kolkata, West Bengal. The said guidelines for cage culture in inland open water bodies highlights environmental considerations with regard to the release of excessive nutrients and accumulation in water sediment of the water body. Cage culture being an intensive fish rearing, the feeding rates will be higher with excessive release of nutrients in to the water body. The guideline also put emphasis on precautionary approach for Environmental Impact Assessment (EIA) in cage culture operations due to deficit in data on the environmental impacts. The guideline further recommends EIA for cage culture activities as it is deleterious in terms of higher eutrophication potential due excessive nutrient loading and other chemical/pharmaceutical inputs. The guideline suggests a strong governance platform based on co-management principles for responsible cage culture. The guideline also restricted any cage culture in water bodies having an area less than < 1000 Ha. The copy of guideline is provided at **Annexure-II**.

In addition, a technical manual 1948 entitled, "Cage Culture in Reservoirs in India was published by Central Inland Fisheries Research Institute, ICAR, Barrackpore, Kolkata, West Bengal that briefly states the environmental constraints in poorly managed cages with respect to the discharge of nutrients.

For the sustainable development of inland fisheries and freshwater aquaculture in the country, Central Government agencies such as ICAR- Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore, ICAR- Central Institute of Freshwater Aquaculture, Bhubaneshwar, ICAR- Directorate of Coldwater Fisheries Research, Bhimtal and National Fisheries Development Board, Hyderabad are diligently involved in research and development and time to time publishing guidelines, package of practices and other extension material for the stakeholder of the Inland Fisheries and Aquaculture.

7.0 POLICY OF DEPARTMENT OF AGRICULTURE, ANIMAL HUSBANDRY, DAIRY DEVELOPMENT and FISHERIES, GOVT OF MAHARASHTRA

Department of Agriculture, Animal Husbandry, Dairy Development and Fisheries, Govt. of Maharashtra has issued Policy on 17.10.2016 for Fish farming through Cage Culture to increase the fish production in the State, which is further revised in 2018 and 2021 w.r.t. certain conditions including permission regarding cage culture and its area with reference to water shed area of the reservoir. The copies of the said 2016 policy and revised policy of 2021 are provided at **Annexure- III A and III B** respectively.

The salient feature of the policy w.r.t permission for cage culture in the reservoir and water pollution/contamination/monitoring are as follows-

- (1) It is mentioned in the Revised Policy (vide Govt Resolution (GR) Dated 26.08.2021) that fish farming using cage method is advanced technology which will help to increase the fish production. Cage aquaculture activities are promoted to overcome the issue of malnutrition through increase in availability of proteinaceous food, and to create employment.
- (2) As per the GR dated 17.10.2016, it was decided to give contract for cage culture project in 1 % of the water spread area in reservoirs having water spread area more than 200 hectares.

As per GR dated 09.03.2018, it was decided to give contract for cage culture project in 0.5 % of the water spread area in reservoirs having water spread area less than 200 hectares but not less than 15 hectares and having depth of the water 10 m throughout the year.

As per the Central Government guidelines cage culture activities are not permitted, if the area of the reservoir is less than 1000 hectares. However, considering there are only 46 reservoirs having area greater than 1000 hectares in the State of Maharashtra, permissions for the cage culture

aquaculture projects have been given for 2448 reservoirs available in the State.

Thereafter, Office of Commissioner of Fisheries submitted proposal to the State Government. Accordingly, new policy was issued through GR on 26.08.2021 with revised criteria which includes -

- (a) Cage aquaculture shall be permitted by Fisheries Department in 1 % of the water spread area in reservoirs having water spread area not less than 15 hectare and average depth of water is more than 08 meter throughout the year.
 - (b) Maximum cages shall be 18 in numbers and 630 m² per project proponent (Fish Farmer) and 6 cages per member in case Fishery Co-operative Society, Women's Self-help groups, Fisherman Self-help group etc. with maximum 72 cages and 2520 m².
- (3) The revised new policy is inclusive of Agreement for the cage aquaculture on contract basis (*please refer Annexure-1 of the revised new policy*). The relevant terms and conditions w.r.t. water quality/pollution mentioned in the revised new policy vide GR dated 28.08.2021 which are given as below-
- (a) Para 5 –Terms & Conditions (Condition no-17 at page no.07 of GR dated 28.08.2021) for Cage Culture Fish farming Contractor - Care should be taken to keep all relevant reservoir areas (water and land) clean. Contract will be cancelled, if the water source is found polluted as well as the surrounding area found un-cleaned. Toilets can be constructed after permission from Water Resource Department.
 - (b) Condition no. 15 (page no. 14 of GR dated 28.08.2021)- Water quality examination should be regularly conducted and its record to be maintained. It is binding on project proponent to take care/measure to avoid water pollution in the reservoir.

- (c) Condition no. 37 (page no. 17 of GR dated 28.08.2021) - Solid, Liquid or Chemicals should not be added to the reservoir which will kill/destroy, affect health, harm fishes and no any activities will be carried out which will pollute the water. There is no restriction on use of wholesome food for growth of fish and government approved medicines as per guidance of expert. Food and medicine should be government certified and prior permission should be taken from Assistant Commissioner of Fisheries, Department of Fisheries

8.0 ABOUT VADIWALE LAKE AND CAGE CULTURE PROJECTS AT VADIWALE LAKE

8.1 ABOUT VADIWALE LAKE:

Vadiwale Lake is located in village Valvanti on the Kamshet-Kundali Road in Maval Taluka, near village Kamshet, in Pune District (Latitude: 18.826829" Longitude: 73.494237"). Vadiwale Lake is one of the major lakes in the area, at an altitude of 2,200 ft above sea level. It is an artificially created lake due to the backwaters of the Uksan Dam. The outfall of Uksan Dam is the Indrayani River. The average water spread area of Vadiwale lake is 230 Hectare (2.3 km²). The location of Vadiwale Lake is shown in Image-1 & Image-2.



Image 1: Pune District and Location of Vadiwale Lake, Dist.Pune, Maharashtra

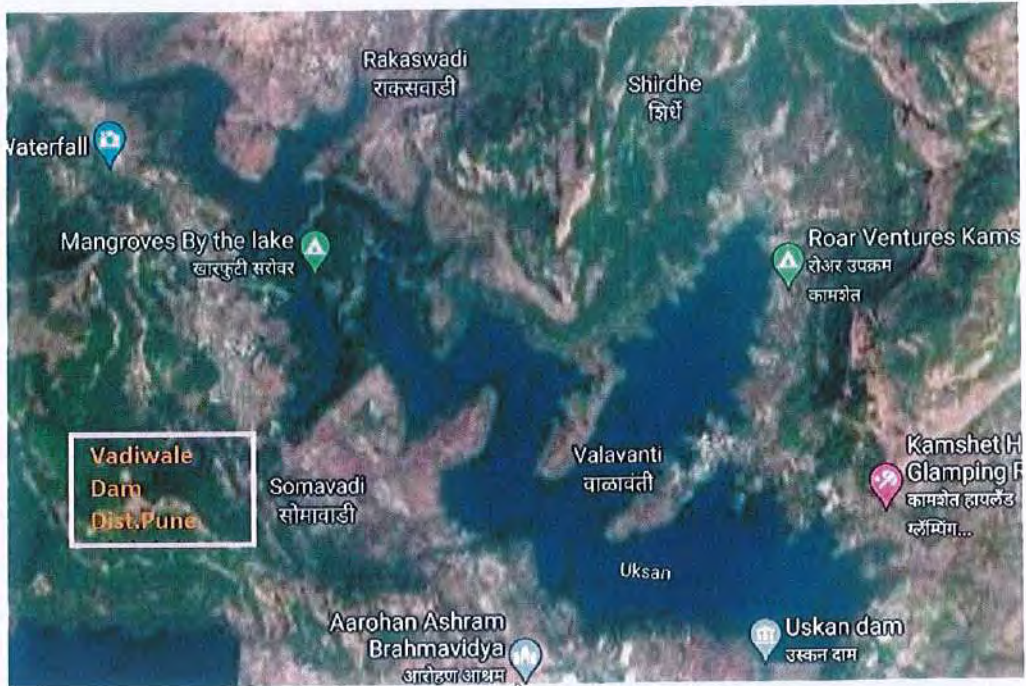


Image 2: Location of Vadiwale Lake, Dist.Pune, Maharashtra

8.2 CAGE CULTURE PROJECTS AT VADIWALE LAKE

The average water spread area of Vadiwale Lake is 230 Hectare (2.3 km²/ 23,00,000 m²). Accordingly, 1% area of the Vadiwale lake has been decided to give on contract basis for cage culture which is 2.3 Hectare (i.e. 0.023 km², 23,000 m²).

As per the order of Commissioner of Fisheries, Govt of Maharashtra, Mumbai dated 30.06.2017 (**Annexure-IV**), water shed area of 0.15 Hectare is allocated to Mrs. Vaidehi Bhushan Randive for 7 years (2017-18 to 2023-24). However, the project is not yet established.

Vide another order of the Commissioner of Fisheries, Govt of Maharashtra, Mumbai dated 06.09.2018 (**Annexure-V**), water spread area of 0.15 Hectare has been allocated to Shri. Bhardwaj Yadavrao Pagare for cage culture project. Currently, the said cage culture project is operational with 24 cages (Size of each cage 6x4x4 feet).

8.3 SITE VISIT, SAMPLING AND FINDINGS

A site visit was carried out to Vadiwale Lake on 27.08.2021 by the committee members.

During the site visit, it was observed that only one cage culture project which is developed by Shri Bhardwaj Yadavrao Pagare was operational. The aforesaid project has 24 cages and spread over an area about 0.15 Ha. Species reared in the cage culture are Pangassius sp, Common Carp and Rupchand. The feed given to the reared species is Godrej Nutifry-Premium Larval Feed (NF-0C, 1C and 2C, NF-3P(Ø 1mm), and NF-4P (Ø 2mm). Even though the permission is granted to Mrs. Vaidehi Randive for establishing the cage culture as per the order dated 30.06.2017, the project is not yet established.

The committee also visited Pond Aquaculture developed by Mr Bhushan Randive, located in the nearby village Khandashi, Taluka Maval Dist Pune.

Few images of the Cage Culture taken during the visit are given below;



Image 3: Cage Culture owned by Shri. Pagare, at Vadiwale lake



Image 4: Cages where fishes are reared

8.4 SAMPLING & MONITORING:

Grab water sampling was carried out to assess the impact of aquaculture-cage culture on water body –Vadivale lake within and around the existing cage culture established by Shri. Pagare, and outfall into Kundalini river from Vadiwale lake which meets Indrayani River.

The water samples were collected from cage compartments(2 nos.), 3 meter away from cage culture in east and west direction (2 nos.), 100 meter away from Cage Culture (1 no.) as reference, and also outfall from the Uksan Dam into stream which meets Indrayani River. Water samples from the Pond Aquaculture developed by Mr. Bhushan Randive located in the nearby village Khandashi Taluka Maval Dist Pune were also collected during the visit, although the pond water quality had not reached such a stage, where it needed to be discharged due to building up of concentration. The details of the sampling locations are provided in following Table-2.

TABLE-02: DETAILS OF SAMPLING LOCATIONS

Sr.No	Type Aquaculture	Location Code	Location Description
1	Cage Aquaculture	L1	Cage Culture from Small Fish Compartment
2		L2	Cage Culture from Big Fish Compartment
3		L3	3 metres away from cage culture towards west side
4		L4	3 metres away from cage culture towards east side
5		L5	100 metres away from Cage Culture
6		L6	Outfall from Uksan Dam in to Kundalini river which meets Indrayani river
7	Pond Aquaculture	L7	Mr Bhusahn Randive Fish Aquaculture

8.5 SAMPLE ANALYSIS RESULTS AND FINDINGS:

The collected water samples were analysed at Regional Laboratory, MPCB, Pune.

The samples were analysed for the following parameters:

TABLE-03: PARAMETERS ANALYZED FOR WATER SAMPLING

Sr.No.	Parameter (s)	Sr. No.	Parameter(s)
1	pH	16	O-Phosphate
2	Temperature	17	T-Phosphate
3	Turbidity	18	Sulphide
4	Biochemical Oxygen Demand (B.O.D)	19	Iron
5	Chemical Oxygen Demand (C.O.D)	20	Copper
6	Dissolved Oxygen (D.O)	21	Manganese
7	Total Suspended Solids (TSS)	22	Magnesium
8	Total Dissolved Solids (TDS)	23	Calcium
9	Sulphates	24	Potassium
10	Chlorides	25	Total Hardness
11	TAN	26	Faecal Coliform (FC)
12	TKN	27	Total Coliform (TC)
13	Nitrate (NO ³⁻)	28	Zinc
14	Nitrites (NO ²⁻)	29	Phenol
15	Phosphorus	30	Total Alkalinity

Analysis results of the aforesaid sampling carried out from and near the cage culture and outfall of Uksan Dam into Kundalini river which meets Indrayani river are provided in the Table-04. For references, their comparison with CPCB's Guidelines on Designated Best Use Water Quality Criteria for "Class of Water – C: Drinking water source after conventional treatment and disinfection" and "Class of Water – D: Propagation of Wild Life and Fisheries" are given in Table-04A. Comparison with Drinking Water Specifications (IS 10500:2012) has also been made and given in Table-04B.

Similarly, analysis results of the aforesaid samples collected from the Pond Aquaculture developed by Mr Bhushan Randive located in the nearby village Khandashi Taluka Maval Dist Pune, are given in Table-05 along with comparison with General Discharge Standards notified under the Environment (Protection) Act, 1986.

TABLE-04: ANALYSIS RESULTS OF SAMPLES COLLECTED IN AND AROUND CAGE CULTURE AND OUTFALL OF VADIWALE LAKE

Sr. No	Parameters	Sampling Locations in and around Cage Culture and outfall of Vadiwale Lake							Sampling Location of the Pond Aquaculture
		L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini Rher)	L7 Pond Aquaculture (Randive Fish Aquaculture)	
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	7.24	
2	TDS	226	258	224	154	186	138	92	
3	SS	12	24	18	14.00	14	8	52	
4	Turbidity (NTU)	1.0	1.10	1.20	1.10	1.10	1.10	1.2	
5	DO	4.70	3.80	4.60	4.70	4.90	4.70	NA	
6	BOD	14.00	21	13.00	14.0	11.00	4.80	35	
7	COD	48.00	64	36.00	40.00	32.00	24	92	
8	NH ₃ -N	0.50	0.60	0.40	0.50	0.30	0.20	0.80	
9	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
10	Ammonia (as total ammonia-N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.80	
11	NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	1.20	
12	NO ₂ -N	0.08	0.03	0.02	0.02	0.02	BDL	0.41	
13	TKN	1.68	2.24	1.68	2.24	2.24	1.12	2.80	
	Total Nitrogen*	2.65	3.06	2.22	2.93	2.74	1.89	5.21	
14	Total Alkalinity	28.00	32	26	14.00	20.00	12	12	

15	Hardness (Total)	62.00	64	58.00	38.00	44.00	36	30
16	Hardness (Mg ²⁺)	16	16	20.00	16	14.00	16	12
17	Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	2.92
18	Calcium	18.44	19.24	15.23	8.82	12.02	8.02	7.21
19	Phosphate (Total)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
	Total Phosphorus [§]	0.2	0.033	BDL	0.033	BDL	0.067	0.47
20	Phosphate (Ortho)	0.60	0.10	BDL	0.10	BDL	0.20	1.40
21	Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	9.10
22	Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Chloride	42.49	47.49	44.99	27.49	32.49	24.99	28.99
24	Faecal Coliform**	30.00	45	25.00	25.00	20.00	17	NA
25	Total Coliform**	900	900	550	550.00	425.00	250	NA
26	Phenol	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Zinc	BDL	BDL	BDL	BDL	BDL	0.08	BDL
28	Iron	0.03	0.05	0.03	0.57	0.37	NA	0.05
29	Copper	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30	Lead	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31	Nickel	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Concentration of all the values expressed in mg/L, except pH; BDL-Below Detection Limit;

*as estimated, free ammonia was found to be BDL; the NH₃-N has been considered as Total Ammonia-N;

**expressed in (MPN/100 ml); NA-Not Analysed; NR-No Relaxation.

[§]addition of all forms of Nitrogen Free Ammonia, Ammonia (as total ammonia-N), NO₃-N, NO₂-N, TKN.

[§]total Phosphorus calculated from Total Phosphate.

As per guideline published by NFDB Hyderabad (Annexure-II), it is mentioned that, in any case, cage culture should not be attempted in any water body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively.

TABLE-04A: ANALYSIS RESULTS AND COMPARISON WITH DESIGNATED BEST USE WATER USE QUALITY CRITERIA OF CPCB'S GUIDELINES

Sr. No	Parameters	L1 (Inside Cage of Small fish)	L2 (Inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Best Designation Use Class of water-C [#]	Designated Best Use Class of Water-D [§]
1	pH	7.23	7.40	7.83	7.72	7.62	8.04	6-9	6.5-8.5
2	DO	4.70	3.80	4.60	4.70	4.90	4.70	>4	>4
3	BOD	14.00	21	13.00	14.0	11.00	4.80	<3	NS
4	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	NS	1.2
5	Total Coliform**	900	900	550	550.00	425.00	250	<5000	NS

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit; NS –Not specified.

*Class of Water – C: Drinking water source after conventional treatment and disinfection

§ Class of Water – D: Propagation of Wild Life and Fisheries

TABLE-04B: ANALYSIS RESULTS OF WATER SAMPLES AND COMPARISON WITH DRINKING WATER SPECIFICATION

Parameters	L1 (Inside Cage of Small fish)	L2 (inside Cage of Big Fish)	L3 (3-m away from cage boundary in west side)	L4 (3m away from cage boundary in east side)	L5 (100 m away from cage boundary towards east)	L6 (Outfall of Uksan dam in to Kundalini River)	Drinking Water Specifications: IS 10500:2012	
							Requirement (Acceptable limit)	Permissible limit in absence of alternative source
pH	7.23	7.40	7.83	7.72	7.62	8.04	6.5-8.5	NR
TDS	226	258	224	154	186	138	500 (Max)	2000 (Max)
Turbidity (NTU)	1.0	1.10	1.20	1.10	1.10	1.10	1 (Max)	5 (Max)
Ammonia (as total ammonia-N)*	0.50	0.60	0.40	0.50	0.30	0.20	0.5 (Max)	NR
NO ₃ -N	0.39	0.19	0.12	0.17	0.18	0.55	45 (Max)	NR
Total Alkalinity	28.00	32	26	14.00	20.00	12	200 (Max)	600 (Max)
Hardness (Total)	62.00	64	58.00	38.00	44.00	36	200 (Max)	600 (Max)
Magnesium	3.90	3.90	4.87	3.89	3.41	3.89	30 (Max)	100 (Max)
Calcium	18.44	19.24	15.23	8.82	12.02	8.02	75 (Max)	200 (Max)
Sulphate	52.3	51.10	50.20	49.00	48.20	4.00	200 (Max)	400 (Max)
Sulphide	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Max)	NR
Chloride	42.49	47.49	44.99	27.49	32.49	24.99	250 (Max)	1000 (Max)
Phenol	BDL	BDL	BDL	BDL	BDL	BDL	0.001 (Max)	0.002 (Max)
Zinc	BDL	BDL	BDL	BDL	BDL	0.08	5 (Max)	15 (Max)
Iron	0.03	0.05	0.03	0.57	0.37	NA	0.3 (Max)	NR
Copper	BDL	8DL	8DL	BDL	BDL	BDL	0.05 (Max)	1.5 (Max)
Lead	BDL	BDL	BDL	BDL	BDL	BDL	0.01 (Max)	NR
Nickel	BDL	8DL	BDL	BDL	BDL	BDL	0.02 (Max)	NR

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit; NR – No Relaxation.

TABLE-05: ANALYSIS RESULTS OF WATER SAMPLES OF THE POND AQUACULTURE AND THEIR COMPARISON WITH GENERAL DISCHARGE STANDARDS NOTIFIED UNDER THE ENVIRONMENT (PROTECTION) ACT, 1986

S. No.	Parameters are expressed in mg/L, except pH)	L7 Pond Aquaculture (Randive Fish Aquaculture)	General Standards for discharge of environmental pollutants [Schedule-VI, Rule 3A, The Environment (Protection) Rules, 1986]		
			Inland surface water	Public sewer	Land for irrigation
1	pH	7.24	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
2	SS	52	100	600	200
3	BOD	35	30	350	100
4	COD	92	250	--	--
5	NH ₃ -N*	0.80	50	50	--
6	Free Ammonia	BDL	5.0	--	--
7	NO ₃ -N	1.20	10	--	--
8	TKN	2.80	100	--	--
9	Sulphide	BDL	2.0	--	--
10	Phenol	BDL	1.0	5.0	--
11	Zinc	BDL	5.0	15	--
12	Iron	0.05	3.0	3.0	--
13	Copper	BDL	3.0	3.0	--
14	Lead	BDL	0.1	1.0	--
15	Nickel	BDL	3.0	3.0	--

Concentration of all the values is expressed in mg/L, except pH; BDL-Below Detection Limit.

- A. The analysis results of samples collected from the Cage Culture of Small Fish Compartment (L1) and Big Fish compartment (L2) revealed that the concentration of major water quality parameters viz, TSS, DO, BOD, COD, NH₃-N are 12 mg/L, 4.7 mg/L, 14 mg/L, 48 mg/L, and 0.5 mg/L, respectively in L1 and 24 mg/L, 3.8 mg/L, 21 mg/L, 64 mg/L, 0.6 mg/L, respectively in L2. The higher concentration of TDS, BOD, COD and NH₃-N and lower concentration of DO in L2 in comparison to L1 indicate that the water near the Big Fish compartment is more contaminated. The contamination is due to feed to the fingerlings and their drop outs/fish excretory matters.
- B. The water samples L3 and L4 were collected at 3 meters away from the aforesaid Cage Culture towards West and East side (Opposite to each other), respectively. The concentration of major water quality parameters viz. TSS, DO, BOD, COD, NH₃-N, in these samples were found to be 18.0 mg/L, 4.6 mg/L, 13.0 mg/L, 36.0 mg/L, and 0.4 mg/L, respectively in L3 and 14 mg/L, 4.7 mg/L, 14.0 mg/L, 40.0 mg/L, and 0.5 mg/L, respectively in L4. The concentrations of the aforesaid parameters were found to be almost comparable in L4 and L5, but improved as compared to samples taken from cage compartment (L1&L2).

Water sample L5 was collected at about 100 m away from the Cage Culture along the line of L4 location towards East direction. The concentration of TSS, DO, BOD, COD, and NH₃-N in L5 sample were found to be 14.0 mg/L, 4.9 mg/L, 11.0 mg/L, 32.0 mg/L, and 0.3 mg/L, respectively. The decrease in concentration of major water quality parameters viz. TDS, BOD, COD, & NH₃-N, and increase in DO, in L5 in comparison to L1, L2, L3 and L4 samples, clearly indicates contamination of water due to cage aquaculture.

- C. The concentration of TSS, DO, BOD, COD, and NH₃-N in the sample collected at the outfall of Vadiwale Lake into Kundalini river which further meets with Indrayani River were found to be 8 mg/L, 4.7 mg/L, 4.8 mg/L, 24 mg/L, and

0.2 mg/L, respectively, which are significantly lower than L1, L2, L3, L4, and L5 samples. This may be attributed to the dilution of contaminants from cage culture due to distance and carrying capacity in the lake before outfall into Kundalini river which meets with River Indrayani.

D. (i) Comparison with CPCB's Designated Best Use Water Quality Criteria

The water sample analysis results of the collected samples in Vadiwale Lake were compared with the CPCB's Designated Best Use Water Quality Criteria for different class of water quality (Table-4A). Each water sample (L1 to L6) conformed with the analysed parameters of the Class-C Water criteria (Designated-Best-Use is Drinking Water Source after conventional treatment and disinfection), except BOD exceeded the prescribed limit in all the samples. Whereas, except L2 where DO (3.8 mg/L) is slightly lower than the prescribed limit of 4 mg/L, all water samples (L1 to L6) qualified the Class-D Water criteria (Designated-Best-Use is Propagation of Wild Life and Fisheries).

(ii) Comparison with Drinking Water Specifications IS 10500:2012

The water sample analysis results were also compared with the Drinking Water Specifications IS 10500:2012 (Table-4B). The concentration of all analysed parameters for water samples L1, L3, L6 were observed to be within the acceptable limits (in absence of alternative source) of Drinking water specifications, except for Turbidity which slightly exceeded the acceptable limit (1.0 mg/L) in all samples (L1 to L6) but remained within the permissible limit (5.0 mg/L). The prescribed maximum permissible & acceptable concentration of Ammonia (as total ammonia-N) and iron in drinking water specifications IS 10500:2012 are 0.5 mg/L and 0.3 mg/L, respectively. In water sample L2, the concentration of ammonia (as total ammonia-N) exceeded the permissible & acceptable limits. L2 is the sample

taken from big fish compartment. In water samples L4 and L5, the concentration of iron exceeded the permissible & acceptable limits.

Although the water samples conform to the Designated Best Use Class-D water criteria for Propagation of Wild Life and Fisheries, except DO in L2, the discharge/pollution load in the water body due to cage culture activities in the Vadiwale lake is evident from the water sample analysis results, as the concentration of analysed parameters in water are broadly higher inside the cages followed by at 3 m distances and at 100 m distances away from the boundary of cage culture when compared to that of downfall location (L6) which is at about 2.5 km distance from cage culture. Further, the concentration of analysed parameters in the cages of big fishes were found higher than the concentration of analysed parameters in the cages of small fishes.

- (iii) **Comparison with guideline published by NFDB Hyderabad for cage culture**
As per guideline published by NFDB Hyderabad (Annexure-II), it is mentioned that, in any case, cage culture should not be attempted in any water body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively. However, as per analysis results given in Table-04 above, total phosphorus is exceeding the value 0.02 mg/l at all the sampling locations of the lake -except at L3 (i.e.3-m away in west side from cage boundary) and L5 (i.e. 100 m away in east side from cage Culture). Total nitrogen concentration exceeds the said prescribed value of 1.2 mg/l at all the sampling locations.

E. Analysis results of Pond Aquaculture

Pond Aquaculture in nearby village was visited and Aquaculture fishing was found being carried out. The sample was collected from the pond where Aquaculture was in operation and analysis results are given Table-5. It is

observed that pH-7.24, TSS-52 mg/l, BOD-35 mg/l, COD-92 mg/l etc. On comparison of the pond water sample quality with the general discharge standards as prescribed in the Schedule-VI, Rule 3A of The Environment (Protection) Rules, 1986, it was observed that all analyzed parameters conform to the Inland Surface Waters discharge standards, except BOD. However, the said water samples collected had not reached to the stage/concentration when it needed discharge due to building up of concentration after sometime.

The contamination in the pond is due to feed to the fingerlings/fishes and their excretory matters. The unconsumed/excess food releases a lot of nutrients into the system and increases the organic loading.

9.0 OBSERVATIONS & FINDINGS:

9.1 OBSERVATIONS/COMMENTS W.R.T ALLEGATIONS BY APPLICANT & DIRECTIONS GIVEN IN HON'BLE NGT ORDER

A. *Aquaculture activity involves use of modern techniques and harmful chemicals. Release of harmful chemicals in the lake will directly affect the human health. Apart from discharge of harmful chemicals other key materials like poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics also have harmful impact on water bodies. Impacts of these materials on water bodies are not taken into account only financial aspects are considered.*

As per order of Hon'ble NGT in this matter-

...

"Examine whether in Inland Fisheries, chemicals are allowed to be used and if so how it can be regulated. Need to ensure protection of environment in the process of aquaculture activities in water bodies by use of modern techniques, particularly use of chemicals if any."

i) Use of Chemicals in Inland Aquaculture in India

Aquaculture has been practiced in India in both freshwater and coastal saline waters since long time. These were characteristically low-input, low-production systems depending on natural seed collection from the wild, with stocking in natural ponds, or impounding in large water bodies without any further management measures. During last three decades, aquaculture has slowly but steadily transformed itself into a profitable business activity. In freshwater carp culture, production rates of up to 15 t/ha/yr have been attained, and in shrimp culture, yields of about 8 t/ha/crop have been achieved. Compared to coastal aquaculture, freshwater carp culture is widespread in the country, particularly in the states of Andhra Pradesh, West Bengal, Madhya Pradesh, Punjab, Uttar Pradesh, Orissa and Bihar, and now it is spreading in almost all states of the country. Basically, aquaculture in India is largely of the extensive type and primarily related to carp farming. However, due to increased demand for fish in the country, there has been an emergence of large-scale commercial, semi-intensive culture of carps in a few states, especially in Andhra Pradesh. With the increase in productivity in semi-intensive carp culture, semi-intensive or intensive shrimp farms, and related hatchery operations, there has been increased usage of artificial inputs in the form of chemicals. The various chemicals having use in grow-out farming and hatchery operations in both freshwater and coastal aquaculture in India can be classified into the following broad categories-

- water/soil treatment products
- disinfectants, piscicides
- herbicides
- organic fertilizers
- inorganic fertilizers
- feed additives
- therapeutants, and
- anesthetics.

The usage of chemicals and risk associated with use of these chemicals are given in **Annexure-VI & VII**, respectively.

Chemical use in freshwater aquaculture is generally related with intensive fish farming and at moment the area under semi-intensive and intensive fish farming is gradually increasing while in case of inland cage culture the use of chemicals is of no use especially when it is being practiced in medium or large reservoir. As per the guidelines published by National Fisheries Development Board (NFDB), in case of inland cage culture, the use of antibiotics and chemicals is forbidden, however under exceptional circumstances, the use of four drugs and chemical such as Chloramine-T, Formalin, Oxytetra-cyclinedihydrate and Florfenicol are permitted to use with recommended dose and administration mode of Immersion and Medicated feed. As per Condition no. 37 (page no. 17) mentioned in the new revised policy of Fisheries Department, Govt of Maharashtra (**Annexure-III B**) given in the Agreement for the contract of Cage culture- Solid, Liquid or Chemicals should not be added to reservoir which will kill/destroy, affect health, harm fishes and no any activities will be carried out which will pollute the water. There is no restriction on use of wholesome food for growth of food and government approved medicines as per guidance of expert. Food and medicine should be government certified and prior permission should be taken from Assistant Commissioner of Fisheries, Department of Fisheries.

Although, the use of chemicals in inland cage culture or freshwater aquaculture is limited, but it is of environmental concern. Unlike Coastal Aquaculture Authority in case of coastal aquaculture, at present, there is no central regulatory authority to control the usage of chemicals and drugs in inland or freshwater aquaculture in the country. Some provisions are made to regulate use of medicines, antibiotics, pesticides in inland aquaculture under The Kerala Inland Fisheries and Aqua Culture Act, 2010 and The Andhra Pradesh State Aquaculture Development Authority Act, 2020. The supply and use of chemicals and fish medicines is uniformly regulated in the EU and supported by appropriate codes of best practice. A number of codes of practice that include reference to the use

of medicines have been produced both at a European level and in member states (Costello et al., 2001). In several other countries like Australia, Japan, China, Vietnam, USA, etc., the national regulation on the use of chemicals in aquaculture exist, however, a dedicated regulation for inland fisheries and aquaculture in these countries not found.

- ii) **Impact of discharge of chemicals, poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics etc., that are key to aquaculture farming**

The issue raised by the applicant is of environmental concern, however, it has to be seen that what kind of chemicals are being used in the cage culture in the Vadivale lake, Pune. The claim made by the applicant may be based on the literature on use of chemicals in different land-based intensive aquaculture systems whereas, the farming system in question is Cage Fish Farming; a form of open water aquaculture. Also, no specific information on the kind of chemicals used in the cage culture operation in Vadivale lake is provided by the Applicant. Cage culture of fish is a form of open water aquaculture system where use of drugs and chemicals is seldom unlike in the other semi-closed aquaculture systems at intensive scale. However, as per the guidelines of National Fisheries Development Board (NFDB), Hyderabad some chemicals and drugs are permitted to be used with prescribed dose and mode of administration under unavoidable circumstances. In general, the only inputs in the cage culture in inland open waters are in the form of seed (fish fingerlings) and feed. Also, since the cages are installed in open waters such as reservoirs, lakes and wetlands, the direct use of chemicals and drugs is neither effective nor economically feasible.

The use of some chemicals, drugs and antibiotics is being practised in land based intensive freshwater aquaculture, however, the impact of such chemicals on the environment is of scientific interest and needs to be studied. The Inland freshwater aquaculture is mostly practiced in seasonal ponds or in the ponds constructed on the barren agriculture land and the discharge of water into the

environment is negligible or zero due to scarcity of freshwater in most part of the country.

In some states including Maharashtra fish farming is being practiced in the polythene lined ponds constructed basically for irrigation. This pond water is nutrient rich due to left over feed and faeces of the fish which is used for agriculture crops, however, parameters of concern present in such nutrient rich water require to be studied. However, it is to be noted that this practice is part of Integrated Farming System (IFS) where output of one system is used as input for another system to utilize the resources efficiently and sustainably. The Govt. of India is widely promoting IFS as a sustainable farming system for farm income consistency and livelihood security.

Regarding allegation about use of poultry wastes from poultry farms such as gizzards and chicken guts/offal in aquaculture, is not relevant in case of cage culture particularly cage culture in reservoirs. Generally, poultry waste is used as feed for the carnivorous fish species such as *Clarius gariepinus* (African catfish) whose culture is already banned in the country and regulated by the State Fisheries Departments.

Currently there are no scientific studies on the environmental impacts of chemical and drugs used in cage culture in inland open waters in India and hence it would not be appropriate to comment on its impacts on environment. There is need of such studies from reputed institute in the field over a period of time considering the sizes of cage culture, no of cage culture area, fish types, area of lake/reservoir, etc.

9.2 OBSERVATIONS BASED ON CAGE CULTURE PERMISSION ON CONTRACT BASIS BY COMMISSIONER OF FISHERIES, GOVT OF MAHARASHTRA AND CAGE CULTURE AQUACULTURE OPERATION AT VADIVALE LAKE

A. Department of Agriculture, Animal Husbandry, Dairy Development, Fisheries, Govt. of Maharashtra issued Policy on 17.10.2016 for Fish farming through Cage Culture to increase the fish production in the State, which is

further revised in 2018 and 2021 w.r.t certain conditions including permission regarding cage culture and its area out of water shed area of reservoir. As per the Central Government Guidelines, cage culture activities are not permitted if the area of the reservoir is less than 1000 hectares. However, considering there are only 46 reservoirs having area greater than 1000 hectares in the State of Maharashtra, permission for the cage culture aquaculture projects has been given for 2448 reservoirs available in the State. As per new policy issued vide GR dated 26.08.2021 with revised criteria such as-

- (a) Cage aquaculture shall be permitted by Fishery Department in 1 % of the water spread area in reservoirs having water spread area not less than 15 hectare and average depth of water is more than 08 meter throughout the year.
 - (b) Maximum cages shall be 18 in numbers and 630 m² per project proponent (Fish Farmer) and 6 cages per member in case Fishery Co-operative Society, Women's Self-help groups, Fisherman Self-help group etc with maximum 72 cages and 2520 m².
- B. During the site visit on 27.08.2021, only one cage aquaculture was seen established by Shri. Bhardwaj Yadavrao Pagare which was found operational. The aforesaid cage culture has 24 cages and spread over an area about 0.15 Ha. Species reared in the cage culture were Pangassius S.P, Common Carp and Rupchand. **The feed given to the reared species is Godrej Nutifry-Premium Larval Feed (NF- 0C, 1C and 2C, NF-3P(Ø 1mm) and NF-4P (Ø 2mm).**
- C. No use of any chemicals, medicine, antibiotics, poultry manure, chemical manures, and other waste products from poultry farms such as gizzards and chicken guts was observed during the visit.

9.3 THE EXISTING CONSENT REGIME UNDER THE WATER ACT AND WHETHER THERE IS NEED TO INTRODUCE ANY CHANGES

The conditions related to water quality and pollution are given in the new revised policy issued by Fisheries Department, Govt. of Maharashtra vide GR dated 28.08.2021. The conditions which are mentioned in the aforesaid policy are-

- a) Care should be taken to keep all relevant reservoir areas (water and land) clean. Contract would be cancelled, if the water source is found polluted as well as the surrounding area found un-cleaned.
- b) Water quality should be regularly conducted and it's record to be maintained. It is binding on project proponent to care/measure to avoid water pollution in the reservoir.

However, aforesaid GR dated 28.08.2021 does not include any conditions stipulating water quality standards to be complied/maintained in reservoirs, where aquaculture cage culture is carried out, and parameters thereto. Further, cage culture is not regulated through consent mechanism by Maharashtra State Pollution Control Board.

The analysis results reveal that water gets polluted due to aquaculture activity in Vadiwale lake due to addition/use of feed (nutrients) which ultimately gets dissolved/mixed with water due to exchange of metabolite and nutrients between the cage and outside environment.

Thus, there occurs discharge of trade effluent (having nutrient/feed, excretory matters, etc.) from cage culture premises into stream (natural or artificial inland water) with pollutants like in BOD, COD, Total Nitrogen, Phosphate, etc. Such discharges, when not carried out in controlled manner, may likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

The relevant portion of the Section-25 of the Water (Prevention & Control of Pollution) Act, 1974, is given below-

"25. Restrictions on new outlets and new discharges —

(1) Subject to the provisions of this section, no person shall, without the previous consent of the State Board, —

(a) establish or take any steps to establish any industry, operation or process, or any treatment and disposal system or any extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land (such discharge being hereafter in this section referred to as discharge of sewage); or

.....

.....

(4) The State Board may —

(a) grant its consent referred to in sub-section (1), subject to such conditions as it may impose, being—

.....

.....

(ii) in the case of a new discharge, conditions as to the nature and composition, temperature, volume or rate of discharge of the effluent from the land or premises from which the discharge or new discharge is to be made; and

(iii) that the consent will be valid only for such period as may be specified in the order, and any such conditions imposed shall be binding on any person establishing or taking any steps to establish any industry, operation or process, or treatment and disposal system of extension or addition thereto, or using the new or altered outlet, or discharging the effluent from the land or premises aforesaid; or

....."

Therefore, the applicability of consent under Section-25 may be applicable in reservoir/lake and may be enforced by MPCB. However, such applicability of consent may be implemented depending on the sizes of cage culture, no of cage culture area, fish types, volume of water & area of lake/reservoir, its water quality, other sources of pollution, surface runoff meeting with the reservoir etc. for which there may require a detailed study.

9.4 VADIWALE LAKE IS SOURCE OF DRINKING WATER FOR NEARBY VILLAGES AND THE OUTFALL OF THE LAKE IS IN INDRAYANI RIVER WHICH IS AGAIN SOURCE OF DRINKING WATER FOR 28 VILLAGES.

The outfall from Vadiwale lake is used for irrigation and drinking purposes after certain distances after confluence of other streams also as informed by official of Irrigation department. The same may have potential to either improve/deteriorate the water quality. Gram panchayat take water from the Vadiwale lake and supply to nearby villages after chlorination. Therefore, the irrigation department/water supply department may ensure that water being supplied after such treatment meets the prescribed standards of water quality and if required, further other treatment may also be imparted so as to meet with the prescribed standards.

10. CONCLUSIONS

- (i) India has vast and varied inland fisheries resources that comprise of 191,024 kms of rivers and canals, 1.2 million ha of floodplain lakes, 2.36 million ha of ponds and tanks and 3.15 million ha of reservoirs. Although, inland fisheries have grown, the rate of growth in terms of its potential is not yet achieved. The average fish production potential was estimated at 250 kilograms (kg)/hectare (ha) in reservoirs and about 350 kg/ha for wetlands. While reservoirs and freshwater aquaculture can be considered as the two main pillars of growth, another major activity in aquaculture sector called the cage/pen culture in open waters, has shown significant growth in recent

years. It offers vast potential for inland aquaculture in the country. The production potential from sustainable cage culture production is about 50 kg/m³.

The freshwater aquaculture production systems in India comprise 2.36 million ha of ponds and tanks. In Eastern India, aquaculture is practiced in ponds and tanks of less than 1 ha area, whereas in Western India aquaculture is operated on a larger scale, with watersheds of 1525 ha.

- (ii) Cage culture of fish is a form of aquaculture where use of drugs and chemicals is seldom unlikely in the land based intensive fish culture systems. However, as per the guidelines of National Fisheries Development Board (NFDB), Hyderabad, some chemicals and drugs are permitted to use with prescribed dose and mode of administration under unavoidable circumstances. In general, the only inputs in the cage culture in the inland open waters are in the form of seed (fish fingerlings) and feed. Also, since the cages are installed in open waters such as reservoirs, lakes and wetlands, the direct use of chemicals and drugs may neither be effective nor economically feasible.

Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace and which may lead to some concern of its impact on the water bodies.

- (iii) The issue of poultry wastes from poultry farms such as gizzards and chicken guts/offal in aquaculture is not relevant in case of cage culture particularly in reservoirs.

- (iv) Unlike Coastal Aquaculture Authority in case of coastal aquaculture, at present, there is no central regulatory authority to control the usage of chemicals and drugs in inland or freshwater aquaculture in the country. The supply and use of chemicals and fish medicines is uniformly regulated in the

EU and supported by appropriate codes of best practice. In several other countries like Australia, Japan, China, Vietnam, USA, etc., the national regulation on the use of chemicals in aquaculture exist, however, a dedicated regulation for inland fisheries and aquaculture in these countries not found.

Some provisions are made to regulate use of medicines, antibiotics, pesticides in inland aquaculture under the Kerala Inland Fisheries and Aqua Culture Act, 2010 and the Andhra Pradesh State Aquaculture Development Authority Act, 2020.

National Fisheries Development Board (NFDB), Hyderabad (Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt. of India) has published a guideline for cage culture in inland open water bodies of India with technical inputs from the ICAR-Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore, Kolkata. A Handbook- World Fish Center Technical Manual No. 1948 was published by Central Inland Fisheries Research Institute, ICAR, Barrackpore, Kolkata. The handbook briefly states the environmental constraints of cage culture when poorly managed with respect to the discharge of nutrients.

The aforesaid NFDB's published guideline for cage culture in inland open water bodies also:

- (a) outlines about some environmental impact due to release of excessive nutrients and accumulation in water sediment of the water body.
- (b) suggests a strong governance platform based on co-management principles for responsible cage culture and recommends EIA for cage culture activities as it is deleterious in terms of higher eutrophication potential due excessive nutrient loading and other chemical/pharmaceutical inputs.
- (c) restricts any cage culture in water bodies having an area less than < 1000 Ha.

permission from Water Resource Department, without specifying management of discharges from such toilet.

- (vi) As per the analysis results of water samples collected by this committee within and outside the cage aquaculture of 0.15 Hectare of the average 230 ha water spread area of Vadiwale Lake, the concentration of analysed parameters in water are broadly higher inside the cages followed by at 3 m distances and at 100 m distances away from the boundary of cage culture when compared to that of downfall location (L6) which is at about 2.5 km distance from cage culture (please refer **Table 04**). Further, the concentration of analysed parameters in the cages of big fishes were found higher than the concentration of analysed parameters in the cages of small fishes.

Thus, it is evident that there is discharge/pollution load in the water body due to cage culture activities in the Vadiwale lake with fish excretory matters and addition/use of feed (nutrients) which ultimately gets dissolved/mixed with water due to exchange of metabolite and nutrients between the cage and outside environment. It leads into discharge of trade effluent (having nutrient/feed, excretory matters, etc.) from cage culture premises into stream (natural or artificial inland water) with pollutants like in BOD, COD, Total Nitrogen, Phosphate, etc. Such discharges, when not carried out in controlled manner, may likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

Further, it was also observed that:

- (a) The total phosphorous and total nitrogen concentration in the water were found in excess of the aforesaid NFBD guidelines' prescribed value of 0.02

mg/L and 1.2 mg/L at various monitored locations and all the monitored locations respectively, as given at Table 04 above. The guidelines stipulate that, in any case, cage culture should not be attempted in water body having such exceedance.

- (b) When compared with CPCB's guidelines on Designated Best Use Water Quality Criteria for "Class of Water – D: Propagation of Wild Life and Fisheries", the DO (3.8 mg/L) was found slightly lower than the prescribed limit of 4 mg/L at one of the monitored locations viz. L2 – inside the Cage Culture Compartment of big fishes. Please refer Table 4B above.
- (vii) Water samples collected from the Pond Aquaculture in the nearby village were found to be conforming to the General Discharge Standards as notified under the Environment (Protection) Act, 1986, w.r.t. analysed parameters for discharge into land for irrigation and public sewer but didn't conform for discharge into inland surface water. The said water samples collected though had not reached to the stage/concentration when it needed discharge and accumulation of further concentration in the monitored water samples cannot be ruled out.
- (viii) Consent mechanism under the Water (Prevention and Control of Pollution) Act, 1974, is currently not regulated by Maharashtra Pollution Control Board. However, the above observations reveal that there is need to bring inland aquaculture fisheries into consent regime depending on size/volume of both i.e. water bodies and aquaculture.
- Further, depending on size/volume of both (i.e. water bodies and aquaculture) and water quality of the water, there may also be need of bringing the inland aquaculture under the Environmental Impact Assessment regime which has also been suggested in the aforesaid NFDB's published guideline.
- A detailed study may be required in this regard to assess environmental impacts vis-à-vis size/volume of both (i.e. water bodies and aquaculture)

and water quality for prescribing consent and EIA mechanism including control on use of various feed material/chemicals/drugs/antibiotics/etc. and various measures required in inland aquaculture.

11. RECOMMENDATIONS

- I. There is need to regulate cage aquaculture under consent mechanism of the Water (Prevention and Control of Pollution) Act, 1974. Also MoEF&CC may deliberate the requirement of prior Environmental Impact Assessment in view of the suggestion made by NFDB. However, such consent mechanism and EIA requirement may be regulated categorising nos. & sizes of cage aquaculture, fish types, area of lake/reservoir, its water quality, other sources of pollution, surface runoff meeting with the reservoir etc. as per findings of study as mentioned in subsequent paragraphs.

- II. There is a need to conduct a study by reputed institutes in the field of fisheries and environment over a period of time considering the sizes of cage culture, cage culture area, fish types, area of lake/reservoir, its water quality, other sources of pollution, discharges, etc. to study respective environmental impacts. The study will help in regulating inland open waters usage for cage culture in terms of reservoir sizes, fish species, cage sizes & nos., water quality, types of feeds/chemicals/drugs to be prohibited/allowed, discharges, environmental impacts & measures to be taken, etc. without affecting water quality & eco-system.

The study may be coordinated by MoFAH&D in consultation with MoEF&CC and CPCB.

- III. Till the study is conducted, Fisheries Department, Government of Maharashtra, to adhere with the prevailing NFDB guidelines for the cage

culture in Inland open water bodies and may prescribe the following precautionary measures while permitting aquaculture in reservoir/lake, as well as in the existing permitted cage aquaculture;

- (a) Aquaculture/Cage Culture shall not be allowed in the reservoirs that do not conform to the CPCB recommended Designated Best Use Water quality criteria for Propagation of Wild Life and Fisheries.
- (b) Cage culture should not be allowed in any water body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively, as recommended in NFDB's published guideline.
- (c) Water quality of the reservoir/lake shall be analysed before starting the cage culture activities and twice in a year during non-monsoon seasons during aquaculture period at pre-identified strategic locations which may be ensured by state fisheries department. Based on the analysis of water quality, if any abnormality observed, the same shall be reported to MPCB/Irrigation Department/Water Supply Department.
- (d) Total phosphorous, total nitrogen, chloride, calcium, magnesium and other site specific relevant parameters shall be prescribed by MPCB and State Fisheries Department for analysis of the aforesaid water quality.
- (e) Sinking feed may be prohibited for cage fish farming as it accumulates at the base and fouls the cage/reservoir environment.
- (f) Construction of toilets near the cage culture fish farming shall not be allowed unless such toilets have discharge management ensuring no discharge to the lake/reservoir/land and permission from the Water Resource Department is obtained.

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292/2021/TECH-RD (Pune)

Item No. 03

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 80/2020 (WZ)

Vanashakti & Anr.

Applicant(s)

Versus

State of Maharashtra & Ors.

Respondent(s)

Date of hearing: 31.05.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant(s): Mr. Zaman Ali, Advocate

ORDER

1. Grievance in this application is against unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra. Particular grievance has been raised in the context of permission granted in favour of respondent no. 7, Vaidehi Randive in Vadivale Lake in Village Valavanti on the Kamshet-Kundali Road in Maval Taluka, near Village Kamshet, in Pune District, by the Commissioner of Fisheries, Government of Maharashtra.

2. The applicants have assailed the impugned permission as being against the "Precautionary" and "Sustainable Development" principles. Aquaculture activities, with modern techniques involve use of harmful chemicals. In the process, such chemicals are and released in the lakes and other water bodies concerned. In the present case, permission has been given for aquaculture activities in *Vadivale* Lake in Pune District. The

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lake is a source of drinking water to the nearby villages. Outfall of the lake is in the Indrayani River which is source of drinking water for 28 villages.

3. The applicant has referred to the policy decisions of the Fisheries Department, Government of Maharashtra to submit that the same does not consider environmental aspects. They consider only financial aspects. Reference is made to GO dated 15.10.2001 for permitting fishing in lakes of the size above 200 hectares. It does not consider harmful impact of discharge of harmful chemicals, poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics etc., that are key to aquaculture farming. The applicants have also referred to the Coastal Aquaculture Authority Act, 2005 to regulate coastal aquaculture in coastal areas enacted in the light of the Judgment of the Hon'ble Supreme Court in *S. Jagannath v. Union of India* [(1997) 2 SCC 87]. Under the said Act, environmental safeguards are laid down for permitting aquaculture in coastal areas. However, there are no safeguard laid down for permitting such activities in inland waters. The applicant has relied upon a report of the National Bank for Agriculture and Rural Development (NBARD), Mumbai, under the title "The Use of Chemicals in Aquaculture in India". Further reference has been made to the guidelines framed by the Ministry of Fishing, Government of India titled "Guidelines for Cage Culture in Inland Open Water Bodies of India" noticing the environmental facts arising out of such activities in open water bodies. Further reference is made to the study conducted by the Madras University titled "Environment and Social Conflicts of Aquaculture in Tamil Nadu and Andhra Pradesh." The applicants have submitted that 2005 Act should apply to all aquaculture activities. It is stated that adverse impact of aqua culture activities in *Vadivale* Lake has been found in a report titled "Assessment

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of Water Quality Index of Indrayani River, Alandi, Pune" published in 2018 in International Journal of Science, Engineering and Technology Research.

4. We have given due consideration to the issue raised. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six-member expert Committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional Officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process.

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5. Since we have not found it necessary to issue notice having regard to the nature of the order, we give liberty to the respondents to move this Tribunal in case they are aggrieved.

The application is disposed of.

A copy of this order be forwarded to the MoEF&CC, the CPCB, the Maharashtra State PCB, the Ministries of Fishing, Govt. of India and Maharashtra Govt. and Central Inland Fisheries Research Institute by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

M. Sathyanarayanan, JM

Brijesh Sethi, JM

Dr. Nagin Nanda, EM

May 31, 2021
Original Application No. 80/2020 (WZ)
SN



Guidelines for Cage Culture in Inland Open Water Bodies of India



Department of Animal Husbandry, Dairying & Fisheries

Ministry of Agriculture and Farmers Welfare, Government of India
Krishi Bhavan, New Delhi - 110 001

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Guidelines for Cage Culture in Inland Open Water Bodies of India

1. Background

Cage aquaculture, though relatively new to the inland aquaculture scenario of the country, brings in new opportunities for optimizing fish production from the reservoirs and lakes, and also developing new skills among fishers and entrepreneurs to enhance their earnings. However, unplanned expansion of any activity can lead to adverse impacts in terms of environmental integrity and social equity. Recognizing this, a 'National Level Committee to Develop Guidelines for Cage Culture in Inland Open Waters' (NCGCC) was constituted on 25 April 2016 with a mandate (a) to assess the potential of this culture system to contribute to increased production, employment, income generation and other benefits, (b) to assess the possible environmental and socio-economic impact, (c) to suggest precautions to be taken, and (d) to suggest the modes of propagating and scaling up of this technology to optimize benefits on a sustainable manner.

The Committee in its first meeting held at Hyderabad on 14 June 2016, noted a glaring lack of data required for developing such guidelines, especially with regard to the environmental and social impact of cage culture activities. Nevertheless, it has resolved to formulate guidelines by making use of the available information at Institutes and also utilizing the secondary information sourced from the public domain. Although some research projects have been initiated to assess the environmental impact of cage culture, it would take some time before these efforts yield any meaningful results. Therefore, the Committee decided to develop advice on environmental impacts through an intensive effort to gather and process the information through a brainstorming by all known experts on the subject and to finalize the guidelines in six months. In the meantime, a need was felt to develop an interim set of advice making use of the available knowledge on the subject. Responding to this need, the Committee met on 30 July 2016 at the ICAR-Central Inland Fisheries Research Institute, the Institute where most of the research on cage culture has taken place. This report is the outcome of the deliberations made by the experts on the subject and the members of the National Level Committee to bring out an interim set of guidelines.

2. Objectives

The main objective of this document is to inform the national efforts being made to promote cage culture in the inland open water bodies like reservoirs and floodplain wetlands in the country, which inter alia advises how to leverage cage culture:

- 1) to augment fish production from lakes and reservoirs in a responsible manner, without affecting the livelihood of the traditional/local fishing communities;
- 2) to increase per capita fish protein availability in the country;
- 3) to enhance the income and livelihood security of the fishers depending on inland fisheries resources; and
- 4) to ensure that the growth of aquaculture is:
 - a) inclusive and sustainable,
 - b) in harmony with principles of ecological integrity and natural resource conservation, and
 - c) not in conflict with the genuine interests of other users of the water and land resources.

3. Purpose, Scope and Coverage

The guidelines contained in this document are addressed to all stakeholders including, Farmers, SHGs, Cooperative Societies, Other community organizations, Business Process Development Facilitators (BDFs), Farmer Producer Organizations (FPOs), Fisheries Departments of the States, Department of Animal Husbandry Dairying and Fisheries, Government of India and its Institutes, Research Organizations, Environmentalists.

At present, India does not have an umbrella agency that oversees/regulates freshwater aquaculture activities or implements Guidelines/ Best Management Practices (BMPs). Equally glaring is the lack of a uniform policy across the country that governs freshwater aquaculture. Thus, there is no scope for these guidelines to be readily implemented at this stage. However, efforts are on to put in place some policy and a regulatory framework. For instance, a draft 'Policy Framework for Aquaculture Development in India' was submitted by the Central Marine Fisheries Research Institute to the Department of Animal Husbandry Dairying and Fisheries in 2014. This draft policy paper, though focussed heavily on mariculture, lays down the basic structure for a national level policy on aquaculture and proposes a 'District Level Task Force' to implement Guidelines and BMPs. Thus, despite the absence of any scope for direct application, these guidelines can be useful to those who will formulate aquaculture policies in future. In any case, the present guidelines can (a) guide the Departments/Agencies of the State and Central Governments in formulating development plans based on cage culture, (b) inform policies to be framed in future, and (c) guide farmers and entrepreneurs for practicing responsible cage culture in the country and (d) advise the District Level Task Force (as proposed in the draft policy).

Aspects covered under this document are: (1) Relevance and scope for cage culture in inland open waters, (2) Definition of cage and cage culture, (3) Cage size, shape and materials, (4) Site selection, (5) Cage maintenance, (6) Species selection, (7) Stocking density, (8) Feed and Feeding and FCR, (9) Fish health monitoring, (10) Safety measures, (11) Market, Post-harvest facilities and infrastructure, (12) Environmental precautions and impact assessment, (13) Carrying capacity, (14) Ownership, (15) Beneficiaries, (16) Governance, (17) and (18) Social relevance.

4. Relevance and Scope for Cage Culture in Inland Open Waters

During the last five decades, contribution of marine fish in the total production of the country has decreased from 71% in 1950s to 35% during 2014-15 (www.dahd.nic.in) with a corresponding increase in inland fish production. This shift in catch structure in favour of the inland segment is attributable to the growth of inland aquaculture, as opposed to the sole dependence of capture fisheries in the marine counterpart. In view of the dwindling production from natural waters, both inland and marine, any substantial increase in production has to come either from inland aquaculture or mariculture. Inland aquaculture presently contributes 4.4 million tonnes (in 2014) of fish annually (FAO-SOFIA, 2016); with the three Indian major carps *viz.*, catla (*Catla catla*), rohu (*Labeo rohita*) and mrigal (*Cirrhinus mrigala*) constituting 87% of the production. Several variants of carp culture such as wastewater-recycled culture, integrated agriculture aquaculture (IAA) and many short-term culture practices are also available. However, freshwater aquaculture in India by and large still centres on pond-based systems.

Considering the ever-increasing and often conflicting cross-sectoral demands for water and land, there are limitations for growth in pond-based aquaculture. In this context, culture of fish in enclosures such as cages and pens installed in open water bodies offer scope for increasing production obviating the need for more land-based fish farms. Considering India's rich and varied open water resources like reservoirs, lakes and floodplain wetlands, enormous scope exists to increase production through enclosure aquaculture. Utilizing a modest fraction of their surface area, large and medium reservoirs can contribute a substantial quantity of fish to the total inland fish production basket. Although cage culture has not yet reached the desired commercial proportions capable of making any impact on the production figures, it is growing at a very fast pace giving hopes and also causing some concern.

India has 3.15 million ha of reservoirs and more than 5.0 lakh ha of floodplain wetlands (*beels, jheels, mauns, pats, etc.*) spread across the numerous river basins in the country. The present fish yield from reservoirs is low, to the tune of about 82 kg/ha (Jha, *et al.*, 2013), in spite of their high production potential (500 kg/ha, 250 kg/ha and 100 kg/ha in small, medium and large reservoirs, respectively). Similar is the case with floodplain wetlands, where the present yield has been estimated at 400-800 kg/ha, against the production potential of 1500-2500 kg/ha (Sugunan and Sinha, 2001). Harvesting is a major problem in most of the reservoirs and lakes in the country as most of them are either weed-choked or having obstructions in the form of boulders or tree stumps limiting operation of many a fishing gear. Presence of predators often results in high natural mortality of stocked fishes causing low productivity (Sugunan, 2000). This, coupled with poor utilization of all food niches available in these ecosystems in the absence of efficient fish grazers, is mainly responsible for low fish yield from these ecosystems. It is prudent, therefore, to explore alternate production tools to augment fish yield. Thus, enclosure culture systems have a definite role to play in augmenting fish production from inland open waters in India especially the reservoirs and floodplain lakes. These can overcome many production constraints in lakes and reservoirs by maintaining a captive stock, growing it on artificial feeds, protecting it from predators and enabling harvesting at will.

It has now been established beyond doubt that a major reason for the low productivity of Indian reservoirs is poor stocking compliance. Small and shallow reservoirs and lakes are managed on the principle of culture-based fisheries and therefore need to be stocked with advance fingerlings in appropriate numbers in order to get the desired production level. According to one estimate, >3000 million fingerlings of size 80-100 mm are required annually to stock reservoirs alone in India (Jha, *et al.*, 2013). But, due to non-availability of advanced fingerlings, vast majority of Indian reservoirs remain understocked. Available land-based nurseries are inadequate to meet the huge demand that emanates from the culture-based fisheries of reservoirs. Pens and cages erected in reservoirs can be effectively used as nurseries to raise stocking material to obviate the necessity of constructing land-based nurseries which are cost-intensive. Studies conducted in many States across the country have shown that *in situ* production of fingerlings has resulted in better stocking compliance and resultant high yields (Sugunan and Katihia, 2004).

Advantages of enclosed culture systems in inland fisheries can be summarised as:

- Augmenting fish yield by optimizing the use of all available water area
- Raising fingerlings in large numbers for stocking in a cost effective way

- Optimization of trophic structure and functions to the advantage of fish production
- Effective utilization of weed-choked water bodies and those with obstructions like tree stumps and boulders, where harvesting of wild fish is difficult
- Reducing pressure on land for farms and nurseries
- Scope to keep a captive stock within the open water bodies allowing rapid, sure, complete and easy harvesting
- Direct and easy observation of stock for feeding, growth and general health
- Considerable indirect employment opportunities.

5. Cage Culture - Definitions

Cage is an enclosed space to rear organisms in water that maintains free exchange of water with the surrounding water body. 'Pens' are essentially portions of a water body cordoned off by erecting a fence like structure. Usually pens are enclosed portions of the lake margin, with fencing on three sides; the free fourth side being contiguous with the land. But, pen can also be away from the shore with fencing on all the four sides. The main difference between a pen and a cage is: pen bottom is never covered so that the soil water interface of the water body is not compromised. Enclosure aquaculture in the context of inland fisheries in India refers to both 'cage culture' and 'pen culture'. This document deals exclusively with cage culture.

6. Shape of Cages and Cage Materials to be Used

The cages are generally enclosed on all sides, except for leaving an opening at the top for feeding and handling the stock. They can be positioned at the bottom, middle or surface of the water column, but floating cages are very popular and easy to manage. Cages are of many shapes (round, square or rectangular). While round cages with a cylindrical net, supported by circle-shaped support frames, are extensively used for sea cage culture in India, cube-shaped, rectangular/square cages are used in reservoirs. Both round and rectangular cages are equally good from production point of view and their choice is mainly based on other considerations such as endurance (against turbulence), life, cost, availability of materials, convenience in assembling and transporting the components. However, it must be kept in mind that it is not easy to mobilize floating cranes and other logistic support for moving and installing huge structures in inland water bodies. Round cages are considered more suitable for choppy waters with wave- and wind-driven turbulence.

Size of a cage for fish culture in reservoirs can vary, but often multiple units are installed as a battery of cages with catwalks for easy access to the fish stock and floating huts. However, from operational and planning purposes, a cage with the dimensions: 6m (length) x 4m (width) x 4m (height) is considered as a standard unit and a battery comprises 6, 12 or 24 such cages, as per requirement. The cages in a battery are arranged in caterpillar design for better exchange of water thereby facilitating relatively high dissolved oxygen.

Durable and stable cage materials are essential for achieving better results. A cage comprises hard frames as support and nylon nettings as cage body. It is desirable to have environment-friendly, HACCP (Hazard Analysis and Critical Control Points) protocol compliant, rust-free materials for cage fabrication. Commonly used materials for cage frames are bamboos, mild steel (MS), galvanized iron (GI), poly-vinyl chloride (PVC) and virgin-grade HDPE (High Density

Polyethylene) (for runner-based & pontoon-based frames). The bamboo based frames are not recommended for commercial cage fish farming due to their poor longevity and strength to withstand turbulence

Knotless nylon nets are recommended for cage fabrication. The net mesh size recommended for rearing fry of *Pangasianodon hypophthalmus* is 10 to 12 mm and that for fingerling to marketable size is 20 to 30 mm. (In case of IMC, the mesh size should be 5 mm for fry and 10 mm for fingerling). Protective net may be put above the cage to avoid crop loss due to predation by birds (Table 1).

Table 1. Recommended Cage Net specifications for culture of *Pangasianodon hypophthalmus*

Type of Nets	Specification (Ply)	*Mesh Size (mm)
Fingerling Growing Nets (knotless)	10-12	10-15
Grow-out Nets (knotless)	20-30	30-40
Predator or Outer Nets	25-30	35-40
Bird Protection Nets	18-20	60-80

*Mesh Bar (knot to knot) is half the length of mesh size (stretched mesh)

Separate cages are needed for nursery rearing and grow-outs. Normally, 30% of the cages in a battery are earmarked for *in situ* rearing of fingerlings (stocking materials); the rest being grow-out cages. Special care is needed on mooring/anchoring of the cage structure to avoid displacement or damage to the structure. Anchoring needs to be done diagonally opposite at the four corners of the cage structure by providing heavy sinkers such as anchors or black stones having a dimension of 0.5 m x 1.0 m (not less than 40 kg in weight) tied with strong nylon rope.

7. Site Selection

7.1 Selection of Water Body

Due to ecological reasons, cage culture in rivers is discouraged world over. In India, the riverine ecosystems are already under severe stress resulting in habitat loss/degradation due to a number of reasons such as dams, water abstraction, low flows, river training and pollution from industrial, domestic and agricultural runoff. Cage culture in a water-starved stream will add further stress to the ecosystem and therefore cage culture is not recommended in rivers. Subject to other conditions, it can be practiced in estuaries, lagoons, lakes, and large/medium reservoirs. Large, deep reservoirs and lakes need to be chosen for cage culture, leaving aside small and shallow water bodies for the following reasons:

1. Small and shallow water bodies are very productive and usually suited for free-ranching as there is no constraint in harvesting the fishes.
2. Predators are not a big problem.
3. Such water bodies are suitable for practicing culture-based capture fisheries, managed on the basis of annual stocking and harvesting.
4. Small and shallow waters are generally rich in nutrients and the sunlight penetrates down to the bottom resulting in high rate of primary production. Cage culture involves high input of nutrients in the form of feed. This coupled with the high rate of deposition of fish excretory matters result in high rate of nutrient input to the system causes eutrophication. This will lead to the disruption of natural ecosystem processes and causing irreparable damage to the system.

5. Small reservoirs do not have sufficient depths for the cages to remain afloat during the lean season. If water level recedes and goes beneath the critical level, the crop will be destroyed.

Therefore:

- *Cage culture shall be allowed in water bodies having a surface area 1,000 ha or more at FRL. (Exception to this can be made only in case of 'very deep abandoned mines', which are less than 1000 ha in area, but too deep for practicing culture-based fisheries, subject to all other conditions prescribed in this document).*
- *Cage culture shall be allowed in reservoirs with an average depth of 10 m (Average depth is calculated as: Area in hectares divided by water holding capacity in m³).*
- *The cage site at the reservoir should have at least 10 m depth round the year.*

7.2 Site Selection

Criteria for site selection are based on safety of the location and smooth culture operations avoiding or minimising user conflicts. Thus, the sites to be avoided are: (1) places with turbulence and excessive wave/wind action, (2) bad water quality, (3) water bodies with obstructions and heavy weed infestation, (4) low depth, (5) difficult to access the site and logistic considerations and (6) nearness to dense human habitation, dams, tourist spots, industries and polluting industries. Areas of fish nursery and breeding grounds, sensitive areas like wildlife habitat including birds nesting, socio-culturally important areas like pilgrimage centres, water bodies for public use like drinking water, cleaning, navigation, etc, and protected aquatic reserves, sanctuaries, etc. are also to be avoided. The ideal locations for siting cages in large and medium reservoirs are the protected bays/coves to avoid damage due to strong wind action. However, some mild turbulence always helps exchange of metabolites and nutrients between the cage and outside environment.

By using these basic criteria, water bodies or specific locations within a water body can be chosen for cage culture. This information can be included in a map to be prepared at district and State level. The State Department of Fisheries should take initiatives of their own to select the suitable reservoirs and the sites therein for cage fish farming and draw-up maps in GIS platform to facilitate easy planning. However, if necessary they can take the advice of experts from the concerned ICAR and Central Institutes.

7.3 Depth and Water Quality

Depth is an important criterion for selecting the reservoir and also the cage site. The reservoir should have at least 10 metres of mean depth and the cage site needs a water depth of at least 10 metres round the year. A clearance of 6 metres will be always needed from the cage bottom to the floor of the water body.

As the cage culture operations will tend to increase nutrient load, BOD and COD in the water bodies, care must be taken to pre-assess the water quality of the location. Excessive nutrient load from cage culture inputs, especially feeds can create eutrophic conditions with disastrous consequences to the ecosystem. It needs to be ensured that the water body is either oligotrophic (low nutrient content) or mesotrophic (moderate nutrient content) before starting the cage culture. Although generally, Indian reservoirs are either mesotrophic or oligotrophic in nature,

those water bodies receiving effluents or drained by rich catchments can show eutrophic tendencies. If cage culture is practiced in such eutrophic reservoirs, the leftover feed and the metabolic wastes from the stock can cause eutrophication. Therefore, it is necessary to conduct an Environment Impact Assessment (EIA) before cages are installed in reservoirs. The ICAR research Institutes have the capacity to make rapid EIAs. Estimation of chlorophyll, nutrients (nitrates and phosphates) and Secchi Disc transparency can give sufficient clue to the trophic status of a water body. *In any case, cage culture should not be attempted in any water body having total phosphorous and total nitrogen concentration in the water in excess of 0.02 mg/L and 1.2 mg/L, respectively.*

8. Cage Maintenance

Anti-corrosive paint should be applied to GI/MS cages to prevent rusting and to increase the durability. Cage should be cleaned at 15-days interval to avoid net clogging. After shifting the stock to another cage, each cage is taken out, sun-dried and cleaned thoroughly by scrubbing/water-jet wash to remove debris and fowling organisms. *In situ* cleaning using water jets is not advised as it will dislodge the pathogenic organisms throwing them into cages to infect the fish. Additional *hapas*/nets may be maintained for this purpose or to meet other emergency situation. The physico-chemical parameters of water should be recorded regularly as a part of water quality monitoring.

9. Species

At the moment economically viable cage culture is practiced in inland water bodies of India by growing the exotic pangasius (Sutchi Catfish), *Pangasianodon hypophthalmus*. Culture of another exotic species *viz.*, GIFT tilapia, a genetically improved strain of *Oreochromis niloticus* has been allowed subject to certain conditions such as: only all-male seed, sourced from authorized agencies can be used. However, culture of tilapia has not picked up in any appreciable manner. In the absence of any adoptable technology to culture indigenous species, culture of exotic pangasius and GIFT tilapia certified/supplied by authorized agencies are allowed. However, cage culture of more species drawn from the indigenous species-pool needs to be encouraged at all levels. Depending on just one or two species will be unsustainable in the long run and the high density culture practice of exotic pangasius can invite major disease issues in future. Considering the consistent demand for species of high economic and nutritive value, coupled with the regional preference (for some species), the following indigenous species need to be inducted into the cage culture domain: *Labeo bata*, *L. rohita* (Jayanti rohu), *Osteobrama belangeri* (*pengba*), *Ompok bimaculatus* (*pabda*), *Anabas testudineus* (*koi*), *Pangasius pangasius*, *Puntius sarana*, *Lates calcarifer* (*bhetki*), *Chanos chanos* (milk fish), *Etroplus suratensis*, *Chitala chitala* (featherback), Murrels (*Channa striata*, *C. marulius*), *Wallago attu* and shellfish *Macrobrachium rosenbergii*. At the present level of technology, cage culture of the indigenous species mentioned above is not economically viable although they have good market and consumer preference. Sometimes, *Labeo rohita* is stocked in the outer nets of the cages @ 10-15 advanced fingerlings (> 100mm) per cage. By virtue of its browsing habit, rohu cleans the algal growth over the nets, besides giving some additional fish biomass.

Apart from Pangasianodon hypophthalmus and GIFT Tilapia, all other exotic species (including illegally introduced fishes) are strictly prohibited for cage culture.

10. Stock Management

10.1 Culture of *Pangasianodon hypophthalmus*

The fish seed for stocking should be sourced from authentic and reliable agencies, subject to government stipulations. Proper records on seed sourcing shall be maintained and the seed should be quarantined and acclimatized and bathed in 3 mg/L KMnO_4 (as prophylactic treatment on need basis) before stocking. The size at stocking and optimum stocking density vary according to requirements, depending on growth and survival. However, stocking density for *P. hypophthalmus* range from 500 to 700 nos./ m^3 of 20 mm size fry for rearing to fingerlings. For grow-out, the stocking density is in the range of 60 to 100 nos./ m^3 of fingerlings (50-60 mm size). The stocking material is better transported to the cage site in water loaded open tank with frequent stirring. Stock maintenance involves periodic sampling to assess the growth and general health condition. The culture period of *P. hypophthalmus* is generally 7-8 months.

(For raising fingerlings of Indian major carps, fry measuring above 25 mm length are suitable for rearing in cages. The size at stocking and stocking density of Indian major carps and other indigenous species shall be need-based as these have not been standardized yet. To raise fingerlings for culture of Indian major carps, it is always better to stock 50 mm fry as these will grow faster and survival rate would be higher. Harvesting can be done after rearing for 60 days. However, this depends on natural productivity and supplementary feeding. It is helpful if land-based nurseries are available near a reservoir or a cluster of them for rearing fry to fingerlings. Pen culture is ideal for raising stocking material of IMC, but all reservoirs do not have the ideal conditions for taking up pen culture.)

The cage fish farming being purely based on supplementary feeding, selection of good/best fish feed and its application in right quantity is important to achieve desirable results. It is advised that only quality floating feed is selected. Sinking feed is totally unsuitable for cage fish farming as it accumulates at the base and fouls the cage/reservoir environment. The rate of feeding for *Pangasianodon hypophthalmus* is given in Table II.

Table II. Feed requirement of *Pangasianodon hypophthalmus* in Cage Culture

Stage	Feed	Protein Requirement	Feeding Rate (% of Fish Body Weight)
Fry to Fingerling	Crumble Floating Feed (0.5 -1.0 mm)	30 to 35%	Less than 10% body wt., 4-5 times a day
Fingerling to Table Fish	Pellet Floating Feed (Above 1.0 mm)	25 to 30%	First 2 months 5% body wt., twice a day. From 3 rd to 5 th month 3% body wt., twice a day or as required. From 6 th month onward 2% body wt., twice a day or as required.

10.2 Culture of GIFT Tilapia

Rajiv Gandhi Centre of Aquaculture (RGCA) has developed culture technologies for GIFT Tilapia (*Oreochromis niloticus*) and Sea Bass (*Lates calcarifer*). Details of cage specifications and feeding for GIFT Tilapia are given below (Table III to V).

Table III. Specifications of Net Cage for Tilapia Culture

Net Cage Specifications	Fish Weight
Fish net cage without top cover made of HDPE 0.75/16mm mesh size webbings with rope (Cage size : 5m x 5m x 5m)	50 - 150 grams
Fish net cage without top cover made of HDPE 1.25/20mm mesh size webbing with rope (Cage size : 5m x 5m x 5m)	150 – 250 grams
Fish net cage without top cover made of HDPE 1.25/24mm mesh size webbing with rope (Cage size : 5m x 5m x 5m)	250 – 500 grams, till harvest

Table IV. Stock Management of Tilapia

Items	Details
Cage Size	5m x 5m x 4m
*Mesh Sizes	16 mm, 20 mm, 24 mm
Body weight, Feed Pellet Size & Protein Content	50-150 grams – 2 mm (28% protein) 150-500 grams – 3 mm (28% protein) 500-600 grams – 4 mm (25% protein) 600 grams and above – 5 mm (22% protein)
Stocking Density	40/m ³
Cage Changing	Fortnightly
Nursery	Not permitted in Reservoirs; minimum stockable size is 50 grams

*Mesh Bar (knot to knot) is half the length of mesh size (stretched mesh size)

Table V. Feeding Chart for Tilapia

S. No.	ABW (g)	Feeding rate (% of Body Weight)	Culture Phase
1	1-5	8%	Nursery Rearing
2	6-10	6%	
3	10-15	5.5%	
4	15-20	4%	
5	20-50	4.0 - 2.5%	
6	50-100	2.5 - 1.7%	Growout Rearing
7	100-200	1.7 - 1.3%	
8	200-300	1.3 - 1.0%	
9	300-500	1.0 - 0.9%	
10	500-700	0.9 - 0.8%	
11	>700	1.8 - 0.6%	

10.3 Culture of Sea Bass *Lates clacarifer*

Recommended cage materials, mesh size, maintenance of biomass and feeding of Sea Bass in Cage Culture in Inland Waters (Reservoirs & Dams) are given in Table VI, VII and VIII).

11. Fish Health Monitoring

As fish health monitoring involves maintaining hygienic and healthy culture environments, it is important to source seed and feed from authorized and genuine agencies that follow high standards. Usage of suitable quality feed, maintenance of optimum stocking densities, adoption of preventive measures such as prophylactic treatment before stocking, regular monitoring of stock and periodic cleaning of cages will avoid outbreak of diseases and stock loss.

Table VI. Type and Number of Net Cages required for Sea Bass Culture

Sl. No.	Particulars of Cage	No. of Cages Required (%)
1	500PE/8 ply/12 mm (knot to knot)	6
2	500PE/8 ply/16 mm (knot to knot)	8
3	500PE/8 ply/20 mm (knot to knot)	10
4	500PE/8 ply/24 mm (knot to knot)	12
5	500PE/8 ply/32 mm (knot to knot)	16
6	500PE/8 ply/38 mm (knot to knot)	23
7	500PE/8 ply/44 mm (knot to knot)	25

Additional 30% Cages of 38 mm and 44 mm mesh bar (knot to knot) are required as standby because 12 mm and 16 mm mesh bar size cages are not used when the fish attain harvestable size.

Note: Irrespective of the cage size the mesh sizes vary as given in Table

Table VII. Cage Mesh Size and Biomass Capacity for different sizes of Sea Bass

Size of Fish (cm)	Wt of Fish (g)	Cage Mesh* (mm)	Biomass (kg/cu. m)
10.0 - 12.0	13.0 - 23.0	12.0	2.5 - 3.0
12.0 - 14.0	23.0 - 53.5	12.0	3.0 - 3.5
14.0 - 16.0	53.5 - 76.0	16.0	3.5 - 4.0
16.0 - 18.0	76.0 - 105.0	16.0	4.0 - 4.5
18.0 - 20.0	105.0 - 140.0	20.0	4.5 - 5.0
20.0 - 22.0	140.0 - 180.0	24.0	5.0 - 5.5
22.0 - 24.0	180.0 - 230.0	24.0	5.5 - 6.0
24.0 - 26.0	230.0 - 280.0	24.0	6.0 - 6.5
26.0 - 30.0	280.0 - 350.0	32.0	6.5 - 7.0
30.0 - 32.0	350.0 - 420.0	32.0	7.0 - 7.5
32.0 - 34.0	420.0 - 500.0	38.0	7.5 - 8.0
34.0 - 36.0	500.0 - 600.0	38.0	8.0 - 9.0
36.0 - 38.0	600.0 - 700.0	38.0	9.0 - 10.0
38.0 - 40.0	700.0 - 820.0	44.0	10.0 - 11.0
40.0 - 43.0	820.0 - 1000.0	44.0	11.0 - 12.0

*Mesh Bar (knot to knot) is half the length of mesh size (stretched mesh)

Table VIII Feeding of Sea Bass

Size of Fish (cm)	Av. Wt. (g)	Feed Type	Pellet Size (mm)	Feeding Rate (% Body Wt.)
9-10	9.7-13.0	Floating	2.0-2.2	5.0
10-12	16.0-23.0	Floating	3.0	4.8
12-16	23.0-53.5	Floating	4.0	4.6
16-18	53.5-76.0	Floating	4.0	4.4
18-20	76.0-105.0	Floating	6.0	4.2
20-22	105.0-140.0	Floating	6.0	3.8
22-24	140.0-180.0	Floating	8.0	3.6
24-26	180.0-230.0	Floating	8.0	3.2
26-28	230.0-280.0	Floating	10.0	3.0
28-30	280.0-350.0	Floating	10.0	2.8
30-32	350.0-420.0	Floating	10.0	2.6
32-34	420.0-500.0	Floating	12.0	2.4
34-36	510.0-600.0	Floating	12.0	2.2
36-38	600.0-700.0	Floating	12.0	2.0
38-40	700.0-820.0	Floating	14.0	1.8
40-43	820.0-1000	Floating	14.0	1.8

As far as possible, use of antibiotics and chemical should be avoided. However, in the event of it becoming necessary under exceptional circumstances, the use should be judicious and *it must be clearly understood that only approved drugs/chemicals, permitted by Government regulatory authorities (See Table IX) at standard doses shall be used.*

In case of severe infection, the fish should be removed from the cages and buried/incinerated/bleached. Health of the fishes stocked in cages must be monitored at monthly interval and proper treatment measures must be adopted in case of disease outbreak, (if any). Standard doses of chemicals like $KMnO_4$ and formalin can be used for dip treatment. In case of bacterial disease, Oxytetracycline (OTC) and its derivatives can be administered through feed or other modes. These are the only antibiotics allowed for fish culture in cages. A record on incidence of fish disease and control measures adopted including medicines used should be maintained. In case of disease outbreak, the State Fisheries Department or National Institutes (one of the eight fisheries research Institutes under ICAR (other Central Government labs like NABL accredited aquaculture lab of RGCA) or any laboratory belonging to the State governments can be approached.

Table IX. Drugs and Chemicals allowed to be used in Cage Aquaculture

Drug/Chemical	Recommended Dose	Indications	Administration
Chlor-amine-T	20 milligrams per litre static bath once per day for 60 minutes on consecutive or alternate days for 3 days	Columnaris disease associated with <i>Flavobacterium columnare</i>	Immersion
Formalin	External parasites 250µL/L for 1-hour	Control of external protozoa (<i>Chilodonella</i> spp., <i>Costia</i> spp., <i>Epistylis</i> spp., <i>Ichthyophthirius</i> spp. <i>Scyphidia</i> spp. and <i>Trichodina</i> spp.) and the monogenetic trematode parasites (<i>Cleidodiscus</i> spp., <i>Dactylogyrus</i> spp., and <i>Gyrodactylus</i> spp.) on all finfish	Immersion
Oxytetracycline dihydrate	Catfish – 2.5 to 3.75 g Oxytetracycline/50 kg of fish for 10 days through feed (Active ingredients: 200 g Oxytetracycline/ 0.5 kg)	Control of <i>Hemophilus piscium</i> , Furunculosis caused by <i>Aeromonas salmonicida</i> , Bacterial hemorrhagic septicemia caused by <i>Aeromonas liquefaciens</i> , and <i>Pseudomonas</i> disease	Medicated feeds
Florfenicol	10 mg Florfenicol/kg of fish/day for 10 consecutive days through feed (Active ingredients: 500 g of Florfenicol/kg)	Control of <i>Flavobacterium psychrophilum</i> and <i>Aeromonas salmonicida</i> , <i>Streptococcus iniae</i> , <i>Flavobacterium columnare</i>	Medicated feeds

12. Safety Measures

Cage culture involves working in a risky environment and therefore, all security measures should be taken to avoid injury and loss of life while installing cages and working in cages to manage the stock (rearing the fishes). Adequate number of lifebuoys/ other life-saving equipment should be provided at the cages and in vessels used for approaching (managing) the cages. Similarly, the workers should wear life-jackets all the time while working in water and cages. Emergency life-saving kits and first-aid boxes should be provided at the cages/boats/floating huts or field camps. The international conventions related to 'safety at sea' and procedures prescribed in the FAO-Code of Conduct for Responsible Fisheries (FAO-CCRF) will be the guiding principles for safety measures (<http://www.fao.org/docrep/005/v9878e/v9878e00.HTM>). The cage stock needs to be protected from poaching/ trespassing by keeping efficient watch and ward.

13. Market, Harvesting and Post-Harvest Management

The feeding should be stopped 2 days prior to harvesting. If antibiotics were used during the culture period, sufficient withdrawal period may be given before harvest. It is advisable that the

harvesting of stock may be done in phased manner like larger fish first, especially to avoid glut in the market, to avoid low price for the harvested fish and get a better market price. Records of harvest should be maintained at the site. Cage culture is a high-intensive culture practice that could result in harvest of large quantities of fish at a time. Growth of this segment of fish production without a planned link to a whole value chain approach, could result in marketing problems and post-harvest losses. It is essential to have a post-harvest and marketing strategy before launching cage culture ventures on a large-scale. The large-scale cage production centres should either have their own facilities or have linkages for:

- Proper harvesting gadgets
- Fish holding and storage
- Live fish transport
- Post-harvest processing centres like fillet plants
- Market chain including E-markets.

In any case, it is advisable for all cage units (including small units) to have a small ice-making device at each cage site for preservation of the harvest before being transported for storage or to the market. There should be at least one insulated van at site for transportation of fish. Efforts may also be made to create live/preserved fish sale outlets at strategically important points in nearby cities for better return.

14. Environmental Precautions and Assessment

Cage culture is a relatively new area of fish production in India and its environmental impacts are not fully understood. There are models for assessing the environmental impact in terms of nutrient loading developed in other countries. But these models are not directly applicable in India due to the difference in environmental regimes under which these have been developed, especially the variations in temperature and trophic status. Efforts are on to develop such models in India, but the results will not be available in short time. Nevertheless, the cage culture activities are growing at a very fast rate causing concerns, especially when viewed in the light of our bad experience with coastal aquaculture in the 1980s and 1990's when unregulated growth without addressing environmental concerns have resulted in disastrous consequences to ecosystems.

Following the guidelines of the FAO-CCRF for dealing with data-deficient systems, our policy towards EIA of cage culture should be based on a precautionary approach and hence the limitations on phosphates and nitrates values as given in para 7.3 above. Accordingly, the following measures need to be adopted for cage culture projects:

1. Major environmental threats from cage aquaculture include the release of excessive nutrient that accumulate in water and sediments.
2. With the aim of protecting aquaculture operations from excessive nutrient loading in water and sediments and also to protect the environment from the harmful effects of cage culture (eutrophication and chemical/pharmaceutical inputs), Environmental Impact Assessment is necessary before clearing cage culture projects. This will be done/facilitated by competent authorities/organisations, following the standard procedure. States should exercise greater control over cage aquaculture operations through appropriate governing procedures.

3. The State governments should demarcate, list and notify water bodies that are suitable for cage culture on the basis of its trophic characteristics and other criteria of site selection (as given above at 7.1, 7.2, 7.3 above) and upload the list of water bodies and their suitability on GIS platform with the help of concerned institutions.
4. It will be mandatory for the cage culture operators to record the water quality parameters like Dissolved Oxygen, pH, CO₂ and Total Alkalinity, inside and outside the cages from the day-one of the operation, keeping in view the need for long-term environmental impact. Any increase in nutrients level away from the cage area should be taken as a warning.
5. It will be mandatory for the cage culture operators to collect data on the trophic status in and around the cages as well as the areas away from the cages, periodically and report to the authorities to assess the impacts in terms of nutrient loading. Studies on other chemical and physical quality parameters of water and sediments also shall be undertaken as per the risk perception.
6. NFDB and Central Organizations will build capacities of States to interpret such data and arrive at conclusion.

15. Carrying Capacity and Limit of Cage Numbers

Carrying capacity of a water body to hold cages is the most vital input for decision making in cage culture. But, unfortunately we are not in a position to arrive at carrying capacity levels with precision due to paucity of data. Therefore, our policy on carrying capacity has to be based on a precautionary approach. Provisions of FAO-Code of Conduct for Responsible Fisheries (<http://www.fao.org/docrep/005/v9878e/v9878e00.HTM>) clearly stipulates to follow the 'precautionary approach' while dealing with data deficient systems. Accordingly, taking into account, the general trend of nutrients in Indian reservoirs and possibility of nutrient loading from cage culture, the following carrying capacities have been developed on a precautionary approach basis (Table X):

Table X. Limits set for Cage Culture in Reservoirs

Reservoir Area (ha)	Maximum Number of Cages Allowed*
< 1000	Not allowed
1001 to 2000	500
2001 to 3000	1000
3001 to 4000	1500
4001 to 5000	1900
5001 to 10000	3000
>10000	5000

*As Stand-alone or in Batteries (of 6, 12 or 24 Cage Units), as required

*One Cage Unit is 6m x 4m x 4m

16. Ownership, Beneficiaries and Governance

Unlike the land-based aquaculture undertaken on private land, cage culture is practiced in common property resources. Therefore, the question – who owns the cages installed in reservoirs needs an important consideration. While answering the question, the following facts need to be considered:

- (a) Almost all large and medium reservoirs in the country are owned by the government or government agencies and fishers fish these water bodies as common property resource with free or almost free access.
- (b) Fish produced from the reservoirs is essentially a natural resource and the traditional and local fishers communities have the 'natural primary rights' to this resource.
- (c) Livelihoods of many poor people depend on catching fish from reservoirs.
- (d) Reservoir fishing is used sometimes as a means to rehabilitate the people ousted from the dam project sites.

Considering the above facts, it is essential to ensure that expansion of cage culture do not impair the livelihoods and income of the fishers. Cage culture can adversely impact the interests of local fishers by denying access to fishing grounds, obstructing their pathways, and decline in fish catch if cage culture affects the natural productivity of the water body. At the same time, it is equally important to utilize the additional fish production potential through cage culture. Considering the need to avoid conflicts, the best way to achieve the goal is to empower the fishers to take up this activity collectively without conflicts. Following a purely revenue approach by allowing individual investors and corporate houses to undertake cage culture will be against the spirit of inclusive growth and can create social tension. Thus, the community (or a group of members of the community) should own the cages as a common property and they should be the beneficiaries of this technology.

A strong governance platform based on co-management principles is essential for responsible cage culture operations to be undertaken by the community. But the existing Fishermen Cooperative Societies have poor track record of functioning as a responsible entity to work as a group. This throws a big challenge on the government to organize and empower the fisher communities and develop capacity among them to enable them to take up cage culture. SHGs, Cooperative Societies, FPOs or other such groups should be given licenses to undertake cage culture. *Under any special circumstances, if a private entrepreneur or investor is to be brought to the scene, government through strong policies, should protect the interest of the local fishers and fisher communities, who have the primary rights to the natural resource. A Conflict Management Cell should be established to address complaints.*

17. Social Relevance

Cage culture in inland open waters is a fast growing activity and it could have many environmental and social impacts, which may not be predictable. But adequate precautions need to be taken to ensure that it should not lead to any such issues in future. The ultimate goal should be increased fish production through environmentally sustainable and socially inclusive means. The additional income generated from the reservoirs through the growth of cage culture should be shared by the fisher community rather than an investor walking away with all the benefits and the fishers get only the wages. The social impact should be additional income and improved standard of living for one of the weakest sections of our society. This should be the ideal social impact of cage culture operations apart from the increased availability of fish.

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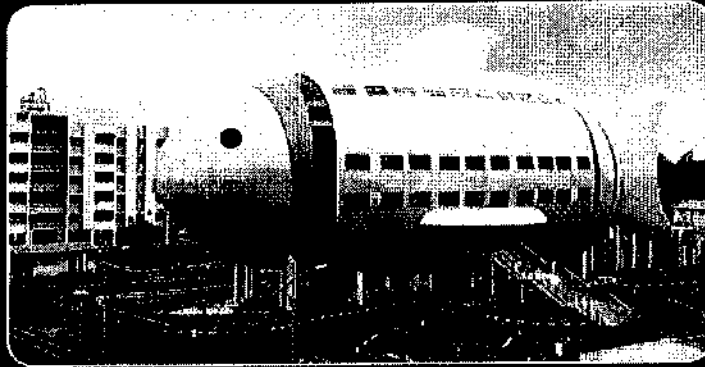
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राज्यातील मत्स्य उत्पादनात वाढ करण्यासाठी
पिंजरा पध्दतीने मत्स्यसंवर्धन करण्याबाबत धोरण.

महाराष्ट्र शासन

कृषि, पशुसंवर्धन, दुग्धव्यवसाय विकास व मत्स्यव्यवसाय विभाग,
शासन निर्णय क्र. मत्स्यवि-२०१६/प्र.क्र.१८/पदुम-१३

दिनांक: १७ ऑक्टोबर, २०१६

वाचा:- १) आयुक्त मत्स्यव्यवसाय यांचा क्र. मत्स्य/भू/ताम/०२०१०५/२९/२०१६,
दिनांक ४.७.२०१६ चा प्रस्ताव.

प्रस्तावना:-

राज्यातील कुपोषणाची समस्या हाताळण्यासाठी प्रोटीनयुक्त खादयपदार्थांची उपलब्धता वाढविणेची अत्यंत आवश्यकता आहे. मासे हे प्रोटीनयुक्त खादयपदार्थ म्हणून अतिशय महत्वाचा घटक आहे. राज्यातील मत्स्य उत्पादन वाढीस लागून उच्च प्रतीचे प्रोटीन उपलब्धता वाढविण्यासाठी मत्स्यव्यवसाय विभाग प्रयत्नशील आहे. यासाठी बंदिस्त पिंजरा पध्दतीने मत्स्यसंवर्धन करणे ही उच्च तंत्रज्ञानावर आधारीत पध्दत असून, त्याद्वारे प्रति हेक्टरी अधिक मत्स्योत्पादन मिळू शकते. मत्स्यव्यवसाय विभागामार्फत सध्या राज्यामध्ये एकूण २५७९ जलाशय ठेक्याने देण्याची कार्यवाही करण्यात येत आहे. सदर जलाशयांचे एक टक्के जलविस्तार क्षेत्राचा वापर करून सदर क्षेत्रामध्ये पिंजरा पध्दतीने मत्स्य उत्पादन घेतल्यास ठेक्याने दिलेल्या जलाशयाच्या जलविस्तार क्षेत्रावर ठेकेदाराच्या मासेमारी अधिकारावर कोणतीही बाधा येत नाही व कोणताही विपरीत परिणाम होत नाही. पिंजरा पध्दतीने मत्स्य पालनामुळे मत्स्यबीज उत्पादन, बर्फ कारखाना, मत्स्य खाद्य उत्पादन, कोल्ड स्टोरेज, मत्स्य वाहतूक इत्यादि उद्योगांसाठी चालना मिळून यासाठी उत्पादन व विक्रीसाठी लागणारे कुशल व अकुशल कामगार मिळून जवळपास (३०,०००) लोकांना रोजगार उपलब्ध होणार आहे. यास्तव, राज्यातील एकूण उपलब्ध जलाशयांमध्ये पिंजरा पध्दतीने मत्स्योत्पादन प्रकल्प स्थापित करून मत्स्यव्यवसायाकरीता पिंजरा पध्दतीने मत्स्यसंवर्धन करण्यासाठी धोरण लागू करण्याच्या अनुषंगाने शासनाने पुढीलप्रमाणे निर्णय घेतला आहे.

शासन निर्णय:-

पिंजरा पध्दतीने मत्स्य संवर्धनासाठी मत्स्यव्यवसाय विभागांतर्गत ठेक्याने देण्यात येणाऱ्या २०० हेक्टर वरील जलाशयांमध्ये मत्स्यसंवर्धन करण्यास परवानगी देण्यात येईल. पिंजरा पध्दतीने मत्स्यसंवर्धन विकास संबंधी धोरणांतर्गत आयुक्त मत्स्यव्यवसाय यांनी दरवर्षी आदिवासी विकास विभाग, मानव विकास योजना इत्यादि मधील लाभार्थी, पिंजरा पध्दतीने मत्स्योत्पादन करणाऱ्या संघटना, विविध संस्था, जिल्हा मच्छिमार संघटना, मत्स्यबीज उत्पादक, मत्स्य खाद्य उत्पादक, पिंजरा उत्पादक यांच्यासह कार्यशाळा घ्यावी व त्यादरम्यान या योजनेंतर्गत इच्छुक गुंतवणूकदार (शासकीय अनुदान व आधारित नसलेल्या) व्यक्ती/संस्था यांच्याकडून वर्तमान पत्रात जाहिरातीद्वारे अर्ज मागवून घेण्याची कार्यवाही करावी.

१. पिंजरा पध्दतीने मत्स्योत्पादनासाठी जलाशय ठेका देण्यासाठी निविदेबाबत कार्य पध्दती

आयुक्त मत्स्यव्यवसाय राज्यातील पात्र जलाशयांची यादी प्रसिध्द करतील व पारदर्शक पध्दतीने वर्तमानपत्रात जाहिरात देऊन पात्र व्यक्ती/विविध संस्था यांच्याकडून विहित पध्दतीने निविदा मागविण्यात येतील आणि उच्चतम निविदाधारकास निविदा मंजूर करण्यात येईल. त्यासाठी ठेक्याने देण्यासाठी आकारण्यात येणारी न्यूनतम ठेका रक्कम (offset price) १५०० चौ.मि. क्षेत्रात पिंजरा बांधकामासाठी लागणाऱ्या जलक्षेत्राची किंमत प्रथमवर्ष रु.५०,००० इतकी राहिल. यासाठी वेळोवेळी ठेका किंमती ठरविण्याचे व त्यात वाढ करण्याचे अधिकार प्रधान सचिव (पदुम) यांच्या अध्यक्षतेखालील समितीस राहतील सदर समिती स्थापन करण्याचे आदेश स्वतंत्रपणे निर्गमित करण्यात येईल. सदर प्रक्रिया राबविताना खालील लाभार्थींना प्राधान्य देण्यात येईल.

अ) १००% स्थानिक मच्छिमारांची प्राथमिक मच्छिमार सहकारी संस्था, १००% स्थानिक आदिवासी मच्छिमारांची प्राथमिक मच्छिमार सहकारी संस्था तसेच ज्या प्रकल्प ग्रस्ताना पर्यायी शेतजमिन वितरित करण्यात आलेली नाही किंवा मोबदला देण्यात आलेला नाही अशा १००% प्रकल्पग्रस्तांची प्राथमिक मच्छिमार सहकारी संस्था इत्यादिना ठेका वितरित करताना अग्रक्रम देण्यात येईल.

(ब) मत्स्यसंवर्धन पिंजऱ्यासाठी अर्ज करतेवेळी प्रकल्प अहवालाप्रमाणे (DPR) अर्जदाराकडे प्रकल्पाकरिता लागणा-या निधीच्या नियोजनाप्रमाणे स्वता:च्या भांडवलाची रक्कम असणे आवश्यक राहिल. अर्जदार संस्था असल्यास संस्थेकडे स्वता:च्या भांडवलापोटी राखीव निधी (Reserves & Surplus) असणे आवश्यक राहिल. संस्थेकडे आवश्यक राखीव निधी (Reserves & Surplus) नसण्याच्या परिस्थितीत सभासदांकडून अतिरिक्त भांडवल उभारणे, तसेच नविन सभासदांची नोंदणी करणे, त्यांच्याकडून भागभांडवलाची रक्कम गोळा केल्यावर त्यांना भागभांडवल प्रमाणपत्र दिल्यावर ती संस्था अर्ज करण्यास पात्र ठरेल. स्वता:च्या भागभांडवलामध्ये शासनमान्य वित्तीय संस्थेकडून (Non-Banking Financial Institution), उदा. SFAC, SIDBI प्राप्त भाग भांडवल (Venture Capital/ Sub-ordinate Loan) व शासकिय योजनेअंतर्गत देय अनुदानाचाही समावेश समजण्यात येईल.

२. पिंजरा बांधकामाबाबत अटी

प्रकल्पांतर्गत एकूण जलाशयाच्या १% क्षेत्र पिंजरा प्रकल्पासाठी संबंधितांच्या ताब्यात देण्यात येईल. याशिवाय पिंजरा बॅटरीचे चारही बाजूने विहित निकषाप्रमाणे आयुक्त मत्स्य यांच्यामार्फत वेळोवेळी निर्गमित केलेल्या आदेशाप्रमाणे मोकळी जागा सोडणे आवश्यक राहिल. या जलक्षेत्रात जास्तीत जास्त ६x४x४ या आकाराचे ४८ केज बांधकाम करणे आवश्यक राहिल.

३. कालावधी

पिंजरा पध्दतीने मत्स्यसंवर्धनासाठी देण्यात आलेल्या ठेक्याचा सर्वसाधारण कालावधी सात वर्षांचा राहिल. आदिवासी उपयोजना भागात, पेसा अधिनियमांतर्गत असलेल्या भागात व नक्शाल प्रभावित तालुक्यात सदर कालावधी आठ वर्षांचा राहिल. सदर कालावधीत तीन वर्ष वाढविण्याचे अधिकार आयुक्त मत्स्यव्यवसाय यांना राहतील. त्याबाबतच्या अटी शर्ती स्वतंत्रपणे निर्गमित करण्यात येतील. सदर कालावधीत गुंतवणूकदाराने कर्ज परतफेड न केल्यामुळे प्रकल्प अनुत्पादक मालमत्ता (Non-Performing Asset) जाहीर करण्यात आला असल्यास किंवा ठेकेदाराची मालमत्ता बँकेने जप्त केल्याचे घोषित केल्यास अशा ठेकेदारांना देण्यात आलेल्या पिंजऱ्याचे ठेके रद्द केले जातील.

४. बांधकाम

पिंजऱ्याचे जास्तीत जास्त बांधकाम १५०० चौ.मि.इतके मर्यादित ठेवणे बंधनकारक राहिल. पिंजऱ्यामध्ये मत्स्यबोटुकली साठवणूक करण्यासाठी, मत्स्यजिरे ते मत्स्यबोटुकलीत वाढ करण्याकरीता प्रकल्प क्षेत्राच्या जवळ असलेल्या जागामध्ये मत्स्यबीज संवर्धन तलाव बांधकाम करून घेण्यासाठी आयुक्त मत्स्यव्यवसाय विभाग यांनी जलयुक्त शिवार योजना व रोजगार हमी योजना (MNREGA) अशा शासकीय योजनेचा जास्तीत जास्त लाभ घेण्यासाठी आवश्यक पावले उचलणे अपेक्षित आहे. संबंधित ठेकेदारास मत्स्यसंवर्धन तलावामध्ये बोटुकली गोळा करण्यासाठी आऊटलेट दरवाजे (Sluice Gate) बांधणे मत्स्यपिंज-याची नियतकालिक देखभाल करणे इत्यादीची संपूर्ण जबाबदारी ठेकेदाराची राहिल. प्रकल्प क्षेत्रावर कर्मचारी यांचेसाठी शेड बांधकाम, स्वच्छता गृह बांधकाम इत्यादि तसेच कोणतेही इतर बांधकाम करण्याची जबाबदारी ठेकेदाराची राहिल.

पिंजरा पध्दतीने मत्स्यसंवर्धन करणा-या ठेकेदारांना मत्स्यखाद्य, जाळी, प्रकल्पासाठी लागणा-या साहित्याकरिता, स्टोरेज व कर्मचारी यांच्याकरिता स्वच्छतागृह बांधणे इत्यादी कामाकरिता तसेच, जलाशयामधील पिंजऱ्याकडे जाण्यायेण्यासाठी बिगर यांत्रिकी/यांत्रिकी नौका वापरण्यास परवानगी मिळवून देण्याची जबाबदारी संबंधित सहाय्यक आयुक्त मत्स्यव्यवसाय विभाग यांच्यावर सोपविण्यात येईल.

५. राखीव क्षेत्राव्यतिरिक्त उपलब्ध असलेल्या पिंजरा प्रकल्पांतर्गत निविदेमध्ये सूट देण्याची पध्दत-

जलाशयामधील पिंजरा प्रकल्पांतर्गत (cages) जलक्षेत्राचा जाहिर निविदा करण्याचे प्रस्तावित आहे. तथापि मुद्दा क्र. (१-अ) मध्ये नमुद वर्गवारीतील अर्जदारांना न्यूनतम ठेका रक्कमेमध्ये १०% पर्यंत सूट अनुज्ञेय राहिल. ठेका दिलेल्या अर्जदारांना मिळालेला ठेका पोट-ठेकेदारांना हस्तांतरित करता येवू नये, याकरिता व्यक्तिगत अर्जदारांनी स्वतःच्या बँकेचा खाते क्रमांक, पॅनकार्ड नंबर, आधारकार्ड नंबर अर्जामध्ये नमूद करणे आवश्यक आहे. तसेच, संस्था

अर्जदार असल्यास, अर्जदार संस्थेची संस्थेचा पॅन नंबर, बँक खाते नंबर, व संस्थेच्या संचालक मंडळाच्या सर्व सदस्यांचे पॅन नंबर व आधार क्रमांक अर्जामध्ये नमुद करणे आवश्यक राहिल व प्रवर्तक सदस्य (Promoter Members) यांना ठेक्याच्या मुदतीत संस्थेचे सदस्यत्व सोडता येणार नाही.

६. पिंजरा मत्स्यसंवर्धनाच्या कार्यक्रमाद्वारे मिळणा-या महसुलाबाबत कार्यवाही-

पिंजरा मत्स्यसंवर्धन कार्यक्रमाद्वारे मिळणारा महसूल महाराष्ट्र मत्स्योद्योग विकास महामंडळ यांच्या खाती जमा करावा व त्याचा उपयोग पिंजरा पध्दतीने साठवणूक करण्यासाठी लागणा-या मत्स्यबीज उत्पादनाची सुविधा निर्माण करण्याकरिता तसेच महामंडळाकडे असलेल्या मत्स्यबीज उत्पादन केंद्र व मत्स्यबीज संवर्धन तलाव यांचे बांधकाम अथवा देखभाल दुरुस्ती करणे बंधनकारक राहिल.

आवश्यकतेनुसार कुशल कामगारांची उपलब्धता वाढविण्याकरिता कौशल्य विकास संबंधी प्रशिक्षण कार्यक्रमावर खर्च करण्याची परवानगी राहिल. प्रशिक्षणाच्या वेळेस इतर शैक्षणिक संस्थांमधून प्रशिक्षित वैज्ञानिक यांना प्रशिक्षणासाठी निमंत्रण दिल्यास त्यांना द्यावयाचे मानधन या महसूलामधून महामंडळाने अदा करावे. आयुक्त मत्स्यव्यवसाय यांनी पिंजरा ठेक्याने देण्याची कार्यवाही व जाहीर लिलावामुळे होणा-या प्रसिध्दीचा खर्च इ., करिता तज्ञांना निमंत्रित केल्यास या कामासाठी महामंडळाने या निधीतूनच खर्च करणे अपेक्षित आहे.

७. पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांकरिता आवश्यक अटी-शर्ती

- अ. पिंजरा पध्दतीने देण्यात आलेले ठेके, उपठेक्याने देण्याची परवानगी देण्यात येणार नाही. ठेका उपठेक्याने दिल्यास त्याचा ठेका रद्द करण्यात येईल.
- आ. पिंजरा पध्दतीने देण्यात आलेल्या ठेक्याचे ठेकेदाराने स्वतःच्या पिंजऱ्यामध्ये मत्स्यसंवर्धन करणे बंधनकारक राहिल. त्यांनी अधिकार नसताना खुल्या जलाशयामध्ये मासेमारी करू नये. तसे केल्यास त्यांचा ठेका रद्द करण्यात येईल.
- इ. पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदाराने, त्यांच्या पिंजऱ्यावर काम करणाऱ्या कामगारास कामगार कायद्यांतर्गत किमान वेतनापेक्षा कमी वेतन अदा करू नये, सदर वेतन कामगारांचे बँक खाते काढून त्याला आधारकार्ड UIDAI नंबरचा आधार घेऊन त्यांच्या बँक खातेमध्ये जमा करण्यात यावे. त्यांना कायदेशीर तरतुदी प्रमाणे EPF, ESIS इत्यादी योजनेचा लाभ देणे आवश्यक राहिल. तसेच, ठेकेदारांनी त्यांच्या खर्चाने प्रधान मंत्री सुरक्षा विमा योजने अंतर्गत सर्व कामगारांचा विमा काढणे बंधनकारक राहिल.
- ई. ठेकेदाराने त्यांचे व त्यांच्या कामगारांच्या सुरक्षिततेच्या दृष्टीकोनातून पिंजरा प्रकल्पावर लाईफ सेविंग जॅकेट व इतर प्रथमोपचाराची साधने ठेवणे बंधनकारक राहिल.

उ. ठेकेदाराने प्रकल्पाच्या परिसरात बेकायदेशिररित्या कोणत्याही प्रकारचे अवैध कार्यक्रम करू नयेत तसेच प्रकल्पाच्या सुरक्षितेतला बाधा निर्माण होईल, असे कृत्य झाल्यास सदर पिंजरा पध्दतीचा ठेका रद्द करण्यात येईल.

८. कुशल कामगार व कौशल्य प्रशिक्षण निर्मितीचा कार्यक्रम-

पिंजरा पध्दतीने मत्स्यसंवर्धन करण्यासाठी उच्च तंत्रज्ञानाच्या कुशल कामगार पर्याप्त संख्येत उपलब्ध करून देण्यासाठी कौशल्य विकास कार्यक्रम व इतर प्रशिक्षण कार्यक्रमाची सर्व जबाबदारी महाराष्ट्र मत्स्योद्योग विकास महामंडळ यांच्यावर सोपविण्याचे प्रस्तावित आहे. याकरिता भारतीय कृषि अनुसंधान (ICAR) यांच्या अंतर्गत असलेली संस्था, जसे CIFRI, CIFA इत्यादि, महाराष्ट्र पशु व मत्स्यविज्ञान विद्यापीठ, नागपूर (MAFSU) व राज्यातील मत्स्यविज्ञान महाविद्यालय यांची मदत घेण्याची परवानगी राहिल. महामंडळाने त्यांनी निर्माण केलेल्या पिंजराबाबत प्रशिक्षण देण्याची सोय उपलब्ध करून देणे अपेक्षित आहे.

९. पिंजरा पध्दतीसाठी जलाशयामधील जलक्षेत्र निवडणे व पाण्याचे पृथक्करण करणे

पिंजरा पध्दतीसाठी जलाशयामधील १% जलक्षेत्र निवडणे व पाण्याचे पृथक्करण करणे याची जबाबदारी सहाय्यक आयुक्त मत्स्यव्यवसाय यांची राहिल. जलाशयामधील १% जलक्षेत्र निवडणे तसेच पाण्याचे परिक्षण करणे याकरिता भारतीय कृषि अनुसंधान यांच्या अंतर्गत असलेली CIFRI, CIFA इत्यादि, राज्यातील मत्स्यविज्ञान महाविद्यालय, महाराष्ट्र पशु व मत्स्य विज्ञान विद्यापीठ, नागपूर (MAFSU) यांचे सहकार्य घेण्यात यावे.

१०. पिंजरा पध्दतीने मत्स्यसंवर्धन करण्यासाठी मत्स्यबोटुकली व मत्स्यखाद्य यांची उपलब्धता वाढविणे

मत्स्यबोटुकली, मत्स्यखाद्य यांची उपलब्धता वाढविणेसाठी उत्पादक कंपन्यांची माहिती उपलब्ध करून देण्याची जबाबदारी महाराष्ट्र मत्स्योद्योग विकास महामंडळ यांच्यावर राहिल.

११. राज्यामध्ये अवर्षण अथवा अतिवृष्टी या प्रसंगी पिंजरा पध्दतीने ठेकेदारास मिळणारी सवलत

राज्यामध्ये अवकाळी दुष्काळ पडल्यास अथवा अतिवृष्टी झाल्यास महसूल विभागाच्या सन १९७६ च्या तसेच त्यानंतर वेळोवेळी निर्गमित करण्यात येणाऱ्या अवर्षण व अतिवृष्टीच्या शासन निर्णयानुसार पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांना १ वर्ष विनामुल्य वाढ देण्यात येईल.

१२. पिंजरा पध्दतीने ठेक्याने देण्यात आलेल्या ठेक्यामध्ये काही वाद विवाद झाल्यास करावयाची कार्यवाही

पिंजरा पध्दतीने ठेका देण्याच्या प्रक्रियेत अथवा ठेका दिल्यानंतरच्या कालावधीत कोणताही वाद उद्भवल्यास या वादासंदर्भात आयुक्त मत्स्यव्यवसाय हे अपिलीय प्राधिकारी राहतील तसेच प्रधान सचिव (पदुम) हे पुनर्विलोकन प्राधिकारी राहतील.

सदर शासन निर्णय महाराष्ट्र शासनाच्या www.maharashtra.gov.in या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा संकेतांक २०१६१०१७१७३७०३२१०१ असा आहे. हा आदेश डिजीटल स्वाक्षरीने साक्षांकित करुन काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने,

**Chitrakala
Suryawanshi**

Digitally signed by Chitrakala Suryawanshi
DN: c=IN, o=Government Of Maharashtra, ou=Agriculture
And ADF Department, postalCode=400032,
st=Maharashtra,
2.5.4.20-bd1aa8a1243458a7300585877d01b18c73211c3f
79c97957bd00e1e79e2a572a, cn=Chitrakala Suryawanshi
Date: 2016.10.17 18:43:26 +05'30'

(चि.नि.सुर्यवंशी)

सहसचिव, महाराष्ट्र शासन

प्रति,

१. मा.राज्यपाल यांचे सचिव
२. मा.मुख्यमंत्री यांचे प्रधान सचिव
३. मा.उपमुख्यमंत्री यांचे प्रधान सचिव
४. सर्व मा.मंत्री/राज्यमंत्री यांचे खाजगी सचिव
५. मा.मुख्यसचिव, महाराष्ट्र राज्य
६. अप्पर मुख्य सचिव (महसूल) मंत्रालय मुंबई-३२.
७. प्रधान सचिव (वित्त) मंत्रालय मुंबई-३२.
८. प्रधान सचिव (वने) मंत्रालय मुंबई-३२.
९. प्रधान सचिव (ग्रामविकास) मंत्रालय मुंबई-३२.
१०. सचिव (सहकार) मंत्रालय मुंबई-३२.
११. प्रधान सचिव (आदिवासी विकास) मंत्रालय मुंबई-३२.
१२. प्रधान सचिव (सामाजिक न्याय) मंत्रालय मुंबई-३२.
१३. सचिव (जलसंपदा) मंत्रालय मुंबई-३२.
१४. सचिव (लक्षेवि) मंत्रालय मुंबई-३२.
१५. आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई
१६. आयुक्त सहकार पुणे
१७. सर्व विभागीय आयुक्त
१८. सर्व जिल्हाधिकारी
१९. सर्व मुख्य कार्यकारी अधिकारी, जिल्हा परिषद
२०. व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ, मुंबई

पृष्ठ ७ पैकी ६

Annexure-III B

राज्यातील मत्स्य उत्पादनात वाढ करण्यासाठी पिंजरा पद्धतीने मत्स्य संवर्धन करण्याबाबत सुधारित धोरण.

महाराष्ट्र शासन

कृषि, पशुसंवर्धन, दुग्धव्यवसाय व मत्स्यव्यवसाय विभाग,

शासन निर्णय क्र. मत्स्यवि-२०१६/प्र.क्र. ९८/पदुम-१३

मंत्रालय, मुंबई -४०० ०३२.

दिनांक: २६ ऑगस्ट, २०२१

वाचा:-

- १) शासन निर्णय क्र. मत्स्यवि-२०१६/प्र. क्र.९८/पदुम-१३, दि. १७/१०/२०१६
- २) शासन शुद्धीपत्रक क्र. मत्स्यवि-२०१६/प्र.क्र.९८/पदुम-१३, दि. ०९/०३/२०१८
- ३) केंद्र शासनाच्या मार्गदर्शक सूचना "Revised Guidelines for Responsible farming of Tilapia in India" माहे एप्रिल २०२०
- ४) "प्रधानमंत्री मत्स्यसंपदा योजना" अंतर्गत "पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता" केंद्र शासनाच्या सुधारीत मार्गदर्शक सूचना, दि. ०६/११/२०२०
- ५) आयुक्त मत्स्यव्यवसाय यांचा प्रस्ताव क्र. मत्स्य/भू/०२०१२५/८५/२०२० दि. १९/११/२०२०

प्रस्तावना:-

बंदिस्त पिंजरा पद्धतीने मत्स्यसंवर्धन करणे ही उच्च तंत्रज्ञानावर आधारीत पद्धत असून, त्याद्वारे अधिक मत्स्योत्पादन मिळू शकते. सबब राज्यातील कुपोषणाची समस्या हाताळण्याकरीता प्रथिनयुक्त खाद्य पदार्थांची उपलब्धता वाढविण्याकरीता पिंजरा पद्धतीने मत्स्य संवर्धन प्रकल्प स्थापित करून रोजगार निर्मितीच्या उद्देशाने राज्यातील मत्स्य उत्पादनात वाढ करण्यासाठी पिंजरा पद्धतीने मत्स्यसंवर्धन करण्याबाबत (वाचा क्र. १) येथील शासन निर्णयान्वये २०० हेक्टर वरील जलाशयांमध्ये एकूण जलाशयाच्या १% जलक्षेत्र तसेच (वाचा क्र. २) येथील शासन शुद्धीपत्रकान्वये २०० हेक्टर खालील परंतू १५ हेक्टर पेक्षा कमी नसलेल्या व किमान १० मीटर खोली असलेल्या जलाशयांत एकूण जलाशयाच्या ०.५% जलक्षेत्र पिंजरा प्रकल्पासाठी भाडेपट्टीने मत्स्यसंवर्धकास देण्याबाबत निर्णय घेण्यात आला आहे. केंद्र शासनाच्या मार्गदर्शक सूचनांमध्ये नमूद १००० हेक्टर खालील जलाशयांमध्ये पिंजरा मत्स्यसंवर्धन करण्याची परवानगी देण्यात आलेली नाही. परंतू राज्यात १००० हेक्टर वरील जलाशयांची संख्या कमी (४६) असल्याने राज्यातील उपलब्ध २४४८ जलाशयांमध्ये पिंजरा पद्धतीने मत्स्य संवर्धन प्रकल्प राबविण्यास परवानगी देण्यात आलेली आहे. सदर धोरणामधील त्रुटी लक्षात घेवून आयुक्त मत्स्यव्यवसाय कार्यालयाने (वाचा क्र. ५) अन्वये उपरोक्त धोरणामध्ये करावयाच्या बदलांच्या अनुषंगाने प्रस्ताव शासनास सादर केला आहे. सबब या अनुषंगाने तलाव/जलाशयांमध्ये पिंजरा पद्धतीने मत्स्यसंवर्धन करणेबाबत यापूर्वीचे संदर्भ क्र.

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१ व २ अन्वये निर्गमित धोरण अधिक्रमित करुन सुधारीत धोरण निश्चित करण्याची बाब शासनाच्या विचाराधीन होती.

शासन निर्णय:-

शासन या निर्णयाद्वारे तलाव/जलाशयांमध्ये पिंजरा पद्धतीने मत्स्यसंवर्धन करणेबाबत शासन निर्णय दि. १७/१०/२०१६ व शासन शुद्धीपत्रक दि. ०९/०३/२०१८ अन्वये निर्गमित धोरण अधिक्रमित करुन या शासन निर्णयान्वये सुधारीत निकषांसह नवीन धोरणास मान्यता देत आहे.

पिंजरा पद्धतीने मत्स्य संवर्धनासाठी मत्स्यव्यवसाय विभागांतर्गत ठेक्याने देण्यात येणाऱ्या १५ हेक्टर पेक्षा कमी नसलेल्या सर्व जलाशयांत (ज्या जलाशयांची पाण्याची वर्षभर किमान ०८ मीटर पेक्षा जास्त सरासरी खोली असेल असे जलाशय) एकूण जलाशयाच्या १% जलक्षेत्रामध्ये परवानगी देण्यात येईल. सर्व जलाशयांकरिता पिंजरा उभारणी संख्या कमाल १८ पिंजरे, ६३० चौ.मी जलक्षेत्र प्रति वैयक्तिक मत्स्यसंवर्धक तसेच मत्स्यसंवर्धक सहकारी संस्था/महिला स्वयं सहायता गट/मच्छीमार स्वयं सहायता गट/संयुक्त दाईत्व गट ई. असल्यास पिंजरा उभारणी संख्या ६ पिंजरे प्रति सदस्य या प्रमाणात कमाल ७२ पिंजरे, २५२० चौ.मी जलक्षेत्र याप्रमाणे निश्चित करण्यात येत आहे. याबाबत पिंजरा पद्धतीने मत्स्यसंवर्धन विकास संबंधी धोरणांतर्गत आयुक्त मत्स्यव्यवसाय यांनी आदिवासी विकास विभाग, मानव विकास योजना इ. मधील लाभार्थी, पिंजरा पद्धतीने मत्स्य उत्पादन करणाऱ्या संघटना, विविध संस्था, जिल्हा मच्छीमार संघटना, मत्स्यबीज उत्पादक, मत्स्य खाद्य उत्पादक, पिंजरा उत्पादक, इच्छुक गुंतवणुकदार (शासकीय अनुदानावर आधारित असलेल्या व नसलेल्या) व्यक्ती/संस्था यांच्याकडून वर्तमानपत्रातील जाहिरातीद्वारे परिपूर्ण अर्ज मागवून घेण्याची कार्यवाही करावी.

१. पिंजरा पद्धतीने मत्स्यसंवर्धनासाठी जलक्षेत्र ठेक्याने देण्यासाठी कार्यपद्धती:-

आयुक्त मत्स्यव्यवसाय वर्तमानपत्रातील जाहिरातीद्वारे पारदर्शक पद्धतीने राज्यातील पात्र जलाशयांची यादी प्रसिद्ध करतील व पात्र व्यक्ती/संस्था यांच्याकडून विहित पद्धतीने परिपूर्ण अर्ज मागविण्यात येतील. १५ हेक्टर पेक्षा कमी जलक्षेत्र नसलेल्या सर्व जलाशयांतील १% जलक्षेत्रापैकी ७०% जलक्षेत्र शासकीय योजनांतर्गत अनुदान अर्जातील लाभार्थ्यांकरिता व उर्वरित ३०% जलक्षेत्र विनाअनुदानीत अर्जातील लाभार्थ्यांकरिता राखीव ठेवण्यात येईल. लाभार्थ्यांची निवड करताना "प्रथम येणाऱ्यास प्रथम प्राधान्य" या तत्त्वानुसार खाली नमुद प्राधान्य क्रमानुसार निवड करण्यात येईल. प्रत्येक वैयक्तिक लाभार्थ्यास आधार कार्ड आणि राष्ट्रीयकृत बँकेत खाते असणे अनिवार्य असेल. पिंजरा जलक्षेत्र वापर भाडे प्रति पिंजरा रु. ४०००/- प्रति वर्ष इतके असेल. यासाठी वेळोवेळी ठेका किंमत ठरविण्याचे व त्यात वाढ करण्याचे अधिकार मुद्दा क्र. १० अन्वये स्थापन सचिव/प्रधान सचिव (पदुम) यांच्या अध्यक्षतेखालील समितीस राहतील.

पृष्ठ १८ पैकी २

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राज्यातील जे तलाव/जलाशय मत्स्यव्यवसाय आयुक्तालयाच्या अधिनस्त आहेत अशा तलाव/जलाशयांमधील पिंजरा मत्स्यसंवर्धन प्रकल्पांची जबाबदारी मत्स्यव्यवसाय आयुक्तालयाची असेल तर जे तलाव/जलाशय महाराष्ट्र मत्स्योद्योग विकास महामंडळाच्या अधिनस्त आहेत अशा तलाव/जलाशयांमधील पिंजरा मत्स्यसंवर्धन प्रकल्पांची जबाबदारी महाराष्ट्र मत्स्योद्योग विकास महामंडळाची असेल.

सदर प्रक्रिया राबविताना लाभार्थी निवडीबाबत खालीलप्रमाणे प्राधान्यक्रम राहिल-

- स्थानिक मच्छिमारांची प्राथमिक मच्छिमार सहकारी संस्था
- स्थानिक आदिवासी मच्छिमारांची प्राथमिक मच्छिमार सहकारी संस्था
- प्रकल्पग्रस्तांना पर्यायी शेतजमीन किंवा मोबदला देण्यात आलेला नाही अशा प्रकल्पग्रस्तांची प्राथमिक मच्छिमार सहकारी संस्था

विनाअनुदानीत पिंजरा पद्धतीने मत्स्यसंवर्धन करणेकरीता विशिष्ट तलाव/जलाशयाकरीता जलक्षेत्र उपलब्ध नसल्यास अर्जदार लाभार्थ्यांच्या अनुमतीने इतर जलाशयांमध्ये विनाअनुदानीत लाभार्थ्यांसाठी १% जलक्षेत्रापैकी ३०% राखीव जलक्षेत्र उपलब्ध असल्यास अशा जलाशयांमध्ये पिंजरा प्रकल्प देण्याचे प्रस्तावित असेल.

२. पिंजरा बांधकामाबाबत अटी:-

प्रकल्पांतर्गत एकूण जलाशयाच्या जलक्षेत्राच्या अनुषंगाने १% जलक्षेत्र पिंजरा पद्धतीने मत्स्यसंवर्धनासाठी राखीव ठेवण्यात येईल. त्यापैकी १८ पिंजऱ्यांकरीता, ६३० चौ.मी जलक्षेत्र प्रति वैयक्तिक लाभार्थी मत्स्यसंवर्धक तसेच मत्स्यसंवर्धक सहकारी संस्था/महिला स्वयं सहायता गट/मच्छिमार स्वयं सहायता गट/संयुक्त दाईत्व गट ई. असल्यास ६ पिंजरे प्रति सदरस्य या प्रमाणात कमाल ७२ पिंजऱ्यांकरीता, २५२० चौ.मी. जलक्षेत्र याप्रमाणे वितरीत करण्यात येईल. याशिवाय पिंजरा बॅटरीचे चारही बाजूने विहीत निकषांप्रमाणे आयुक्त मत्स्यव्यवसाय यांच्यामार्फत वेळोवेळी निर्गमित केलेल्या आदेशाप्रमाणे मोकळी जागा सोडणे आवश्यक राहिल. या जलक्षेत्रात ६x४x४ मी. या आकाराचे आयताकृती अथवा वर्तुळाकार आकाराचे (९६ घन मीटर आकारमानाचे) पिंजरा उभारणी करणे आवश्यक राहिल. पिंजरा उभारणीसाठी GI (C-टाईप) पाईप/पंटुन (virgin) साहित्याचाच वापर करणे बंधनकारक राहिल. तसेच १८ पिंजऱ्यांकरीता २४० ड्रम आणि ७२ पिंजऱ्यांकरीता ९६० ड्रम जोडणे अनिवार्य राहिल.

३. कालावधी:-

पिंजरा पद्धतीने मत्स्यसंवर्धनासाठी देण्यात आलेल्या ठेक्याचा सर्वसाधारण कालावधी दहा वर्षांचा राहिल. नमुद कालावधीस कमाल दोन वर्षांची मुदतवाढ देण्याचे अधिकार आयुक्तस्तरीय

पृष्ठ १८ पैकी ३

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पिंजरा मत्स्यसंवर्धन जलक्षेत्र वाटप समितीस राहतील (एकावेळी एक वर्षाची मुदतवाढ देण्यात येईल). त्याबाबतच्या अटी व शर्ती स्वतंत्रपणे निर्गमित करण्यात येतील. सदर ठेका कालावधीत गुंतवणूकदाराने कर्ज परतफेड न केल्यामुळे प्रकल्प अनुत्पादक मालमत्ता (Non-Performing Asset) जाहीर करण्यात आला असल्यास किंवा ठेकेदाराची मालमत्ता बँकेने जप्त केल्याचे घोषित केल्यास अशा ठेकेदारांना देण्यात आलेल्या पिंजऱ्याचे ठेके रद्द केले जातील. वैयक्तीक लाभार्थ्यांच्या मृत्यु किंवा कायम अपंगत्वाच्या स्थितीत त्यांच्या कायदेशीर वारसाच्या नावे उर्वरित कालावधीसाठी पिंजरा प्रकल्प संबंधित जिल्ह्याचे सहायक आयुक्त मत्स्यव्यवसाय यांच्या अनुमतीने हस्तांतरित करता येऊ शकेल. कालावधी संपुष्टात आल्यानंतर सदर जलक्षेत्र दुसऱ्या लाभार्थ्यांस देण्यासाठी उपलब्ध राहिल.

४. महसुलाबाबत कार्यवाही:-

जे तलाव/जलाशय आयुक्त मत्स्यव्यवसाय यांचे अधिनस्त आहेत त्या तलाव/जलाशयांमधील पिंजरा मत्स्यसंवर्धन कार्यक्रमाद्वारे मिळणारा महसूल (जलक्षेत्र वापर भाडे) आयुक्त मत्स्यव्यवसाय कार्यालयाकडे जमा होईल आणि जे तलाव/जलाशय महाराष्ट्र मत्सोद्योग विकास महामंडळ यांचे अधिनस्त आहेत अशा तलाव/जलाशयांमधील पिंजरा मत्स्यसंवर्धन कार्यक्रमाद्वारे मिळणारा महसूल (जलक्षेत्र वापर भाडे) महाराष्ट्र मत्सोद्योग विकास महामंडळाकडे जमा होईल.

आयुक्त मत्स्यव्यवसाय कार्यालयाच्या अधिनस्त तलाव/जलाशयांद्वारे प्राप्त उत्पन्नापैकी (जलक्षेत्र वापर भाडे) ७५% उत्पन्न संबंधित जिल्ह्यातील सहायक आयुक्त मत्स्यव्यवसाय यांचेमार्फत तलाव ठेका धोरणांतर्गत निर्मित "मत्स्यव्यवसाय विकास निधीमध्ये" भरणा करण्यात यावा. तथापि महाराष्ट्र मत्सोद्योग विकास महामंडळाच्या अधिनस्त तलाव/जलाशयांद्वारे प्राप्त उत्पन्नापैकी (जलक्षेत्र वापर भाडे) ७५% उत्पन्न राज्यातील मत्स्योत्पादन वाढीकरीता महामंडळाच्या खाती जमा करण्यात यावे. सदर निधीचा विनियोग कशाप्रकारे करावा याकरीता मुद्दा क्र. १०(अ) अन्वये स्थापित राज्यस्तरीय समितीद्वारे विहित बाबी व स्वतंत्र निकष निश्चित करण्यात येतील.

तसेच जमा होणाऱ्या उत्पन्नापैकी (जलक्षेत्र वापर भाडे) उर्वरित २५% उत्पन्न सिंचन/जलसंपदा विभागास अदा करण्यात यावे.

५. पिंजरा पद्धतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांकरिता आवश्यक अटी-शर्ती:-

१) लाभार्थी चे वय १८ ते ६० वर्ष या वयोगटातील असणे आवश्यक आहे. मत्स्यविज्ञान क्षेत्रातील पदविका, पदवी, पदव्युत्तर पदवीधर तसेच शासनमान्य संस्था उदा. CIFE, CIFRI, NFDB व मत्स्य महाविद्यालय इ. यांचेद्वारे अल्प कालावधीचे प्रशिक्षण अशाप्रकारे उच्चतम शिक्षण अर्हतेच्या व्यक्तीस प्राधान्य असेल. (प्रशिक्षण प्रमाणपत्र निविदा भरतेवेळी सादर करणे आवश्यक आहे).

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- २) पिंजरा संवर्धनाकरीता अनुदानीत/विनाअनुदानीत पिंजरा मत्स्यसंवर्धकांस एका कुटुंबामधुन एकाच लाभार्थ्यास (रक्त नात्यातील कुटुंबातील एक याप्रमाणे आई/वडील/ भाऊ/ बहीण/ पती/पत्नी) तसेच एकाच जलाशयाकरीता पिंजरा मत्स्यसंवर्धन प्रकल्पास अनुमती राहिल.
- ३) प्रकल्प आराखड्यानुसार पिंजरा संवर्धनाकरीता प्रधानमंत्री मत्स्यसंपदा योजनेअंतर्गत नमूद एका कुटुंबामधुन एकाच लाभार्थ्यास (रक्त नात्यातील कुटुंबातील एक याप्रमाणे आई/वडील/ भाऊ/बहीण/पती/पत्नी) तसेच एकाच जलाशयाकरीता पिंजरा अनुदानाचा लाभ देय राहिल. तथापि यशस्वी मत्स्योत्पादन घेतल्यास आयुक्त मत्स्यव्यवसाय कार्यालयाच्या मान्यतेनुसार स्वखर्चाने प्रकल्प निर्माण करण्यास पात्र राहतील.
- ४) पिंजरा संवर्धनाकरीता ठेका मंजूर केल्यानंतर प्रकल्प कार्यान्वित ठेवण्यासाठी विहित केलेल्या कालावधीकरीता प्रकल्प कार्यान्वित ठेवणे प्रकल्प धारकास बंधनकारक राहिल. जर प्रकल्प अर्धवट कालावधी मध्ये बंद केला तर प्रकल्प धारकांच्या नावे असलेल्या स्थावर मालमत्तेमधुन लाभार्थ्यास दिलेल्या अनुदानाची वसुली करण्यात येईल.
- ५) पिंजरा पद्धती मत्स्यसंवर्धक वैयक्तिक लाभार्थी/मच्छिमार सहकारी संस्था/संघ/मच्छिमार स्वयं सहाय्यता गट/संयुक्त दायित्व गट हे मत्स्यव्यवसाय विभागाचे थकबाकीदार नसावे.
- ६) वित्त पुरवठ्याबाबत:-
 - अ). लाभार्थी स्वनिधीतुन खर्च करत असल्यास त्याने बँक खात्यामध्ये जमा रकमेचे विवरणपत्र सादर करणे बंधनकारक राहिल.
 - ब). वित्तीय संस्थेमार्फत अर्थपुरवठा होत असल्यास वित्तीय संस्था/राष्ट्रीयकृत बँकेकडुन वित्तीय पुरवठा करणार असल्याबाबतचे लेखी पत्र सादर करणे आवश्यक राहिल.
 - क). प्रकल्पधारकाने प्रकल्प रकमेनुसार ३ वर्षांचे Bank Statement सादर करणे बंधनकारक राहिल.
- ७) पिंजरा पद्धतीने मत्स्यसंवर्धन करणेकरीता करारनामा करणे:-
 - अ). पिंजरा पद्धतीने मत्स्यसंवर्धन प्रकल्पाकरीता जलक्षेत्र वाटप मंजूरी आदेश प्राप्त झाल्यापासून १ महिन्याच्या कालावधीत संबंधित मत्स्यसंवर्धक यांनी रु. २००/- व शासन वेळोवेळी ठरविले त्या मुद्रांक शुल्काच्या स्टॅम्प पेपरवर परिशिष्ट-१ येथे नमुद केल्याप्रमाणे विहित करारनामा करुन देणे संबंधित मत्स्यसंवर्धकांस बंधनकारक राहिल.
 - ब). नमुद केल्याप्रमाणे विहित नमुन्यात करारनामा प्राप्त झाल्यापासून १ महिन्याच्या कालावधीत सदरहू करारनामा अंतिम करणे आयुक्तस्तरीय पिंजरा जलक्षेत्र वाटप समितीस बंधनकारक राहिल. अपवादात्मक परिस्थितीत वाजवी कारणास्तव पिंजरा मत्स्यसंवर्धन करारनामा अंतिम करण्यास विलंब झाल्याबाबत आयुक्त मत्स्यव्यवसाय यांची खात्री पटल्यास ते १ महिन्याची वाढीव मुदत देवू शकतील.

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- क). सदरहू करारपत्राच्या अटी/शर्तीचा भंग केल्यास संबंधित पिंजरा पद्धती प्रकल्प मत्स्यसंवर्धक यांचा जलक्षेत्र भाडेपट्टी ठेका मुदतपूर्व रद्द करण्यात येईल.
- ८) पिंजरा पद्धतीने मत्स्यसंवर्धन करतांना भाडेपट्टी ठेक्याने घेतलेल्या जलक्षेत्रामध्ये एका वर्षात पिंजरा उभारणी करणे आवश्यक आहे. एक वर्ष कालावधीत पिंजरा प्रकल्प उभारणी न केल्यास जलक्षेत्र भाडेपट्टी ठेका आपोआप रद्द होऊन भरणा केलेली ठेका रक्कम जप्त करण्यात येईल. स्वतंत्रपणे ठेका रद्द करण्याची कार्यवाही करण्याची गरज असणार नाही. तथापि लाभार्थ्यांना अधिकारक्षेत्र नसणाऱ्या बाबींमुळे पिंजरा प्रकल्प उभारण्यास विलंब झाल्यास व विशिष्ट कालावधीत (एक वर्षात) पिंजरा उभारणी न केल्यास जास्तीत जास्त सहा महिन्यांची मुदतवाढ ही एक वर्ष कालावधी संपण्याच्या आधी संबंधित प्रादेशिक उपायुक्त मत्स्यव्यवसाय देऊ शकतील.
- ९) पिंजरा पद्धतीने मत्स्यसंवर्धन करणाऱ्या सर्व मत्स्यसंवर्धकांस प्रमाणित असलेल्या मत्स्यबीज निर्मिती केंद्रातून मत्स्यबीज खरेदी करणे आवश्यक राहिल, तसेच मत्स्यबीज व मत्स्यखाद्य कोठून व किती प्रमाणात आणले तसेच पिंजरा मत्स्यसंवर्धनाद्वारे होणाऱ्या उत्पादनाचा मासिक अहवाल विहित नमुन्यात संबंधित जिल्हा मत्स्यव्यवसाय कार्यालयास दर तीन महिन्यात ई-मेल द्वारे अथवा प्रत्यक्ष सादर करणे बंधनकारक राहिल.
- १०) पिंजरा मत्स्यसंवर्धन प्रकल्पात तिलापिया प्रजातीच्या माशांचे संवर्धन करण्याकरिता संबंधित मत्स्यसंवर्धकांस राज्यस्तरीय देखरेख व सूकाणू समिती (State Level Steering Cum Monitoring Committee) ची मान्यता घेणे आवश्यक आहे.
- ११) पिंजरा पद्धतीने मत्स्यसंवर्धन करणेकरिता केंद्र शासनाच्या ICAR-CIFRI, ICAR-CIFE, ICAR-CIFA, NFDB, केंद्र शासनाचा मत्स्यव्यवसाय विभाग यांचेकडून मान्यता प्राप्त मत्स्य प्रजाती यांचेच संवर्धन करणे आवश्यक राहिल. तलाव/जलाशयाच्या जैविक विविधतेस घातक असणाऱ्या मत्स्य प्रजातींचे संवर्धन करण्यास सक्त मनाई राहिल.
- १२) पिंजरा मत्स्यसंवर्धनासाठी आवश्यक असणाऱ्या मत्स्यबीजाची योग्य वाढ होऊन ते पिंजरा मत्स्यसंवर्धनासाठी संचयन करणे आवश्यक राहिल. या करिता जलसिंचन विभागाच्या मालकीच्या जमिनीवर मत्स्यबीज वाढीसाठी संगोपन तलाव खोदकाम करण्यासाठी जलसिंचन विभागाची परवानगी घेणे आवश्यक राहिल.
- १३) पिंजरा पद्धतीने मत्स्यसंवर्धनासाठी ठेक्याने देण्यात आलेले जलक्षेत्र उपठेक्याने देता येणार नाही. जलक्षेत्राचा ठेका उपठेक्याने दिल्यास संबंधित ठेकेदाराचा ठेका रद्द करण्यात येईल.
- १४) संबंधित ठेकेदाराने पिंजरा पद्धतीने मत्स्यसंवर्धन करण्यासाठी ठेक्याने देण्यात आलेल्या जलक्षेत्रामध्येच मत्स्यसंवर्धन करणे बंधनकारक राहिल. त्यांनी अधिकार नसताना खुल्या तलाव/जलाशय जलक्षेत्रामध्ये मासेमारी करू नये तसे आढळल्यास त्यांचा ठेका रद्द करण्यात येईल.

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- १५) पिंजरा पद्धतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदाराने संबंधित पिंजरा प्रकल्पावरती काम करणाऱ्या कामगारांस कामगार कायद्या अंतर्गत किमान वेतनापेक्षा कमी वेतन अदा करू नये. संबंधित पिंजरा प्रकल्प धारकाने सदर वेतन कामगारांचे बँक खाते काढून त्याला आधारकार्ड UIDAI नंबरचा आधार घेऊन त्यांच्या बँक खात्यामध्ये जमा करावे. त्यांना कायदेशीर तरतुदी प्रमाणे EPF, ESIS इत्यादी योजनेचा लाभ देणे आवश्यक राहिल. तसेच, ठेकेदाराने पिंजरा मत्स्यसंवर्धन प्रकल्पावर काम करणाऱ्या कामगारांची नोंदणी प्रधानमंत्री मत्स्यसंपदा योजने अंतर्गत "मच्छिमारांना विमाछत्र" या योजने अंतर्गत करणे बंधनकारक राहिल.
- १६) पिंजरा मत्स्यसंवर्धनासाठी जमिनीपासून जलाशयात पिंजरा उभारणी केलेल्या ठिकाणी जाण्या-येण्यासाठी, मत्स्यखाद्य व आवश्यक साधन सामुग्रीची ने-आण करण्यासाठी नौकेची व्यवस्था करणे आवश्यक आहे. ठेकेदाराने स्वतःच्या व त्याच्या पिंजरा मत्स्यसंवर्धन प्रकल्पावर काम करणाऱ्या कामगारांच्या सुरक्षिततेच्या दृष्टीने सदर नौकेवर व पिंजरा प्रकल्पावर जीवरक्षक साधने, लाईफ सेविंग जॅकेट, रिंग बोया, सोलर एलईडी व इतर प्रथमोपचाराची साधने पुरविणे बंधनकारक राहिल.
- १७) सर्व संबंधित जलाशय क्षेत्र (पाणी व जमीन) स्वच्छ ठेवण्याची काळजी घ्यावी. पाण्याचा स्रोत प्रदुषित केल्यास, तसेच परिसरात घाण निर्माण करण्यास जबाबदार आढळल्यास सदर ठेका रद्द होईल. सिंचन विभागाची अनुमती घेऊन प्रसाधनगृह इत्यादीची व्यवस्था करता येईल.
- १८) ठेकेदाराने प्रकल्पाच्या परिसरात बेकायदेशीररित्या कोणत्याही प्रकारचे अवैध कार्यक्रम करू नयेत तसेच प्रकल्पाच्या सुरक्षिततेला बाधा निर्माण होईल, असे कृत्य झाल्यास सदर पिंजरा मत्स्यसंवर्धन ठेका रद्द करण्यात येईल.
- १९) मत्स्यसंवर्धनासाठी केंद्र शासनाने प्रतिबंधित केलेली प्रतिजैवके वापरण्यास मनाई राहिल.
- २०) प्रादेशिक विभाग निहाय पिंजरा पद्धती मत्स्यसंवर्धनाचा आढावा दर ३ महिन्यांच्या कालावधी मध्ये आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई हे घेतील. पूर्ण विभागाचा पिंजरा पद्धती मत्स्यसंवर्धनाचा आढावा दर ६ महिन्यांच्या कालावधी मध्ये सचिव/प्रधान सचिव (पदुम), मंत्रालय, मुंबई हे घेतील.
- २१) खुल्या तलाव/जलाशय ठेकेदाराने पिंजरा मत्स्यसंवर्धन करणाऱ्या ठेकेदारास नौका ने-आण करण्याच्या मार्गावर मासेमारी जाळी/इतर कोणत्याही मार्गाने अडथळा करता येणार नाही.

६. पिंजरा पद्धतीसाठी जलाशयामधील जलक्षेत्र निवडणे व पाण्याचे पृथक्करण करणे:-

पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता संबंधित जलाशयामधील १% जलक्षेत्र भाडेपट्टीने देण्याकरीता जिल्हानिहाय पिंजरा क्षमता बाबत तलावांच्या क्षेत्राची माहिती देण्याची जबाबदारी संबंधित जिल्ह्याच्या सिंचन विभागाची असेल. त्याआधारे संबंधित जिल्ह्याचे सहायक आयुक्त मत्स्यव्यवसाय पिंजरा पद्धतीने मत्स्यसंवर्धन योजनेची जाहिरात देतील. तसेच उपरोक्त प्रमाणे

पृष्ठ १८ पैकी ७

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जलक्षेत्र निवडणे व पाण्याचे पृथक्करण करण्याची जबाबदारी संबंधित जिल्हाच्या सहायक आयुक्त मत्स्यव्यवसाय यांची राहिल.

७. राज्यामध्ये अवर्षण अथवा अतिवृष्टी या प्रसंगी पिंजरा पद्धतीने ठेकेदारास मिळणारी सवलत:-

राज्यामध्ये अवकाळी दुष्काळ (अवर्षण) पडल्यास अथवा अतिवृष्टी झाल्यास पिंजरा पद्धतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांना महसूल विभागाच्या सन १९७६ च्या तसेच यानंतर वेळोवेळी निर्गमित करण्यात येणाऱ्या अवर्षण व अतिवृष्टीच्या शासन निर्णयानुसार अथवा एक वर्ष विनामुल्य वाढ यापैकी उचित लाभ देण्यात येईल. अवर्षण व अतिवृष्टी याबाबतचा लाभ देण्याचा अधिकार आयुक्तस्तरीय पिंजरा मत्स्यसंवर्धन जलक्षेत्र वाटप समितीस राहिल.

८. पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता देण्यात आलेल्या ठेक्याबाबत वाद उद्भवल्यास अवलंबवयाची कार्यपद्धती:-

पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता जलक्षेत्र भाडेपट्टी ठेक्याने देण्याच्या प्रक्रियेत अथवा ठेका दिल्यानंतरच्या कालावधीत या अनुषंगाने उद्भवणाऱ्या वादांसंदर्भात दाद मागण्याकरिता संबंधितास संधी उपलब्ध राहिल. याबाबत प्रधान सचिव (पदुम) हे अपिलीय प्राधिकारी राहतील तसेच मा. मंत्री (मत्स्यव्यवसाय) हे पुनरिक्षण/पुनर्विलोकन प्राधिकारी राहतील. मात्र अपिल/पुनरिक्षण अर्जावर एकदा घेतलेला निर्णय अंतिम राहिल. अपिलार्थी यांच्यासाठी अपिल दाखल करावयाचा कालावधी हा ६० दिवसांचा राहिल, तसेच याबाबतचे पुनर्विलोकन करावयाचे झाल्यास यासाठीचा कालावधी ९० दिवसांचा राहिल.

९. संकिर्ण:-

सुधारीत शासन निर्णयात काहीही नमुद असले तरी सदरहू शासन निर्णय लागू होण्यापूर्वी ज्या मत्स्यसंवर्धकांना/संस्थांना पूर्वीच्या शासन निर्णयान्वये पिंजरा पद्धतीने मत्स्यसंवर्धनाकरिता ठेका मंजूर झाला असेल अथवा प्रकल्प सुरू असतील यांमध्ये मंजूर कालावधीपर्यंत काहीही बदल होणार नाही. सदरहू मंजूर पिंजरा मत्स्यसंवर्धन ठेका कालावधी संपुष्टात आल्यानंतर सदरचे जलक्षेत्र सुधारीत धोरणान्वये ठेक्याने देणेकरीता उपलब्ध होईल.

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१०. पिंजरा पद्धतीने मत्स्यसंवर्धन करणे करीता खालीलप्रमाणे समितीची रचना करण्यात येत आहे:-

अ): सचिव/प्रधान सचिव (पदुम) यांचे अध्यक्षतेखाली खालीलप्रमाणे राज्यस्तरीय समिती स्थापन करण्यात येत आहे-

अ. क्र.	पदनाम	समितीमधील पद
१.	प्रधान सचिव (पदुम), कृषि व पदुम विभाग, मंत्रालय, मुंबई	अध्यक्ष
२.	प्रधान सचिव (सिंचन), सिंचन विभाग, मुंबई	सदस्य
३.	आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई	सदस्य
४.	व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ, मुंबई	सदस्य
५.	उपसचिव (मत्स्य), कृषि व पदुम विभाग, मंत्रालय, मुंबई	सदस्य
६.	सह आयुक्त मत्स्यव्यवसाय (भूजल), आयुक्तालय, मुंबई	सदस्य सचिव

उपरोक्त समितीची अधिकार कक्षा खालीलप्रमाणे राहिल-

- १) पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता वेळोवेळी ठेका किंमत ठरविणे व त्यात वाढ करणे.
- २) पिंजरा पद्धती धोरण व धोरणाच्या अनुषंगाने करावयाचे बदल आणि नियोजन करणे.
- ३) पिंजरा पद्धतीने मत्स्यसंवर्धन अंतर्गत तलाव/जलाशयांद्वारे प्राप्त महसूलापैकी (जलक्षेत्र वापर भाडे) ७५% महसूलाचा विनियोग करण्याकरीता बाबी व याबाबतचे निकष यांची निश्चिती करणे.

ब). आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई यांचे अध्यक्षतेखाली खालीलप्रमाणे आयुक्तस्तरीय पिंजरा जलक्षेत्र वाटप समिती स्थापन करण्यात येत आहे-

अ. क्र.	पदनाम	समितीमधील पद
१.	आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई	अध्यक्ष
२.	व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ, मुंबई	सदस्य
३.	उपसचिव (मत्स्य), कृषि व पदुम विभाग, मंत्रालय, मुंबई	सदस्य
४.	उपसचिव (जलसंपदा विभाग), मंत्रालय, मुंबई	सदस्य
५.	उपसचिव (वित्त विभाग), मंत्रालय, मुंबई	सदस्य
६.	सह आयुक्त मत्स्यव्यवसाय (भूजल), आयुक्तालय, मुंबई	सदस्य

पृष्ठ १८ पैकी ९

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७.	संबंधित प्रादेशिक उपायुक्त मत्स्यव्यवसाय	सदस्य
८.	उपनिबंधक, सहकारी संस्था (मत्स्य), आयुक्तालय, मुंबई	सदस्य
९.	सहायक संचालक (वित्त), आयुक्तालय, मुंबई	सदस्य
१०.	सहायक आयुक्त मत्स्यव्यवसाय (भूजल), आयुक्तालय, मुंबई	सदस्य सचिव

उपरोक्त समितीची अधिकार कक्षा खालीलप्रमाणे राहिल-

- १) पिंजरा पद्धतीने मत्स्यसंवर्धन अंतर्गत पिंजरा प्रकल्प उभारणीकरीता पात्र तलाव/जलाशय जागेची निश्चिती करणे.
- २) पिंजरा पद्धतीने मत्स्यसंवर्धनाकरीता १५ हेक्टरवरील पात्र जलाशयांतील १% जलक्षेत्राचे मुद्दा क्र. १ येथे नमुद कार्यपद्धतीनुसार वाटप करणे.
- ३) १५ हेक्टरवरील पात्र तलाव/जलाशयांमध्ये मत्स्य संवर्धनासाठी २ वर्षांची मुदतवाढ देणे.
- ४) आयुक्त मत्स्यव्यवसाय कार्यालयाच्या अधिनस्त तलाव/जलाशयांद्वारे प्राप्त उत्पन्नापैकी "मत्स्यव्यवसाय विकास निधीमध्ये" भरणा करण्यात येणारे (जलक्षेत्र वापर भाडे) ७५% महसूल राज्यस्तरीय समितीद्वारे निश्चित करण्यात आलेल्या विहित बाबींवर खर्च करणे.
- ५) अवर्षण व अतिवृष्टी याबाबतचा लाभ देणे.

सदर शासन निर्णय महाराष्ट्र शासनाच्या www.maharashtra.gov.in या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा संकेतांक २०२१०८२६१७३६५३३८०१ असा आहे. हा आदेश डिजिटल स्वाक्षरीने साक्षांकित करून काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने,

Shrinivas Jagannath
Shastri

(श्रीनिवास शास्त्री)

उपसचिव, महाराष्ट्र शासन

Digitally signed by Shrinivas Jagannath Shastri
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serialNumber=602719ac7a2b3a90d817c95c1483e33229c7fcb3a324b1
2590062081d2337, cn=Shrinivas Jagannath Shastri
Date: 2023.08.26 16:39:48 +05'10'

प्रति,

- १) मा. राज्यपाल यांचे सचिव
- २) मा. मुख्यमंत्री यांचे प्रधान सचिव
- ३) मा. उपमुख्यमंत्री यांचे प्रधान सचिव
- ४) सर्व मा. मंत्री/राज्यमंत्री यांचे खाजगी सचिव
- ५) अप्पर मुख्य सचिव (महसूल) मंत्रालय, मुंबई-३२
- ६) प्रधान सचिव (वित्त), मंत्रालय, मुंबई-३२
- ७) प्रधान सचिव (आदिवासी विकास), मंत्रालय, मुंबई-३२

पृष्ठ १८ पैकी १०

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- ८) प्राधान सचिव (सामाजिक न्याय), मंत्रालय, मुंबई-३२
- ९) सचिव (जलसंपदा) मंत्रालय, मुंबई-३२
- १०) सचिव (लक्षेवि), मंत्रालय, मुंबई-३२
- ११) आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई
- १२) व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ
- १३) सर्व प्रादेशिक उपआयुक्त, मत्स्यव्यवसाय
- १४) उपनिबंधक सहकारी संस्था (मत्स्य), आयुक्त मत्स्यव्यवसाय यांचे कार्यालय, मुंबई
- १५) सर्व सहाय्यक आयुक्त मत्स्यव्यवसाय
- १६) महालेखापाल (लेखापरिक्षक/लेखा अनुज्ञेयता) मुंबई/नागपूर
- १७) वित्त विभाग (व्यय-२) मंत्रालय मुंबई-३२
- १८) निवड नस्ती (कार्यासन पदुम-१३)

पृष्ठ १८ पैकी ११

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परिशिष्ट-१

मत्स्यव्यवसाय विभागाच्या जलाशयातील १% जलक्षेत्र पिंजरा पध्दतीने
मत्स्यसंवर्धन प्रकल्पासाठी ठेका पध्दतीने देणेसंबंधीचा करारनामा

जलाशयाचे नाव ता..... जि.....

- अ) हा करारनामा दि. रोजी प्रथम पक्षकार आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई, तारापोरवाला मत्स्यालय, नेताजी सुभाष रोड, चर्नी रोड, मुंबई-४०० ००२ याचे पुढे "शासन" म्हणून उल्लेख केला आहे व या संज्ञेत संदर्भावरून इतर अर्थ होत नसल्यास त्यांचे उत्तराधिकारी व त्यांनी नेमलेल्या व्यक्ती यांचा समावेश होतो. यांच्यात
- आणि**
- ब) द्वितीय पक्षकार श्री. पत्ता..... यांचा यात यापुढे "ठेकेदार" म्हणून उल्लेख करण्यात आलेला आहे व यासोबत संदर्भावरून इतर अर्थ होत नसल्यास त्याचे वारस, मृत्यु पत्रानुसार व्यवस्था ठेवणारे व वहिवाट चालविणारे यांचा समावेश होतो.
- क) मत्स्यव्यवसाय विभागाच्या या जलाशयावरील पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्पासाठी चौ. मि. जलक्षेत्र वर्षासाठी ठेका पध्दतीने देणेबाबत वर्तमान पत्रात जाहिरात प्रसिध्द करण्यात आली होती. यानुसार द्वितीय पक्षकार श्री. यांनी भरलेला परिपूर्ण अर्ज शासनाने स्विकारलेला आहे.
- ड) जिल्ह्यातील जलाशय या नावाने ओळखल्या जाणाऱ्या जलाशयाच्या एकूण जलक्षेत्रापैकी चौ. मि. जलक्षेत्रात (ज्याचा यात यापुढे "जलक्षेत्र" म्हणून उल्लेख करण्यात आला आहे). पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्प उभारण्याची परवानगी तसेच त्यांची योग्य रीतीने अंमलबजावणी करण्यासाठी या जलक्षेत्रासाठी जेवढ्या जमिनीवर जाणे आवश्यक असेल तेवढ्या जमिनीवर जाण्याच्या व तेथून ये जा करण्याची सवलत तसेच इतर कोणत्याही मान्यता असलेल्या रस्त्याने अथवा पायवाटेने जरूर भासल्यास, सदरहु जलाशया भोवतालच्या सरकारी जमिनीतून पायी जाण्याची सवलत शासन दि. पासून दि. पर्यंत किंवा सदरहु ठेका रितसर सुरु आहे तोपर्यंत ठेकेदारास देण्यात येत आहे.
- इ) सदरहु जलक्षेत्र पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्पासाठी ठेकेदाराने प्रतिवर्षी ठेका रक्कम खाली नमुद केल्याप्रमाणे वर्षनिहाय देण्याचे मान्य केले आहे. दरवर्षी ठेका रक्कम नवीन वर्ष सुरु

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होण्याच्या आधी म्हणजेच दिनांक पुर्वी आयुक्त मत्स्यव्यवसाय/महामंडळाकडे भरणा करणे ठेकेदारास बंधनकारक राहिल. त्याची शेवटची तारीख पुढील प्रमाणे असेल.

अ.क्र.	वर्ष	रुपये व दिनांक
१)	पहिले वर्ष	२०२१-२२ रु., दि.
२)	दुसरे वर्ष	२०२२-२३ रु., दि.
३)	तिसरे वर्ष	२०२३-२४ रु., दि.
४)	चौथे वर्ष	२०२४-२५ रु., दि.
५)	पाचवे वर्ष	२०२५-२६ रु., दि.
६)	सहावे वर्ष	२०२६-२७ रु., दि.
७)	सातवे वर्ष	२०२७-२८ रु., दि.
८)	आठवे वर्ष	२०२८-२९ रु., दि.
९)	नववे वर्ष	२०२९-३० रु., दि.
१०)	दहावे वर्ष	२०३०-३१ रु., दि.

वरीलप्रमाणे १० वर्षांची एकूण ठेका रक्कम रु. /- इतकी राहिल.

फ) पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदारांनाकरिता आवश्यक अटी/शर्ती दोन्ही पक्षकारांना मान्य असून त्यां खालिलप्रमाणे आहे.

- १) ठेकेदाराची निविदा मंजूर झाल्यानंतर सदर प्रकल्पाकरिता आवश्यक असणारे परवाने मिळविणेसाठी (आवश्यक असल्यास) सहाय्यक आयुक्त मत्स्यव्यवसाय मदत करतील.
- २) पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्पासाठी देण्यात आलेल्या जलक्षेत्राचा ठेका, उपठेक्याने देण्याची परवानगी नाही. उपठेक्याने दिल्यास त्याचा ठेका रद्द करण्यात येईल व कोणतीही नुकसान भरपाई शासनाकडून दिली जाणार नाही.
- ३) ठेकेदारास सदरहु पिंजरा पध्दतीने मत्स्यसंवर्धन हे फक्त शासन मान्य मत्स्यबीजाकरीताच करता येईल. तिलापिया किंवा इतर प्रतिबंधित मत्स्यप्रजातीचे संवर्धन करता येणार नाही. शासन मान्य तिलापिया प्रजातीचे मत्स्यसंवर्धन करावयाचे असल्यास रितसर या करीता गठीत समितीची मान्यता घेण्यात यावी.
- ४) पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्प देण्यात आलेला ठेका ठेकेदारानी स्वतःच्या पिंजऱ्यामध्ये मत्स्यसंवर्धन करणे बंधनकारक राहिल. त्यांनी अधिकार नसताना खुल्या जलाशयामध्ये मासेमारी करू नये. तसे केल्यास त्यांचा ठेका रद्द करण्यात येईल. ज्या ठेकेदारास जलक्षेत्र ठेक्याने दिलेला आहे त्यास कोणतीही तक्रार करणेची संधी देण्यात येवू नये.
- ५) पिंजरा पध्दतीने मत्स्यसंवर्धन करणाऱ्या ठेकेदाराने, त्यांच्या पिंजऱ्यावर काम करणाऱ्या कामगारास कामगार कायद्यांतर्गत किमान वेतनापेक्षा कमी वेतन अदा करण्यात येऊ नये.

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- ६) ठेकेदाराने त्यांचे व त्यांच्या कामगारांच्या सुरक्षिततेच्या दृष्टीकोनातून पिंजरा प्रकल्पावर लाईफ सेविंग जॅकेट व इतर प्रथमोपचाराची साधने ठेवणे बंधनकारक राहिल.
- ७) ठेकेदाराने प्रकल्पाचे परिसरात बेकायदेशिररित्या कोणत्याही प्रकारचे अवैध कार्यक्रम करू नये. तसेच जलाशय प्रकल्पाच्या सुरक्षिततेत बाधा निर्माण होईल, असे कृत्य झाल्यास सदर पिंजरा पध्दतीचा ठेका रद्द करण्यात येईल.
- ८) ठेकेदारास मंजूर झालेल्या चौ. मी. जलक्षेत्रात जास्तीत जास्त ६x४x४ आकाराचे किंवा या संदर्भात शासन निर्गमित करेल त्या आदेशाप्रमाणे पिंजरा प्रकल्प बांधकामाची परवानगी राहिल.
- ९) केजच्या एका बॅटरीच्या चारही बाजूने विहित निकषाप्रमाणे आयुक्त मत्स्यव्यवसाय यांच्यामार्फत वेळोवेळी निर्गमित केलेल्या आदेशाप्रमाणे मोकळी जागा सोडणे आवश्यक राहिल.
- १०) पिंजरा मत्स्यसंवर्धनासाठी आवश्यक असलेले मत्स्यबीज, मत्स्यबोटुकली तयार करण्यासाठी निर्माण केलेल्या संगोपन तलावामध्ये बोटुकली गोळा करण्यासाठी आऊटलेट दरवाजे (Sluice Gate) बांधणे, मत्स्यजिन्यांची नियतकालिक देखभाल करणे, इ. संपूर्ण जबाबदारी ठेकेदाराची राहिल. तसेच प्रकल्प क्षेत्रावरील कर्मचारी यांचेसाठी शेड बांधकाम, स्वच्छता गृह बांधकाम इत्यादी तसेच इतर कोणतेही आवश्यक बांधकाम करण्याची जबाबदारी ठेकेदाराची राहिल याची नोंद घ्यावी.
- ११) जलक्षेत्र ठेक्याने घेतल्यानंतर संबंधीत ठेकेदाराने सहा महिन्यांच्या आत उत्पादन सुरु केले पाहिजे.
- १२) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना वापरण्यात येणारे मत्स्यखाद्य, औषधे व साहित्य सामुग्री यांची विहित नमुन्यात नोंदवही ठेवणे आवश्यक आहे. प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना प्रतिबंधित कंपनी/दर्जाची साहित्य, औषधे व मत्स्यखाद्य इ. वापरण्यात येवू नये.
- १३) पिंजरा मत्स्यसंवर्धनामध्ये संवर्धन केलेल्या मत्स्यप्रजाती बाबतच्या आयातीचा, संवर्धन, मरतुक व मत्स्योत्पादनाचा दैनिक अहवालाच्या नोंदी विहित नोंदवहीत ठेवण्यात याव्यात व त्याबाबतचा मासिक अहवाल संबंधित सहायक आयुक्त मत्स्यव्यवसाय कार्यालयात न चुकता सादर करावा.
- १४) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना प्रत्येक प्रकल्पावर जिवरक्षक साधने ठेवणे व त्याचा वापर करणे अनिवार्य राहिल.
- १५) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना पाण्याची गुणवत्ता वेळोवेळी तपासून त्याची नोंदवही ठेवणे आवश्यक राहिल. जलाशयाचे पाणी प्रदुषित होणार नाही याची दक्षता प्रकल्पधारकाने घेणे बंधनकारक राहिल.
- १६) सदर पिंजरा पध्दतीच्या प्रकल्पातील ठेकेदाराच्या वतीने मासे पकडणाऱ्या व्यक्तींना ओळखपत्र द्यावेत इतर कोणत्याही व्यक्तीस सदरहू प्रकल्पातील मासे पकडण्याची मुभा

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- अथवा परवानगी देऊ नये. त्याची नोंद वेळोवेळी सहायक आयुक्त मत्स्यव्यवसाय यांचेकडे करावी.
- १७) सदरहु ठेक्याची अंमलबजावणी करतांना मत्स्यव्यवसाय विभागाच्या सक्षम अधिकाऱ्यांनी वेळोवेळी दिलेल्या निर्देशांचे पालन करावे.
- १८) सदर पिंजरा पद्धतीच्या प्रकल्पाचा उपयोग फक्त मत्स्यपालनासाठी, मत्स्यसंवर्धनासाठी आणि मत्स्यव्यवसायासाठी करावा याशिवाय इतर कोणत्याही कारणसाठी करू नये.
- १९) कोणत्याही कारणामुळे सदरहु पिंजरा पद्धतीच्या प्रकल्पातील पाण्याची पातळी कमी अगर जास्त झाल्यास तसेच नैसर्गिक आपत्ती अगर अतिवृष्टीमुळे मासळीचे/मासेमारी साधनांचे/पिंजरा प्रकल्पाचे नुकसान झाल्यास शासन त्यास जबाबदार राहणार नाही. त्यामुळे कोणतेही नुकसान सोसावे लागल्यास त्याबद्दल कोणतीही नुकसान भरपाई अथवा मुदत वाढ निविदाधारकास शासनाकडून मागता येणार नाही.
- २०) सदरहु पिंजरा पद्धतीच्या प्रकल्पातील जलाशयाचे पाणी वापरण्याचा हक्क असलेल्या कोणत्याही व्यक्तीस ते पाणी वापरण्यास प्रतिबंध करू नये किंवा प्रकल्पातील पिण्याच्या पाण्यावर कोणत्याही प्रकारचा प्रतिकूल परिणाम होईल असे कृत्य करू नये. पिंजऱ्यातील पाण्यामध्ये प्राणवायु भरपूर राहिल याची खबरदारी ठेकेदाराने घ्यावी. तसेच इतर घटक तपासण्यासाठी यंत्रसामुग्री ठेवण्यात यावी.
- २१) शासनाच्या मालकीची जंगले, सदरहु जलाशयाचे किनारे, कुंपण, सांडवा व इतर मालमत्ता यांची कोणतेही नुकसान करू नये. सदरहु जलाशयाचे कोणतेही नुकसान झाल्यास सहायक आयुक्त मत्स्यव्यवसाय, किंवा सक्षम अधिकाऱ्याने ठरविल्या प्रमाणे शासनाकडे नुकसान भरपाई भरावी लागेल.
- २२) सदर पिंजरा पद्धतीच्या प्रकल्पातील अथवा लगतच्या भागात येणारे पशु, पक्षी यांची हानी किंवा शिकार करू नये. असे करून त्यांची मरतुक झाल्यास त्यास ठेकेदार सर्वस्वी जबाबदार राहिल व प्रकरणाचे गांभीर्य लक्षात घेऊन योग्य ती कायदेशीर कारवाई करण्यात येईल.
- २३) निविदा धारकाने पिंजरा पद्धतीच्या प्रकल्प घेतल्यानंतर प्रकल्पातील मासळी मेली किंवा चोरीस गेली व निविदाधारकास आर्थिक नुकसान झाले म्हणून कोठल्याही प्रकारच्या तक्रारीचा विचार केली जाणार नाही.
- २४) ठेकेदाराने पिंजरा पद्धतीच्या मत्स्य संवर्धन प्रकल्पाचे नुकसान होऊ नये म्हणून त्या साहित्याचा स्वखर्चाने विमा उतरविण्यात यावा. तसेच संपूर्ण प्रकल्पाचे वेळोवेळी सुरक्षा ऑडीट करणे बंधनकारक राहिल. तसेच प्रक्रीयामध्ये कार्यरत सर्व कामगार, कर्मचारी यांचा रितसर विमा उतरावा.
- २५) ठेकेदाराने प्रकल्पातील मत्स्यउत्पादनासंबंधीची आकडेवारी दरमहा सहायक आयुक्त मत्स्यव्यवसाय, प्रादेशिक उपआयुक्त मत्स्यव्यवसाय कार्यालयाकडे विहित प्रपत्रात पाठवावी. जर विहित स्वरूपाची माहिती निर्धारित कालावधीत न सादर केल्यास करारनामा रद्द करण्यात येईल. त्यामुळे होणाऱ्या आर्थिक नुकसानीस ठेकेदार स्वतः जबाबदार राहिल.

पृष्ठ १८ पैकी १५

शासन निर्णय क्रमांक: मत्स्यवि-२०१६/प्र.क्र.९८/पहुम-१३

- २६) पिंजरा पद्धतीच्या प्रकल्पामध्ये बोटीचा उपयोग फक्त मासे वाहतुकीसाठीच करण्यात यावा. तसेच कोणत्याही प्रकारच्या बेकायदेशीर सहित्यांची वाहतूक करण्यात येऊ नये. बोटीचा उपयोग केवळ मासे/मत्स्यखाद्य व प्रकल्पामध्ये काम करणारे कामगार यांचे वाहतुकीसाठी रितसर संबंधित विभागाची परवानगी घेवून करावा. इतर कारणासाठी करता येणार नाही. जर तसा वापर करण्यात आल्यास त्याची संपूर्ण जबाबदारी ठेकेधारकाची राहिल. मासे वाहतुकीसाठी वापरण्यात येणाऱ्या बोटीतून प्रवासी वाहतूक करता येणार नाही. जर अशा बोट वाहतूकीमुळे कोणत्याही प्रकारच्या अपघात होऊन जिवित अथवा वित्तहानी झाल्यास त्याची संपूर्ण जबाबदारी सर्वस्वी ठेकेधारकाची राहिल व शासन अशा हानीबाबत व नुकसान भरपाई बाबत जबाबदार राहणार नाही.
- २७) पर्यटनासाठी बोटीचा वापर करण्यास सक्त मनाई आहे.
- २८) सदर पिंजरा पद्धतीच्या प्रकल्पाची अगर भागाची अकरमात हानी झाल्यास त्याहानीबद्दल नुकसान भरपाई देण्यास शासन जबाबदार असणार नाही याची जबाबदारी व नुकसान भरपाईची जबाबदारी ठेकेदाराची राहिल.
- २९) सदर पिंजरा पद्धतीच्या प्रकल्पासाठी जलक्षेत्राची ठेका रक्कम अथवा तिचा कोणताही भाग देय तारखेपासून ३० (तीस) दिवस थकलेला असेल तर तिचा औपचारिकरित्या मागणी करण्यात आलेली असो वा नसो, अशी मागणी ही थकबाकी म्हणून धरली जाईल व त्यावर निविदाधारकास देय तारखेपासून २०% दंडनिय व्याज आकारण्यात येईल.
- ३०) ठेक्याची रक्कम देय तारखेपासून ६० (साठ) दिवसात भरणा न केल्यास कोणतेही कारण न देता सदर प्रकल्पाचा ठेका देण्याची मुदत आपोआप संपुष्टात येऊन ठेका रद्द समजण्यात येईल. तसेच सुरक्षा अनामत रक्कम जप्त करण्यात येईल.
- ३१) निविदाधारकास न्यायालयाकडून दिवाळखोर ठरविण्यात आल्यास अथवा त्याचा घंदा बंद करण्यात आला तर सदरहू ठेका रद्द करण्यात येईल.
- ३२) आपल्या कृत्यापासून निविदाधारकास मिळणारा फायदा दुसऱ्याच्या नांवे करून दिला तर किंवा पोट निविदाधारक नेमण्यात आला तर सदरहू ठेका हा रद्द करण्यात येईल.
- ३३) पिंजरा पद्धतीच्या प्रकल्पात मत्स्यबीज संवर्धन करण्यात आले नाही तर सदरहू ठेका हा रद्द करण्यात येईल.
- ३४) पिंजरा पद्धतीच्या प्रकल्पात जलक्षेत्राची ठेका रक्कम शासनाने सुचना देवून ही भरणा करण्यात आली नाही किंवा वर नमुद केलेल्या कोणत्याही अटीचा निविदाधारकाकडून भंग झाला किंवा मुदतीपूर्वी ठेका संपुष्टात आल्यास ठेक्याच्या ठरलेल्या मुदतीसाठी सदरहू प्रकल्पाचा ठेका दुसऱ्या कोणत्याही व्यक्तीस अगर सहकारी संस्थेस लिलावाने अथवा खाजगी कराराने देण्याचा हक्क शासनास आहे. त्यायोगे शासनास कोणतेही नुकसान सोसावे लागल्यास अशाप्रकारे सोसावे लागलेले नुकसान निविदाधारकाकडून नियमांप्रमाणे वसूल करण्यात येईल. सदरहू रक्कम आणि तत्सम येणे असलेली कोणतीही इतर रक्कम भरण्यास ठेकादाराने कसूर केल्यास शासनास उर्पलब्ध असलेल्या इतर उपाययोजनेस बाधा न येता सदरहू रक्कम जमीन महसुलाची थकबाकी म्हणून वसूल करण्यात येईल.

पृष्ठ १८ पैकी १६

शासन निर्णय क्रमांक: मत्स्यवि-२०१६/प्र.क्र. १८/पदुम-१३

- ३५) ठेकेदाराने पिंजरा पध्दतीने मत्स्यसंवर्धन प्रकल्पास बाधा आणल्यास अथवा शासनासोबत केलेल्या करारनाम्यातील अटी व शर्तीचे पालन न केल्यास ठेका रद्द करण्यात आल्यास सुरक्षा अनामत रक्कम जप्त करण्यात येईल.
- ३६) निविदाधारकांनी निविदेमध्ये सादर केलेली माहिती कोणत्याही क्षणी खोटी असल्याचे आढळून आल्यास सादरहू करार रद्द करून अनामत/सुरक्षा रक्कम जप्त करण्यात येईल.
- ३७) सादरहू जलाशयातील मासे नष्ट होतील, आजारी पडतील किंवा त्यांना इजा पोहचेल अथवा ज्यामुळे सादरहू जलाशयातील पाणी दुषित किंवा खराब होईल, अशा कोणत्याही प्रकारचा घन, द्रव किंवा रासायनिक पदार्थ सादरहू जलाशयात टाकू नये किंवा जलाशयाचे पाणी खराब होईल असे कोणतेही कृत्य अथवा गोष्ट करू नये. परंतु मासे वाढीसाठी सकस आहार व शासनमान्य संबंधीत मासे संवर्धक औषधी तज्ञांच्या मार्गदर्शनानुसार वापरण्यास हरकत नाही. माशांना सकस आहार किंवा संवर्धक औषधी देतांना ते शासन प्रमाणित असावीत. तसेच त्याबाबत सहाय्यक आयुक्त मत्स्यव्यवसाय यांचेकडून पूर्वपरवानगी घेणे आवश्यक आहे.
- ३८) शासनाचा जलाशयावर पूर्ण ताबा असून करार मुदती मध्ये शासनमार्फत कार्यान्वित असलेली व कार्यान्वित होणारी कामे अबाधित राहतील. मग या करीता शासनास सादरहू ठेका मुदतपूर्वी संपुष्टात आणावा लागला तरी त्यास ठेकेदाराचा विरोध राहणार नाही.
- ३९) ठेकेदाराने सादरहू ठेका रितसर घेतल्यानंतर या संदर्भात कोणताही वादविवाद निर्माण झाल्यास त्याविषयी संबंधितांना प्रचलित शासन निर्णयानुसार विहित मुदतीत प्रधान सचिव (पदुम) यांचेकडे अपिल अर्ज तसेच मा. मंत्री (मत्स्यव्यवसाय) यांचेकडे पुनरिक्षण/पुनर्विलोकन अर्ज दाखल करता येईल.

वरील अटी व शर्ती आणि सुचना मी/आम्ही काळजीपूर्वक वाचल्या असून त्या निविदामधील अटी व शर्ती मला / आम्हाला मान्य आहेत.

महाराष्ट्र राज्याचे मा.राज्यपाल यांच्या वतीने मा., आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई यांनी सही करून आपल्या कार्यालयाच्या शिक्का वठवला आहे /प्रधिकृत अधिकारी, सहायक आयुक्त मत्स्यव्यवसाय (तां.) यांनी शिक्का वठवला आहे.

पृष्ठ १८ पैकी १७

शासन निर्णय क्रमांक मत्स्यवि-२०१६/प्र.क्र. १८/पदम-१३

करारनामा करून घेणार/देणार

ठेकेदाराची स्वाक्षरी
 नांव- श्री.
 पत्ता-

प्राधिकृत अधिकारी
 सहायक आयुक्त मत्स्यव्यवसाय
 (तांत्रिक),.....

साक्षीदार

१) नांव- श्री.
 पत्ता-

स्वाक्षरी

२) नांव- श्री.
 पत्ता-

स्वाक्षरी

पृष्ठ १८ पैकी १८

विषय :- राज्यातील मत्स्योत्पादनात वाढ करण्यासाठी पिंजरा पध्दतीने मत्स्यसंवर्धनासाठी २०० हेक्टर वरील जलाशयातील १% जलक्षेत्र ठेक्याने देणेबाबत.
वडिचळे (२३० हेक्टर), जि.पुणे

संदर्भ :- १) निविदा समितीची दि.०६/०६/२०१७ ची बैठक

२) निविदा प्रक्रिया जा.क्र.मत्स्य/भू/०२२९६/२२०/२०१६/भाग-२, दि.०६/०६/२०१७

उपरोक्त संदर्भिय क्र.२ अन्वये निविदा प्रक्रियेनुसार राज्यातील मत्स्यउत्पादनात वाढ करण्यासाठी पिंजरा पध्दतीने मत्स्यसंवर्धनासाठी वडिचळे (२३० हेक्टर), जि.पुणे मधील १५०० चौ.मी. जलक्षेत्र ७ वर्ष ठेक्याने देण्याकरिता प्राप्त झालेली निविदा राज्यस्तरीय निविदा समितीसमोर दि.०६/०६/२०१७ रोजी उघडण्यात आल्या. यामध्ये श्रीमती वैदेही भूषण रणदिवे यांना ७ वर्षे भाडेपट्टीने देणेसाठीची समितीने मान्यता प्रदान केलेली आहे. निविदेतील ७ वर्षे ठेका रकमेचा तपशील खालीलप्रमाणे.

जलाशयाचे नांव : वडिचळे (२३० हेक्टर), जि.पुणे

अ. क्र.	निविदाकाराचे नाव	न्यूनतम ठेका रक्कम रु.५०,०००/- प्रतिवर्ष
१	सन २०१७-१८ पहिले वर्ष	रुपये
२	सन २०१८-१९ दुसरे वर्ष	५०,०००/-
३	सन २०१९-२० तिसरे वर्ष	५१,०००/-
४	सन २०२०-२१ चौथे वर्ष	५१,५००/-
५	सन २०२१-२२ पाचवे वर्ष	५२,०००/-
६	सन २०२२-२३ सहावे वर्ष	५२,०००/-
७	सन २०२३-२४ सातवे वर्ष	५२,५००/-
	एकूण	रु. ३,६२,०००/-

वडिचळे (२३० हेक्टर), जि.पुणे मधील १५०० चौ.मी. जलक्षेत्र ७ वर्ष पिंजरा मत्स्यसंवर्धनासाठी भाडेपट्टीने देण्याकरिता खालील प्रमाणे पूर्तता करण्यात यावी.

- १) सुरक्षा अनामत रकमेपोटी रु.११,०००/- चा डी.डी. ठेकेदाराने व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ, मुंबई यांचे नाव काढून प्रथम जमा करावा.
- २) पहिल्या वर्षाची ठेका रक्कम भरणा केल्यानंतर १५०० चौ.मी. जलक्षेत्र ठेक्याने देण्यासाठीचा करारनामा करून घ्यावा. सहायक आयुक्त मत्स्यव्यवसाय, पुणे यांना आयुक्त मत्स्यव्यवसाय, महाराष्ट्र राज्य, मुंबई यांच्या वतीने करार करणेसाठी प्राधिकृत करण्यात येत आहे.

(माहिती बोर्डक)

आयुक्त मत्स्यव्यवसाय,

महाराष्ट्र राज्य, मुंबई

आयुक्त मत्स्यव्यवसाय,

प्रत :-

- १) श्रीमती वैदेही भूषण रणदिवे यांनी रु. ११,०००/- ची सुरक्षा अनामत रक्कम व पहिल्या वर्षाची ठेका रक्कम रु. ५०,०००/- महाराष्ट्र मत्स्योद्योग विकास महामंडळ मर्यादित, मुंबई यांचेकडे भरणा करावी.
- २) प्रादेशिक उपआयुक्त मत्स्यव्यवसाय, पुणे
- ३) सहाय्यक आयुक्त मत्स्यव्यवसाय, पुणे यांना सुचित करण्यात येते की, उपरोक्त दोन्ही रकमा ठेकेदाराने भरणा केल्यानंतर सोबतच्या पत्रात नमूद केल्याप्रमाणे ठेकेदारसोबत विहित नमुन्यातील करार रु.२००/- च्या स्टॅम्प पेपरवर करून घ्यावा. कराराची छायाप्रत व केलेल्या कार्यवाहीचा अहवाल १५ दिवसात मुख्य कार्यालयास सादर करण्यात यावा.
- ४) कार्यकारी अभियंता, पुणे पाटबंधारे विभाग, जि.पुणे यांना माहितीस्तव.
- ५) व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ मर्यादित, मुंबई.

महाराष्ट्र शासन

आयुक्त मत्स्यव्यवसाय,

यांचे कार्यालय तारापोरेवाला मत्स्यालय, नेताजी सुभाष रोड, चर्नी रोड, मुंबई-४०० ००२.

GOVERNMENT OF INDIA
COMMISSIONER OF FISHERIES,Office the Taraporewala Aquarium, Netaji Subhash Road, Charni Road, Mumbai-400 002.
Email :- comfishmaha@gmail.comWebsite :- <http://fisheries.maharashtra.gov.in>

दिनांक :- ०६/०९/२०१८

जा.क्र. मत्स्य/भू/०२०११६/१२०/७९६/(१०)/२०१६ भाग-३

प्रति

महायुक्त आयुक्त मत्स्यव्यवसाय,

पुणे/नाशिक

विषय :- राज्यातील मत्स्योत्पादनात वाढ करण्यासाठी पिंजरा पध्दतीने मत्स्यसंवर्धनासाठी २०० हेक्टर घरील जलाशयातील १% व २०० हेक्टर खालील जलाशयातील ०.५% जलक्षेत्र ठेक्याने देणेबाबत.

संदर्भ :- १) निविदा क्र. मत्स्य/भू/०२०११६/१२०/२०१६, भाग -३ दि. २३/०२/२०१८

२) निविदा क्र. मत्स्य/भू/०२०११९/१४९/२०१८, दि. १६/०३/२०१८

३) निविदा समितीची दि. ०४/०६/२०१८ व दि. २४/०७/२०१८ ची बँटक.

उपरोक्त विषयी आपणांस कळविण्यात येते की, सोबतच्या प्रपत्रातील अ.क्र. १ ते ४५ प्रकल्पधारकांना १५०० चौ.मी. /७५० चौ.मी. जलक्षेत्र हे दि. ०१/०९/२०१८ पासून पुढील ७ वर्ष (३१/०८/२०२५) व ८ वर्षांकरिता (३१/०८/२०२६) पर्यंत पिंजरा पध्दतीने मत्स्यसंवर्धन करण्यासाठी ठेक्याने देण्यात आले आहे. त्याबाबत करावयाच्या करारपत्राची प्रत सोबत पाठविण्यात येत आहे. करारावर आयुक्त मत्स्यव्यवसाय यांचे वतीने स्वाक्षरी करण्यासाठी संबंधित जिल्ह्याचे सहाय्यक आयुक्त मत्स्यव्यवसाय यांना प्राधिकृत करण्यात येत आहे. संबंधित जिल्ह्याचे सहाय्यक आयुक्त मत्स्यव्यवसाय यांनी त्याप्रमाणे स्वाक्षरी करावी व त्याप्रमाणे केलेल्या करारपत्राची छायाप्रत मुख्य कार्यालयास सादर करावी. तसेच खालीलप्रमाणे सूचनांचे पालन संबंधित प्रकल्पधारका कडून करून घ्यावे.

- १) करारपत्रातील अटी व शर्तीचे पालन होईल याची खबरदारी घ्यावी.
- २) कराराच्या कार्यवाहीमध्ये संबंधित जलाशयाचे कार्यकारी अधियंता, पाटबंधारे विभाग, अथवा त्यांचे प्रतिनिधी यांची मदत घ्यावी. साक्षीदार म्हणून त्यांच्या स्वाक्षऱ्या घ्याव्यात.
- ३) प्रत्येक प्रकल्पधारकास त्यास मंजूर झालेल्या एका बँटरीसाठी २०० हेक्टर घरील जलाशयामधील १५०० चौ.मि. जलक्षेत्रात जास्तीत ६X४X४ आकाराचे ४८ पिंजरे बांधकामाची परवानगी राहिल. तसेच २०० हेक्टर खालील जलाशयामधील एका बँटरीसाठी ७५० चौ.मि. जलक्षेत्रात जास्तीत जास्त ६X४X४ आकाराचे २४ पिंजरे बांधकामाची परवानगी राहिल.
- ४) मंजूर करण्यात आलेल्या ४८/२४ केजच्या एका बँटरीच्या चारही बाजूने विहीत निकषाप्रमाणे मोकळी जागा सोडणे आवश्यक राहिल.
- ५) पिंजरा मत्स्यसंवर्धनासाठी आवश्यक असलेले मत्स्यबीज, मत्स्यबोटुकली तयार करण्यासाठी निर्माण केलेल्या संगोपन तलावामध्ये बोटुकली गोळा करण्यासाठी आऊटलेट दरवाजे (Sluice Gate) बांधणे. मत्स्यजिन्यांची नियतकालिक देखभाल करणे, इ. संपूर्ण जबाबदारी ठेकेदाराची राहिल. तसेच प्रकल्प क्षेत्रावरील कर्मचारी यांचेसाठी शेड बांधकाम, स्वच्छता गृह बांधकाम इत्यादी तसेच इतर कोणतेही आवश्यक बांधकाम करण्याची जबाबदारी ठेकेदाराची राहिल याची नोंद घ्यावी.
- ६) जलक्षेत्र ठेक्याने घेतल्यानंतर संबंधित ठेकेदाराने सहा महिन्यांच्या आत उत्पादन सुरु केले पाहिजे.

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- ७) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना वापरण्यात येणारे मत्स्यखादय, औषधे व मार्गदर्शक सामग्री यांची विहित नमुन्यात नोंदवही ठेवणे आवश्यक आहे.
- ८) पिंजरा मत्स्यसंवर्धनामध्ये संवर्धन केलेल्या मत्स्यप्रजाती बाबतच्या आघातांचा, संवर्धन मार्गदर्शक व मत्स्यउत्पादनाचा दैनिक अहवालाच्या नोंदी नोंदवहीत ठेवण्यात याव्यात व त्याबाबतचा मार्गदर्शक अहवाल संबंधित सहायक आयुक्त मत्स्यव्यवसाय कार्यालयात न चुकता सादर करावा.
- ९) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना प्रत्येक प्रकल्पावर जिवरक्षक साधने ठेवणे व त्याचा वापर करणे अनिवार्य राहिल.
- १०) प्रकल्पधारकाने पिंजरा मत्स्यसंवर्धन करतांना पाण्याची गुणवत्ता वेळोवेळी तपासून त्याचे नोंदवही ठेवणे आवश्यक राहिल. जलाशयाचे पाणी प्रदुषित होणार नाही याची दक्षता प्रकल्पधारकाने घेणे बंधकारक राहिल.
- ११) संबंधित प्रकल्पाची आवश्यकतेनुसार पाहणी/तपासणी मत्स्यव्यवसाय विभागाच्या अधिकाऱ्या मार्फत वेळोवेळी करण्यात येईल.
- १२) राज्यातील मत्स्यउत्पादनात वाढ करण्यासाठी पिंजरा पध्दतीने मत्स्यसंवर्धन करण्याबाबतच्या शासन निर्णय क्र.मत्स्यवि-२०१६/प्र.क्र.९८/पदुम-१३, दि.१७ ऑक्टोबर, २०१६ व शासन निर्णय क्र.मत्स्यवि-२०१६/प्र.क्र.९८/पदुम-१३, ९ मार्च, २०१८ च्या अटी, शर्ती व मार्गदर्शक सूचनाप्रमाणे कार्यवाही करावी. वरीलप्रमाणे कार्यवाही करून केलेल्या कार्यवाहीचा अहवाल उलट-टपाली सादर करावा.

सहपत्र: वरीलप्रमाणे

स्थळप्रतिबर मा.आयुक्त महोदयांची स्वाक्षरी आहे.

अविपक्षीय

(अजिंक्य वि.पाटील)

सहाय्यक आयुक्त मत्स्यव्यवसाय, (मत्स्यबीज)
महाराष्ट्र राज्य, मुंबई.

प्रत :-

- १) प्रादेशिक उपआयुक्त मत्स्यव्यवसाय, मुंबई/पुणे/ नाशिक/ औरंगाबाद/अमरावती/ लातूर
- २) कार्यकारी अधियंता, जलाशय
- ३) व्यवस्थापकीय संचालक, महाराष्ट्र मत्स्योद्योग विकास महामंडळ मर्यादित, मुंबई.
- ४) समीर शिंदे, १२४ तथास्तु हनुमान कॉलनी, वासिंद (पूर्व), जवळ शहापूर, ठाणे-४२१६०४
- ५) इंडेपेन्डंट अॅक्वाकल्चर प्रा.लि., पहिला मजला, टॉवर-१, कर्मेशियल-२, कोहिनूर सिटी, किरोळ रोड, समोर एलबीएस, कुर्ला (पश्चिम), मुंबई-४०००७०.
- ६) मे.जी.एस.के. फिशरीज, ए-४४४, रोड नं.३७, समोर रोड नं.२८, जवळ रबर प्रॉडक्ट्स कंपनी, रामनगर वागळे इस्टेट, ठाणे (पश्चिम)-४००६०४.
- ७) श्री.संतोष महादेव सकपाळ, मु.सती, पो.पिंपळी, ता.चिपळून, जि.रत्नागिरी.
- ८) श्री.गौरव मंगेश पंडीत, पंडीतवाडी, मु.पो.सोलगांव, ता.राजापूर, जि.रत्नागिरी.
- ९) श्री.महाराज यादवराव पगारे, मु.संसरी गांव, पो.देवळाळी कॅम्प, जि.नाशिक.
- १०) मे.रोहन एन्टरप्रायजेस, शैलेश टॉवर, फ्लॅट नं.३, औधगांव, पुणे-४११००७.
- ११) श्री.संकेत रामदास भोसले, फ्लॅट नं.६०४, वॉटर्स एज, पिंपळे-निलख, पुणे-४११०२७.
- १२) श्री.अभिभव विरेंद्र सक्सेना, सी-११ कोणार्क स्फेंडर, वडगावशेरी, पुणे-१४
- १३) श्रीमती ज्योती नितीन भुजबळ, एल-२, २०४ ब्रम्हा सन सिटी, वडगावशेरी, पुणे.
- १४) श्री.गौरव शंकर शर्मा, ए-१, ३०२, खराडी, पुणे.
- १५) श्री.महमद मक्सुद अन्सारी, जी-७०६, पिंपळे सौदागर, पुणे.
- १६) श्री.नितीन गोविंद भुजबळ, एल-२, २०४ ब्रम्हा सन सिटी, वडगावशेरी, पुणे.
- १७) श्रीमती दिव्या गौरव शर्मा, ए-१, ३०२, खराडी, पुणे.

Page No 11

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Annexure-VI**USE OF CHEMICALS IN AQUACULTURE****Inorganic Fertilizers**

Chemical	Purpose	Dose (Kg/ha)	Remark
Nitrogen:			
Urea (H_2NCONH_2) (Kg/ha)	Fertilization	150-300	Applied alternately with organic manure at 15-d interval
Ammonium sulphate ($(NH_4)_2SO_4$)		300-600	
Sodium nitrate ($NaNO_3$), potassium nitrate (KNO_3) and calcium nitrate ($Ca(NO_3)_2$)		20-30	
Phosphorus:			
Triple superphosphate	Fertilization	50-150	Applied alternately with organic manure at 15-d interval
Single super phosphates		150-400	
Mono and di ammonium phosphates		5-10	
Phosphoric acid		5-10	
Other:			
Potassium chloride or muriate of potash (KCl)	Fertilization	1-2	1-4 weeks interval
Sodium silicate (Na_2SiO_3)		1-5	2 weeks interval
Fertilizer enhancers (e.g., Humate, Nutrisphere-N)		10-100	1 Month interval

Soil and Water treatment

Chemical	Purpose	Dose	Remark
Liming material:			
Agricultural limestone (pulverized $CaCO_3$)	Correcting pH	380-1690	Dose depend on the pH of soil and water
Burnt lime (CaO or $CaO \cdot MgO$)		270-1130	
Hydrated lime ($Ca(OH)_2$ or $Ca(OH)_2 \cdot Mg(OH)_2$)		340-1610	
Oxidants:			
Potassium permanganate ($KMnO_4$)		2-8 ppm/ha	

Hydrogen peroxide (H ₂ O ₂) or calcium peroxide (CaO ₂)	controlling phytoplankton, killing disease organisms, or oxidizing bottom soils	Upto 100 kg/ha	Hypochlorite can form carcinogenic compounds trihalomethanes (THMs) and chlorinated hydrocarbons during oxidation of organic matter.
Calcium hypochlorite (Ca(OCl) ₂)		30 ppm before stocking 0.1 ppm if animals	
Sodium, potassium, or calcium nitrate (NaNO ₃ , KNO ₃ , or Ca(NO ₃) ₂)		5-10 ppm	
Coagulants:			
Aluminum sulfate or alum (Al ₂ (SO ₄) ₃ ·18H ₂ O)	Reduces turbidity	15-40 ppm	Applied before manuring
Ferric chloride (FeCl ₃)		15-40 ppm	
Calcium sulfate or gypsum (CaSO ₄ ·2H ₂ O)		250-500 ppm	
Soil reformers:			
Sulfurbacter	Reduces soil pH	75-120 kg/ha	Applied in wet soil and sun dried 2-3 d Dose depends on soil
Health stone/zeolite	Reactivates soil/promotes algal growth/absorbs fouling materials	250-1000 kg/ha 250-1000 kg/ha	

Algicides and herbicides

Chemical	Purpose	Dose	Remark
Copper sulfate (CuSO ₄ ·2H ₂ O)	To reduce the abundance of nuisance aquatic plants and phytoplankton	0.5-2 ppm	Used as Algicides
Chelated copper compounds		0.2-1 ppm	
Simazine (C ₇ H ₁₂ ClN ₅ ; 1,3,5-triazine herbicide)		0.25-1 ppm	
Potassium ricinoleate (KC ₁₈ H ₃₄ O ₃)		0.25-1 ppm	Emergent weeds Submerged weeds Floating weeds Floating weeds
2,4-D		5-10 kg/ha	
Diuron (3-(3,4-dichlorophenyl)-1,1-dimethylurea)		10-15 kg/ha	
Ammonia		1-2% aq. Soln.	
Paraquat (N,N'-dimethyl-4,4'-bipyridinium dichloride)	0.2 kg/ha		

Piscicides

Chemical	Purpose	Dose	Remark
Teaseed cake (10 -15 % saponin)	To kill unwanted fishes and other aquatic animals	75- 100 ppm	
Mahua oil cake (4 -6 % saponin)		200-250 ppm	
Derris root powder (5% Rotenone)		5-10 ppm	
Calcium hydroxide + Ammonium sulfate		10 ppm	Applied in 1: 4 ratio
Bleaching powder		150-250 Kg/ha	
		Not advisable	High residual toxicity
Chlorinated hydrocarbons			
Ammonium fertilizer		0.01 kg of urea/ m ³	

Disinfectants

Chemical	Purpose	Dose	Remark
Bleaching powder/Bleach liquor	Disinfection	25-30 ppm	Toxicity lasts 7-8 d
Quaternary ammonium		1 (soft water) – 4 (hard water) ppm	Non-corrosive, inactivated by normal soaps
Iodine		1-2 ppm	Toxic (Elemental I ₂)
Ozone		3 ppm	Degrade rapidly
Formalin		15-25 ppm	Half-life is about 2-3 days (longer in non-aerated water)
Potassium permanganate (KMnO ₄)		1-5 ppm	

Chemotherapeutants

Chemical	Purpose	Remark
Antibacterial agents:		
Nitrofurans (Furazolidone)	Antibacterial and anti protozoal	Treatment through feed
Macrolides	Gram positive bacteria	Erythromycin the only macrolide used in fish farming

Phenolics (Chloramphenicol, thiamphenicol and florphenicol)	Antibacterial (Broad spectrum antibiotic)	Banned in Aquaculture
4- Quinolones	Antibacterial (Broad spectrum antibiotic)	Quinolones inhibit the bacterial enzyme DNA-gyrase which results in breaks in the DNA
Sulphonamides (Trimethoprim and ormetoprim)	Antibacterial (Broad spectrum antibiotic)	Immersion feasible as " absorbed through gills
Tetracyclines (Oxytetracyclin and chlorotetracycline)	Antibacterial (Broad spectrum antibiotic)	OTC cheaper than other antibacterial agents
Other than Antibacterial agents:		
Acridlavine	Antibacterial and for external protozoan	Mixture of euflavine and proflavine
Copper compounds (Aquatrine)	External protozoan and filamentous bacterial disease in shrimps	Induce molting in shrimps by reducing cuticular fouling by filamentous bacteria
Dimetridazole/metronidazole	Antiprotozoal	Favored more strongly by aquarium trade
Formalin	Antifungal and ectoparasites	Global use. Most often in hatchery systems.
Malachite green	Antiprotozoal and antifungal	Principally used in hatcheries
Methylene blue	Antifungal and antiprotozoal	-
Ivermectin	Ectoparasites	-
Potassium permanganate (KMnO ₄)	Antifungal	-
Trifluralin (Treflan)	Antifungal	Used in hatcheries
Malathion/Dichlorvos (Nuvan)	Ectoparasites	-

ANNEXURE- VII**USE OF CHEMICALS IN AQUACULTURE****Inorganic Fertilizers**

Chemical	Purpose	Dose (Kg/ha)	Remark
Nitrogen:			
Urea (H_2NCONH_2) (Kg/ha)	Fertilization	150-300	Applied alternately with organic manure at 15-d interval
Ammonium sulphate ($(NH_4)_2SO_4$)		300-600	
Sodium nitrate ($NaNO_3$), potassium nitrate (KNO_3) and calcium nitrate ($Ca(NO_3)_2$)		20-30	
Phosphorus:			
Triple superphosphate	Fertilization	50-150	Applied alternately with organic manure at 15-d interval
Single super phosphates		150-400	
Mono and di ammonium phosphates		5-10	
Phosphoric acid		5-10	
Other:			
Potassium chloride or muriate of potash (KCl)	Fertilization	1-2	1-4 weeks interval
Sodium silicate (Na_2SiO_3)		1-5	2 weeks interval
Fertilizer enhancers (e.g., Humate, Nutrisphere-N)		10-100	1 Month interval

Soil and Water treatment

Chemical	Purpose	Dose	Remark
Liming material:			
Agricultural limestone (pulverized $CaCO_3$)	Correcting pH	380-1690	Dose depend on the pH of soil and water
Burnt lime (CaO or $CaO \cdot MgO$)		270-1130	
Hydrated lime ($Ca(OH)_2$ or $Ca(OH)_2 \cdot Mg(OH)_2$)		340-1610	
Oxidants;			
Potassium permanganate ($KMnO_4$)		2-8 ppm/ha	

Hydrogen peroxide (H ₂ O ₂) or calcium peroxide (CaO ₂)	controlling phytoplankton, killing disease organisms, or oxidizing bottom soils	Upto 100 kg/ha	Hypochlorite can form carcinogenic compounds trihalomethanes (THMs) and chlorinated hydrocarbons during oxidation of organic matter.
Calcium hypochlorite (Ca(OCl) ₂)		30 ppm before stocking 0.1 ppm if animals	
Sodium, potassium, or calcium nitrate (NaNO ₃ , KNO ₃ , or Ca(NO ₃) ₂)		5-10 ppm	
Coagulants:			
Aluminum sulfate or alum (Al ₂ (SO ₄) ₃ ·18H ₂ O)	Reduces turbidity	15-40 ppm	Applied before manuring
Ferric chloride (FeCl ₃)		15-40 ppm	
Calcium sulfate or gypsum (CaSO ₄ ·2H ₂ O)		250-500 ppm	
Soil reformers:			
Sulfurbacter	Reduces soil pH	75-120 kg/ha	Applied in wet soil and sun dried 2-3 d Dose depends on soil
Health stone/zeolite	Reactivates soil/promotes algal growth/absorbs fouling materials	250-1000 kg/ha 250-1000 kg/ha	

Algicides and herbicides

Chemical	Purpose	Dose	Remark
Copper sulfate (CuSO ₄ ·2H ₂ O)	To reduce the abundance of nuisance aquatic plants and phytoplankton	0.5-2 ppm	Used as Algicides
Chelated copper compounds		0.2-1 ppm	
Simazine (C ₇ H ₁₂ ClN ₅ ; 1,3,5-triazine herbicide)		0.25-1 ppm	
Potassium ricinoleate (KC ₁₈ H ₃₄ O ₃)		0.25-1 ppm	
2,4-D		5-10 kg/ha	Emergent weeds
Diuron (3-(3,4-dichlorophenyl)-1,1-dimethylurea)		10-15 kg/ha	Submerged weeds
Ammonia		1-2% aq. Soln.	Floating weeds
Paraquat (N,N'-dimethyl-4,4'-bipyridinium dichloride)	0.2 kg/ha	Floating weeds	

Piscicides

Chemical	Purpose	Dose	Remark
Teaseed cake (10 -15 % saponin)	To kill unwanted fishes and other aquatic animals	75- 100 ppm	
Mahua oil cake (4 -6 % saponin)		200-250 ppm	
Derris root powder (5% Rotenone)		5-10 ppm	
Calcium hydroxide + Ammonium sulfate		10 ppm	Applied in 1: 4 ratio
Bleaching powder		150-250 Kg/ha	
		Not advisable	High residual toxicity
Chlorinated hydrocarbons			
Ammonium fertilizer		0.01 kg of urea/ m ³	

Disinfectants

Chemical	Purpose	Dose	Remark
Bleaching powder/Bleach liquor	Disinfection	25-30 ppm	Toxicity lasts 7-8 d
Quaternary ammonium		1 (soft water) – 4 (hard water) ppm	Non-corrosive, inactivated by normal soaps
Iodine		1-2 ppm	Toxic (Elemental I ₂)
Ozone		3 ppm	Degrade rapidly
Formalin		15-25 ppm	Half-life is about 2-3 days (longer in non-aerated water)
Potassium permanganate (KMnO ₄)		1-5 ppm	

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Other than Antibacterial agents:		
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Formalin	Antifungal and ectoparasites	Global use. Most often in hatchery systems.
Malachite green	Antiprotozoal and antifungal	Principally used in hatcheries
Methylene blue	Antifungal and antiprotozoal	-
Ivermectin	Ectoparasites	-
Potassium permanganate (KMnO ₄)	Antifungal	-
Trifluralin (Treflan)	Antifungal	Used in hatcheries
Malathion/Dichlorvos (Nuvan)	Ectoparasites	-

Item No. 03

(Pune Bench)

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 80/2020 (WZ)

Vanashakti & Anr.

Applicant(s)

Versus

State of Maharashtra & Ors.

Respondent(s)

Date of hearing: 31.05.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MR. JUSTICE M. SATHYANARAYANAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE BRIJESH SETHI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant(s): Mr. Zaman Ali, Advocate

ORDER

1. Grievance in this application is against unregulated activities of aquaculture and fishery in water bodies carrying fresh water in the State of Maharashtra. Particular grievance has been raised in the context of permission granted in favour of respondent no. 7, Vaidehi Randive in Vadivale Lake in Village Valavanti on the Kamshet-Kundali Road in Maval Taluka, near Village Kamshet, in Pune District, by the Commissioner of Fisheries, Government of Maharashtra.
2. The applicants have assailed the impugned permission as being against the "Precautionary" and "Sustainable Development" principles. Aquaculture activities, with modern techniques involve use of harmful chemicals. In the process, such chemicals are and released in the lakes and other water bodies concerned. In the present case, permission has been given for aquaculture activities in *Vadivale* Lake in Pune District. The

lake is a source of drinking water to the nearby villages. Outfall of the lake is in the Indrayani River which is source of drinking water for 28 villages.

3. The applicant has referred to the policy decisions of the Fisheries Department, Government of Maharashtra to submit that the same does not consider environmental aspects. They consider only financial aspects. Reference is made to GO dated 15.10.2001 for permitting fishing in lakes of the size above 200 hectares. It does not consider harmful impact of discharge of harmful chemicals, poultry manure, chemical manures, other waste products from poultry farms such as gizzards and chicken guts, chemical fertilizers and antibiotics etc., that are key to aquaculture farming. The applicants have also referred to the Coastal Aquaculture Authority Act, 2005 to regulate coastal aquaculture in coastal areas enacted in the light of the Judgment of the Hon'ble Supreme Court in *S. Jagannath v. Union of India* [(1997) 2 SCC 87]. Under the said Act, environmental safeguards are laid down for permitting aquaculture in coastal areas. However, there are no safeguard laid down for permitting such activities in inland waters. The applicant has relied upon a report of the National Bank for Agriculture and Rural Development (NBARD), Mumbai, under the title "The Use of Chemicals in Aquaculture in India". Further reference has been made to the guidelines framed by the Ministry of Fishing, Government of India titled "Guidelines for Cage Culture in Inland Open Water Bodies of India" noticing the environmental facts arising out of such activities in open water bodies. Further reference is made to the study conducted by the Madras University titled "Environment and Social Conflicts of Aquaculture in Tamil Nadu and Andhra Pradesh." The applicants have submitted that 2005 Act should apply to all aquaculture activities. It is stated that adverse impact of aqua culture activities in *Vadivale* Lake has been found in a report titled "Assessment

5. Since we have not found it necessary to issue notice having regard to the nature of the order, we give liberty to the respondents to move this Tribunal in case they are aggrieved.

The application is disposed of.

A copy of this order be forwarded to the MoEF&CC, the CPCB, the Maharashtra State PCB, the Ministries of Fishing, Govt. of India and Maharashtra Govt. and Central Inland Fisheries Research Institute by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

M. Sathyanarayanan, JM

Brijesh Sethi, JM

Dr. Nagin Nanda, EM

May 31, 2021
Original Application No. 80/2020 (WZ)
SN

of Water Quality Index of Indrayani River, Alandi, Pune" published in 2018 in International Journal of Science, Engineering and Technology Research.

4. We have given due consideration to the issue raised. We are of the view that there is need to ensure protection of environment in the process of aquaculture activities in water bodies (other than those covered by the Coastal Aquaculture Authority Act, 2005) by use of modern techniques, particularly the use of chemicals, if any, in the process. To ensure such protection, there is need to undertake study of the existing consent regime under the Water Act and whether there is need to introduce any changes. We constitute a six-member expert Committee comprising the concerned Regional Officer, MoEF&CC, the concerned Regional Officer, CPCB, the Maharashtra State PCB, the nominee of Ministry of Fishing, Government of India and Maharashtra State and the Central Inland Fisheries Research Institute. The CPCB and the State PCB will be the nodal agency for coordination and compliance. The joint Committee will be at liberty to consult any other Expert Institution or individual and also take into account the studies already undertaken. We understand that based on studies, some States have enacted legislation on the subject such as Kerala Inland Fisheries and Aqua Culture Act, 2010. The Committee may look into the consent regime under the Water Act. The Committee may examine whether in inland fisheries, chemicals are allowed to be used and if so, how the same can be regulated. The study may be completed as far as possible within three months and report furnished to the Secretary, MoEF&CC and the Chief Secretary, Maharashtra for further remedial measures. In the light of such study, the permission granted in the present case may be appropriately revisited, if necessary, following due process.

Email

sharmishtha.shukla@govcontractor.in

Reminder 1. Directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr Vs. State of Maharashtra & Ors-Seeking inputs

From: sharmishtha.shukla <sharmishtha.shukla@nic.in> Tue, Oct 31, 2023 04:31

Subject: Reminder 1. Directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr Vs. State of Maharashtra & Ors-Seeking inputs regarding

3 attachments

To: Sagar Mehra <sagamehra@nic.in>, Joint Secy Inland <js-inland@do.gov.in>

Cc: Sundar Ramanathan <sundar@nic.in>, D.Marcus Knight <m.knight@gov.in>

Reply To: sharmishtha.shukla <sharmishtha.shukla@nic.in>

Sir,

Please refer to the trailing mail. In this regard, it is to inform you that the MoEF&CC has not received the comments on your behalf regarding the directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr vs. State of Maharashtra & Ors., as sought by the MoEF&CC vide OM dated 13/06/2023 (*enclosed herewith*). Further, the undersigned has been directed to request you to provide your comments at the earliest for taking further necessary action in the matter.

Thanking you

Your sincerely

Sharmishtha Shukla

LEGAL ASSOCIATE (POLICY)

Ministry of Environment, Forest and Climate Change

Government of India,

Indira Parayavaran Bhawan

Jor Bagh Road, Aliganj,

New Delhi Pin-110003

From: "UNTUN KUMAR SINGH" <tk.singh@gov.in>

To: "Sagar Mehra" <sagar.mehra@nic.in>

Cc: "Sujit Kumar Bajpayee" <sujit.baju@gov.in>, "Sundar Ramanathan" <r.sundar@nic.in>, "J.D.Marcus Knight" <m.knight@gov.in>, "sharmishtha shukla" <sharmishtha.shukla@nic.in>

Sent: Tuesday, June 13, 2023 5:37:56 PM

Subject: Directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr Vs. State of Maharashtra & Ors-Seeking inputs regarding

Respected Sir(s)/Madam

I am directed to forward herewith the letter No. IA3-3/32/2023-IA.III dated 13/06/2023 alongwith Annexures regarding Directions of the Hon'ble NGT(WZ) in EA No.12 in OA No.80 of 2020 titled Vanashakti & Anr Vs. State of Maharashtra & Ors-Seeking inputs please

{P}
{SEP}

TK SINGH
Assistant Section Officer
CRZ SECTOR, IA.III SECTION
Ministry of Environment, Forest and Climate Change
Indira Paryavaran Bhawan, Jorbagh Road,
New Delhi-110003

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 **Annexure 2-Committee Report.pdf**
6 MB

 **Annexure 1-order dated 27-02-2023 and 31-05-2021.pdf**
10 MB

 **IA3-3-32-2023-IAIII dated 13-06-2023.pdf**
4 MB



डॉ. सुजीत कुमार बाजपेयी
संयुक्त सचिव
DR. SUJIT KUMAR BAJPAYEE
JOINT SECRETARY

भारत सरकार
पर्यावरण, वन और जलवायु परिवर्तन
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST
AND CLIMATE CHANGE
02 January, 2024

F. No. IA3-3/32/2023-IA.III (Part I)

Dear Shri Sagar ji

Kind attention is invited to the letter dated 13.06.2023 from this Ministry regarding E.A. No. 12 of 2022 in O.A. No. 80 of 2020 titled Vanashakti & Anr. v. State of Maharashtra & Ors., wherein directions were given to undertake a study regarding environmental impact of cage aquaculture.

2. The Joint Committee which was constituted by order dated 31.05.2022 had, inter alia, recommended that there is a need to conduct a study on the environmental impacts of cage aquaculture. It is also recommended that the study may be coordinated by MoFH&D in consultation with MoEF&CC and CPCB.

3. The matter has been followed up with MoFH&D with subsequent reminder emails, however, reply is still awaited. In this regard, it is requested to kindly expedite the study mentioned above and provide your inputs on whether there is a requirement to bring cage aquaculture under the ambit of EIA Notification, 2006.

4. The matter may be treated on priority in order to avoid any adverse orders of the Hon'ble Tribunal.

With regards,

Yours sincerely,


(Dr. Sujit Kumar Bajpayee)

Shri Sagar Mehra
Joint Secretary (Inland Fisheries and Administration)
Department of Fisheries
Room No. 482 Krishi Bhawan,
New Delhi-110001

पृथ्वी विंग, प्रथम तल, कमरा नं.135, इंदिरा पर्यावरण भवन, जोर बाग रोड, नई दिल्ली-110003
दूरभाष: 011-20819398/20819340, ईमेल : sujit.baju@gov.in

Prithvi Wing, 1st Floor, Room No.135, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-110003

F. No. IA3-3/32/2023-IA.III

Government of India

Ministry of Environment, Forest and Climate Change

(Impact Assessment Division)

Indira Paryavaran Bhawan

Aliganj, Jorbagh Road

New Delhi-110 003

Dated 9th July, 2024

OFFICE MEMORANDUM

Sub: Compliance of NGT order dated 31.05.2021 in Original Application No. 80 of 2020 titled as Vanashakti & Anr. Vs State of Maharashtra & Ors- reg.

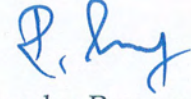
It was brought to the notice of this Ministry that a meeting was convened under the Chairmanship of Joint Secretary (Inland Fisheries) Department of Fisheries, on 14.06.2024 to discuss the issue regarding the compliance of the order dated 31.05.2021 of the Hon'ble NGT order in OA. 80/2020 (WZ), titled as Vanashakti & Anr. Vs State of Maharashtra & Ors.

2. Subsequently, a meeting was convened by Maharashtra Pollution Control Board on 03.07.2024, in which officials of this Ministry also participated. It is understood that a study titled "*Environment Impact Assessment of cage culture in inland open waters*" is being entrusted to ICAR-CIFRI in compliance of the order of Hon'ble NGT (WZ). During the said meeting, the officials of this Ministry requested that as per Hon'ble NGT order the proposed study should examine the requirement of Environmental Clearance under the provisions of Environment Impact Assessment (EIA) Notification 2006 for cage aquaculture activities and the same may be added in the terms of reference of the study.

3. In this regard, it is requested that the above requirement may be included in the terms of reference of the study so as to enable this Ministry to take a considered decision in compliance to Hon'ble NGT order on whether there is a requirement of

bringing the cage aquaculture under the ambit of EIA Notification, 2006, based on the outcome of the study which is proposed to be carried out by ICAR-CIFRI.

4. This is issued with the approval of the Competent Authority.



(Sundar Ramanathan)
Scientist E

To

Joint Secretary (Inland Fisheries and Administration),
Department of Fisheries
Room No. 482 Krishi Bhawan,
New Delhi-110001

Copy for information to

1. Member Secretary, Maharashtra Pollution Control Board
Kalpataru Point, 3rd and 4th floor,
Mumbai- 400022
2. Director, (ICAR - Central Inland Fisheries Research Institute)
Monirampur (Post), Barrackpore Kolkata,
West Bengal - 700120

MAHARASHTRA POLLUTION CONTROL BOARD

Tel.: 24010437/24020781/24014701
Fax : 24024068 / 24044531
Website : www.mpcb.gov.in
E-mail : jdair@mpcb.gov.in



Kalpataru Point, 2nd - 4th Floor,
Opp. PVR Cinema,
Near Sion Circle, Sion (E),
Mumbai - 400 022.

No. BO/JD(APC)/TB/B- 0104

Date: - 24/09/2024

To,
Scientist and In-charge,
Vadodara Research Centre,
ICAR- Central Inland Fisheries Research Institute,
GERI Campus, Behind Yash Complex,
Gotri, Vadodara- 390021.

Sub – Work order for Study on Environmental Impact Assessment of Cage Culture in Inland Open waters before brining Cage Culture under Consent Mechanism.

Ref – 1) Order passed by Hon"ble NGT in EA No.12 of 2022 (WZ) in OA No. 80 of 2022 (WZ) filed by Vanshakti regarding Cage Aquaculture in Vadiwale lake Dist. Pune
2) Presentation held before Authority on 04/07/2024.
3) Revised proposal submitted vide email dtd. 10/07/2024.

Sir,

In accordance to the above referred subject and orders passed by Hon'ble NGT vide above ref. no. 1 Board is in receipt of your proposal regarding Study on Environmental Impact Assessment of Cage Culture in Inland Open waters before brining Cage Culture under Consent Mechanism and vide above ref no.2 presentation held on 04/07/2024. Further, MPC Board has decided to award works for Study on Environmental Impact Assessment of Cage Culture in Inland Open waters before brining Cage Culture under Consent Mechanism to your organization with following Objectives, Scope of Work and Deliverables with payment terms and conditions: -

Objectives:

- To assess the impact of cage culture on limno-chemical profiles of water and sediment.
- To assess the impact of cage culture on biotic communities.
- To frame recommendations based on the study for the consent mechanism under water act.

24/9/2024


Technical programme:

The overall project activities will be performed in mutual agreement with MPCB/CPCB.

- Selection of three cage culture farms sites for the study based on categories of reservoir (large, medium, small)
- Conducting stakeholder meeting cum project start-up workshop
- Periodic collection of water (pH, DO, TDS, electrical conductivity, nitrate-N, phosphate-P, NH₃-N, BOD, COD, chlorophyll-a etc.) and sediment (pH, organic carbon, available and total phosphorus, available and total nitrogen etc.) samples for analysis of important physico-chemical parameters of water and sediment from cage culture site and reference sites
- Periodic sampling of biotic communities (phytoplankton, zooplankton, macroinvertebrate, etc.) of the water body from cage culture sites and reference sites.
- Fish diversity assessment in the reservoir to determine potential escapes from the cage
- Analysis of data
- Conducting concluding workshop at the end of the project period
- Formulation of recommendation for cage culture for different category of reservoirs of India
- Report writing and submission within 12 months.

Project Duration

- The timeline for this study shall be 12 months from date of receipt of the work order. Final report along with recommendations shall be submitted within 15 days from the date of completion of the whole project.


24/9/2017

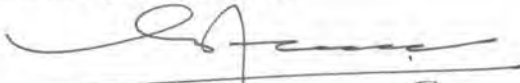
Payment Terms:-

Sl. No.	Heads	Cost in Rs. (Lakhs)
A	1 Young Professional (YP-II) @ 42000/-per month for 12 Months	5.04
B	2 Young Professional (YP-I) @ 30000/-per month for 12 Months	7.2
C	TA/DA	10.5
D	Minor Equipment	4
E	Operational Contingencies	
	Consumables (Chemicals, Glassware and plastic wares)	4.5
	Vehicle hiring, Boat hiring, experimental fishing, labour charges	4.5
F	Stakeholder meeting cum project start-up workshop and Concluding workshop	3.0
G	Miscellaneous (unforeseen expenditure)	3.4
H	Sub Total (A+B+C+D+E+F+G)	42.14
I	Institutional Charges (10%)	4.21
J	Grand Total	46.35

- 50% alongwith work order
- 30% on submission of Interim Report
- 20% on submission of Final Report

In view of above, you are hereby requested to start the work on issuance of this work order and submit report after completion of work in timely manner.

This is issued with the approval of the Competent Authority of the Board.


 (Dr. V.M. Motghare) 29/9/2014.
Joint Director (Air Pollution Control)

Copy for necessary action:-

1. Chief Account Officer, MPC Board, Mumbai – you are directed to release payment in favor of M/s. ICAR- Central Inland Fisheries Research Institute, Vadodara
2. Regional Office, Pune/ Sub Regional Office, Pune-II—They are directed to assist the ICAR- Central Inland Fisheries Research Institute, Vadodara team during the studies carried out.