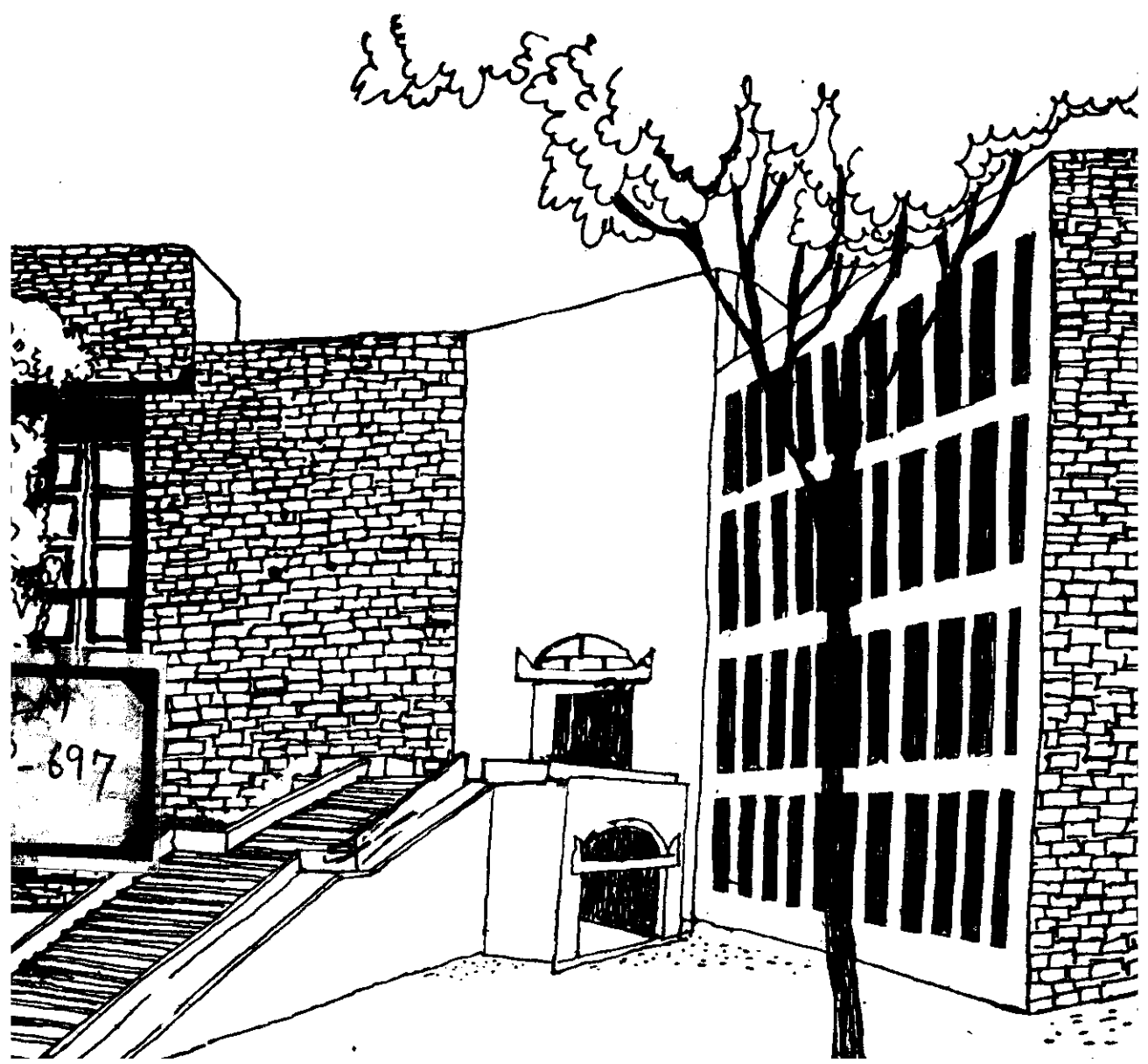




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CONSIDERATIONS IN EVOLVING A COMPREHENSIVE
LEASING POLICY FOR INLAND WATERBODIES
FOR FISH PRODUCTION

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CONSIDERATIONS IN EVOLVING A COMPREHENSIVE LEASING
POLICY FOR INLAND WATERBODIES FOR FISH PRODUCTION*

U.K. SRIVASTAVA**

Inland fishery resources can be classified in terms of rivers, fresh water ponds, reservoirs and brackish-water bodies (ponds for culture, farms for capture/filtration, lakes, swamps and estuaries). (See Figure-1) Some states have made an attempt to license the river stretches to the fishermen for a small fee but in view of the declining catches from the riverine resources, it is doubtful whether riverine fishermen in Gujarat can be made to pay anything. There is, however, a need for conservation of fish breeding and genetic resources in the riverine sector.

The question of lease/royalty is important for the other three sub-systems of inland sector i.e. fresh water ponds, reservoirs and brackish water waterbodies. This paper is designed to highlight some of the critical elements in decision making about the leasing of these waterbodies.

FRESH WATER PONDS

Most of the fresh water ponds are owned by public bodies like Panchayat, Irrigation Departments and others. These ponds are to be leased to fish farmers for fresh water aquaculture. The following characteristics need to be kept in mind :

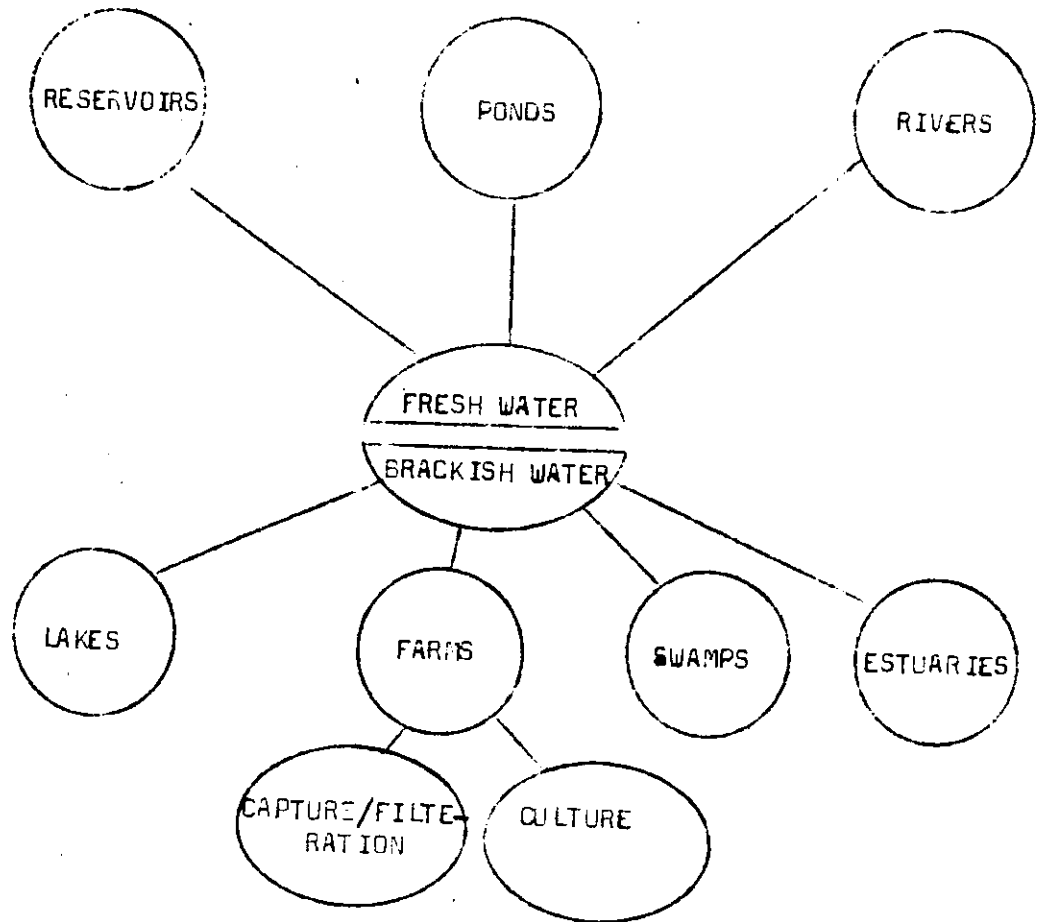
All the fixed costs (in deepening and excavation of ponds and construction of inlets and outlets) and variable costs (lease rent, seed, feed, nets, watch and ward and interest on capital) are incurred by the fish farmers. Therefore, the fish farmers need some time (payback period) to recover back the fixed costs from the contribution from the production. This is a key consideration in determining the duration of the lease. The research studies have pointed out that this lease duration should be 10 years.¹

* Paper presented in the Workshop on Leasing Policy for Inland waterbodies, held at the Indian Institute of Management, Ahmedabad, on 25th April '87. (Sponsored by the Government of Gujarat)

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¹ U.K. Srivastava, et. al. Inland Fish Marketing in India, Vol. 1 & 3, Concept Publishing Co., New Delhi, 1985.

Figure 1 : Inland Fish Production Sub-system



Source: U.K. Srivastava *et. al.*, Inland Fish Marketing in India,
Vol. I, Concept Publishing Company, New Delhi, 1985, p. 19.

- 2) Presently, the lease rent per hectare is around Rs. 250/-. Two important considerations in fixing this amount are: (a) whether the amount would keep the returns to the fish farmers at remunerative level, and (b) whether the amount is adequate to compensate the public bodies for the privatization of common property resources. In answer to the first question, it has been demonstrated that given the technology now available, it is possible to charge substantially higher lease rent without affecting the financial viability of fish farmers from aquaculture operations. For example, a calculation for Kheda District indicates that the present lease rent of Rs. 250 per hectare can be enhanced as follows :²

- Category A (1 - 5 ha) - Rs. 2,500 per ha.
- Category B (5 - 10 ha) - Rs. 2,000 per ha.
- Category C (10 - 20 ha) - Rs. 1,250 per ha.

This calculation indicates that the rate of return after paying the lease rent mentioned above would still be fairly high to motivate the fishermen to take up fish culture provided bank loans are available at the commercial rates applicable for agriculture sector.³

The higher lease rent would also generate interest in Panchayat and other public institutions which own the waterbodies, in supporting fish production activities.

One another consideration in deciding as to who should get the preference for such lease is from the point of view of equity. Since by leasing the common property resource we are privatizing the asset for the benefit of the few, it has to be decided as to who are the most deserving sections to get access to these resources. Here cooperative societies of fish farmers may be given preference, provided they are genuine and functional.

BRACKISH WATER RESOURCES

Most of the potential areas (near the sea coast), which have the potential for excavation as ponds for prawn and fish culture, are again publically owned. Some of them are classified as forest land (even though there is no forest at the moment). These lands have to be leased to potential fish farmers. Here, the following important characteristics have to be kept in mind in deciding about leasing policy:

² K.R. Narayanan, et. al., Fresh Water Fish Culture Development Project for Kheda District, Gujarat, Seventh Course on Designing Projects for Agricultural Development, Nov 17, 1985 to Jan 18, 1986.

³ Op. cit., p. 39.

- 1) The brackish water aquaculture is highly capital intensive. For example, a recent estimate of constructing a cluster of 100 ha. of pond area came to Rs. 57.7 lakhs.⁴ The tidal and pH conditions etc. in Gujarat suggest that the brackish water ponds have to be based on pumped water supply and pumping facilities are not divisible. Therefore, we have to go for cluster of ponds of a minimum size, say minimum of 100 hectares (with one to two ha. partitions) and water supply through a common feeder canal. Furthermore, there are scale economies in the management and maintenance costs. It means if we compare the operating cost of a 50 hectare pond cluster and a 100 hectare pond cluster, the operating cost per hectare of the latter is less than the former.
- 2) It has been estimated that the lease duration of about 30 years is required to make the proposition attractive to fish farmers so that they can recover their fixed cost along with acceptable rate of return.⁵
- 3) Keeping in view, the Gujarat conditions and the points mentioned (1) and (2) above, it may be worthwhile to encourage the private sector companies to take up the development of these resources. Even if a part of these resources is reserved for the benefit of a small and poorer fish farmers, it is not possible and advisable to lease the area to individuals for excavation of ponds for prawn and fish culture because they would not be able to invest and operate the technology at profitable level. Therefore, it is necessary to think of in terms of something like Brackish Water Fish Farmers Development Agency (BFDA) which can be given lease for construction and maintenance of the ponds on behalf of fish farmers. The BFDA can in turn lease one to two hectare ponds after construction to fish farmers. The proposed BFDA may undertake the following functions :⁶
 - a) Organizing the micro survey for selection of suitable areas and sites. It is suggested that BFDA involves some of the existing organization like MPEDA for this task.
 - b) Construction of farms and nurseries.
 - c) Maintenance of ponds.
 - d) Supply of seed and feed to the farmers.

⁴ U.K. Srivastava, Bakul H. Dholakia and S. Vathsala, Brackish Water Aquaculture Development Project (Gujarat - Part-I), Indian Institute of Management, Ahmedabad, 1986, p. 228.

⁵ U.K. Srivastava et. al., Inland Fish Marketing in India, Vol. 6, Concept Publishing Co., Op. cit.

⁶ U.K. Srivastava, Bakul H. Dholakia and S. Vathsala, Brackish Water Aquaculture Development Project, Part-I, Op. cit., p. 34.

- e) Water management covering flow, salinity, circulation, temperature, pH, etc.
 - f) Guiding farmers in harvesting and marketing.
 - g) Selection and training of farm management team, technical team and farmers.
 - h) Managing finance and credit.
 - i) Coordination activities.
 - j) Monitoring and evaluation of project.
- 4) The amount of lease per hectare will have to be fixed keeping in mind the high capital cost of brackish water ponds in Gujarat and lower returns than other states because of a lack of P. Monodon prawn prawn seeds in Gujarat. It has, however, been demonstrated that BFDA can recover a lease rent upto Rs. 9,500 per hectare per year which is sufficient to repay the principal amount, interest on fixed and working capital and also to meet operating and maintenance cost of common facilities.

RESERVOIRS

Unlike the fresh water and brackish water ponds, where all the investment is made by the lease holders, in case of reservoirs the stocking is done by Department of Fisheries and only harvesting is done by the beneficiaries of lease/royalty or any other arrangements. Therefore, the broad objectives of the leasing system in case of reservoirs can be summarised as follows:⁸

- a) To facilitate development of the reservoir to increase productivity.
- b) To facilitate and provide resources for the development of reservoir.
- c) To enable the fishermen to get a good return on their catches.
- d) To facilitate the compilation of production data.
- e) To provide a good base for marketing of fish.

The above objectives imply that the leasing system to be followed in a reservoir should not only generate revenue but also should incorporate conservation, regulatory and stocking provisions.

⁷ U.K. Srivastava, Bakul H. Dholakia and S. Vathsala, Brackish Water Aquaculture Development Project, Part-I, Op. cit.

⁸ M. Raghavachari and S. Surya Chandra Rao, "Development of Reservoir Fisheries in India - Some Issues and Recommendations" in U.K. Srivastava and S. Vathsala (Eds), Strategy for Development of Inland Fishery Resources in India - Key Issues in Production and Marketing, Concept Publishing Company, New Delhi, 1984, p. 218.

The period of lease which is currently for one year may be increased for longer time span (say 3 to 5 years) so that the agency getting fishery rights can better plan the production and marketing arrangements. Annual leases have the following demerits:⁹

- i) The contractor's aim is just to capture as much fish as possible.
- ii) The contractor has no interest to ensure necessary fish seed stocking since he is not interested in sustained yields.
- iii) The contractor's overhead managerial costs of arranging fishing operations is high and so he can offer lesser royalty to the government on fish catch and/or lower fishing charges to fishing labour.

Leasing systems generally follow the trends of fish production, income and expenditure of the department, socio-economic status of fishermen and above all, the government policy towards cooperative sector. Different states have different leasing systems depending upon the conditions prevailing in the state, and their fishery resources. Even within a state, the system differs from reservoir to reservoir. Also the leasing system varies at different points of time for the same reservoir. The leasing system followed across the country shows that Andhra Pradesh, Karnataka, Maharashtra, Orissa and Himachal Pradesh attach importance to the cooperative sector, while Madhya Pradesh, Tamil Nadu, West Bengal and Gujarat attach importance to State Fisheries Development Corporation (SFDC) and Bihar, Rajasthan and Uttar Pradesh seem to prefer the open auction system.¹⁰

It appears that production levels can be constantly maintained whenever the reservoir is entrusted to an official agency, for example, Corporation or Federation. Such a system exists in Gobind Sagar, Kadana, Panam, Gandhisagar, Maniari, Jaisamand and Sathanur reservoirs. The system of fixing quota targets followed by some states imposes an effective control on the contractors from over-exploitation.

Under some leasing systems the production data could be compiled accurately, whereas in some other systems the production data could not be recorded properly. Whenever an official agency like Corporation, Federation, or Department undertakes weighing the catch and collecting royalty either from the contractor or cooperative societies, there is an inbuilt motivation to record the catch. In a free licence system or licence fishing, the official agency is not interested in recording the

⁹ Pradip K. Yadav, "Reservoir Fishery Management : Major Policy Issues for Government Intervention", in U.K. Srivastava and M. Dharma Reddy (Eds), Fisheries Development in India : Some Aspects of Policy Management, Concept Publishing Co., 1983, p. 450.

¹⁰ M. Raghavacheri and S. Surya Chandra Rao, Op. cit.

catch. The control exercised by the official agency in the latter system is also minimum, and more so in recording stocking, poaching, or adhering to conservation and regulatory provisions.

The system of open auction with quota targets ensures a good revenue to the official agency.¹¹ This is true of U.P. and Rajasthan. The system of royalty, with or without licence fee followed at Gobindsagar and Pongadam also gives good revenue to the Department. In the reservoirs where licensing alone is resorted to the revenue of the department is usually small. In cases where revenue is large, official agency has an obligation to do stocking, to provide infrastructure facilities, and to help the fishermen in term of fishery requisites.

The basic policies for leasing rights in reservoirs can thus be broadly categorized as follows:¹²

- i) Direct fishing by a government fishing authority.
- ii) Lease by outright auction.
- iii) Single lease on royalty basis.
- iv) Multiple licences to fishermen and fishermen's cooperative societies.

A priori, the merits and demerits of these systems may be very briefly delineated as follows :

i) Direct fishing by government fishing authority

Merits

- a) assured fair wages to fishermen,
- b) elimination of contractor's profit, and
- c) economic and social security for fishermen.

Demerits

- a) higher incidence of corruption,
- b) inefficient man-management,
- c) huge overheads for managerial supervision,
- d) labour problems, and
- e) possible interference in day-to-day management.

¹¹ M. Raghavachari and S. Surya Chandra Rao, Op. cit.

¹² Pradip K. Yadav, Reservoir Fishery Management : Major Policy Issues for Government Intervention, Op. cit., pp. 448-449.

ii) Lease by Outright Auction

Merits

- a) small overhead expenses because of smaller supervisory staff necessary,
- b) lower levels of corruption since field staff has little control, and
- c) contractor has personal interest in himself preventing poaching.

Demerits

- a) only big contractors can compete because of the larger capital investment necessary.

iii) Single Lease on Royalty Basis

Merits

- a) small contractors and fishermen cooperative societies can easily compete in view of small capital investment necessary.

Demerits

- a) higher incidence of corruption because of royalty on weight basis,
- b) increased overheads on supervisory staff engaged in weighmen, and
- c) possibility of litigation because of non-fulfilment of quota requirements.

iv) Multiple Licences to Fishermen and fishermen's Cooperative Societies (on royalty basis or gear basis)

Merits

- a) direct benefit to individual fishermen and cooperative societies with minimum investment, and
- b) reduction in middlemen's profits.

Demerits

- a) large overhead expenses because of large volume of supervisory staff necessary,
- b) greater incidence of corruption,
- c) greater possibility of poaching, and
- d) possible interference in day-to-day management.

In deciding about the leasing policy for reservoir fisheries in Gujarat state, it is imperative that we think of the entire system from the stocking of fingerlings, conservation to harvesting and marketing of fish. It is also necessary that we link the revenue generated from the lease to the expenses on stocking conservation, and enforcement of regularly measures for the development of reservoirs.¹³

MANAGEMENT OF RESERVOIRS FOR FISHERY DEVELOPMENT

There is a need for a single government agency to be vested with fishing rights and that agency be made responsible for the control, stocking, management of seed farm, and the administration of the reservoir.¹⁴ This agency should receive the lease/royalty amount for a reservoir. Too many agencies charging royalty entail cutting of margins for fishermen. The leasing system adopted should also incorporate conservation, regulatory, and stocking provisions.

Since the turnover of fish from a medium sized reservoir is large, a Board or a Committee can be appointed at each reservoir site for the administration of reservoir from fishery point of view. This should consist of representatives from the agency entrusted with fishing rights, Departments of Fisheries, the lessee in-charge of marketing, the fishermen, the fishery scientists and the management experts.

To be effective, all stocking should be done in one size, namely, advanced fingerlings size of 12.5 cm. The following stocking rates should be found advantageous. Large reservoirs (above 5,000 ha) - 200 fingerlings/ha. Medium reservoirs (1,000 to 5,000 ha) - 400 fingerlings/ha. Small reservoirs (less than 1,000 ha) - 1,000 fingerlings/ha. To estimate the total number of fingerlings required, 50% of FSI area as suggested by National Commission of Agriculture could be appropriate.

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- ¹³ Some of the possibilities for strengthening regulatory measures are :
- a) Making provisions in the State Fisheries Act for giving:
 - i) powers of summary trial to gazetted officers of the State Fisheries Department, and
 - ii) power to confiscate boats or nets used for poaching;
 - b) Judging by the economics of fish production in the particular reservoir, and providing patrol staff and fast patrol boats well within economically viable limits; and
 - c) Giving fishing rights to a group or cooperative of fishermen living next to the reservoir.

Also see P.K. Yadav, Op. cit.

¹⁴ M. Raghavachari and S. Surya Chandra Rao, Op. cit.

The seed farm at the reservoir site should be a rearing farm rather than an integrated seed farm. Hatchlings brought from a centralized seed producing farm could be reared to fingerling size at these rearing ponds. In this way greater control can be exercised both on the farm and on the mortality rates.

Greater emphasis should be laid on enforcement of conservation and regulatory provisions. A minimum mesh size of 4" to 6" for gillnets should be enforced. A closed season of 2 to 3 months should be strictly observed during the breeding season.

SUMMING UP

To sum up the following emerge in relation to leasing policy for inland waterbodies :

a) Fresh Water Ponds

- i) The duration of lease be 10 years (with adequate safeguards to ensure that the leased waterbody would indeed be used for fishery development) and the procedure for granting the lease should be simplified.
- ii) The lease rent should be kept at reasonably high level so the adequate compensation may be built for public bodies leasing the resource to private beneficiaries. It has been demonstrated that fresh water aquaculture small ponds can sustain with 8 to 10 times of the present lease rent.

b) Brackish Water Ponds

- i) The duration of the lease has to be raised about 30 years.
- ii) Since it is highly capital intensive and managerial resources make substantial difference for efficiency, it is necessary to encourage the private sector involvement in exploitation of these resources.
- iii) If it is decided to earmark a small portion of brackish water land for leasing to small and poor farmers, the lease can only be given to some agency like BFDA which in turn can construct the ponds with 1 to 2 hectare partition for leasing to small and poor farmers.
- iv) In Gujarat tidal and pH conditions indicate that pumped farms are the most suitable ones. Therefore, the lease has to be a cluster of ponds say 100 or 50 hectares because pumping resources are not divisible and there are scale economies. are
- v) In view of the low profitability (due to lack of P. Monodon seeds) the lease amount has to be small.

c) Reservoirs

- i) The leasing policy for reservoir has to encompass the entire system right from seed production and stocking and regulatory and conservation measures to harvesting and marketing.
- ii) There is a need to set up one agency to undertake the stocking, enforce conservation and regulatory measures and collect lease/royalty amount from the beneficiaries.
- iii) It is advisable to put lease duration to 3 to 5 years.
- iv) Ideally one should strive for royalty on weight basis of catch rather than flat rate. If, however, a flat rate of lease is chosen due to ease of administration then it is advisable to link it up with strong system for the stocking of seeds, and enforcement of regulatory and conservation measures.

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