

# PROJECT FORMULATION

Shyam.S.Salim

Central Institute of Fisheries Education  
Mumbai-61

## Introduction

Once the project have been identified there begins the process of progressively more detailed programme and analysis of project plans. This process includes all the work necessary to bring the project to the point at which a careful review or appraisal can be undertaken and if it is determined a good project, implementation can begin. In the preparation and analysis of projects, consideration will be given to each of the following aspects

- a) Technical aspects
- b) Institutional-organizational-managerial aspects
- c) Social aspects
- d) Commercial aspects
- e) Financial aspects
- f) Economic aspects

## Evaluation of investment feasibility and criteria for selection of fisheries projects

In order to ascertain whether an aquaculture investment project is feasible or not, a cooperative evaluation should first be conducted by both the biologist and economist. Only those species and projects that are suited to the local environment and are biologically feasible for development should be considered. Thereafter, a socioeconomic study can be undertaken. Basically, an economic evaluation includes both the production and marketing functions.

1. The first requirement for any aquaculture investment project in both the public and private sectors is the availability of suitable land and water resources.
2. The species selected for development should be adapted to the local environmental conditions and the stocking materials and suitable feed should be readily available at reasonable cost. The species should also be fast growing and culture technology should be locally available.
3. There should be no legal constraints on development (this is particularly important for private investors).
4. The products of the investment project should have a high market demand with a reasonable price.
5. The investment project should be financially lucrative compared to other investment opportunities for private investors and should also be socio-economically feasible with alternative means of achieving the national objectives for public investment. Private investors usually use profitability as a measure of financial feasibility when assessing commercial aquaculture projects, and public officials usually consider socioeconomic

benefit-cost and/or the social internal rate of return as measures of economic feasibility along with some qualitative judgments.

In order to evaluate the feasibility of an investment project in aquaculture, one must consider six criteria:

- Resource availability,
- Environmental suitability,
- Biological feasibility,
- Market potential,
- Economic feasibility, and
- Institutional feasibility,

6. It is also important to realize that many variables ought to be considered for each criterion. Each variable can be assessed as favourable, partially favourable, unfavourable, etc. Each ranking can then be scored (or coded) numerically—weighted or unweighted. Next, a general score or code can be assigned to each criterion after evaluation of all the subscores and codes, and the bio-economic feasibility can be determined by weighting the general score or code for each criterion. This procedure can be varied to suit particular projects.

#### Summary sheet for feasibility evaluation

Criteria	Variables	Rank of Suitability	Score or Code
Resources	Suitable land area	a. Available for expansion b. Limited for expansion c. Not available for expansion Sub-score or code	---- -
	Value of suitable land	a. Low b. Average. c. High Sub-score or code	---- -
	Water supply of	d. Adequate year round. suitable quality e. Seasonal shortage f. Not available Sub-score or code	---- -
General score or code for resource availability			
Environmental suitability	Water temperature	a. Well suited b. Suited after temperature is manipulated during certain periods of the year c. Not suited ---- Sub-score or code	-

	Salinity	a. Well suited b. Suited after salinity manipulation c. Not suited ---- Sub-score or code	-
	pH value	a. Well suited b. Suited after pH value is manipulated c. Not suited ---- Sub-score or code	-
	Tidal flushing	a. Well suited b. Suited after tidal manipulation c. Not suited ---- Sub-score or code	-
General score or code for resource availability			
Biological factors	Breeding	a. No breeding problem, spawning in captivity, fry available from hatchery. b. Supply of fry relies on captured wild gravid females, or on the catch from native waters, but availability of fry is not limited at present. c. Availability of fry from natural waters is limited but the breeding problem is expected to be solved in the near future. d. Availability of fry from natural waters is limited and the breeding problem is not expected to be solved in the near future Sub-score or code	---- -
	Feeding	a. Nutritional requirements of different age stages are known and appropriate feeds (artificial or natural) are available at reasonable cost b. Nutritional requirements are partially known. c. Nutritional requirements are not known Sub-score or code	---- -
	Crowding	a. Adapted to crowding conditions with no major problems in diseases and parasites, and/or with wide range of oxygen tolerance. b. Some problems with disease and parasites under crowded conditions, or with narrow range of oxygen tolerance c. Not suited for crowding conditions Sub-score or code	---- -
	Growing period	a. Less than one year b. One to two years c. More than two years Sub-score or code	---- -

General score or code for resource availability			
Market potential	Price elasticity	a. Elastic demand with ready market b. Inelastic demand but elasticity can be improved by market promotion and product development c. Inelastic demand with limited market Sub-score or code	---- -
	Income elasticity	a. Elastic demand b. Unitary elasticity c. Inelastic demand Sub-score or code	---- -
	Competition	a. No competition b. Competes favorably in price with close substitutes c. Competes unfavorably with close substitutes at the present but favorably in the future d. Cannot compete with close substitutes Sub-score or code	---- -
	Culture, religion and tradition	a. Species is currently cultured and preferred by majority of population without socio-cultural limitation b. Species is accepted by a part of the population due to socio-cultural limitations. c. Species is not accepted due to religion or tradition Sub-score or code	---- -
General score or code for resource availability			
Economic feasibility	Profitability	a. High rate of return compared with alternatives. b. Average rate of return compared with alternatives. d. Low rate of return compared with alternatives. Sub-score or code	---- -
	Socio-economic	a. Average cost per unit of protein, or protein yield per unit of land is favorable compared with alternatives if the national policy concerns animal protein deficiency. Foreign exchange earnings per unit of land or other scarce resources are favorable compared with other alternatives if national policy concerns foreign exchange earnings. Employment per unit of land is favorable compared with agriculture activities if national policy concerns employment in rural areas. Combination of all the above-mentioned conditions or any two of them is favorable compared with alternatives.	

		b. Partially favorable compared with alternatives. c. Unfavorable compared with alternatives. Sub-score or code	---- -
General score or code for institutional criteria			
Institutional feasibility	Permit	a. Easy to get permit. b. Difficult to get permit.	
	Conflicts in use	a. No conflict b. Some conflict c. Strong conflict	
	Use rights	a. With legal use right b. Without legal use right Sub-score or code	---- -

### Reasons for project analysis proving wrong

When a fisheries project analysis proves to be a poor predictor of the actual outcome of a project, it may be that the project design or implementation is at fault, or it may be that the project analyst has done a poor job of incorporating a good project design in an analytical framework.

#### 1) Poor project design and implementation:

The most common reason fisheries projects run into problems of implementation may be grouped into five major categories:

- ♣ Inappropriate technology
- ♣ Inadequate support system and infrastructure
- ♣ Failure to appreciate the social environment
- ♣ Administrative problems include those of the project itself and of the overall administration within the country.
- ♣ The policy environment of which the most important aspect is producer price policy

#### Guidelines for project preparation reports

These general guidelines will give an idea about the scope and content of a preparation or appraisal report for an aquaculture or rural development project. Most projects in aquaculture are adaptable to a fairly standard form of presentation. It gives the starting point i.e. the format. It will give the readers of the report a narrative with supporting tables and annexes that gives information and conclusion about the worth of the proposed project without confounding them with unnecessary or extraneous detail.

---

These guidelines emerge from the combined experience of the food and agricultural organisation, the World Bank and other international lending institutions. The Inter American bank has prepared a comprehensive set of outlines for many different kinds of aquacultural projects. Different elements of a project will need different emphasis depending on the kind of a project.

As far as possible the main text should present the project in a form that a non specialist can understand specialized backup information-including maps, charts, and detailed tables should be reserved for the annexes or the project file.

The principal elements of project preparation or appraisal report are outlined in the following way. It can include the origin of the project concept in the national development plan in a sector survey or by a project identification mission. It might mention the government agencies and other organisations involved in the preparation and any external assistance received. It can acknowledge the team that prepared the project and the report and can mention the period in which they work.

## **Background**

A well thought-out and properly constructed background discussion can do much towards establishing the framework of the project and making it intelligible in a broader economic and social perspective. The analyst needs to be very discriminating when choosing material for this part. The only general guidance is that there should be a clear relation between this material and the contents of other sections of the report.

### **(a) Current economic situation;**

This discussion could mention per capita income dependent on particular moments of imports and exports, balance of payments considerations and the like. It should cover only those features of recent economic developments that have a bearing on the project and on studies of the possible alternatives to the project.

### **(b) Status of the fisheries sector;**

This describes the main characteristics of the fisheries sector of the country including constraints for over all development and a description of relevant sub sector.

### **(c) Development and social objectives;**

This section might outline development and social objectives as expressed in national plans and official policy statements it could note the main elements of the national strategy for aqua cultural development and mention significant government policies including price and interest rate subsidies supply of inputs, targets for rural income regional balance and the like.

### **(d) Income distribution and poverty;**

If a project is designed to benefit a particular group of the rural people, a discussion of income distribution and poverty should be appropriate. In the background section, the information should establish a framework for the eventual justification for selecting a particular region or line of action for priority attention under the project. It should cover

---

information about income distribution on a natural basis and give a regional or social dimension to the data.

(e) Institutions related to fisheries developments

Concerned with the development and financing in the fisheries sector covered by the project. These might include the Ministry of Agriculture, the live stock development authority, NABARD etc.

**Project rationale**

Against the fully discussed background of development opportunities and constraints with in the relevant sectors, it should also explain why a particular development strategy has been decided for this project and establish the technical, social, and economic reasons for the selection of this particular project in preference to possible alternatives. This may be the best point at which to indicate the scale of the proposed project and to explain why a certain size has been chosen. Finally there should be a project risks and the steps that have been taken in project implementation to minimize them.

**Project area**

It is to present a description of the existing status of the area, where the project will be located and to give the basis from which the project starts. These descriptive data should be presented in the relevant physical, aqua cultural, social, economic, institutional and legal terms.

**(A) Physical features**

This section will deal with the main geographical and topographical features of the area and relate the area to important features of the country as a whole. The principal objective is to show that the climate and soils are suitable for the culture and live stock production proposed.

(a) Geographic location

General location of the project area with in the country is identified and then the area is defined more precisely in relation to administrative boundaries.

(b) Climate

Should cover, rainfall, including monthly and annual total, intensity and variability, temperature, humidity, evaporation, transpiration, etc. For dry land culture the amount of water and rainfall timely is needed this is also taken into consideration.

(c) Geology soils and topography

Here take into consideration land in the project its aqua cultural potential, its sustainability for culture, its need for drainage etc. Judgment will be required about the scale of the maps and land classification to be included in the report.

---

#### (d) Water resources

Surface and underground water resources should be described to the extent they are relevant to project decisions. Usually this is done from the viewpoint of culture and drainage.

### **(B) Economic base**

This section should cover the main economic features of the project region

#### (a) Aquaculture and live stock resources

The importance of this sector is the economy of the region, the proportion of people employed in these activities, the area and an approximate estimate of the value of these products may be given

#### (b) Land use, farming systems and cultures

Include information about land type, farm size, culture type species varieties brooders, and inputs used. A short description of aqua cultural practices and results achieved on experimental stations in the area may be mentioned.

#### (c) Input supply and product marketing

This gives about channels for the supply of inputs and of the facilities for marketing from production. The effects of such government policies as price supports, input subsidies, taxes on products and the like may be described and evaluated.

#### (d) Other economic activities

These include for e.g. forestry, fishing rural handicrafts and processing industries, number of families engaged in these should be given for estimation of rural economy.

### **(C) Social aspects**

#### (a) Land tenure and size of holdings

Land tenure should be discussed with reference to the proportion of owner cultivator, tenant cultivators and landless labourers. If possible the size of holding may be related to the kind of tenure. The descriptions should refer to any changes in land tenure caused by aquaculture reform and settlement.

#### (b) Population and migration

Data that illustrate aspects of population as density per square kilometer, pressure of population on the cultivated area, dependency ratios and the literacy rate, migration into urban and rural and seasonal flows may be described and quantified, A discussion of



---

employment and underemployment in the project area or near by seasonal and its relevant. Income levels discussed in the project area housing, health and nutrition of the population may be done.

(c) Social services

Social services like primary and secondary schools, dispensaries and other facilities. Disease problems their control are discussed and social services that function well and those that may need improvement are mentioned.

(d) Infrastructure

Depending on the project itself, infrastructure related components and requirements differ. Some projects are concerned exclusively with providing rural infrastructure in which case of course, the weight given to this section would be substantial. It may be relevant to quantify the length of road, annual tonnage; recent growth in traffic etc. infrastructure of project output and to the supply of inputs should be mentioned. The number of families served by various infrastructure facilities may be quantified.

### **Organisation and management**

Organization and management is intended to show which entity or entities will be responsible for the various aspects of project execution and operation and how these entities will carry out their responsibilities. The discussion should demonstrate that executing agencies have adequate power, staffing, equipments and finance. It should show that adequate arrangement between and within administrative groups responsible for various project activities. If there are deficiencies the changes and improvement required should be clearly stated.

If the administrative agency is not a government department, it may be desirable to show details about legal charts and governing board and any special provisions concerning its budget.

When there is more than one agency concerned with a project, the arrangements for coordination, joint representation on boards, joint committees and joint use of field facilities described.

It should discuss the number and caliber of the project staff whether time is enough for the operation of the project. Qualification and experience of the management staff may be noted. The needs of the project for professional and technical staff mentioned. Any necessary provision for assistance from expatriates should be noted and details about qualification of expatriates given. Some of the special requirements are:

- 1.credit administration
- 2.market structure
- 3.supply of inputs

- 
- 4.land reform
  - 5.research
  - 6.extension
  - 7.cooperatives
  - 8.farmer organization and participation.

### **Production, markets and financial results**

The report should show that the results of project actions would be sufficiently attractive financially to encourage enough fish farmers to participate.

#### **Production**

The primary benefit of an aquacultural project is usually incremental output from project forms. This is the basis for the formulation of project. Projects may introduce new technologies but it should show the incremental yield to previous technologies. In any case the assumptions about yield or live stock production both with and without projects should be fully supported.

A table showing aggregate buildup during the development period of the project may be included in the annex.

#### **Availability of markets**

It must be seen that satisfactory markets exists for the product of the project. It should be sufficient size to absorb the production proposed for the project, export the commodity involved, attention should be paid to such special situations as preferential treatment, long-term contracts or quality preferences.

#### **Farm income**

Farm budgets are fundamental to any aquaculture or rural development project analysis and will also have been referred to in connection with or farm investment. It is important to present a fully developed analysis in the project report. It include farm budgets that indicate the inflow and outflow for each major farm model anticipated in the project, out line financing needs and project the incremental net benefits the farm family may expect.

#### **Processing industries and marketing agencies**

Detailed projections of balance sheet, income statement, sources and uses of funds statement and the incremental cash flow should be included.

#### **Government agencies or project authorities**

In some project reports, especially if the project is to be administered by a largely self-supporting project authority, an analysis of finance from the standpoint of administering agency may be done.

---

## **Benefits and justification**

This is a crucial part of the project report in which all data discussed in previous part are brought together and an assessment made; that all things considered about whether to proceed with the project.

### **a. Social benefits:**

This shows the affect of income on the poorest farmers. Like

- (a) Income distribution
- (b) Employment
- (c) Access to learn
- (d) Internal migration
- (e) Nutrition and health
- (f) Other indicators of the quality of life.

Some projects may have a significant effect on the quality of rural life through improvements in access to domestic water supplies, electricity, schools etc.

### **b. Economic benefits**

Economic desirability of a project should be assessed. Economic cost and benefits are valued.

### **Out standing issues :**

All most every project will have outstanding issues that must be resolved after the preparation report is presented. These considerations may relate to project rationale policy issues affecting the project, management, staffing issues and other financing arrangements.

## **Sources of institutional assistance for project preparation**

For specialized assistance in preparing complex projects, many governments may wish to turn to one of the bilateral or multilateral international aid agencies or to engage the services of commercial consultants.

### **Bilateral assistance**

Some governments may have a special interest in assisting developing countries to prepare particular projects. Information about bilateral assistance of this kind may be obtained from the embassy or equivalent office of the prospective donor country.

### **Examples of bilateral assistance**

US Agency for International Development (USAID) Canada (CIDA), Denmark (DANIDO), etc. Multilateral assistance

---

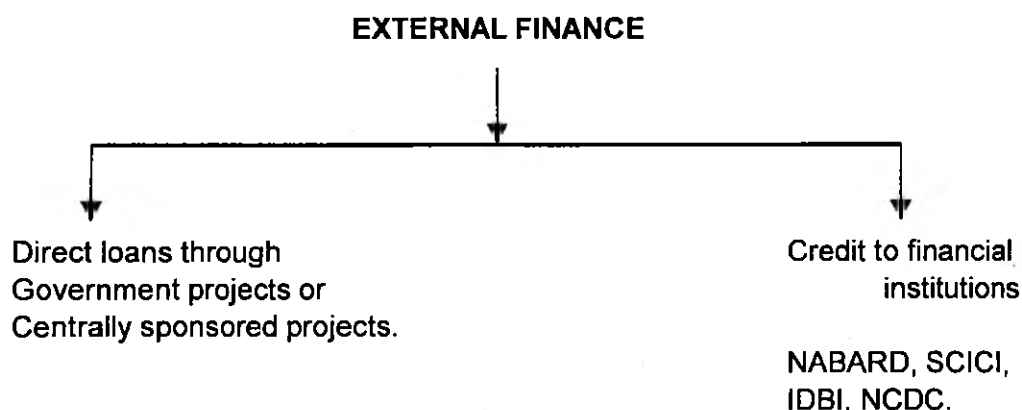
In addition to assistance agreed on by two governments, a government can enter into arrangements for assistance in preparing projects with a variety of international agencies. Examples of multilateral assistance

Common sources are World Bank and Asian Development Bank, UNDP, FAO, etc provide financial support to fisheries.

Contributions of multilateral agencies have been predominant till mid eighties. However in recent years bilateral assistance has more contribution to fisheries development in India.

World bank remains at the top among the different external sources for providing financial assistance to Indian fisheries development.

Growth of modern fisheries requires more capital advanced technology and good infrastructure, less developed countries like India would therefore depend on external assistance in order to meet the financial needs of different projects of fisheries sector.



### **Trends in fisheries financing in India**

Disbursement of finance for the fisheries sector showed an increasing trend till 1995-96 after which there was a decline in the amount of credit and number of loans transacted due to following reasons.

1. Introduction of agriculture and rural financing in large scale.
2. Environmental and disease problems faced in shrimp industry.
3. Order of Supreme Court and subsequent uncertainty of final judgement on shrimp culture.
4. Slow progress in mariculture.