

Chapter - I

Introduction and Research Methodology

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Chapter - I

INTRODUCTION AND RESEARCH METHODOLOGY

1.1 Introduction

Environment is of vital importance to all living things in general, and human beings in particular. The survival and existence of all living things is determined by the status of the environment. Water or hydrosphere is an important sphere of the environment. Even though, it has covered about 72% of the geographical area of the earth, only one percent is fresh water useful for drinking, domestic, industrial, agricultural and other purposes, and all others is a sea and ice glaciers water. Hence, preservation, conservation and proper use of especially fresh water from the water bodies like rivers, lakes, wells, bore wells is very much essential.

It is therefore dams on the rivers are constructed, and efforts are made to preserve, conserve the river water and its proper allocation and utilization as well. Dams are useful in providing for drinking water supply, irrigation facilities, electricity generation and all others. However, dams have bad impacts on the environment coupled with a very few positive also. Hence, it is very much essential to assess environmental impacts of the dams.

This enables us in determining environmental viability of the dam, which is a development project. India being an agricultural country, efforts have been made to construct dams, comprising of major, medium and minor. In the same direction, attempts are being made to construct dams in the state of Maharashtra. Phatak wadi dam is a dam constructed on the Ghatprabha river at village Phatak wadi in Chandgad tehsil of Kolhapur district. It is a medium sized earthen dam that benefits Chandgad and Gadhinglaj tehsils (34 + 12 = 46 villages) of the Kolhapur district. It is a multipurpose dam for irrigation, drinking water supply, electricity generation. It is very much necessary to examine its environmental

viability. It is against this overall background, the present research study intends to assess environmental impact of the Phatak wadi dam in Chandgad tehsil of the Kolhapur district in Maharashtra.

1.2 Statement of the Research Problem

It is a fact that all development projects have environmental adverse impacts. Likewise, the development project like dam cannot be an exception to that. Phatak wadi dam is a medium sized dam on Ghatprabha river at Phatak wadi in Chandgad tehsil of the Kolhapur district in Maharashtra state. The adverse impacts of the dam on the environment can be water logging, salinisation, land degradation, yield reduction, increase in water borne diseases including malaria, typhoid, cholera, loss of forests, loss of habitat of wild life, deterioration of surface and ground water quality, loss of fisheries, prevention of sedimentation, change in temperature of water, discharge of toxic matters and their condensation in food chain, increase in earth quakes, loss of water due to evaporation, water, soil nutrient relations, submergence of land, water level and so on. These are necessary to be assessed in the context of Phatak wadi dam in Kolhapur district. In the case of Phatak wadi dam, the submergence of land is 251 hectares. The annual evaporation losses of water is 1.70 Mcum for storage and 1.84 Mcum for utilisation. The impact like loss of forest, loss of habitats of wildlife, salinity of land are also seen in the command area of the dam. The study attempts identifying and quantifying the environmental impacts of the Phatak wadi dam during the latest period from 2006-07 to 2013-14.

1.3 Objectives of the Study

The major objectives of the present research study are as follows :

1. To study a profile of the study area;
2. To study a profile of Phatak wadi dam;
3. To assess environmental impact of Phatak wadi dam;
4. To suggest measures on controlling adverse environmental impact of Phatak wadi dam.

1.4 Hypothesis of the Study

The hypotheses of the present research study are as follows :

1. Phatakwadi dam has negative impact on the environment.
2. Negative impact of Phatakwadi dam is imposing heavy economic burden on the society.

1.5 Research Methodology

The present research study is in Economics of Environment. Hence, it requires to collect both the secondary as well as primary data. It is therefore, the present study relies on both the data, primary as well as secondary. The study period of the present study is from 2006-07 to 2013-14, especially for the secondary data. The necessary secondary data relating to profiles of study area, Phatakwadi dam, land, submergence, forest area, land utilisation, production and productivity, land salinity and water logging, water quality, water borne diseases, production of fisheries, earthquake, evaporation of water is collected from publications and official records of Public Works Department, Irrigation Department, Forest Department, Agriculture Department of Government of Maharashtra, selected villages for study for the period from 2006-07 to 2013-14. Likewise, the necessary primary data concerning land salinity, water logging, water pollution, crop yield, water level, water borne diseases, loss of wildlife habitats, soil nutrients, loss of land, etc. is collected by administering a well-structured questionnaire, interviews, group discussions and observations. This dam is beneficial to 34 villages from Chandgad tehsil and 12 villages from Gadhinglaj tehsil of Kolhapur district. To collect primary data a non-random with purposive sample of 10% from each tehsil comprising of 7 villages from Chandgad tehsil and 3 villages from Gadhinglaj tehsil, which stands at in all 10 villages is selected for the study. As the present study is an environmental impact assessment, hence, the checklist method is used for impact identification, prediction, and evaluation, which involves listing of features, which may be affected by a project. In addition to this, the methods of estimating costs from Environmental Economics namely productivity approach, human capital or forgore earnings approach, opportunity cost approach and replacement cost method are used. The collected both the secondary

as well as primary data has been processed and analysed in the light of the objectives, hypotheses, and chapter scheme of the present study. On the basis of the results of the data analysis, the conclusions have been drawn, and suggestions have been given so as to reduce negative impacts of the dam on the environment. The processing and analysis of the data is carried out by using the computer software like Excel and SPSS. The graphical presentation of some of the trends in variables also is given in the study. The important parameters to assess environmental impact of Phatak wadi dam are considered include salinity of land, water logging, reduction in yield, water borne diseases, submergence of land, loss of forests, water pollution, loss of fishery production, loss of habitat of wildlife. The study has employed the impact quantitative techniques such as percentage share, frequency distribution, and graphical presentation to analyze the data.

1.6 Chapter Scheme

The chapter scheme of the present research study is as follows :

- Chapter – I : Introduction and Research Methodology
- Chapter – II : Review of Research Studies
- Chapter – III : A Profile of Study Area
- Chapter – IV : A Profile of Phatak wadi Dam
- Chapter – V : Environmental Impact Assessment of Phatak wadi Dam
- Chapter – VI : Conclusions and Suggestions

1.7 Significance of the Study

The significance of the present research study is as follows :

1. The present study enables us to get acquainted with a profile of the study area and Phatak wadi dam.
2. The study helps in knowing environmental impact of the Phatak wadi dam.
3. This study comes out with suggestions useful to control negative environmental impact of the dam.

4. The study is helpful in formulating environmental policy especially relating to the dams.
5. The study plays an important role in providing knowledge and creating awareness among the people and society about the adverse environmental impact of the Phatakwadi dam.

1.8 Limitations of the Study

The important limitations of the present research study are as follows :

1. The present study covers the period from 2006-07 to 2013-14 only.
2. The conclusions drawn based on the primary data are relating to sample area and respondents.

1.9 Concluding Remarks

As environment is very much important to all living things in general and human beings in particular. Their existence and survival is determined by the environmental status. Hence, its preservation, conservation and protection is of vital importance. Every development activities and projects affect the environment. Dam is such a development project, which can adversely affect the state of the environment. The present study is an attempt directed towards examining impact of Phatakwadi dam on the environment. The study has an economic-social and environmental issues.