

ENVIRONMENTAL ISSUES OF SJVN

1.1 BIODIVERSITY CONSERVATION POLICY

1.1.1 The Biodiversity Challenge and Our Commitments

Respect for the values of the Earth and the resources it provides for present and future generations belongs to the key values that SJVNL lives by. We recognise that:

- Our operations have impacts that, if not properly addressed, may result in reduced biodiversity; i.e. losses in the variety of ecosystems, species and genetic material
- Action is required now to protect the variety of ecosystems as providers of services to people
- There is need for a global regulatory framework for the safeguarding of biodiversity
- There is need for knowledge of the primary and secondary effects of hydropower development activity on biodiversity

Our ambition is to be aware of risks to biodiversity from our activities, and to contribute to biodiversity conservation where we operate.

1.1.2 To meet the biodiversity challenges - we will

- Respect the Government of India (and IUCN classification, as far as applicable) of protected areas and management regulations applicable to them
- Take actions to avoid or mitigate impacts on biodiversity from our operations. This will include compensatory measures to conserve biodiversity in sensitive areas
- Consider primary and secondary effects on biodiversity in our Environmental and Social Impact Assessments
- Monitor biodiversity in connection with our activities
- Contribute to the development of a better knowledge on the effects on biodiversity of our business
- Actively support the development of frameworks on biodiversity conservation
- Engage in partnerships and stakeholder dialogue to meet our ambitions

1.1.3 In the River valleys that SJVNL is involved in developing hydropower, we will:

- Encourage a consistent dialogue on conservation of biodiversity
- Assist, as far as practicable, the State Governments and River basin Authorities in the implementation of their stated biodiversity conservation plans and programs
- Partner with other hydropower developers in the river basin in developing knowledge base on biodiversity and its linkages to community life and well being.

1.2 CLIMATE CHANGE CHALLENGE & OUR COMMITMENTS

1.2.1 We Recognize

- That the risk of long term climate change requires action now to reduce global greenhouse gas emissions
- That our own projects face potential threats from climate change and the ensuing variability in hydrological regime and landscape degradation
- That technology development is necessary for emissions reductions and development of long term sustainable systems

In SJVNL, we are committed to participate in the development of knowledge regarding the climate change issues, in our own emissions reductions and in the development of sustainable systems.

1.2.2 We will support

The National and State Governments, other relevant stakeholder and partner agencies involved in developing, managing and regulating hydropower in the river valleys that SJVNL is involved:

- To implement best practices and best available technologies in the short term
- To develop bridging solutions for the intermediate term
- To develop systems and infrastructures for the longer term

We will also support the National and State Governments to develop equitable frameworks designed to find cost efficient solutions to the potential threats arising out of climate variability and extreme climatic events.

1.2.3 The framework to make it happen

- We participate in and support the National and State endeavors to develop the commitments and the frameworks like the UNFCCC/Kyoto protocol with its flexible mechanisms, and frameworks with similar goals

- We support market based emissions trading systems to provide the necessary incentives to drive emissions reductions
- We will strive to design, develop and operate our projects to ensure reductions in greenhouse gas emission
- We will strive to design, develop and operate our projects to ensure adequate management and response to extreme climatic events

1.2.4 Our actions to meet the global climate challenge

- We will continue to develop our business, projects and operations in a way that will support global green house gas emission reductions in a life cycle perspective
- We will limit emissions from our production through better operations and through development and implementation of new technologies, wherever relevant and economical
- We will take into account the expected future cost of green house gas emissions in major investment decisions to support the choice of climate benign solutions
- We will develop a trading capacity to manage our green house gas portfolio and to provide incentives to reduce operational emissions.

1.3 ENVIRONMENT MANAGEMENT PLAN, BUDGET, IMPLEMENTATION MONITORING & RESPONSIBILITIES

1.3.1 Environmental Impact Assessment (EIA) is an important management tool for ensuring optimal use of natural resources for sustainable development, and was introduced in India initially for River Valley Projects in 1978-79. The scope of the EIA has been enhanced to cover other developmental sectors such as industries, mining schemes, energy, etc. To facilitate project proponents in collection of environmental data and formulation of environmental management plans, it is now mandatory under the Environment (Protection) Act, 1986, for 29 categories of developmental activities involving investment beyond certain thresholds (see Annexure 3)

The notification was issued on 27th January 1994 and was amended on 4th May 1994. This, it is hoped would provide an opportunity both for the project proponents and Government to assess the impact of the concerned project on the environment before it actually comes into play.

1.3.2 The purpose of Environmental Impact Assessment (EIA) is to identify and evaluate the potential impacts (beneficial and adverse) of development projects on the environmental system. It is an useful aid for decision making based on understanding of the environmental

implications including social, cultural and aesthetic concerns which could be integrated with the analysis of the project costs and benefits. This exercise should be undertaken early enough at the planning stage of projects for selection of environmentally compatible sites, process technologies and such other environmental safeguards. Such exercises will have to be decided after initial evaluation of the possible implications of a particular project and its location.

1.3.3 **Environment Management Plan (EMP)** is envisaged for each project at the time of preparing Environmental Impact Assessment Report. This EMP shall be implemented in the Project through Environment units of SJVN . There is also possibility of increasing the purview of EMP on the basis of time to time interventions and legal directives of State Govts and Govt. of India.

1.3.4 SJVNL will avoid carrying out operations in environmentally sensitive areas such as forests, national park, and biosphere reserves; it will consider environmental implications of location, terrain, and sensitive areas in impact identification and mitigate these with innovative / practical engineering solutions; to abate pollution in all its activities and operations; and Minimizing energy losses and promote energy efficiency in all activities of the Projects of SJVNL.

1.3.5 SJVNL will undertake proper management of environmental and social issues through International Management System viz. **ISO: 14001 for Environment Management, ISO: 9001 for Quality management** maintaining high standards of human resource development of staff, contractors and others associated with SJVNL's meeting the national requirements and conforming to the international norms. SJVNL will constantly review the policy and procedures consistent with its guiding principles of prevention, minimum disturbance, and innovative remedial measures.

1.3.6 **FINANCIAL / BUDGET**

SJVNL estimates that the cost of EMP , and other environment mitigation measures including specialised studies required from time to time are essential for the conservation of environment, ecology and sustainability of the project. The budget of implementing EMP including studies required from time to time shall be included in the capital budget of the project.

1.4 **ENVIRONMENT INFORMATION MANAGEMENT**

Internal and External Communication systems shall be developed with roles and responsibilities of all departments responsible for efficient implementation of Environment, Health & safety directives specified.

Corporate Environment Department has been identified as the central nodal agency for Environment Management Plan implementation to be implemented by monitoring respective projects , so all communications to other departments will be made directly by them.

The following modes of communication have been identified;

Requests for information from Project site by the corporate headquarters are routed through Head Corporate Environment to Project Environment . There should be regular and free flow of data between the two centres. All related departments at Project and Corporate shall help in sharing data / information with Corporate Environment department which will act as nodal agency for information and interface with Management and external agencies. The flow of data / information be shared in both formats i.e. soft as well as hard copy. The Director (C) will be overall incharge Director of Environment, Health and Safety activities. Corporate Environment cell shall directly report to Director (C) for these aspects.

The Monthly / Quarterly Progress Reports shall be submitted through MIS based system and in soft copy also.

1.5 MONITORING OF EMP

Environmental Monitoring is an essential component for sustainability of any hydro project Any water resources development project introduces complex inter-relationships in the project area between people, various natural resources, biota and the many developing forces. Thus, a new environment is created. It is very difficult to predict with complete certainty the exact post-project environmental scenario. Hence, monitoring of critical parameters is essential in the project operation phase. An Environmental Monitoring Programme IS designed with the following objectives:

- assess the changes in environmental conditions, if any, during construction and operation of the project.
- monitor the effective implementation of mitigatory measures.
- warning of any significant deterioration in environmental quality so that additional mitigatory measures may be planned in advance.

A summary of monitoring programme is elaborated in subsequent tables.

1.6 Summary of Environmental Monitoring Programme during Project Construction Phase

S. No.	Item	Parameters	Frequency	Location
1.	Effluent from septic tanks	pH, BOD, COD, TSS, TDS	Once every month	Before and after treatment from each septic tank

S. No.	Item	Parameters	Frequency	Location
2.	Water-related diseases	Identification of water related diseases, adequacy of local vector control and curative measure, etc.	Three times a year	Labour camps and colonies
3.	Noise	Equivalent noise level	Once in three months	At major construction sites.
4.	Air quality	SPM, RPM, SO ₂ and NO _x	Once every season	At major construction sites (total 3 stations)
5.	Meteorological aspects	Wind direction & velocity, temperature, humidity, rain	Once every season	At one of the ambient air quality sampling sites
6.	Catchment Area Treatment Plan & Compensatory Afforestation works	Works of Afforestation, landslide protection, erosion protection, benching, pasture development etc.	Twice a year	As per Annual plan of forest Department
7.	Muck Disposal & Reutilisation, Remediation works	Muck be dumped at designated site and be reclaimed as per plan to be prepared by Project ENVIRONMENT.	Daily	All construction sites in progress.
8.	Fisheries Development /Management plan	As per Plan to be submitted by Fisheries Department of the state	Monthly	At site of work
9.	Downstream water flow in river & silt	Daily flow / weekly flow of water	Daily/ weekly	At intake, upstream and down stream of intake, intermediate two points between intake and power house, down stream of power house site

TABLE

1.7 Summary of Environmental Monitoring Programme during project Operation Phase

S. No.	Items	Parameters	Frequency	Location
1.	Water	pH, Temperature, EC, Turbidity, Total Dissolved Solids, Calcium, Magnesium, Total	Thrice a year	<ul style="list-style-type: none"> • 1 km upstream of intake site • 1 and 3 km

S. No.	Items	Parameters	Frequency	Location
		Hardness, Chlorides, Sulphates, Nitrates, DO, COD, BOD, Iron, Zinc, Manganese		downstream of Tail Race discharge
2.	Treated Effluent from STP	pH, BOD, COD, TSS, TDS	Once every week	<ul style="list-style-type: none"> Before and after treatment from STP
3.	Erosion & Siltation	Soil erosion rates, stability of bank embankment, etc.	Twice a year	-
4.	Ecology	Status of afforestation programmess of green belt development	Once in 2 years	-
5.	Water-related diseases	Identification of water-related diseases, sites, adequacy of local vector control measures, etc.	Three times a year	<ul style="list-style-type: none"> Villages adjacent to project sites
6.	Aquatic ecology	Phytoplanktons, zooplanktons, benthic life, fish composition	Once a year	<ul style="list-style-type: none"> 1 km upstream of intake site 1 and 3 km downstream of Tail Race discharge
6.	Aquatic ecology	Phytoplanktons, zooplanktons, benthic life, fish composition	Once a year	<ul style="list-style-type: none"> 1 km upstream of intake site 1 and 3 km downstream of Tail Race discharge
7.	Landuse	Landuse pattern using satellite data	Once in a year	<ul style="list-style-type: none"> Catchment area
8.	Soil	pH, EC, texture, organic matter	Once in a year	<ul style="list-style-type: none"> Catchment area
9.	Catchment Area Treatment Plan & Compensatory Afforestation works	Works of Afforestation, landslide protection erosion protection , benching , pasture development etc.	Twice a year	As per Annual plan of forest Department
10.	Muck Disposal & Reutilisation,	Muck be dumped at designated site and be reclaimed as per plan to be	Daily	All construction sites in progress.

S. No.	Items	Parameters	Frequency	Location
	Remediation works	prepared by Project Environment.		
11.	Fisheries Development /Management plan	As per Plan to be submitted by Fisheries Department of the state	Monthly	At site of work
12.	Downstream water flow in river & silt	Daily flow / weekly flow of water	Daily/ weekly	At intake , upstream and down stream of intake intermediate two points between intake and power house, down stream of power house site

SJVNL understands that Project Environment Departments in consultation and coordination with Corporate Environment Department will identify significant environmental aspects in addition to aspects listed above and will submit regular monthly and Quarterly Reports to Corporate Environment and regulating bodies . Some other aspects can also be added depending upon the stipulated conditions of MOEF, GOI, State PCBs ,Forest Department etc. based on clearances / renewal of consents of the projects from time to time.

1.8 Environmental Awareness

SJVNL's Project Environment Department in consultation with Corporate Environment will promote environmental awareness among employees, suppliers and contractors.

Contractors be made aware by site Environment Engineers for proper dumping of excavated material at designated dumping sites and proper sewage and solid waste disposal mechanism in their labour and own colonies. Contractor's be provided a copy EMP by Project site incharge.

1.9 ROLES AND RESPONSIBILITIES

- **All employees** are responsible for their own health, security, environment & safety and shall cooperate and contribute to the creation of a safe, secure and healthy working environment and to the achievement of the SJVNL's environmental obligations and goals. Specifically, every employee shall execute his or her task in a secure,

safe and efficient manner in compliance with applicable requirements and guidelines.

- **The SJVNL Board** envisage for the establishment and deployment of SJVNL's policy concerning Health, Security, Safety and Environment, and for the elaboration of those related corporate steering documents as are deemed necessary.
- **SJVN's Corporate & Project units** looking after Environment, Health & Safety aspects shall address all relevant HSE issues. They are accountable for the HSE performance of their operations/activities, including an appropriate level of security, and for compliance with statutory requirements and SJVNL's own corporate requirements. They are responsible for integration of applicable HSE practices into the business processes for which they are responsible and shall show determination and commitment to HSE through active leadership, i.e. driving the continuous improvement process: setting goals, follow-up and support the HSE activities, and building a sustainable HSE culture.
- **Corporate Environmental, Safety and Social Development (R&R) Departments** shall, on behalf of the SJVNL Board, ensure that all SJVNL activities are carried out in conformity with statutory regulations and SJVNL's own corporate requirements. They shall assume ownership of the Health, Security, Safety and Environment Processes, assist in making information concerning HSE available, and facilitate cooperation, networking and the exchange of best practices in these fields.
- In cooperation with the Corporate HSE staff, **All Project Units** shall facilitate information exchange and develop common attitudes and standards across all SJVNL projects.

Health, security, safety and environmental issues shall be resolved within the appropriate organizational level, i.e. as low as possible and practical.

1.10 Line Management

General Managers / Head of Projects are responsible for Environment Policy implementation and for communicating the basic principles of this Corporate Directive to all employees in their respective projects.

1.11 Project Departments

To ensure that our business practices are in accordance with these basic principles, each Project Environment Departments shall integrate relevant Environment issues into its strategy development. Challenges related to Environment Management shall be evaluated in connection with the periodic/annual meetings on Environment Management issues with Management.

Elaborated operational guidelines for Environment policy shall be developed appropriately in due course and according to the specific

challenges and characteristics of each Project. Each Project Environment Department is responsible for developing and maintaining adequate organizational capabilities to ensure compliance with this Corporate Directive.

1.12 Corporate ENVIRONMENT Department

Corporate Environment Department is responsible for developing policy and reporting guidelines, monitoring internal performance, and for providing general support to the Project Units. Corporate Environment Department is also responsible for coordinating external reporting at a corporate level and for developing and maintaining relationships with other companies, institutions and organizations in order to share knowledge and competence. The organizations external interface with agencies outside the project area / state shall be undertaken by corporate Environment. Present organizational structure is also enclosed in the organization structures (Annexure IV & V). The proposed organizational structure of Project Environment and Corporate Environment shall be developed by P&A Deptt. SJVN separately.

1.13 No rights created

This Corporate Directive is a statement of certain fundamental principles, policies and procedures that govern the Company. It does not create any rights in any customer, supplier, competitor, shareholder or any other person or entity.

SJVNL's Environment Policy should be seen as a whole and several issues covered in this document and also should be seen in context with the other corporate policies and principles.

1.14 ADAPTIVE MANAGEMENT FOR IMPLEMENTAION OF ENVIRONMENT POLICY DIRECTIVES

1.14.1 To ensure quality SJVNL will sets out procedures and provides a work culture that encourages total involvement of all its personnel. It has consciously adopted a strategic environment within its organizational structure that is marked by a synchronized system of functioning coordinated by a Corporate Planning and Corporate monitoring group, which monitors all activities in the organization. An emphasis on an intra departmental approach to all projects, delineation of departmental responsibilities and the delegation and decentralization of authority resulting in a fast response and quick adjustment to change. A commitment to provide the best possible time bound quality service in all areas of its operations. SJVNL's institutional framework is evolved along above principles.

1.14.2 At present, SJVNL's operations are divided into Project and Corporate centre. The Projects consist of several site offices to oversee

commissioning of hydro projects; and their maintenance. The ENVIRONMENT Departments of Site / Project offices report to Corporate ENVIRONMENT Office through Head of Project.. Project Offices have overall responsibility for construction, operation, and maintenance of environment systems apart from providing necessary support services. At the Corporate level, SJVNL has a Environmental and R&R Department (ENVIRONMENT) that coordinates all environmental and social activities related to a project from conceptualisation to operation and maintenance stage related to environment and social activities.. Apart from this, Corporate ENVIRONMENT interacts with various Multilateral Agencies, State Govts., MOP,GOI and the MoEF for the environmental/forest clearance of all its projects. SJVNL deploys the required personnel with appropriate specialised skills & training, to the ENVIRONMENT Department personnel in order to reinforce its capacity whenever required. At its Project Office SJVNL has created Environmental and R&R Department to manage Environmental and Social issues and to interface between ENVIRONMENT at the corporate level and the Project offices. At the Project level, SJVNL had made the head/in-charge of the Project responsible for implementing the Environment Policy directives and related activities. .

1.14.3 SJVNL had deployed and commits to deploy personnel at appropriate levels of Organizational hierarchy with specialised professionals in the field of Environment to effectively execute the Environment Policy. They will be provided relevant training and exposure in India and Abroad in all relevant environmental aspects which will of utmost importance for achieving SJVN's Environment Policy and sustainable Development commitment.

To ensure effective implementation of its Environment Policy and to improve its specialised man power on Environment and R&R , SJVNL will focus on:

- Strengthening the implementation of the Environment Policy by deploying appropriately qualified and trained personnel specialised in the relevant professional fields.
- Reinforcing in-house capabilities by working with specialised external agencies.
- Reviewing progress of the Environment Policy internally or through external agencies.

Adopting Adaptive Management capacity for improvement of specialised personnel involved in Environment activities and also processes and procedures of implementing & monitoring Environment activities time to time. The procedures shall be developed by Corporate Environment Department in due course. SJVNL shall develop man power , enhancement for implementing various aspects on Environment as per the stated policy .