



Department of Environment,
Science & Technology
Government of Himachal Pradesh

Himachal Pradesh State Environment Master Plan

Establishing Need for Training and Capacity Enhancement

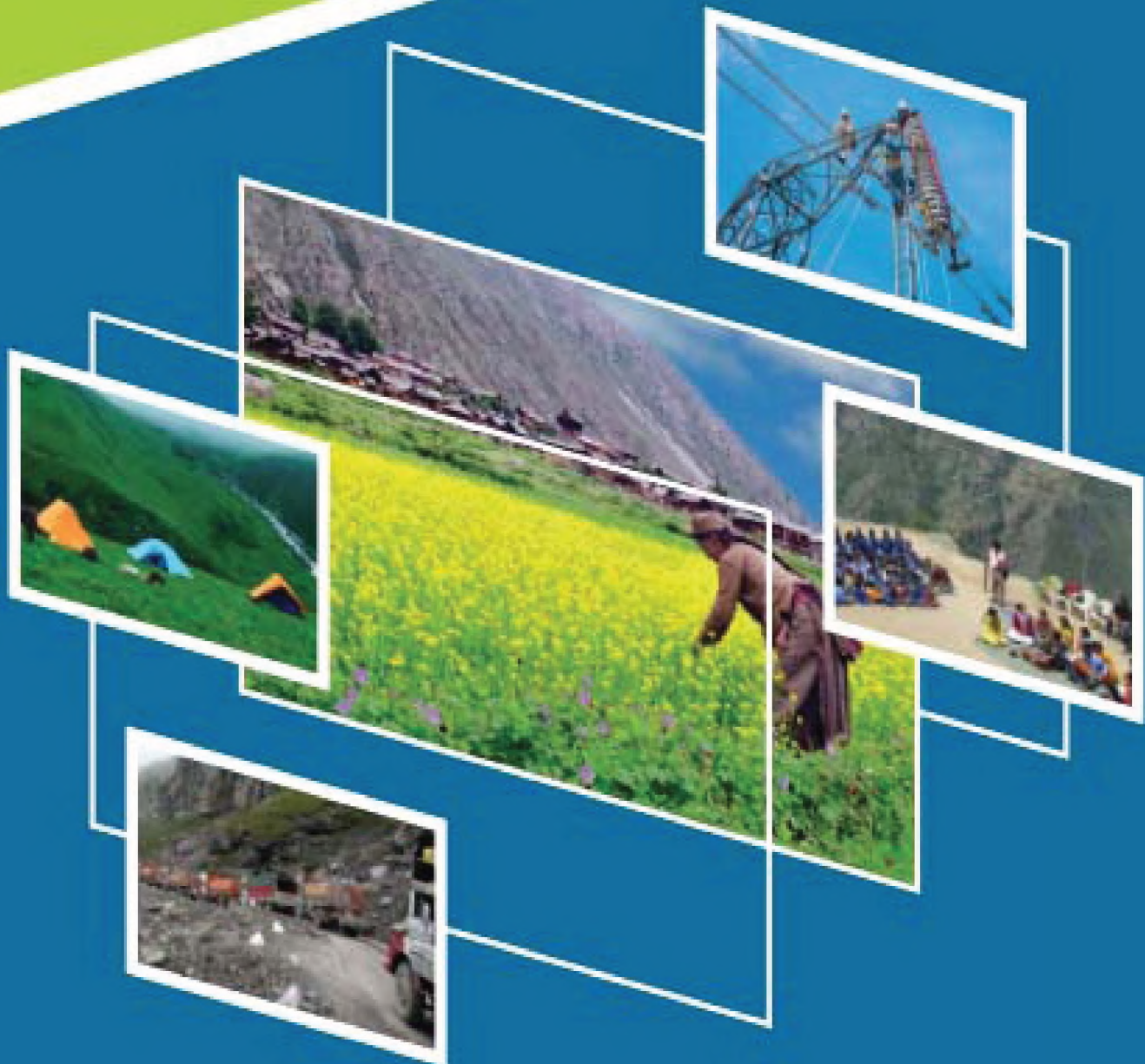


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Establishing Need for Training and Capacity Enhancement

1.1 Background

The Government of Himachal Pradesh explicitly recognises the need for training and capacity enhancement ever since it formulated the State Training Policy 2009. The Policy enjoins upon the government “a duty to ensure that it makes all efforts to improve the competence of its employees who are the principal agents of delivering all that the State strives to achieve for its people.”

The key objectives of the State Training Policy are to:

- (i) Promote better understanding of professional requirements in the given and emerging socio-economic and political environment.
- (ii) Update and enhance professional knowledge and skills needed for better performance of individuals and organizations as a whole.
- (iii) Bring about the right attitudinal orientation

Further, the State Training Policy is action-oriented. The Policy:

- Targets Class IV to Class I government officers as well as public representatives like State
- Legislators, elected members of Panchayati Raj Institutions and Urban Local bodies.
- Provides for a ‘Training Need Analysis’ focusing on separate training needs for different categories of employees.
- Provides for a Training Manager in every department, to be designated as one from among the department officers.
- Earmarks 1% of the salaries head of annual budgets as the training budget in every department and to be managed by the Training Manager.
- Accords a high priority to monitoring and guidance by setting up a State-Level Empowered

Committee headed by the Chief Secretary to review departments’ Annual Action Plan for Training, and a Training Review Committee in each department headed by the department’s Secretary.

- Promotes training through state, regional, national and foreign training universities and institutions

Adding the environmental dimension to the State’s official Training Policy is imperative because the Himachal Pradesh government gives high priority to environment protection and rejuvenation and, in recent times, to the impacts of climate change. The need to integrate economic growth with environmental protection is necessary for long-term benefit from both. State-of-the-art training of government officials in environmental management will bring a better appreciation of environmental implications especially in government departments governing high carbon footprint sectors.

The Department of Environment, Science and Technology (DEST) has identified some key sectors (see Table 1.1 below) that fall under the purview of the State Environment Master Plan (EMP). The EMP is a guiding tool to address environmental concerns across key sectors which encompass the three categories of the infrastructure sector, natural resource management-related or primary sector and the services sector. The Environmental Capacity Enhancement Component (ECEC) is an integral part of the EMP to ensure availability of requisite capacities and skills within departments for the implementation of the EMP. In addition to the identified sectors, the ECEC also covers other related sectors and regulatory bodies.

Table 1.1: Key sectors identified by the EMP and their carbon footprint potential

Infrastructure	Natural Resource Management (NRM)	Services
<i>Highest carbon footprint potential</i>	<i>Low carbon footprint with carbon mitigation potential</i>	<i>Moderate carbon footprint potential</i>
<ul style="list-style-type: none"> ♦ Roads, highways, rural roads & transport ♦ Hydropower (generation transmission and distribution) ♦ Tourism, Ecotourism + Art, Architecture and cultural Heritage ♦ Industry ♦ Mining and Geology ♦ Irrigation and Public Health ♦ Health ♦ Market infrastructure (including horticulture and agriculture) ♦ Rural and urban planning 	<ul style="list-style-type: none"> ♦ Agriculture ♦ Horticulture ♦ Animal husbandry & Livestock ♦ Forests, Wildlife & Wetlands ♦ Fisheries 	<ul style="list-style-type: none"> ♦ Education & Vocational Training ♦ IT and Telecom ♦ Livelihoods ♦ Waste Disposal

1.2 Context

There are several examples that reveal how the Himachal Pradesh government gives high priority to environmental conservation and rejuvenation across sectors. The State initiated the setting up of the Trans-Himalayan Development Council to protect the environmental resources and ecological balance of the Himalayan region. The State has also been pro-active in initiating the process for claiming carbon credits. Government policies promote organic agriculture and give priority to setting up of pollution free, eco- friendly and employment-oriented industries in the State. Other initiatives include mixing used plastic with bitumen to make roads, promoting rain-water harvesting and solar heating on public buildings, segregating garbage at collection points and making incorporation of Environmental and Social Management Framework (ESMF) core to the preparation of every Detailed Project Report (DPR) for all civil and infrastructural works.

The Himachal Pradesh government was among the first to do an energy audit of its own Secretariat building and to take steps towards lower and more efficient energy consumption. The State has initiated the inter-state Trans-Himalayan Development

Council for environmental conservation and ecological balance of the Himalayan region. It is looking at adopting environment-friendly waste management systems and land use change as potential areas for earning carbon credits under the CDM. Himachal Pradesh is also poised to emerge as the first carbon neutral state in the country, and indeed in Asia. Interestingly, it is also the first State to start the practice of all school students taking a pledge with their morning prayers to protect their environment.

In Himachal Pradesh in particular, the state economy is intertwined with its environmental resources, be it the agriculture and allied sectors, tourism or hydro-power. The need to integrate economic growth with environmental protection is necessary for long-term benefit from both. The State's Climate Change Policy, in a bid to preserve natural resources, also has a cross- sectoral focus, encompassing primary, infrastructure and service sectors. The Climate Change Policy identifies energy efficiency and conservation, renewable energy, gas, transport, industry, afforestation and land restoration for green house gas (GHG) mitigation as the main areas where mitigation or adaptation measures are to be incorporated.

The State has embarked on this initiative because the growth of the carbon footprint sectors is high within the State. The State is committed to economic growth and gives priority to industrialization, tourism development and hydel-power generation with a view to generate employment and higher GDP for the State. Some of the other growth areas include construction and pharmaceutical and chemical industries. According to a recent study¹, investments in manufacturing sectors like textiles, pharmaceuticals, precision engineering, automobile and automotive components have been growing. With regard to construction, housing projects and commercial complexes have seen a sharp increase.

The air temperature in the state is one degree centigrade higher than in the year 1970. The average temperature of Shimla has increased by about 1 C during last 100 years. The average snowfall in the state decreased from 272.4 cm in the year 1976-80 to 77.20 cm in the year 2001- 04. Climate Change will affect crop production, water-stress, glacier retreat, floods and droughts, biodiversity, forest health, infrastructure, hydro-projects, health, etc.

Source: HP ENVIS Newsletter, Jul-Dec'08

Environmental management is not core to the training mandate of these high carbon footprint departments. In fact, there is a tendency to isolate environmental considerations from the management of everyday operations. Experience in other countries (e.g. Republic of Korea, Malaysia, China, etc) reveals that imparting basic environmental training to officers across sectors helps the government operate in a more environment-friendly manner.

There are also sectors of the economy that are directly dependent on generating revenue from natural resources. These

include the Departments of Agriculture, Animal Husbandry, Environment, Forests & Wildlife, Fisheries, Irrigation and Public Health and Land Revenue. Related departments include Rural Development and the Panchayati Raj. Training women and men in adaptation will be key in these sectors. Significantly, adaptive agriculture also leads to reduction of emissions from agriculture and this interface will also form part of the training.

In the wake of climate change, training programmes addressing both mitigation and adaptation are required. Mitigation aspects will dominate in key high carbon footprint economic sectors while adaptation aspects will dominate in the trainings given in key primary, or natural-resource dependent, sectors. Service sector departments will need trainings to address both mitigation and adaptation aspects depending on the nature of their operations.

1.3 Purpose

The overall purpose of this capacity enhancement component is to:

- ③ Assess skills and identify gaps in environment management skills within the department of environment and sectors listed in Table 1.1 and
- ③ Prepare training plans indicating target audience, skill level, broad indications of type and extent of environment management training required.
- ③ Identify areas for training & capacity building & institutional responsibility
- ③ Proposed area of training and scope of training programs.
- ③ Identify institutions in India, who could impart such kind of training.

The purpose of the ECEC is to ensure that there are adequate skills and capacities within the relevant departments because each of the sectors will be either guided by, or be influenced by, the sector-specific guidelines which have been formulated under the EMP. These EMP guidelines also encourage inter-

¹ Himachal Pradesh Infrastructure Development Board (HPIDB), 2008, Draft Report: Study on mapping the existing skill levels of the employable youth and the skill gap in Himachal Pradesh by ICRA Management Consulting Services Limited

sectoral coordination between various state departments and other relevant agencies to ensure enhanced outcomes. The ECEC will also address capacities for inter-departmental or inter-agency coordination. The Environmental Capacity Enhancement Component (ECEC) will add value to the State Training Policy 2009 by incorporating environmental dimensions to attain the following training objectives:

- ③ Promote better understanding of professional requirements as they relate to strategic environmental and climate change issues within the sector and across sectors.
- ③ Update and enhance professional knowledge, skills and competencies needed to incorporate environmental issues and environmental management into all projects, programmes and specific activities, including mitigation and adaptation measures.
- ③ Build the right attitude to conserve environmental resources and work towards sustainable development.

The purpose of the ECEC is to invest in state-of-the-art capacity enhancement and training and to link up vertically, from the local to the global. For this, learning from best practices and good examples from across the country and the world is necessary. This ECEC will, as required, seek collaborations with progressive training institutions within India, the region and globally.

1.4 Training Coverage

Given the cross-sectoral nature of environmental impacts and the need to integrate environmental concerns at every level, the ECEC will assess training needs at all levels and address these by delineating a framework for a training plan for all relevant sectors/ departments. A special budget for these training will form part of the project cost and will be incorporated into the annual plan of the departments.

Within departments, training plans will be made for different rungs of civil servants - from Departmental Heads who set the agenda to senior government officers and field-level staff to cover all decision-making, operational and administration sections. The ECEC will also assess capacity enhancement needs and address these within planning and implementation bodies like the State Planning Board and the Pollution Control Board as well as in regulatory bodies. Trainees from the service sector will include those working in the departments of health, education, telecom and postal services.

Besides all government departments, the ECEC will include elected representatives, local community groups and civil society groups. Elected representatives from rural Panchayati Raj Institutions as well as from Urban Local Bodies will be eligible for trainings held under this ECEC. Community-based groups will include Mahila Mandals, youth groups and user groups like forest or minor watershed committees and these groups will work alongside government departments to design, implement and/or monitor government programmes and schemes. Civil society groups or NGOs partnering government through consultative committees or for implementation of programmes will also be included under the purview of this ECEC. Special attention will be made to keep a gender balance in the profile of trainees and recognize gender dimensions of training modules.

Several countries, are now realizing the importance of imparting environmental training to the judiciary. This is becoming essential given the inter-departmental collaborations and regulations required for use of environmental and natural resources as well as sound knowledge of environmental laws for proper implementation of programmes and schemes that involve a multitude of stakeholders laying claim over the same of environmental and natural resources. The Judiciary also performs the critical role of monitoring regulatory bodies in conflict situations and environmental

protection is often a factor in this cases. Figure 1.1 identifies the different stakeholders that fall under the purview of this ECE Component.



Figure 1.1: Stakeholders for Capacity Enhancement

2.1 Gap Analysis

A gap analysis of training needs across departments reveals that environmental issues are not part of the annual training

plans of most departments. In some departments like the PWD and Urban development there are components that focus primarily on technical training and not, for instance, on conceptual understanding of environmental issues or competencies to incorporate environmental dimension into management tasks like ensuring a green supply chain for specific products. The training head of the PWD department, for instance, said that the department runs several environment-related technical training programmes but these are not focused on environmental resources. There is inadequate knowledge for developing inter-departmental linkages for mutual use of natural resources.

The table 2.1 below gives the current status of training areas across departments, based on the three categories of sectors related to (i) natural resource management, (ii) infrastructure development and (iii) services. The table then flags future areas of training based on a gap analysis.

Table 2.1: Gap Analysis of Departments across Sectors

Departments/ Sectors	Current Training Focus	Gap Analysis
Natural Resource Management-related	<ul style="list-style-type: none"> ⌚ Presence of trained experts on environmental issues 	<ul style="list-style-type: none"> ⌚ Focus is on productivity, outputs and yields not balanced with an equal emphasis
E.g. Agriculture, Animal Husbandry & Dairying, Fisheries, Environment, Forests & Wildlife, Horticulture, Fisheries, Irrigation and Public Health, Land Revenue department, State Pollution Control Board, etc	<ul style="list-style-type: none"> ⌚ Technical and skill building environmental courses. Eg. Insect and pest management; marketing of products; fodder development; role of forestry in watershed management ⌚ Some training of elected representatives on disaster management and understanding climate change 	<ul style="list-style-type: none"> ⌚ on conservation and rejuvenation of environmental and natural resources. ⌚ Implications of future trends - increasing population pressure, the imperatives of development and climate change - are inadequately understood and addressed though all these are putting additional pressure on the quantity and quality of natural resources. ⌚ Training courses follow a sectoral approach and not an eco-system approach. Forest department conducts some excellent training courses but needs to strengthen them through an eco-system approach ⌚ Training does not take into account women's traditional knowledge on agriculture and allied activities (crop varieties, animal species, seed selection & storage, bio-pesticides, etc), nor adds value to it ⌚ Legislators are not trained in adaptation measures – neither on local measures based on traditional knowledge and practice that can be scaled up successfully, nor on new measures. ⌚ Training on participatory social audit needed for larger impacts and effective monitoring & evaluation

Departments/ Sectors	Current Training Focus	Gap Analysis
Infrastructure-related Eg. PWD, Industries, Power, Transport, Mining, Chemicals & Pharmaceuticals, Tourism, IT and Telecom, Urban development, Waste Disposal etc.	<ul style="list-style-type: none"> ⌚ Presence of at least one trained expert on technical environmental issues. Training primarily on green technologies. Eg. plastic-bitumen roads, use of plantations to stop soil erosion, lining roads with trees, mandating setting up of dumping sites at all PWD works and using bio- engineering solutions in sewer works ⌚ Some training of elected representatives on clean & green cities including solid waste management, use of public water purifiers for tourism and general public and clean polythene campaign ⌚ Some training on social audit. 	<ul style="list-style-type: none"> ⌚ Designated officers for environment too few usually just one – and located only at the headquarters, not in field/implementation areas ⌚ No focus on resource constraints and rejuvenation of environmental and natural resources as integral to operational plans. Inadequate incorporation of environmental issues in trainings of regulation bodies though these bodies are key to maintaining health of environmental resources ⌚ Trainings are sectoral and project-focused, not taking a macro or a 'programmatic' view. Eg. Need to take the entire river basin as a parameter for each hydro-power unit. ⌚ Trainings do not include backward and forward linkages which are necessary for environmental considerations. Eg. Mining plans, construction of roads with adequate drainage ⌚ Elected representatives are not exposed to some of the best practices in eco-friendly urban development and management that are available in India and particularly in Latin American countries. ⌚ Inadequate attention to use of state-of-the-art technology like GIS for planning and monitoring ⌚ Inadequate knowledge about cross-sectoral linkages, understanding of convergences. Attitudinal change required for more ⌚ pro-environment decision-making and management practices
Services-related Health, Education, Waste Disposal, IT and Telecom, Livelihoods, etc	<ul style="list-style-type: none"> ⌚ Teachers' training plan linked to the school curriculum and pedagogy ⌚ NCERT books up-to- date; not State Board books ⌚ Health-related trainings focus on current diseases in current locations, inadequate for developing needs like spread of malaria and water-borne diseases due to climate change ⌚ Health department legally committed to proper disposal of medical waste 	<ul style="list-style-type: none"> ⌚ Teachers's training to be linked to school subject matter on environment/climate change with up-to-date ⌚ Inter-departmental linkages. Eg. Environmental health, Land use and waste disposal, on-site environmental training for teachers on environmental resources across sectors ⌚ Backward-forward linkages in service industry. Eg. solid waste management with backward linkage of segregation and forward linkage of using compost, etc. ⌚ Inadequate environmental training to members of PRIs, gram sabhas and Urban Local Bodies; expansion of programmes like CLAP required. ⌚ Training in central management policies like green procurement and promoting environmental citizenship among staff and beneficiaries of programmes.

A major training gap across sectors is lack of cross-sectoral or cross-departmental training with regard to environmental and climate change issues.

2.2 Process to Assess needs

The above analysis of the current situation reveals the necessity of this Environmental Capacity Enhancement Component (ECEC) of the Environment Master Plan and also identifies certain gaps in training plans of departments across infrastructure, services and natural resources management sectors. Each department will follow the process shown in Figure 2.1 below to identify the future needs of the department, assess the in-house current sets of skills and competencies and build a training plan based on this information, complete with timelines and budget lines.

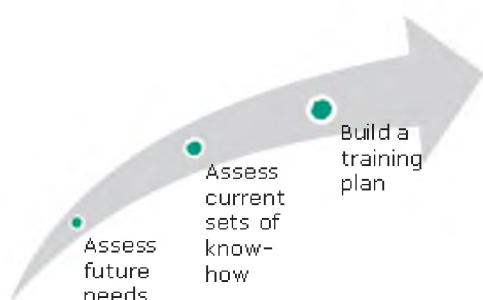


Figure 2.1: Process for Assessing Needs

An assessment of the future needs has been carried out based on the sector specific actions identified and approved by line departments. This assessment describes the areas of training as summarized in **Annexure 1**.

In the rapidly changing scenario, it is necessary to set a high benchmark for each department with regard to environment-responsive operations.

Based on the existing/current sets of know how, the coordinating department will be able to design the program in collaboration with collaborating agency in a respective area. In order to achieve this, it would be necessary to undertake a preparatory planning exercise using tools such as desk research, exposure trips and brainstorming meetings/seminars with research institutes/universities, training institutes, other stakeholders and representatives

from relevant national/state government departments. DEST will provide the technical support to coordinating agency needed in this planning exercise.

The above planning process is critical because of the varied nature of training that may be required by different departments simply because environmental, including climate change, issues are cross-sectoral in nature and encompass a wide range of knowledge, skills and competencies. There is, for instance, the need to understand the purview of the various environmental laws as they relate to a particular department's area of work as well as the competing priorities for the same natural resources, or the political economy governing the use of environmental resources in a state or in a specific sector.

Besides identifying the knowledge areas, departments must also classify these areas based on their importance and the timescale in which they will be required (see Figure 2.1 below). This will help the department prioritise training courses and groups of trainees. This will also help the department to decide whether the need is for an orientation course or a refresher or an advance training course.



Figure 2.2: Prioritizing Knowledge Areas

Once the training needs are prioritized in different departments, the departmental Training Managers, supported by DEST, must make a training plan delineating the target audience, skill level and broad indications of type and extent of environmental management training needed.

2.3 Approach to capacity Enhancement

The approach to Capacity Enhancement on environmental issues will be within the legal parameters of State Training Policy. Key steps that will define this approach include:

Legal: Amending Government Notification

The Environmental Capacity Enhancement Component will be mandated through the State Training Policy 2009 by amending the Policy notification to include environmental concerns under relevant sections:

- Include environmental change under Section II, 'The Need' for the State Training Policy
- Include environmental responsiveness and environmental awareness under Section III,
- 'Training Concerns' of the Policy
- Include emerging environmental imperatives under Section V, Sub-section (i), 'Training
- Objectives' of the Policy
- Additional Chief Secretary (Environment) in the Monitoring and Guidance Empowered Committee on Training for the purpose of training required for the implementation of the State Environment Master Plan
- Include environment and climate change as one of the 'Thrust Areas' under Section XIII of the Policy

Strategic focus on High carbon footprint Sectors

In order to ensure the Himachal Pradesh government's vision of setting up industry in a manner that is environment-friendly while generating income and employment, special focus in training will be given to the high carbon footprint sectors. These include:

- Power
- Industry
- Transport
- Energy
- Rural Development & Panchayati Raj Institutions
- Urban Planning & Urban Local Bodies
- Etc.

Specific areas of training in these sectors are described in Annexure 1.

State-of-the-Art Modules

In order to keep pace with the fast rate of change in the State's economy, society and status of environmental resources, including climate change impacts, this ECEC will invest in state-of-the-art training modules. This will be done in collaboration with institutes and universities in India and abroad with the objective of keeping all the trainees & stakeholders including government officers and public representatives like MLAs and members of Panchayati Raj institutions and Urban Local Bodies abreast of current and future trends in environmental management not only with the state but also at the national and global levels. The scope of these training modules under each sector can be designed based on specific scope identified under each area as summarized in **Annexure 2**.

Continuous and Progressive Levels of Training

Training and capacity enhancement will be done at three levels – basic or orientation, refresher and advanced training – to ensure continuous upgradation of skills and competencies and specialization in niche areas. Performance and output are directly related to the competencies and skills and hence these need to be upgraded continuously (see Figure 2.3). Women and men will participate in all trainings at all levels.



Figure 2.3: Continuous and Progressive up-gradation of Skills

The time of duration of each module can be identified based in department's need.

Interdepartmental Training

A cadre of inter-departmental trainers will be created from within the trained officers across departments to act as a guidance and support group for training institutions selected to impart the various trainings and the publication of primers and training manuals. DEST will be the coordinator for this cadre of trainers. This cadre will

- Encourage teamwork and collaboration on sustainable development across departments
- Coordinate cross-cutting issues related to preparation of sustainable development strategies of departments and their initiatives and
- Ensure a coherent approach to the State government's sustainable development agenda

3.1 Levels and types of training

This Capacity Enhancement Component envisages **three training levels** as shown in Figure 3.1 in every department linked to presence of different competencies within each department. The administrative head will be the designated Training Manager. Basic or orientation training will be given to all operational staff. Specialist training will be

given to 2-4 officers within the department and super-specialist training will be given to at least one person in every department. The basic courses try to provide wide-ranging information essential for incorporating environmental dimensions in general policy implementation.

As far as possible, competencies of existing officers will be built. A system of recruiting interns from relevant universities/research institutes will be instituted to give a fillip to this arrangement, ensure that the trained staff remains up-to-date with latest breakthroughs. This will also encourage active participation of young women and men in building a more environment-responsive governance system. Figure 3.1 illustrates the need to invest in different levels of competencies in every department.



Figure 3.1: Levels of competencies in every department



Figure 3.2: Levels of Officers and Training Plans

Capacity enhancement on environmental issues requires training at several levels because of its cross-sectoral nature and because the learning curve is still high for everyone. The following types of training will define the training modules:

- Conceptual knowledge

- Technical skills
- Performance-linked competencies and
- Attitudinal change.

Innovation and out-of-box thinking will be an integral part of this Capacity Enhancement Component on environmental issues. This is needed given the cross-sectoral nature of these issues, barriers to adoption of new skills, competencies and even new technologies and the rapid pace of developments in science and technology related to environmental management. Some of the key challenges that different types of training will endeavour to overcome include:

- Identifying new forms of cooperation to work across departments to deal with cross- sectoral mandates. For instance, Rural Development department collaborating with DEST to train elected women leaders in the PRIs on public participation in relevant decision-

making bodies to protect, nurture and rejuvenate their environmental resources. For example, at public hearings and as members of forest or micro watershed committees.

- Harnessing GIS and other IT-enabled scientific technology for everyday operational work across departments. For instance, for soil and water surveys and monitoring and for promotion and management of tourism in an environment-friendly manner.
- Changing long-held attitudes to overcome barriers in adopting new ways of working and new technologies. For instance, learning to give equal importance to environmental aspects in management plans.

Analysis of areas and scope described in annexure 2 shows that preferred training module with have broad impacts as described in Table 3.1.

Table 3.1: Preferred Training Module

Sector	Examples of Capacity Enhancement Modules	Impacts
Infrastructure	<ul style="list-style-type: none"> • Mitigation primary focus • Environmental resources issues like air/water/ noise quality; soil and water conservation and soil and water pollution; biodiversity; forest eco-systems; and ecology and environment. 	<ul style="list-style-type: none"> • An enhanced understanding of the impact of their work on their project sites • Take more effective mitigation measures • Make ESMF component in DPR more effective
Natural Resource Management	<ul style="list-style-type: none"> • Shifting tree lines and the imperative of afforestation • Diverse activities, apart from using vermicompost, for organic agriculture • Incorporating climate data in the Agriculture Economics and Statistics outputs • Need to integrate climate concerns into all operational areas incorporate results from • latest research on agriculture and weather prediction models into everyday operations 	<ul style="list-style-type: none"> • Improved handing of environment-development trade-offs • Developing more robust stakeholder partnerships with community-groups, collaborative government departments or industry houses and associations. • More gender-focused modules taking into account specific tasks undertaken by women and men • in agriculture and allied activities.
Service	<ul style="list-style-type: none"> • Environmental health strategy and programme • Health needs in situations of disasters like earthquakes and landslides • Environmental laws • Environmental education for teachers 	<ul style="list-style-type: none"> • Prioritizing environmental health • Promoting environmental citizenship • Higher Human Development Index • Economic benefits

Budget

Budget for these training will form part of the projects costs and will be incorporated into the annual plan of departments. Budgets for the above training will be made available from departments' own training budgets as well as from budgets of project proposals where relevant. multilateral donors like the World Bank and the United Nations also have training budgets for priority sectors. Central ministries, including the Ministry of Environment and Forests, also have training budgets that will be accessed.

3.2 Training Institutions

The Himachal Pradesh Institute of Public Administration (HIPA) will retain its position as the 'apex' training institutions in the State. However, DEST will help upgradation of HIPA to augment courses on environmental awareness and other relevant issues. Some of the other interventions will include:

- Sharing of best practices as training modules in universities/college departments
- Production of specific primers for different audiences; technical support to be given by DEST
- Long term collaboration with national institutions like NIDM to influence and incorporate more relevant courses across departments
- Tie-ups with foreign college departments/ universities

Sector specific indicative list of training institutions of national repute is given in **Annexure 3**.

Some Indian Institutions to tie-up for environmental management training:

- National Institute of Disaster Management (NIDM), New Delhi
- Centre for Environment Education

(CEE), Ahmedabad

- College of Fisheries, Mangalore
- Central Marine Fisheries Research Institute, Kochi
- Indian institute of Remote sensing, Dehradun
- National Environmental Engineering Research institute (NERI), Nagpur
- National Remote sensing Agency, Hyderabad
- Indian Institute of Ecology and Environment, New Delhi
- Forest Research Institute, Dehradun
- Centre of Environmental Education, Ahmedabad
- Centre for Science, Development and Media Studies (CSDMS), Noida
- Central Road Research Institute (CRRI), New Delhi
- Environment Protection Training and Research Institute, Hyderabad
- Tata Energy Research Institute (TERI)
- Kerala Forest Research Institute (KFRI) Trichur, Kerala
- National Institute of Rural Development, Hyderabad
- Council Of Scientific & Industrial Research
- Central Building Research Institute (CBRI),
- Central Leather Research Institute
- Central Road Research Institute (CRRI)
- Indian Institute Of Petroleum (IIP)
- Industrial Toxicology Research Centre (ITRC)

This Environmental Capacity Enhancement Component will also work with foreign governments and foreign university and research and training institutes to enhance capacities of officers and other stakeholders in Himachal Pradesh. Some of the progressive government with whom such collaborations can be made include Malaysia, China, Korea, Singapore and Germany. Some of the institutes for tie-ups include:

- The National Environmental Research and Training Institute (NETI), Korea
- Singapore Environment Institute
- Stockholm University
- Duke University, North Carolina
- United Nations agencies including the UN Institute for Training and Research (UNITAR) and UNEP
- World Bank

In urban development, there is great potential of learning from Latin American countries which have shown remarkable progress in meeting challenges of urbanization and ensuring environmental sustainability. Though language is a major barrier, the Latin American Green Cities Index (researched by Economist Intelligence Unit) compares 17 cities based on their environmental performance and policies during 2008-09. The list is led by the city of Curitiba ('well above average' and followed by 'above average' cities of Belo Horizonte, Bogotá, Brasília, Rio de Janeiro and São Paulo. Those rated 'average' include Mexico City, Monterrey, Porto Alegre and Santiago among others. This was based on

the 30-city European Green Cities Index wherein the highest ranks were given to Copenhagen in Denmark, Stockholm in Sweden, Oslo in Norway, Vienna in Austria and Amsterdam in The Netherlands.

Active industry participation in training will also be encouraged to design and deliver industry- environment related training modules. Industry associations will be encouraged to take the lead in working with the government on this front.

3.3 Training Schedule

This Capacity Enhancement Component envisages the training of the following number of women and men in specific departments over the next three years. After the acceptance of the Environment Master Plan, basic training, to be coordinated by DEST with HIPA, will be given to all staff in key departments over the sectors listed in Table 1.1 above. Simultaneously, further trainings will be planned for ML, HL and VHL officers.

Timeline	Departments	Level of Course	Course and Institute	Level of Officers (JL, ML, HL, VHL)	Number of Trainees	
					Male	Female
0-6 month	Health	Basic	Environmental Health/RedR, Pune	ML		
6-12 month	Education	Basic	Environmental Education/CEE	JL		
12 – 18 months	Education	Basic	Environmental Education and Grassroots Comics/WWF	JL		
18- 24 months		Basic				
24 – 30 months		Basic				
30 – 36 months		Basic				

4.1 Framework for Guidance Role

(a) The Additional Chief Secretary (Environment) will sit on the State Empowered Committee on Training to oversee, monitor and guide the Environmental Capacity Enhancing Component under the State Environment Master Plan.

(b) DEST will set up a Regulatory Gap Analysis Subcommittee with the function of undertaking a periodic gap analysis for ensuring proper implementation of the State Environment Master Plan. This body will function in the form an inter-departmental Sub- committee of the State Level Empowered Committee on Training under the State Training Policy. Additional Chief Secretary (Environment) will head this Regulatory Gap Analysis Subcommittee. This sub-committee will decide the terms of reference for itself and will give periodic reports to the Empowered Committee.

(c) DEST will oversee the implementation of the ECEC by supporting, guiding and coordinating at different levels. The mandate of DEST will be to:

- Co-ordinate needs assessment
- Support and facilitate other departments to select appropriate training modules/courses/institutions
- Provide assistance in drawing up relevant capacity enhancement programmes

Assist in selecting relevant courses for specialist and super-specialist officers

- Facilitate faculty development & training
- Facilitate development of

The Department of Environment & Scientific Technologies has the mandate to improve the effectiveness of environmental management, protect vulnerable ecosystems and enhance sustainability of

teaching aids including best practice documents and primers on relevant issues for all departments

- Coordinate with industry associations/industry houses for designing and implementing relevant training programmes
- Develop and coordinate a cadre of horizontal staff-to-staff training programmes within departments and across departments
- Help integrate training programmes with relevant state institutions like KVKs and agricultural universities
- Develop a programme of internship where trainee government officers can spend 1-3 months doing on-the-job training with Panchayati Raj Institutions or Urban Local Bodies or Community-based Organisations like Mahila Mandals, youth groups or user groups
- Facilitate cross-learning between departments through innovative programmes like internships, swapping of jobs for a limited period, shadowing for a limited period and exposure trips to other departments, to training institutes and universities in India and abroad as well as to working sites in India and abroad
- Facilitate adoption of case study approaches and hands-on learning capsules wherever possible Incorporate a feedback mechanism to monitor and review every capacity enhancement training module imparted and close this through making improvements
- Support, guide and give technical help to all departments on any other related area

DEST will also work in conjunction with the Training Managers in each department to monitor the training plan and revise it as necessary, with mutual agreement.

Continuous and state-of-the-art training of DEST personnel is critical to the proper implementation of this Capacity Enhancement Component and the support

function to be provided by DEST to all other government departments. DEST will draw up a capacity enhancement plan for its department for all levels of officers so the Capacity Enhancement Component can be effectively implemented.

4.2 Monitoring indicators and Evaluation criteria

A menu of Monitoring Indicators have been developed by DEST to measure the progress made after imparting environmental capacity enhancement modules to government officials, elected representatives and other stakeholders. The courses will be evaluated by trainees and graded against the following indicators. Grading will be done from 1 to 5 - giving 1 for the lowest score and 5 for the highest score.

Each department may select all or some of the indicators to measure success. More indicators may be added to the Menu progressively, where needed and/or for specific courses and training modules.

Monitoring Indicators

- Understanding sustainability - does it teach environment sustainability?
- Does it incorporate future trends?
- Process of delivery/learning
- Adaptability to real life situations
- <http://www.unescap.org/drpad/vc/conference/peer.htm> - 3Participation of the community
- <http://www.unescap.org/drpad/vc/conference/peer.htm> - 10Location adaptability - can the project be done in other places?
- <http://www.unescap.org/drpad/vc/conference/peer.htm> - 4Participation of resource owners/users
- <http://www.unescap.org/drpad/vc/conference/peer.htm> - 11Socio-cultural adaptability.
- <http://www.unescap.org/drpad/vc/conference/peer.htm> - 5Partnerships

between various stakeholders for delive

Himachal Pradesh is also an educational hub. With the implementation of this Capacity Enhancement Component, Himachal Pradesh can strive to be the educational hub for environment- responsive skills and competencies across sectors.

This Capacity Enhancement Component is critical to the implementation of the State Environment Master Plan. This plan ensures environmental responsibility of the civil service and elected representatives as well as endeavors to contribute constructively to sustainable development of Himachal Pradesh.

Environmental training is critical in a State where over two-thirds of the geographical area is classified as forest region. The state is also a storehouse of biodiversity and is home to over 3000 species of flora. Himachal Pradesh is now one of the most dynamic hill states in India scoring significantly high on human development indicators. It holds vast untapped potential of tremendous progress with its resources of forests, fruits, minerals, natural assets for tourism, rich culture and hydel power. The Capacity Enhancement Component will add value by readying women and men trained in environmental governance.

Interestingly, though new towns are developing in Himachal Pradesh, the state has the highest proportion of rural population in the country. This population primarily lives off natural resources. Yet, the state is among the top on economic indicators. The Capacity Enhancement Component will go a long way in ensuring that Himachal Pradesh continues to develop while preserving its natural resources.

Annexure – 1

Proposed Areas for Training and Capacity Building for Sectors

- 1.0 INFRASTRUCTURE SECTOR
- 1.1 TOURISM, ART, ARCHITECTURE & CULTURAL HERITAGE
- 1.2 PORTABLE WATER SUPPLY
- 1.3 SEWAGE
- 1.4 HEALTH
- 1.5 ROAD & TRANSPORT
- 1.6 MINING & GEOLOGY
- 1.7 INDUSTRIES
- 1.8 ENERGY
- 1.9 MARKET INFRASTRUCTURE
- 1.10 RURAL PLANING
- 1.11 URBAN PLANING
- 1.12 MUNICIPAL SOLID WASTE MANAGEMENT
- 1.13 HAZARDOUS WASTE

1.1 Tourism, Art, Architecture & Cultural Heritage

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordinating Agency	Collaborating Agency
• Prepare long term water supply master plan for tourist destination & tourist circuit.	Water Supply & Sewage Master Planning	Department of Tourism / Tourism Development Council	IPH, Department of Language, Art & Culture
• Implement drinking water quality monitoring program at tourist transit point e.g. Dhabas / Restaurants for parameters like pH, S.S, TDS, Bacteriological count.	Water Pollution, Water Supply & Sewage Monitoring	Department of Tourism / Tourism Development Council/I PH/ ULBs/ Rural Development	IPH, PRIs, NGOs, CSOs
• Develop appropriate regulatory mechanism for siting and management of dhabas	Master Planning Land Use & Siting	SADA/Food and Civil Supplies	IPH, PRIs, NGOs, CSOs
• Ensure information display 'Safe Drinking Water' at source.	Public Relation & Information Dissemination	Department of Tourism / Tourism Development Council / Forests	IPH, PRIs, NGOs, CSOs
• Implement protection of water source programme at tourist transit points by isolating it from sewage, solid waste and animals.	Water Pollution, Water Supply & Sewage Master Planning	IPH	PRIs, NGOs, CSOs, <i>Dhaba</i> operators
• Preparation of Eco-friendly travel guidelines	Ecotourism	Department of Forests and Wildlife	Department of Tourism Rural Development PRIs ULBs
• Prepare decentralized (off grid) rural / community / tourist resort / Forest resort (Solar / biogas) based electricity supply plan.	Decentralized Energy / Electricity Supply Planning & Implementation	Department of Tourism / Tourism Development Council / Forests	Himurja / DEST / PRI / NGO / CSO Himurja
• Promote solar energy programs at tourist units / Hotels.	Decentralized Energy / Electricity Supply Planning & Implementation	Department of Tourism / Tourism Development Council / Forests	-do-
• Ensure mandatory compliance of national Energy Conservation Building Codes at new tourist resorts / hotels.	Building Energy Efficiency	Department of Tourism / Tourism Development Council / Forests	ULBs / Municipalities / Department of Urban Development Department of energy
• Develop and promote niche area tourism by mainstreaming environment into development of new areas of Hill tourism e.g. corporate / business tourism / medical tourism / heritage tourism.	Tourism Master Planning	Department of Tourism / Tourism Development Council	Corporate Houses, Corporate Hospitals, Department of Health, Forests and Wildlife

Proposed Actions	Areas	Institutional Responsibility	
		Coordinating Agency	Collaborating Agency
Establish non-biodegradable waste (plastic waste/pet bottles, tetrapacks, packets of snack food) collection & treatment infrastructure for tourist circuits in the state through PRIs	Waste Management including Municipal / Biomedical / hazardous / Plastic / Battery / Electronic	Department of Tourism / Tourism Development Council / Forests/ PRIs	Recyclers NGO, CSOs, PRIs, ULBs Department of Urban Development Rural Development/ NGOs
Promote decentralised composting of food waste at Dhabas/tourist transit points / tourist units/ tourist resorts.	Waste Management including Municipal / Biomedical / hazardous / Plastic / Battery / Electronic	Department of Tourism / Tourism Development Council / Forests	PRIs, NGOs, CSOs
Expand the scope of non-biodegradable waste rules to cover dry battery cells/batteries from electronic items or develop rules based on extended producer responsibility.	Electronic Waste Management including Municipal / Biomedical / hazardous / Plastic / Battery / Electronic	DEST/ Government of Himachal Pradesh	HPPCB, ULBs, NGOs/ Department of Urban Development
Monitor & penalize illegal burning of non-biodegradable waste at tourist transit points.	Monitoring of Waste	HPPCB/ Department Of Tourism/ Tourism Development Council/ Forests	DEST / ULBs / PRIs
Undertake studies on carrying capacity of the new tourist circuits/destinations.	Tourism Master Planning	Department of Forests and Wildlife /Department of Tourism	Department of Tourism/ Tourism Development Council
Undertake studies on carrying capacity for expansion of existing tourist circuits/destinations.	Tourism Master Planning	Department of Forests and Wildlife /Department of Tourism	Department of Tourism/ Tourism Development Council
Minimize diversion of forest land in area specific tourism master plan.	Tourism Master Planning	Department of Tourism/ Tourism Development Council	Forests, Urban Development Department, Department of Rural Development, PRIs
Develop area specific eco-tourism master plan.	Tourism Master Planning	Eco-tourism Society, Department of Forests	Department of Tourism/ Tourism Development Council
Undertake studies on carrying capacity for expansion of existing tourist circuits / destinations and tourist circuits / destinations.	Tourism Master Planning	Department of Tourism / Tourism Development Council / Forests	Town & Country Planning
Regulate and control land use change under long term area specific tourism master plan.	Land Use Monitoring	Department of Tourism / Tourism Development Council / Forests	Town & Country Planning
Identification and preservation of valley slopes with aesthetic view under area specific tourism master plan.	Tourism Master Planning	Department of Tourism / Tourism Development council	Town & Country Planning PRIs
Develop and promote diversification of tourism activities such as Rural Haat (markets) as part of rural tourism along the existing tourism circuits/ destinations.	Tourism Master Planning	Department of Tourism / Tourism Development council	Town & Country Planning PRIs

Proposed Actions	Areas	Institutional Responsibility	
		Coordinating Agency	Collaborating Agency
<ul style="list-style-type: none"> Develop and promote ecofriendly activities and appropriate guidelines for e.g. camping, trekking, cycling in existing and proposed tourist circuits/destinations 	Tourism Master Planning	Department of Tourism / Tourism Development council	Town & Country Planning PRIs
<ul style="list-style-type: none"> Mainstream environment in development of guidelines on “Homestays” / bread and breakfast schemes. 	Tourism Master Planning	Department of Tourism / Tourism Development council	Town & Country Planning PRIs
<ul style="list-style-type: none"> Develop destination specific transportation plan. 	Transport Planning as part of Tourism Master Planning	Department of Tourism / Tourism Development Council	Transportation Department, Urban Development ASI, Department of Language, Art & Culture
<ul style="list-style-type: none"> Establish infrastructure like parking space as per transportation plan. 	Tourism Master Planning	Department of Tourism / Tourism Development Council	Transportation Department, Urban Development & ASI, Department of Language Art & Culture
<ul style="list-style-type: none"> Strengthen air quality monitoring program at specific destination sites. 	Air Pollution, Air Quality Monitoring	Tourism Development Council	DEST, Department of Tourism, Tourism Development Council, Department Transport
<ul style="list-style-type: none"> Identify ecologically sensitive tourist destinations/circuits for e.g. Rohtang pass, Mani Mahesh, Sangla Valley, Mandi, sacred groves, etc. 	Tourism Master Planning	Department of Tourism LADC SADA	Department of Forests and Wildlife
<ul style="list-style-type: none"> Prepare long term sanitation master plan for tourist destination & tourist circuit. 	Water Supply & Sewage Master Planning	Department of tourism, Tourism Development Council	IPH, ASI, Department of Languages Art & Culture
<ul style="list-style-type: none"> Establish sewage infrastructure like latrines, at tourist transit points / religious places / heritage sites. Construct toilet tents on all treks; set up and use toilet tents at least 100 m away from water bodies. 	Water Supply and Sewage Master Plan Implementation & Monitoring	Dhaba Operators / Tourist site / Heritage site operators	Department of Tourism, Tourism Development Council PRIs
<ul style="list-style-type: none"> Introduce battery operated vehicles and alternate mode of travels in certain tourist circuits and destinations. 	Transport Planning	Department of Tourism, Tourism Development Council	ASI, Department of Language, Art and Culture
<ul style="list-style-type: none"> Develop and implement environmental code of practice for trekking and campsites. 	Information Dissemination & Public Relation	Department of Forests and Wildlife	Department of Tourism, Tourism Development Council, tour operators ASI, Department of Language Art & Culture DEST. Concerned Departments
<ul style="list-style-type: none"> Review of the existing orders/directives and develop appropriate guidelines for various departments in relation to Tourism related duties for e.g. Tourist Police, 	Environmental Regulations, Compliances and Monitoring	DEST	-do-
<ul style="list-style-type: none"> Home Guards for monitoring the activities. 		Department of Tourism	Department of Information and Public Relations

Proposed Actions	Areas	Institutional Responsibility	
		Coordinating Agency	Collaborating Agency
<ul style="list-style-type: none"> Development of Tourist Information Centres Information Kiosks, displays focusing on protection of environment and local art, culture and heritage at vantage locations e.g. hotels/resorts/mid ways, enroute tourist circuits/destinations, public transport system, mass communication tools 	Information Dissemination & Public Relations	-do-	-do-
Increased surveillance on tourist activities.	Regulation & Compliance Monitoring	Police	Department of Forests, Department of Language, Art and Culture, Department of Tourism, Hotel, Forest, Resort Association
<ul style="list-style-type: none"> Preparation of area specific master plan consisting of satellite destination aiming to decongest existing tourist destinations. 	Tourism Master Planning	Department of Tourism, Tourism Development Council	Department of Urban Development, Department of Rural Development, Town And Country Planning, NGOs, CSO, Forests and Wildlife
<ul style="list-style-type: none"> Adopt/adapt and promote good practices for Hill Tourism. Develop infrastructure in tourist circuits/destinations keeping in mind the hill architecture of the region. Develop and promote appropriate rainwater harvesting structures suitable to the infrastructural facility being developed. Develop and promote green ratings of resorts/ tourists units which promote and demonstrate optimal energy use and other natural resource use and disposal (water, liquid and solid waste) in hill tourism. 	Tourism Master Planning	Department of Tourism, Tourism Development Council	Department of Urban Development, Department of Rural Development, Town And Country Planning, NGOs, CSO, Forests and Wildlife
<ul style="list-style-type: none"> Environmental awareness and capacity building programme on SWM / Sanitation / Water for Dhaba operators / transit point operators / trekkers / porters. 	Awareness & Information Dissemination	DEST	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests
<ul style="list-style-type: none"> Environmental awareness and capacity building programme for Resort owners / Hotels Association. 	Awareness & Information Dissemination	DEST	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests
<ul style="list-style-type: none"> Environmental awareness programme for village communities involved in rural tourism. 	Awareness & Information Dissemination	DEST	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests
<ul style="list-style-type: none"> Environmental awareness programmes for tour operators / Association. 	Awareness & Information Dissemination	DEST	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests

Proposed Actions	Areas	Institutional Responsibility	
		Coordinating Agency	Collaborating Agency
• Planning and design of new buildings following the ridge approach and its strict compliance by all project proponents.	Area Master Planning	Tourism Country Planning	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests
• Use of local materials and resources in the planning, design and construction of new buildings following the prevalent local art, architecture and culture and which blends with the surroundings.	Area Master Planning	Tourism Country Planning	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests
• Plan, Design and Construct New buildings/infrastructure which blends with local art, architecture and culture.	Area Master Planning	Tourism Country Planning	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests
• Depict murals and frescoes in the new buildings/infrastructure as per the prevalent local art, architecture and culture.	Area Master Planning	Tourism Country Planning	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests
• Develop promotional materials on local art and architecture and set them as displays e.g. murals/frescoes/ wall scapings on the roadsides and pavements for aesthetic ambience in urban and rural settings.	Awareness & Information Dissemination	Tourism Country Planning	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests
• Develop and maintain green areas in and around the protected monuments and maintenance of sanitation for better aesthetics	Area Master Planning	Tourism Country Planning	Department of Tourism, Tourism Development Council, HPPCB, NGOs, CSO, IPH, Forests
• Maintenance of the unprotected monuments by ULBs/PRI	Awareness & Information Dissemination	Department of Archaeology	Town & Country Planning ULBs / PRIs

1.2 Portable Water Supply

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
• Promote rainwater harvesting programme both in rural and urban areas in the state	Rain Water Harvesting Planning Design & Implementation	IPH/RD	Department of Urban Development, ULBs, PRIs, CSOs
• Develop a policy framework for allocating water and prices of allocated water.	Pricing Water Resources	Govt. Of HP	IPH, Health, Rural Development Departments, NGOs/CSOs, ULBs
• Promote household drinking water storage, purification and prevention of microbial contamination programme in urban / rural areas.	Water Pollution & Health Impacts	IPH	Rural Development Departments, PRIs, NGOs, CSOs, Health & Family Welfare Department, ULBs
• Prepare & implement community / household level projects on water storage structures in rural areas	Rain Water Harvesting Planning Design & Implementation	PRIs	IPH, Health, Rural Development Departments, NGOs/CSOs, ULBs
• Monitoring of water borne diseases versus intervention at district level	Disease Monitoring	Department of Environmental Science & Technology (DEST)	IPH, Health, PRIs, ULBs
• Introduce reuse of water from treated sewage to reduce water demand from non drinking usage.	Water Supply & Sewage Master Planning	Department of Urban Development	IPH, ULBs, PRIs, CSOs
• Introduce dual system of plumbing to reuse grey water for flushing in buildings.	Water Supply & Sewage Master Planning	ULBs	Department of Urban Development, ULBs, PRIs, CSOs
• Develop and implement source rejuvenation plan throughout the state	Water Resource Planning	IPH	PRIs / NGOs / CSOs, ULBs, Department of Agriculture, Department of Urban Development
• Accelerate / initiate strict actions envisaged in the acts to stop unauthorized tapping of water.	Compliance Monitoring	IPH/ULBs	Department of Urban Development, Municipality, NGOs /CSOs / PRIs
• Develop district-wise existing programme to reduce leakage from significantly through strict compliance of laws and technical intervention and plugging.	Water Supply, Master Plan	IPH/ULBs	Infrastructure Developer, Operators, NGOs/CSOs/ Ministry of Urban Development, Power Utility
• Encourage water sector reforms in water supply distribution, metering and revenue collection.	Water Sector Reforms, Planning & Implementation	IPH/ULBs	Infrastructure Developer, Operators, NGOs/CSOs/Department of Urban Development
• Develop and implement basin plan consisting of water balance based on water availability, water requirement (different sectors) and its allocation and discharge in coordination with other states and central government.	Water Resources & Basin Planning	IPH, Water Management Board	Department of Urban Development, ULBs/ NGOs / PRIs / CSOs , CWC, CGWB, Department of Forests, Department of Energy, DEST
• Preparation and implementation of catchment area treatment (CAT) plans.	CAT Planning Implementation & Monitoring	Department of Forest and Wildlife	Department of Urban Development , ULBs/ NGOs / PRIs / CSOs , CWC, CGWB,

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
• Accelerate / Initiate action for implementation of IEC programme under each health scheme / programmes being implemented at state level.	Information Dissemination	HPPCB/IPH/RD	States energy utilities, DEST, Department of Tourism ULBs, IPH , HPPCB DEST/ULBs, PRIs / CSOs, HPPCB, Health & Family Welfare Department
• Design & Initiate awareness development programmes / projects with NGOs/CSOs.	Information Dissemination	Health & Family Welfare Department	CSOs / NGOs
• Allocation of waste disposal site or dumping site above HFL in the river basin. Further the site should follow criteria prescribed by the Central Pollution Control Board.	Water Supply & Sewage Master Planning	ULBs	Department of forests, Department of agriculture, Department of Minerals, Department of fisheries, States energy utilities, DEST, Department of Tourism, IPH , HPPCB
• Accelerate / initiate actions for drugs distribution envisaged in project implementation plan of NRHM for the state.	Drug Distribution & Logistics Management	Health & Family Welfare Department	Rural Development Departments / PRIs / NGOs /CSOs
• Accelerate / initiate actions for health infrastructure development and project implementation plan for sanitation under NRHM.	Health Infrastructure Development, Planning & Implementation	Health & Family Welfare Department	Rural Development Departments / PRIs / NGOs /CSOs, DEST
• Accelerate /implement / plans/ projects for biomedical waste management in rural/urban areas.	Biomedical Waste Management	Health & Family Welfare Department	Rural Development Departments / PRIs / NGOs /CSOs, DEST, IPH
• Accelerate / implement plans / projects for municipal solid waste in rural / urban areas.	Solid Waste Management Planning, Implementation & Monitoring	ULBs / PRIs	Rural Development Departments / PRIs / NGOs /CSOs, DEST, IPH, Health and Family Welfare Department
• Accelerate and implement plans / projects for sewage collection, treatment and recycling.	Water Supplying & Sewage Master Planning, Implementation Monitoring	UD/RD	Department of Urban Development, PRIs / CSOs / NGOs
• Accelerate / implement actions/ projects under sanitation plans of PRI at village level.	SWM Planning, Implementation & Monitoring	PRIs	IPH, Rural Development Departments / Health & Family Welfare Department
• Develop and implement gender empowerment and women participation under rural sanitation projects e.g. water conservation project.	Rural Sanitation Planning, Implementation & Monitoring	PRIs	IPH, Rural Development Departments / Health & Family Welfare Department
• Accelerate time bound reforms/programmes/projects leading to increased efficiency.	Plan / Program / Project Management & Implementation	IPH	ULBs, Rural and Development Departments / PRIs / NGOs / CSOs, IPH, ULBs
• Carry out viability studies for different economic instruments. "Payment for Environmental Services / Polluter Pays" in water sector in the state.s	Resource Pricing	DEST	Industry, Consultant, Directorate of Factories, Departments of Health & Family, IPH

1.3 Sewage

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Prepare and implement long term master plans for urban/rural area including tourists destinations. The master plan should include strict siting of STP as per TCP acts / guidelines. 	Rural / Urban Sewage Master Planning, Implementation & Monitoring	Department of urban development/ Department of rural development	TCPO, IPH, PRIs, NGOs, CSOs, Health & Family Welfare Department, Municipalities, ULBs, Department of Tourism
<ul style="list-style-type: none"> Implement sanitation master plan. The implementation should include optimum operation & maintenance of the system including separate energy metering for STPs. The skill level of the personnel in the line departments should be upgraded to meet the project requirements. 	Rural / Urban Sewage Master Planning, Implementation & Monitoring	Department of urban development/ Department of rural development	TCPO, IPH, PRIs, NGOs, CSOs, Health & Family Welfare Department, Municipalities, ULBs, Department of Tourism
<ul style="list-style-type: none"> Monitor the execution/implementation of sanitation master plans and community sanitation projects. 	Rural / Urban Sewage Master Planning, Implementation & Monitoring	Department of urban development/ Department of rural development	IPH, HPPCB, ULBs, PRIs, CSOs, DEST, Department of Health & Family Welfare
<ul style="list-style-type: none"> Prepare sewage interception, diversion and treatment plans for catchment areas of recipient water bodies. 	Rural / Urban Sewage Master Planning, Implementation & Monitoring	Department of urban development/ Department of rural development	IPH, Department of forest, PRIs, NGOs, CSOs, Health & Family Welfare Department, Municipalities, ULBs, Department of Tourism
<ul style="list-style-type: none"> Extensive water quality monitoring of surface and ground water bodies and complete disclosure of monitoring results. 	Surface & Ground Water Pollution Monitoring	HPPCB	IPH, Department of health, Department of Urban, Dept. of Rural Development & ULB
<ul style="list-style-type: none"> Ensure publication of monitoring results including trend analysis & follow up actions. 	Information Dissemination	UD/HPPCB	IPH, Health, PRIs, ULBs
<ul style="list-style-type: none"> Prepare & implement community / household level projects on sanitation in rural areas/urban slums. 	Rural / Urban Slums Sanitation Planning, Implementation & Monitoring	PRIs	IPH, Health, Rural Development Departments, NGOs/ CSOs, PRIs
<ul style="list-style-type: none"> Develop and implement sanitation plan for melaground transit points, trekking routes, tourist as part of tourism master plan 	Tourism Master Planning	Department of Urban Development/ Department of rural development	IPH, Infrastructure Developer, Operators, NGOs/CSOs/ ULBs, Department of Tourism
<ul style="list-style-type: none"> Ensure adequate water availability for implementation of sewerage schemes in urban areas and low cost sanitation in rural areas/ urban slums. 	Water Supply & Sewage Master Planning	PRIs	IPH, ULBs/ NGOs / PRIs / CSOs, CWC, CGWB, DEST
<ul style="list-style-type: none"> Promotion of appropriate technology for recycling and treatment e.g. decentralized treatment, common septic tanks, soak pits, manuring as per CEPHHO guidelines/manual. 	Decentralized Water Supply & Sewage Master Planning	PRIs	IPH, ULBs/ NGOs / PRIs / CSOs, CWC, CGWB, DEST

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Implement reforms for water supply distribution, metering and revenue collection; sewage collection; treatment & disposal; sanitation 	Water Supply & Sewage Reforms Implementation & Monitoring	IPH / Department of Urban Development	Infrastructure Developer, Operators, NGOs/CSOs/ULBs
<ul style="list-style-type: none"> Carry out viability studies for different economic instruments eg. Environmental services charge. Polluter pays principle in water and sewage sector in the state and implement the solution. 	Water Pricing	Department of Urban Development / Department of rural development	Consultant, Directorate of Factories, Departments of Health & Family
<ul style="list-style-type: none"> Develop and implement IT solution e.g. online billing & payment. 	IT & Information Systems Development & Implementation	Department of Urban Development / Department of rural development	DEST, IPH, ULBs, IPH
<ul style="list-style-type: none"> Constitute a state level coordination committee to prioritize & implement integrated water resources /water supply/sanitation plans, programmes and projects. 	Integrated Water Resource Planning & Management	IPH/UD/RD	Department of health & family welfare, ULBs
<ul style="list-style-type: none"> Monitoring the progress of prioritized plans, programs & projects quarterly. 	Plan / Program / Project Monitoring	Department of Environmental Science & Technology (DEST)	IPH/Department of urban development, Department of rural development, Department of health & family welfare, ULBs
<ul style="list-style-type: none"> Accelerate and implement time bound reforms/programmes/projects leading to private sector and NGOs participation in the sector. 	Water Sector Reforms Implementation & Monitoring	UD/RD/IPH	PRIs / NGOs / CSOs, IPH, ULBs
<ul style="list-style-type: none"> Accelerate / implement actions/ projects under sanitation plans of PRI at village level. 	Rural Sanitation Master Plan	Department of rural development	IPH, PRIs, Rural Development Departments / Health & Family Welfare Department
<ul style="list-style-type: none"> Develop and implement gender empowerment and participation under rural sanitation projects 	Rural Sanitation Master Plan	Department of rural development	IPH, PRIs, Health & Family Welfare Department
<ul style="list-style-type: none"> Accelerate / Initiate action for implementation of IEC programme under each health scheme / programmes being implemented at state level. 	Information Dissemination	UD/RD	DEST/ULBs / PRIs / CSOs, HPPCB, Health & Family Welfare Department
<ul style="list-style-type: none"> Design & Initiate awareness development programmes / projects with NGOs/CSOs. 	Information Dissemination	UD/RD	PRIs, NGOs, CSOs, Health & Family Welfare Department, Municipalities, ULBs, Department of Tourism, IPH

1.4 Health

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Promote household drinking water storage, purification and prevention of microbial contamination programme in urban / rural areas. 	Awareness & Information Dissemination	Health & Family Welfare Department	TCP, IPH, Rural Development Department PRIs, CSOs
<ul style="list-style-type: none"> Prepare & implement community/household level “water supply source protection projects” in rural areas 	Rural Water Supply, & Sewage Master, Planning	PRIs	Health, Rural Development Departments, CSOs Department of Agriculture Department of Forests
<ul style="list-style-type: none"> Prepare and implement community/ households level project on water storage structures in rural area 	Rural Water Supply & Sewage Master Planning	PRIs	Health, Rural Development Departments, CSOs Department of Agriculture Department of Forests
<ul style="list-style-type: none"> Prepare & implement community / household level projects on water storage structures in rural areas 	Rural Water Supply & Sewage Master Planning	PRIs	Health, Rural Development Departments, CSOs Department of Agriculture Department of Forests
<ul style="list-style-type: none"> Monitoring of water borne diseases by setting up water testing labs at district level 	Water Quality Monitoring	IPH,	DEST Health, PRIs, ULBs
<ul style="list-style-type: none"> Increase monitoring (frequency & location) of drinking water quality in rural, urban areas at source & household level. These part parameters could be pH, Total Dissolve Solid, Suspended Solid, Biological Oxygen Demand / Dissolve Oxygen, Bacteriological count (MPN) 	Water Quality Monitoring		DEST, PCB, ULBs /PRIs / CSOs, Health & Family Welfare Department
<ul style="list-style-type: none"> Promote safe and potable drinking water by way of installing RO/UV based water treatment system in schools 	Methods & Equipment for Potable Drinking Water Purification	Department of Education	Department of Planning
<ul style="list-style-type: none"> Accelerate / initiate actions envisaged in project implementation plan for sanitation 	Project Management	PRIs	Department of Health & Family Welfare, TCP, Department of Education , NGOs/ CSOs
<ul style="list-style-type: none"> Monitor progress of performance of NRHM programme 	Program / Project Monitoring at grass root level	PRIs	Health & Family Welfare Department, Department of Education Department of Environmental, Science & Technology NGOs / CSOs
<ul style="list-style-type: none"> Monitor occurrence of water borne diseases versus intervention e.g. functional latrines in households/ communities in rural areas & urban slums in each district. 	Program / Project Monitoring at field / grass root level.	Department of Environmental, Science & Technology	Health and Family Welfare Departments / NGOs / CSOs / ULBs / PRIs,

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Ensure adequate water supply and provide proper sewerage system by connecting each households with sewerage system. 	Program / Project Monitoring at field / grass root level.	IPH	MCs ULBs HIMUDA
<ul style="list-style-type: none"> Accelerate / initiate actions envisaged in project implementation plan for Biomedical waste management under NRHM. 	Program / Project Monitoring at field / grass root level.	Urban Bodies	Local Health & Family Welfare Department, TCP, Infrastructure Developer / Operators / NGOs / CSOs / PRIs
<ul style="list-style-type: none"> Accelerate/Initiate actions for Biomedical Waste Management by setting up incinerators at district level, Industrial Areas and also in ULBs which receive high number tourists in view of promotion of health tourism in the state. 	Program / Project Management / Monitoring	Health & Family Welfare Department + PRIs	Infrastructure Developer / Operators / NGOs / CSOs / ULBs Department of Tourism
<ul style="list-style-type: none"> Monitor occurrence of infections disease in rural/urban areas versus intervention e.g. MSW/BMW in each district. 	Program / Project Management / Monitoring	Department of Environmental, Science & Technology	Health and Family Welfare Departments / NGOs ULBs / PRIs
<ul style="list-style-type: none"> Awareness generation for promoting personal hygiene and safe sanitation practices in urban & rural areas. 	Awareness & Information Dissemination	PRIs + Education	Health & Family Welfare Department, NGOs / CSOs / ULBs
<ul style="list-style-type: none"> Strengthening of existing awareness campaign for propagating personal hygiene and safe sanitation practices in rural / urban areas. 	Awareness & Information Dissemination	PRIs + Education	Health & Family Welfare Department, NGOs / CSOs
<ul style="list-style-type: none"> Strengthen awareness campaigns on health and environment theme and monitor the performance of awareness campaigns. 	Awareness & Information Dissemination	Department of Environmental, Science & Technology	Health , NGOs PRIs CSOs/CBOs HP- SCST Schools
<ul style="list-style-type: none"> Awareness generation to promote awareness about health impacts of fuel wood / biomass usage as domestic fuel. 	Awareness & Information Dissemination	HP Pollution Control Board (HPPCB)	Health & Family Welfare Department, TCP, NGOs / CSOs
<ul style="list-style-type: none"> Promote alternate domestic safe / cleaner fuel to reduce dependence on fuel wood in urban areas. 	Awareness & Information Dissemination	Himurja	ULBs
<ul style="list-style-type: none"> Promote solar energy application for domestic usage in rural / urban areas through incentives. 	Awareness & Information Dissemination	Himurja	PRIs / CSOs / NGOs
<ul style="list-style-type: none"> Strict compliance to air quality standards in industrial areas. 	Air Pollution / Air Quality Monitoring	HPPCB	DEST / Dept. of Industries
<ul style="list-style-type: none"> Strengthen awareness campaigns and monitoring air quality in urban areas. 	Awareness & Information Dissemination	HPPCB	ULBs Transportation, Dept. of Industries
<ul style="list-style-type: none"> Strengthening of existing awareness campaigns for promoting safe / cleaner fuel and solar energy usage. 	Awareness & Information Dissemination	Himurja	NGOs / CSOs/DEST

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Design and promote crematorium which minimise consumption of fuel wood. 	Alternate Energy Development Program	MCs	ULBs RWAs Citizens groups
<ul style="list-style-type: none"> Promote electric crematorium. 	Alternate Energy Development Program		
<ul style="list-style-type: none"> Accelerate / initiate action for implementation of IEC programmes under each health scheme / programmes being implemented at state level. 	Project / Program Management & Monitoring	Health & Family Welfare Department	DEST/IPH / Rural Development Departments / PRIs / CSOs
<ul style="list-style-type: none"> Design & Initiate awareness development programmes / projects with NGOs/CSOs. 	Awareness & Information Dissemination	Health & Family Welfare Department	CSOs / NGOs
<ul style="list-style-type: none"> Accelerate / initiate actions for drugs distribution envisaged in project implementation plan of NRHM for the state. 	Drugs Logistics & Distribution	Department of Health & Family Welfare	TCP Rural Development Departments / PRIs / NGOs / CSOs
<ul style="list-style-type: none"> Accelerate / initiate actions for health infrastructure develop. 	Project / Program Management & Monitoring	Department of Health & Family Welfare	Rural Development Departments / PRIs / NGOs / CSOs
<ul style="list-style-type: none"> Accelerate / initiate actions under RCH component of NRHM. 	RCH Project Development & Management	Health & Family Welfare Department + Social Justice & Empowerment	Rural Development Departments / PRIs
<ul style="list-style-type: none"> Monitoring of Infants / Maternal nutrient supplement programmes under different schemes. 	Project / Program Management & Monitoring	Health & Family Welfare Department	Rural Development Departments / PRIs/ NGOs / CSOs
<ul style="list-style-type: none"> Strict monitoring of health of workers. 	Project / Program Management & Monitoring	Directorate of Factories	Rural Development Departments / PRIs / NGOs / CSOs, DEST, HPPCB
<ul style="list-style-type: none"> Implementation occupational health & safety (OHS) management system. 	OHS Management System	Industry	Consultant, Directorate of Factories, Departments of Health & Family
<ul style="list-style-type: none"> Implementation of components of prevention, care & support and treatments under National AIDS Control Programme – III. This includes implementation of Information, Education & Capacity (IEC) building campaigns. 	Project / Program Management & Monitoring	Health & Family Welfare Department + Higher Education	NGOs, CSO, PRIs, ULBs DEST
<ul style="list-style-type: none"> Segregation of wastes from different streams. 	Waste Management Monitoring	HPPCB	Department of Health and Family Welfare ,Health Institutions (Private/ Government) ULBs MCs
<ul style="list-style-type: none"> Undertake assessment of need for setting new treatment and disposal facilities. 			
<ul style="list-style-type: none"> Assess and identify gaps in research and development in view of new and emerging health risks and diseases. 	Epidemiology	Directorate of Medical Education	Department of Health and Family Welfare, Medical Council of India

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Undertake need assessment of setting up new super specialty health institutions in the state to address R and D needs, medical professional course and training including paramedical staff. 	R & D Development	Infrastructure	Directorate of Medical Education Department of Health and Family Welfare, Medical Council of India
<ul style="list-style-type: none"> Seek accreditation for existing and new health institutions undertaking R & D, imparting medical professional courses and trainings. 	R & D Development	Infrastructure	Directorate of Medical Education Department of Health and Family Welfare, Medical Council of India

1.5 Road & Transport

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Development of state highway master plan in line with tourism master plan, horticulture development plan and other state plans. 	Roads & Highways Master Planning	PWD	ULBs, Department of Urban Development, Departments of Rural Development, PRIs, NGOs, CSOs, Municipalities, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Development of state rural road master plan for rural roads connecting roads in line with tourism master plan, horticulture development plan and other plans. 	Rural Roads Master Planning.	PWD	Rural Development Departments, PRIs, NGOs, CSOs, Health & Family Welfare Department, Municipalities, ULBs, Department of Urban Development, Department of Tourism, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Prepare state highway / rural road upgradation plan as part of state highway and rural road master plan. 	State Highways & Rural Road Master Planning.	PWD	Rural Development Departments, PRIs, NGOs, CSOs, Health & Family Welfare Department, Municipalities, ULBs, Department of Urban Development, Department of Tourism, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Develop rural roads infrastructure as per, IRC codes. 	Rural Roads Master Planning.	PWD	ULBs, Department of Urban Development, Departments of Rural Development, PRIs, NGOs, CSOs, Municipalities
<ul style="list-style-type: none"> Make EIA & EMP mandatory for all development of new state highways. Provisions of funding mitigation measures as part of EIA & EMP should be made mandatory as part of project cost. 	Environmental Assessment of Roads & Highways Sectors.	PWD	ULBs, Department of Urban Development, Departments of Rural Development, PRIs, NGOs, CSOs, Municipalities, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Carry out strategic environmental assessment (EA) for state highway / rural road master plan. 	Strategic Environmental Assessment of Highway Sector.	Steering committee of secretaries	PWD, DEST, ULBs, Department of Urban Development, Departments of Rural Development, PRIs, NGOs, CSOs, Municipalities, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Monitor both state highway / rural road master plan as per EA's recommendation. 	Project/Programme Management & Monitoring.	Steering committee of secretaries	PWD, DEST, ULBs, Department of Urban Development, Departments of Rural Development, PRIs, NGOs, CSOs, Municipalities, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Monitoring muck disposal plan of all state / national rural road project as part of EMP. 	EMP Monitoring & Reporting.	PWD	DEST, PRIs, Infrastructure developer, Operators, NGOs / CSOs/ ULBs / IPH, Department of urban development, Department of tourism, Department of Transportation, Department of Industry

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Develop environmental training and capacity building plan for PWD / other stakeholders as part of strategic EA plan. 	Strategic Environmental Assessment of Highway Sector	DEST	PWD, PRIs, Infrastructure developer, Operators, NGOs / CSOs/ ULBs / IPH, Department of urban development, Department of tourism, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Strict implementation of municipal laws & by laws. 	Regulation & Compliance Monitoring.	ULBs / PRIs, PWD	PWD, Infrastructure Developer, Operators, NGOs/ CSOs/ IPH, Department of Urban Development, Department of Rural Development, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Strict implementation of laws related to environment at state and national highways. 	Regulation & Compliance Monitoring.	ULBs / PRIs, PWD	PWD, Infrastructure Developer, Operators, NGOs/ CSOs/ IPH, Department of Urban Development, Department of Rural Development, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Strict implementation of state highways / rural road master plan and strategic road sector EA plan. 	Project/Programme Management & Monitoring.	Office of chief secretary	PWD, Infrastructure Developer, Operators, NGOs/ CSOs/ ULBs, PRIs, Department of Urban Development, Department of Rural Development, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Development of parking infrastructure as part of urban master plan. 	Urban Master Planning	ULBs	PWD, ULBs, PRIs, Department of urban development, Department of rural development
<ul style="list-style-type: none"> Development of parking infrastructure as part of tourism master plan. 	Tourism Master Planning	Department of tourism	PWD, ULBs, PRIs, Department of urban development, Department of rural development, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Ensure private sector participation in parking infrastructure. 	Public Private Partnership.	ULBs / PRIs	PWD, ULBs, PRIs, Department of urban development, Department of rural development, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Strict implementation of traffic rules. 	Regulatory Compliance & Monitoring	Himachal Police	PWD, ULBs, PRIs, Department of urban development, Department of rural development, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Identify and privatize places of tourist interest where traffic is a bottleneck. 	Public Private Partnership	Department of tourism	Department of urban development, Department of rural development, PWD, PRIs, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Develop traffic management plan for specific tourist places where traffic is a bottleneck e.g. Rohtang pass, Kufri. 	Tourism Master Planning	Department of tourism	Department of urban development, Department of rural development, PWD, PRIs, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Monitoring of air quality at specific tourist spot. 	Air Pollution Monitoring	HPPCB	Department of tourism, DEST, PRIs

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Monitoring of air quality at specific tourist spot. 	Air Pollution Monitoring	HPPCB	Department of tourism, DEST, PRIs
<ul style="list-style-type: none"> Develop traffic management plan for urban areas. 	Traffic & Transport Planning	ULBs	Infrastructure Developer, Operators, NGOs/CSOs/ Department of Urban Development, Himachal Pradesh police
<ul style="list-style-type: none"> Monitoring air and noise pollution. 	Air & Noise Pollution Monitoring.	Department of urban development	Consultant, IPH, ULBs, Departments of Health & Family, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Develop urban transportation plan using alternate modes. 	Traffic & Transport Planning	ULBs	PWD, DEST, Himachal Police, ULBs, Department of health and family welfare, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Development and implementation of districtwise rapid response plan for accidents and other emergencies. 	Disaster Management Planning	Accident / Disaster management unit	Department of health and family welfareULBs, Rural and urban Development Departments / PRIs / NGOs / CSOs, IPH, ULBs
<ul style="list-style-type: none"> Repatriation of migrant labor should be made mandatory as part of contractual condition of contractor. Contractor should be penalized for non-compliance. 	Regulatory Compliance & Monitoring.	PWD	Department of health and family welfareULBs, Rural and urban Development Departments / PRIs / NGOs / CSOs, IPH, ULBs, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Ensure private sector participation in road infrastructure development. 	Public Private Partnership	PWD	ULBs, Department of Urban Development, Departments of Rural Development, PRIs, NGOs, CSOs, Municipalities, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Project development under PPP. 	Public Private Partnership	PWD	ULBs, Department of Urban Development, Departments of Rural Development, PRIs, NGOs, CSOs, Municipalities, Department of Transportation, Department of Industry
<ul style="list-style-type: none"> Environmental budget should be prepared for implementing mitigation measures as part of DPR. 	Environmental Management Plan Costing & Budgeting.	PWD	ULBs, Department of Urban Development, Departments of Rural Development, PRIs, NGOs, CSOs, Municipalities, Department of Transportation, Department of Industry

1.6 Mining & Geology

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<p>Proper appraisal of the deposit with respect to the environmental issue.</p> <p>Concept of sustainable development to be kept in view while considering mining project.</p> <p>If all clearances are for granted mining lease, strict implementation of mining plan, mine closure plan, EIA/EMP document PCB conditions MOEF/ Forest Department conditions etc. should be carried out.</p> <p>Strict monitoring of all environmental issues.</p>	Comprehensive Environmental Assessment	Dept. of Industries Mining & Geology	Planning Department, HP State Land Use and Wasteland Development Board, Dept. of Industries, CPCB, HP-PCB, Industry Associations DEST NGOs/CSOs
<p>To identify potential sources of dust.</p> <p>Prediction of the dust levels likely to occur near the mines site.</p> <p>Evaluating the potential of dust particles to effect environment and human health.</p> <p>Incorporating dust predications and control measures into mine planning and design which include.</p> <p>Dust be controlled by erecting enclosures.</p> <p>Internal roads be surfaced.</p> <p>Dust be suppressed by water sprays.</p> <p>Green barriers along mine roads.</p> <p>Before charging and blasting consider atmosphere conditions.</p> <p>Regular monitoring for SPM, NOX and SO₂ levels at fixed locations</p>	Air Pollution Control, Management & Monitoring in Mining Sector	Project Proponent	<p>Department of Industries Mining & Geology</p> <p>Dept. of Urban Development/ ULBs</p> <p>CPCB, HPPCB Dept of Transport HP PWD HP Infrastructure Development Board, DEST</p>
<p>To follow zero discharge policy into natural water sources, thereby eliminating the causes of continuation.</p> <p>Recycling of water and setting up of water treatment plants.</p> <p>Suitable treatment of water passing through a settling tank before discharging into natural courses.</p> <p>Water be systematically stored and used for plantation.</p> <p>Bench the sloped inward. Proper drains towards hillside be constructed for proper drainage of rain water.</p>	Water Pollution Control, Management & Monitoring in Mining Sector.	Project Proponent	<p>Department of Industries Mining & Geology</p> <p>Dept. of Urban Development/ ULBs</p> <p>CPCB, HPPCB Dept of Transport HP PWD DEST</p>
<p>For abatement of noise:</p> <p>Barriers to acoustic line of sight serve as feasible solution. Barriers may be:</p> <p>Walling</p> <p>Planting</p> <p>Control of noise by:</p> <p>Reducing sound at source.</p> <p>Interrupting the path of noise.</p> <p>Protecting the receiver.</p> <p>Other techniques</p> <p>Reducing time of exposure.</p>	Noise Control, Management & Monitoring in Mining Sector.	Project Proponent	<p>Department of Industries Mining & Geology</p> <p>Dept. of Urban Development/ ULBs</p> <p>CPCB, HPPCB Dept of Transport HP PWD DEST</p>

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<p>Lubrication maintenance and speed rating.</p> <p>Design of equipments</p> <p>Green belts.</p> <p>Ear protection</p> <p>Controlled blasting.</p>			
<p>No mining to be allowed where ore overburden ratio is more than 1 – 0.20.</p> <p>Disposal of overburden and waste to be done at predetermined locations as per the mining plan.</p> <p>Location to be properly designed for stabilization and re-vegetation and to resist long term erosion.</p> <p>Proper drainage to be constructed to handle heavy rainfall events.</p> <p>Appropriate garland drains to be provided all around.</p> <p>Proper aesthetic to the waste dumps be given in relation to the surrounding landscape so that the area blends with the natural land after rehabilitation.</p>	<p>Mine Waste Control, Management & Monitoring. Mine Area Restoration Planning.</p>	<p>Dept. of Industries Mining & Geology</p> <p>Project Proponent</p>	<p>of Department of Industries Mining & Geology</p> <p>& Dept. of Urban Development/ ULBs</p> <p>CPCB, HPPCB Dept of Transport HP PWD DEST</p>
<p>Any substantial change from the pre mining land form should be contemplated only after full consultation with the local community regulatory authorities and research has been undertaken.</p> <p>The post mining land form, drainage and vegetation association should be stable, self sustaining visually compatible with surrounding land and also meet community expectation.</p> <p>Strict compliance of Mine Plans and Mine Closure Plans which are approved by Indian Bureau of Mines, Government of India.</p>	<p>Mine Closure. Rehabilitation & Restoration Planning</p>	<p>Dept. of Industries Mining & Geology</p> <p>Project Proponent</p>	<p>of Department of Industries Mining & Geology</p> <p>& Dept. of Urban Development/ ULBs</p> <p>CPCB, HPPCB Dept of Transport HP PWD DEST</p>
<p>Strict implementation of compensatory afforestation plan as part of EIA/EMP and the mining plan.</p> <p>Cataloguing individual species for identification of rare and endangered plants and animals.</p> <p>Minimising impacts of mines on flora and fauna through proper layout and designs.</p> <p>Proper top-soil management for ensuring proper rehabilitation of land by plantation.</p>	<p>Top Soil Management, Afforestation, Rehabilitation Planning.</p>	<p>Dept. of Forests</p>	<p>Planning Department, HP State Land Use and Wasteland Development</p> <p>Dept. of Insustries Mining & Geology</p> <p>HPPCB DEST</p> <p>Forest Department Forest Survey of India DEST</p>
<p>Improve aesthetic beauty by planning proper locations of dumps, plants, residential areas along with plantation.</p> <p>Visual safeguards like tree screens and screening with bunds be considered.</p> <p>Proper check dams for controlling the debris flow to improve aesthetic of the area.</p> <p>Contouring of reshaping the worked out benches/pits or dumps of waste rock.</p>	<p>Top Soil Management, Afforestation, Rehabilitation Planning.</p>	<p>Department of Industries mining & Geology</p> <p>Department of tourism, DEST</p>	<p>of Industry Associations, Planning Department, HP State Land Use and Wasteland Development</p> <p>& Forest Department Forest Survey of India</p>

1.7 Industry

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Undertake Regional EIAs / Cumulative Impact Assessment. Complete Zoning Atlas for Industrial Siting and strict implementation Preparation of Region specific map for siting (in GIS environment) Preparation of Region-specific industrial siting guidelines Revisiting land-use surrounding hazardous units (in case industry is already commissioned) Prepare district-wise Environmental Atlas. Proper appraisal of the site with respect to the environmental issues. Concept of sustainable development to be kept in view while considering mining project. If all clearances are through for grant of mining lease, strict implementation of mining plan, mine closure plan, EIA/EMP document PCB conditions MOEF/ Forest Department conditions etc. Strict monitoring of all environmental issues. 	<ul style="list-style-type: none"> Strategic Environmental Assessment GIS, Land Use & Environmental GIS & Remote Sensing Master Planning Compliance Monitoring GIS & Remote Sensing Comprehensive EIA Strategic Environmental Assessment EMP Monitoring EMP Monitoring 	Dept. of Industries	Planning Department, HP State Land Use and Wasteland Development Board, Dept. of Industries, CPCB, HP-PCB, Industry Associations DEST NGOs/CSOs
<ul style="list-style-type: none"> Strict implementation of urban master plan including zonation. 	Master Planning		
<ul style="list-style-type: none"> Preparation and implementation of green belt management plan and restoration of exposed area as part of industrial estate development plan. 	Master Planning & Rehabilitation restoration Plan		
<ul style="list-style-type: none"> Disposal of loose material at designated places 	Master Planning & Rehabilitation restoration Plan		
		Dept. of Urban Development/ ULBs	Dept of Industries
		-do-	-do-
		-do-	CPCB, HPPCB
		Department of Industries	Dept of Transport HP PWD
			HP Infrastructure Development Board
			Department of Tourism

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
Optimization of usage by introducing concept of 3 Rs. (Reduce, Recover & Recycling) and zero discharge industry.	3Rs (Reduce, Recover, Recycling) Planning & Implementation	Department of Industries	CPPCB HPPCB DEST NGOs/CSOs Dept. of Industries Central Ground Water Board DEST
Prepare and implement water harvesting plan to ensure water conservation decreasing in areas of water table.	Water Harvesting Plan Conceptualization & Implementation		Department of Industries, Industry, Association DEST Dept of Industries, HP Infrastructure Development Board Department of Tourism
Strictly monitor exposed area restoration plan as part of EMP of mines.	EMP Monitoring		Industry Associations IPH, ULBs HP Infrastructure Development Board Department of Tourism
Strictly monitor water quality in mined areas and industries.	Water Quality Monitoring		
Strict implementation of noise mitigation measure as part of EMP.	EMP Implementation & Monitoring	Department of Industries	-do- DEST, CPCB, HPPCB, Police, HP PWD
Strict implementation of buffer zone management plan as part of industrial estate development plan	Master Planning		HP Infrastructure Development Board Department of Tourism DEST HPPCB DEST HPPCB Industry Association CSOs, NGOs
Strict implementation of Hazardous waste management plan as part of EMP.	EMP Implementation & Monitoring	Department of Industries	HPPCB, DEST
Implementation of hazardous waste infrastructure development plan e.g. CETPs/TSDF		Industry Association	HPPCB, DEST
Strict monitoring of hazardous waste generation and disposal		HPPCB	DEST, Industries, Industry Association CSOs, NGOs.

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
Development & implementation of exposed area restoration plan as part of EMP of mined areas.	EMP Implementation & Monitoring	HPPCB	Revenue Department, Planning Department, HP State Land Use and Wasteland Development Board, Industry Associations,
Restoration/conservation/industry mine areas of drainage pattern as part of exposed area restoration plan.	EMP Implementation & Monitoring	Department of Forests	HBSEB, HP PCL, HIMURJA, SJVNL
Strict implementation of Catchment Area Treatment integrated with exposed area restoration plan.	EMP / Landscape / Rehabilitation & Restoration Plan Implementation & Monitoring		Department of Energy, HP PWD, HPPCB, DEST
			IPH
Strict implementation of compensatory afforestation plan as part of EMP.	Master Planning	Dept. of Forests	Industry Associations Planning Department, HP State Land Use and Wasteland Development
Strict implementation of buffer zone management plan as part of industrial estate development/mine development areas	EMP / Landscape / Rehabilitation & Restoration Plan Implementation & Monitoring		-do-
Formulation and implementation of an integrated compensatory afforestation, buffer zone management plan.	EMP / Landscape / Rehabilitation & Restoration Plan Implementation & Monitoring	Dept. of Industries	All Line Departments
			Forest Department Forest Survey of India
Strict implementation of landscape restoration plan as part of exposed area restoration plan.	EMP / Landscape / Rehabilitation & Restoration Plan Implementation & Monitoring	Department of Industries	Industry Associations, Planning Department, HP State Land Use and Wasteland Development Forest Department Forest Survey of India
Monitoring of Green cover	EMP Monitoring		
Promote development of State of the Art Industrial Areas	Master Planning	Industries Department	Himachal Pradesh State Industries Development Corporation (HPSIDC),
Creation of Area Specific Statutory Development Agencies and entrusted them with the task of managing urban growth in areas of their jurisdiction and for ensuring creation and strengthening of planned growth of social, housing, health, commercial and other related infrastructure.	Master Planning		Himachal Pradesh Housing and Urban Development Agency (HIMUDA),
	Master Planning		Area Specific Development Agencies
Promote Self certification for industrial units including approval of building plans of plot sizes to be specified would be automatically deemed to have been given, provided the units certify themselves that they have adhered to the basic norms			Town and Country Planning Department/ HPSIDC

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
Promote Cluster based approach to Industrial development	Master Planning	Industries Department	Himachal Pradesh State Industries Development Corporation (HPSIDC)
Prioritisation of Industries that can be promoted in HP,	Master Planning		
Promote industries categorised as green rather than those listed as orange and red.	Master Planning		Himachal Pradesh Housing and Urban Development Agency (HIMUDA)
Promote and incentivise non polluting industries e.g. IT, Biotechnology	Master Planning HR Development		
Capacity building/strengthening of ITIs, to develop a cadre of trained professional			Area Specific Development Agencies Town and Country Planning Department/ HPSIDC HPPCB DEST
Identify the areas where introduction of clean technologies is possible;	Clean Technology / Cleaner Production Management	Industries Department	
Identify the source(s) from where clean technology and data/details thereof can be obtained;	Clean Technology / Cleaner Production Management		
Assess the technology available indigenously as well as those to be imported;	Clean Technology / Cleaner Production Management		
Modify the technology, if necessary and demonstrate it to the satisfaction of the users so that it can be replicated;	Clean Technology / Cleaner Production Management		
Undertake Research and Development to develop technologies for cleaner production;	Clean Technology / Cleaner Production Management		
Collect, collate and disseminate information on clean technology	Clean Technology / Cleaner Production Management		
Maintain interaction with the industry, financial institutions and Research and Development Laboratories for adoption of clean technologies.	Clean Technology / Cleaner Production Management		
Regulate the new cement industries based on the master plan of the given Industrial Area	Master Plan Monitoring	Industries Department	HPPCB DEST Cement Manufacturers Industry Association
Evolve an efficient mechanism on competitive rates so that transportation of raw material and industrial products is smooth and on competitive rates	Logistics Management	Industries Department	Industry Association, Transporter's Association
Foster conducive environment of mutual appreciation and trust between Industry and Transport Unions and encourage regular dialogues between them so as to solve contentious issues at the local level	Logistics Management		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<p>Demarcate specific areas around such industrial clusters where housing infrastructure could be created both in the government and private sector. Permission for purchase of land for captive housing would be given in a time bound manner for purchase of land to the industrial units set up in the State.</p> <p>Ensure supply of power and water to such housing complexes.</p> <p>Encourage Industries to tie up with local adjoining panchayats and villages for arranging captive accommodation by helping such villagers augment their accommodation so as to cater to the specific needs of the workers who could be housed in such units</p> <p>Prepare Master Plan of new and existing Industrial Area focusing on provision of infrastructure, including social infrastructure</p>	Master Planning	Industries Department	Service providing Agencies
	Master Planning		
	Master Planning		Utilities Departments
	Master Planning		Industry Association
			PRIs

1.8 Energy

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Assessment of the hydrology in the immediate catchment/ river basin for small hydro projects Assist line department to ensure coordination between relevant authorities on the timing and volume for release of water Assessment of sustainable ecological flow (15% or more, whichever is higher) Ensure release of minimum 15% flow in downstream section of the river which is made mandatory and as stipulated in the policy Ensure monitoring of downstream flow Assess effectiveness of the downstream flow Cumulative Impact Assessment at basin level (Strategic Environmental Assessment prior for hydro-power development) Guideline for LADA to make it environmentally sustainable Development of detailed Guidelines for every project with clear cut out put on quick-pro-quo basis Payment for Ecosystem Services (PES) for Energy sector Earmark 1% of budget of the CAT plan for PES through quid pro quo basis Maintenance of Longitudinal Aquatic Connectivity of stream/ river River bed modification between diversion and tailrace out fall in a ROR scheme so as to derive higher environmental benefits of releasing downstream discharge Fish pass is must in all barrage irrespective of finding of fish whether reported or not Routing of downstream discharge through fish pass in the diversion structure even if fish is not reported 	<ul style="list-style-type: none"> Basin Planning & Management Basin Plan, Implementation & Monitoring Basin Plan, Implementation & Monitoring Basin Plan, Implementation & Monitoring Basin Plan, Implementation & Monitoring Strategic Environmental Assessment as Part of Basin Plan Basin Planning Basin Planning Resource Pricing Resource Pricing Basin Planning Hydro Power Development as part of Basin Planning Hydro Power Development as part of Basin Planning Hydro Power Development as part of Basin Planning Hydro Power Development as part of Basin Planning 	Power	Utilities Directorate of Energy Himurja HPSEB, BBMB HPPCL, SJVNL, IPH, Fisheries, Forests & Wildlife DEST HP PCB

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Develop and implement river basin management plan. Develop and implement silt management plan. Promulgation of policies to ensure that all development agencies (including Central Govt.) working in the state adopt Environmentally benign Sustainable technologies Develop and Promote Green Road technologies Develop and seek synergy in Hydro projects Implement CAT plans and EMP Monitor implementation of CAT plans and EMP with reference to silt load and composition (Chemical & Physical) including gravity, Hardness and shape of particles 	Basin Plan Management (Implementation & Monitoring)	State CAMPA	Department of agriculture, Department of horticulture, Department of rural development, Department of Animal husbandry, Department of fisheries HP PWD HPSEB Forum of Hydropower Producers (HPPF) for Satluj and Hydropower Producer Forums of other River Basin (s)
	Basin Plan Management (Implementation & Monitoring) State Level		
	Environmental Master Plan Implementation & Monitoring		
	State Level		
	Environmental Master Plan Implementation & Monitoring		
	State Level		
	Environmental Master Plan Implementation & Monitoring		
	CAT Plan Implementation & Monitoring		
	CAT Plan Implementation & Monitoring		
	CAT Plan Implementation & Monitoring		
<ul style="list-style-type: none"> Monitor construction phase and post project (catchment area treatment plan, silt monitoring plan, watershed development programme) programmes / plans to assess the efficacy of proposed and implemented measures for replications. 	Project / Programme Monitoring	Power Utilities	-HPSEB, HPPCL/ SJVNL ZP/PS/GP/LADCs -Department of Agriculture -Department of Rural Development -Department of Animal Husbandry -Watershed Development Committees, Department of Fisheries, Department of Forests, HPPCB, DEST, IPH
<ul style="list-style-type: none"> Prescribe seasonality of the flushing and its monitoring Ensure dredge spoils do not re-enter the water body/ wetland/ reservoir as part of implementation reservoir management plan Carry out effect of sediment and silt on benthic communities as part of water body/ reservoir management and monitoring plan. Identifying and implementing measure for dredge spoil stabilization as part of the reservoir/ water body/basin management Maintaining adequate depth all the year round as part of reservoir operation plan. Maintenance of 	Reservoir Operations Monitoring	Power Utilities Dept. of fisheries HP PCB DEST	-DEST -HP SCST -NGOs -Department of Fisheries -CSOs -ZP/PS/GP
	Reservoir Operations Monitoring		
	Reservoir Operations Monitoring		
	Basin Planning & Management (Implementation & Monitoring)		
	Basin Planning & Management (Implementation & Monitoring)		
	Basin Planning & Management (Implementation & Monitoring)		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
Longitudinal Connectivity of river • River bed modification between diversion and tailrace out fall in a ROR scheme so as to derive higher environmental benefits of releasing downstream discharge • Fish pass must install barrage in respective of finding of fish whether reported or not • Routing of downstream discharge through fish pass in the diversion structure even if fish is not reported	Reservoir Operation & Monitoring Basin Planning & Management (Implementation & Monitoring) Basin Planning & Management (Implementation & Monitoring) Basin Planning & Management (Implementation & Monitoring)	DEST Power Utilities	-HP- PCB -ZP/PS/GP Bhakhra Management Board (BBMB) -Department of Revenue -Department of Agriculture -Department of Horticulture, Department of Fisheries, DEST, HPSEB, SJVNL / Utilities -Multistakeholders Committee of the concerned river basin
• Undertake investigative studies on the impact and insecticidal and fertilizer residue biotic life of aquatic lotic ecosystems and prioritize water bodies based on the level of concern. • Assist department of agriculture and horticulture department in formulating action plan in the identified areas based on level of concern according to investigative studies. • Formulation and Implementation of R&R Plan in conformity with NRRP-2007, State Guidelines and Standard R&R Plan to be made mandatory for all power projects through dedicated, qualified and experienced R&R staff • Strict implementation of (R & R) plans • Implementation of EMPs • Promote bio-farming, IPN, IPNM, bio-fertilizer, bio-pesticide, etc. • Preparation of integrated CAT plan for the entire basin on the pattern of integrated EIA/EMP • Creation of Basin CAT plan fund for expeditious implementation of CAT plans • Mechanism to be developed for cost sharing on project to project basis should be based on proportionate	Post Project Ecological & Environmental Assessment Post Project Ecological/ Environmental Management Plan R & R Planning, Management and Monitoring R & R Planning, Management and Monitoring EMP implementation & Monitoring EMP implementation & Monitoring Basin Planning, Implementation & Monitoring Resource Pricing, Allocation & Recovery Resource Pricing, Allocation & Recovery		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
method instead of any limitation of percentage of project cost			
<ul style="list-style-type: none"> Remote sensing based and other suitable technology based monitoring mechanism to be promoted Formulation and implementation of Reservoir Management and Action Plan Formulation and implementation of dumping area management plans Training of enforcement/regulatory staff and augmentation of enforcement infrastructure. 	GIS & Remote Sensing Basin Planning & Management (Implementation & Monitoring) Basin Planning & Management (Implementation & Monitoring) Regulatory Compliance & Monitoring	Director-ate of Energy / Power Utilities Office of Secretary-Environment	Department of Forest, Department of Agriculture NGO's, CSO's, Department of Tourism, BBMB, SJVNL, HPSEB, ULBs, Department of Fisheries, Department of Forests & Wildlife, IPH, HPPCB HPPF
<ul style="list-style-type: none"> Promotion and adaptation of suitable technology for continuous (24 hour) monitoring particularly during lean season Development and implement river water monitoring plan downstream of dams/reservoir 	Reservoir Monitoring Basin Plan Monitoring	DEST	Power Utilities, BBMB, SJVNL, IPH
<ul style="list-style-type: none"> Develop and implement extended producer responsibility based collection, transportation and disposal regulation Awareness for general public about the harmful affects of mercury 	Extended Producer Responsibility based Regulations. Awareness & Information Dissemination	HPSEB / DEST CFL Distribution Companies	Utilities, ULBs, PRIs, NGOs, CSOs, HPSEB
<ul style="list-style-type: none"> Develop and implement community based decentralized grid programs/ energy programmes using solar and biogas energy for rural areas Ensure at least 10 % solar/biogas usage in upcoming tourist resorts / hotels while granting EIA clearance to them Develop awareness programs for usage of solar and biogas energy in the state. Make implementation of energy conservation building code mandatory for tourist resorts / commercial establishments, government buildings Progressive and increased use of energy mix (including non 	Decentralized Energy Supply Planning & Implementation. Awareness & Information Dissemination Awareness & Information Dissemination Building Energy Efficiency Energy Planning & Implementation.	Himurja State Expert Appraisal Committee Himurja Electricity Regulatory Commission	HPSEB, utilities, Department of rural development, PRIs Himurja, HPSEB, DEST, ULBs, HPPCB. HPSEB, Utilities, PRIs, ULBs, Department of rural development, NGOs/CSOs Himurja, HPSEB, Utilities, ULBs, Department of rural development, Department of urban development, NGOs / CSOs

1.9 Market Infrastructure

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Development and implement IT interventions in agriculture / horticulture produce collection, transportation, storage and selling. 	IT & Agriculture Produce logistics System	HPAMC	Department of agriculture, Department of horticulture, Department of rural development, Telecom service providers, PRIs
<ul style="list-style-type: none"> Develop & implement state level APMC market information system and integrate it with national / international system. 	APMC Market Information System	HPAMC	Department of Industries, Department of agriculture, Department of horticulture, Department of rural development, Telecom service providers, PRIs
<ul style="list-style-type: none"> Maintain and manage product logistic system based on market information / intelligence Identify decentralised waste treatment opportunities particularly for predominantly organic waste including options of composting/ vermi composting in suitable climatic condition Mandis could be developed as outlets for selling compost 	APMC Market Information System Waste Management APMC Market Research	HPAMC	Department of agriculture, Department of horticulture, Department of rural development, Telecom service providers, PRIs, Department of Industries
<ul style="list-style-type: none"> Develop market infrastructure in line with national benchmark. 	APMC Market Infrastructure	HPAMC	Department of agriculture, Department of horticulture, Department of rural development, Telecom service providers, PRIs, Municipalities
<ul style="list-style-type: none"> Renovate and upgrade existing market infrastructure to minimize spoilage and wastage. 	APMC Market Infrastructure	HPAMC	Department of agriculture, Department of horticulture, Department of rural development, Telecom service providers,

Proposed Actions	Areas	Institutional Coordination Agency	Responsibility Collaborating Agency
			Municipalities, IPH Department of Industries.
<ul style="list-style-type: none"> Develop and implement efficient and conducive transportation plan with private sector participation. 	IT & Agriculture Produce logistics Management	HPAMC	Department of agriculture, Department of horticulture, Department rural development, Telecom service providers, PWD, Department of Transport
<ul style="list-style-type: none"> Identify and access long term infrastructure needs in view of crop diversification and shift in cropping pattern for the next twenty years. 	APMC Market Research / APMC Market Infrastructure	HPAMC	Department of agriculture, Department of horticulture, Department rural development, Telecom service providers, PWD, Department of Transport
<ul style="list-style-type: none"> Develop and implement a business plan and an action plan including financing requirements. 	APMC Market Infrastructure	HPAMC	Department of agriculture, Department of horticulture, Department rural development, Telecom service providers, PWD, Department of Transport
<ul style="list-style-type: none"> Implement action plan with private sector participation. 	APMC Market Infrastructure & Public Private Partnership	HPAMC	Department of agriculture, Department of horticulture, Department rural development, Telecom service providers, PWD, Department of Transport
<ul style="list-style-type: none"> Development and implement upgradation plan for packing and packaging mechanism in line with international standards. 	Agricultural Packaging	HPAMC	Department of agriculture, Department of horticulture, Department rural development, Telecom service providers, PWD, Department of Transport, NGOs, CSOs
<ul style="list-style-type: none"> Promote reuse and recycling of disposed packing material 	3 R's (reduce , Recover, Recycle)	HPAMC	Department of agriculture, Department of

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Developed suitable strategies and alternatives of packaging materials made of plastics Identification and adoption of good practices to reduce/eliminate waste generation. 	Conservation Agriculture		horticulture, Department rural development, Telecom service providers, PWD, Department of Transport, NGOs, CSOs
<ul style="list-style-type: none"> Accelerate / initiate actions for renovation / upgradation envisaged in project implementation plan for management of existing storage facility. 	Agriculture Produce logistics Management	HPAMC	Infrastructure Developer / Operators / NCDC / PRI, Deptt. of Horticulture, Department of agriculture
<ul style="list-style-type: none"> Develop and implement storage infrastructure development plan based on market research and operations management study envisaged for agriculture / horticulture. 	Agriculture Produce logistics Management	HPAMC	Infrastructure Developer / Operators / NCDC / PRI, Deptt. of Horticulture, Department of agriculture
<ul style="list-style-type: none"> Develop and implement aviation infrastructure development plan in the states as an alternative to road infrastructure 	Aviation Infrastructure as part of Agriculture logistics Management	Department of aviation / NHAI	Department of agriculture, department of horticulture, Department of tourism, Infrastructure developer, PRI
<ul style="list-style-type: none"> Integrate operations of storage and warehousing infrastructure with logistics management through automated online system. 	IT Systems in Agriculture Produce logistics Management	HPAMC	Infrastructure Developer / IT/ Telecom service providers, Department of agriculture, Department of horticulture, Operators / NGOs
<ul style="list-style-type: none"> Develop and implement waste management system at storage areas. 	Waste Management.	HPAMC	Infrastructure Developer / Operators / NGOs / ULBs , Department of agriculture, Department of horticulture
<ul style="list-style-type: none"> Promote processing and value addition by undertaking Research and Development and adopting good practices. 	Market Research for NTFP	R and D institutes and Universities	Department of Health
<ul style="list-style-type: none"> Promote marketing of medicinal plants and NTFP. 	Project/Programme Management	HSAMB	Department of Ayush State Medicinal Plants Board Department of Forests R and D institutes Universities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Promote the plans / programmes for maintenance of all weather state highways / arterial roads. 	Project/Programme Management under PPP	Public Works Department (PWD)	Department of agriculture / horticulture / Department of transportation, HPAMC
<ul style="list-style-type: none"> Promote development of alternate roads infrastructure as per infrastructure development plan under public private partnership. 	Project/Programme Management under PPP	Public Works Department (PWD)	Department of agriculture / horticulture / Department of transportation, HPAMC
<ul style="list-style-type: none"> Develop parking and storage infrastructure at transit points on major routes. 	Agriculture Produce logistics Management	Himachal Road Transport Corporation, Shimla	PWD, Department of agriculture / horticulture, ULBs, PRIs, DEST
<ul style="list-style-type: none"> Monitoring the performance of air quality. 	Air Quality Monitoring Post Harvest Crop Management	Himachal Road Transport Corporation, Shimla	Department of agriculture / horticulture / Department of transportation, HPAMC
<ul style="list-style-type: none"> Undertake research and development to reduce/eliminate post harvesting losses. 	Air Quality Monitoring Post Harvest Crop Management		Universities R and D institutions focusing on Agriculture and Horticulture
<ul style="list-style-type: none"> Identify and adapt good practices in reducing the post harvesting practices. 	Air Quality Monitoring Post Harvest Crop Management		HPAMC / ULBs, PRIs, IPH, Department of agriculture, Department of horticulture
<ul style="list-style-type: none"> Prepare and implement APMC solid waste collection, segregation and disposal management plan. 	Solid Waste Management	APMC / Market Association	HPAMC / ULBs, PRIs, IPH, Department of agriculture, Department of horticulture
<ul style="list-style-type: none"> Since APMC waste is rich in organic content, develop vermi composting / organic compost plan to dispose APMC solid waste. This compost can be sold at the outlets in APMC market. 	APMC Market Research	APMC / Market Association	HPAMC / ULBs, PRIs, IPH, Department of agriculture, Department of horticulture
<ul style="list-style-type: none"> Prepare and implement APMC sewage collection and disposal management plan. 	Water Pollution Sewage & Drainage	APMC / Market Association	HPAMC / ULBs, PRIs, IPH, Department of agriculture, Department of horticulture
<ul style="list-style-type: none"> Implement occupational health & safety (OHS) management system. 	OHS Management System	Deptt. of Labor	Department of Health & Family Welfare, DEST
<ul style="list-style-type: none"> Promoting awareness programmes on health safety. 	Awareness & Information Dissemination	Deptt. of Health	Deptt. of Agriculture, Deptt. of Horticulture, Govt. & private institutes/ NGOs / CSOs
<ul style="list-style-type: none"> Commission a market research study for identify new markets both in country and abroad in view of product diversification 	Agriculture Produce Market Research & Infrastructure Market Research	HPAMC	Deptt. of Horticulture/ Agriculture, Department of rural

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
and differentiation for the next ten / twenty and thirty years.	Planning		development, PRIs, NGOs / CSOs,
<ul style="list-style-type: none"> Identify market infrastructure needs to support new / existing markets. 	APMC Market Infrastructure		
<ul style="list-style-type: none"> Implement and operationalize both product marketing and infrastructure development plan. 	Agriculture Produce Market Research & Infrastructure Development Planning		
<ul style="list-style-type: none"> Accelerate / Initiate action plan/ program at state level for implementation of control methods such as biological, chemical, cultural methods. 	Disease control & Crop Protection.	Deptt. of Agriculture / Department of horticulture	HPAMC/ CSOs/ PRIs, Department of rural development
<ul style="list-style-type: none"> Design & Initiate programs / projects for promoting products from organic farming. 	Project/Programme Management	HPAMC	Deptt. of Agriculture /Horticulture, Department of rural development
<ul style="list-style-type: none"> Strictly implement disease quarantine measures in APMC market. 	Post Harvest Crop Protection& Disease Control	HPAMC	Deptt. of Horticulture/ Agriculture, Department of rural development, PRIs, NGOs / CSOs,
<ul style="list-style-type: none"> Develop and promote awareness programs for using market information/ intelligence. 	Awareness & Information Dissemination	Deptt. of Horticulture/ Department of agriculture	Department of Rural Development, Telecom service providers / Govt. & private institutes/ NGOs / CSOs, PRIs, HPAMC
<ul style="list-style-type: none"> Develop and implement training programs for ICT penetration and usage for farmers. 	APMC Market Information System		
<ul style="list-style-type: none"> Develop and implement a program of kisan kiosks at panchayat office where ICT infrastructure can be operationalized. 	APMC Market Information System		

1.10 Rural Planning

Proposed Actions, Type of Response and Inter-sectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<ul style="list-style-type: none"> Extend Sectoral Decentralised Planning (SDP) to Tribal Areas and backward areas of HP with environmental mainstreaming as per decision of the Government. Integrate planning principles of inclusive development in all rural development planning in State Government programmes/ schemes with environmental mainstreaming as per decision of the Government Generate employment opportunities by ensuring better coordination among Government, CSOs and private sector by promoting investment and improving marketable vocational skills especially in clean technologies. 	<ul style="list-style-type: none"> Decentralized Rural Planning & Environmental Management Decentralized Rural Planning & Environmental Management Rural Development & Poverty Alleviation Clean Technology & Vocational Skills in Rural Development 	Department of Planning	Department of Rural Development (RD) Zila Parishad (ZP) Gram Panchayat (GP) Panchayat Samiti (PS) Public Works Department (PWD), Irrigation & Public Health (I&PH), State Housing Board and other sectoral departments implementing the capital components in respective budgets as Employment Generation.
<ul style="list-style-type: none"> Implement agricultural and allied sector reforms in the state. Strengthen implementation of Integrated Watershed Management Plan (IWMP) and MGNREGA focusing on agriculture production. Develop and implement crop and horticulture diversification plans, 	<ul style="list-style-type: none"> Agriculture & Allied Sector Reforms Rural Development & Poverty Alleviation Diversified Agriculture support Program Pre & Post Harvesting Crop Management System 	Department of Planning	Department of Rural Development (RD) Zila Parishad (ZP) Gram Panchayat (GP) Panchayat Samiti (PS) 13 Sectors/department with development budget heads (as given in the footnote)

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<p>programs & projects including herbs and medicinal plantations and floriculture.</p> <ul style="list-style-type: none"> Implement backward and forward linkages to farm and horticulture sector to increase resource conservation & reduce waste generation. 			
<ul style="list-style-type: none"> Prioritize future infrastructure investment for creating rural and improve management practices of existing infrastructure planning by mainstreaming environmental safeguards at every level e.g. state, district, block & Panchayat. Maintain and upgrade existing rural infrastructure including transport, power, rural water supply and sanitation with mainstreamed environmental safeguards. Strengthen industrial units in all districts and backward pockets as per Revised Backward Area Industrial Policy with environmental safeguards. 	<p>Rural Infrastructure Planning & Environmental Management</p> <p>Rural Infrastructure Planning & Environmental Management</p> <p>Rural Infrastructure Planning & Environmental Management</p> <p>Rural Infrastructure Planning & Environmental Management</p>	<p>Department of Planning</p>	<p>Himachal Pradesh Infrastructure Development Board</p> <p>Himachal Pradesh Road & Other Infrastructure Development Corporation Limited</p> <p>Department of Rural Development (RD) Zila Parishad (ZP) Gram Panchayat (GP) Panchayat Samiti (PS)</p> <p>13 Sectors/department with development budget heads (as given in the footnote)</p>
<ul style="list-style-type: none"> Expand health facilities with increased health & infrastructure development in rural areas with biomedical waste management. Expand environmental 	<p>Rural Infrastructure Planning & Environmental Management</p> <p>Awareness & Information Dissemination</p>	<p>Department Planning</p>	<p>Department of Rural Development (RD) Zila Parishad (ZP) Gram Panchayat (GP) Panchayat Samiti (PS) Department of Elementary Education Department of Health and family Welfare</p> <p>13 Sectors/department with</p>

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<p>education facilities and infrastructure in rural areas in the state for e.g. IEC activities under Total Sanitation Campaign, watershed development programmes, MGNREGA, etc which links to increased health infrastructure and increased environmental awareness.</p> <ul style="list-style-type: none"> Enhance labor awareness and capacity by investing in health and environmental education, programs & projects. 	Awareness & Information Dissemination		development budget heads (as given in the footnote)
<ul style="list-style-type: none"> Promote and strengthen institutional finance for financing long term rural environmental infrastructure development, programs & projects. Promote Microfinance Institutions for financing village level water supply/sanitation & clean technologies projects. 	<p>Financing Rural Infrastructure</p> <p>Financing Rural Infrastructure</p>	<p>Department Planning</p> <p>NABARD and other Banking Institutions</p>	<p>Department Planning</p> <p>NABARD and other Banking Institutions</p>
<ul style="list-style-type: none"> Promote biotechnology for generating employment in the field of Agriculture and horticulture. Provision of income generating assets aimed at encouraging small scale and cottage industries and providing gainful employment opportunities through backward and forward linkages. 	<p>Biotechnology & Rural Employment</p> <p>Financing Rural Infrastructure</p> <p>Project/ Pro- gramme Manage- ment & Coordina- tion</p> <p>Financing Rural Infrastructure</p>	<p>Department of Planning</p>	<p>All line departments implementing development programmes and schemes</p> <p>Micro, Small and Medium Enterprises Development Institute</p>

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<ul style="list-style-type: none"> Develop and foster coordination among panchayats, government and CSOs for upgradation of skills Promote rural enterprise catering to skills and needs of rural populace. 			
<ul style="list-style-type: none"> Preparation of Model Guidelines/Manual to facilitate the preparation of best Micro Plans with environmental mainstreaming by the Panchayats. Constitution of core group of experts for monitoring and advocacy regarding Micro Planning mainstreamed with environmental safeguards. Enable and empower Water Users/PRI and stakeholders to plan, implement and manage the drinking water and minor irrigation systems Promote Joint training of Government officials working with PRIs. Promote and facilitate Intrastate exposure visits to places where successful models of rural development programs with mainstreamed environment have been demonstrated Study/Exposure visits of core group members and selected office bearers of Gram 	<p>Rural Infrastructure Planning & Environmental Management</p> <p>Project & Programme Management & Monitoring</p> <p>Rural Water Supply & Sewage Master Planning</p> <p>Project & Programme Management & Coordination</p> <p>Awareness & Information Dissemination</p> <p>Awareness & Information Dissemination</p> <p>Awareness & Information Dissemination</p> <p>Rural Infrastructure Planning & Environmental Management</p>	<p>Department of Panchayati Raj</p>	<p>All line departments implementing development programmers and schemes</p> <p>Micro, Small and Medium Enterprises Development Institute</p>

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<ul style="list-style-type: none"> Panchayats outside the State and within the State. Organize panchayat sammelan with environment as theme at regular intervals. Promote and facilitate network of elected women representatives, CBOs and Mahila Mandals for undertaking environmental projects. 			
<ul style="list-style-type: none"> Empower families and broaden the below the poverty line by enlarging the scope of the rural development programmes of poverty alleviation and welfare of women, the Scheduled Castes and Scheduled Tribes Empower Women, SC/ST by imparting new skills/capacity enhancement especially in clean technologies to end exclusion. 	Rural Development & Poverty Alleviation	Department of Planning	H.P. State SC/ST Corporation, Backward Classes Finance and Development Corporation, Social Women Development Corporation, Minorities Finance and Development Corporation, Department of Social Justice and Empowerment

1.11 Urban Planning

Proposed Actions, Type of Response and Inter-sectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<ul style="list-style-type: none"> • Identification of potential schemes including water harvesting • Beneficiary mapping and identification • Ensuring availability of water equitably • Make RWHS mandatory in all commercial and residential in new buildings and townships. 	Water Supply & Sewage Master Planning	IPH	Department of Planning
	Rain Water Harvesting Plan as part of Water Supply & Sewage Master Planning		Department of Urban development
			Town and Country Planning
			ULBs
			Zila Parishad (ZP)
<ul style="list-style-type: none"> • Identification of areas not connected to current sewerage networks 	Water Supply & Sewage Master Planning	IPH/ULB	HP PCB DEST
<ul style="list-style-type: none"> • Identify new sewerage schemes to bring the uncovered areas under new sewerage network 	Water Supply & Sewage Master Planning		
<ul style="list-style-type: none"> • Develop integrated water supply and sewerage projects 	Water Supply & Sewage Master Planning		
<ul style="list-style-type: none"> • Prevention and control of water pollution. 	Water Pollution Control & Management Water Supply & Sewage Master Planning		
<ul style="list-style-type: none"> • Make waste water treatment and recycling mandatory in new buildings and townships 			
<ul style="list-style-type: none"> • Identify suitable sites in the Master Plan for MSW Treatment and Disposal facility keeping in mind the hilly conditions 	Municipal Solid Waste Master Planning	Department of Urban development	Department of Planning
		Town and Country Planning	
<ul style="list-style-type: none"> • Adopt regional approach in the development of MSW Treatment and Disposal facility 	Municipal Solid Waste Master Planning	ULBs	
<ul style="list-style-type: none"> • Attempt setting up decentralized • MSW Treatment and Disposal facility 	Municipal Solid Waste Master Planning		
<ul style="list-style-type: none"> • Increased awareness on ECBC 	Awareness & Information Dissemination	Department of Urban development	Directorate of Energy
<ul style="list-style-type: none"> • Mandatory implementation of ECBC in all Government and commercial buildings 	Building Energy Efficiency	Town and Country Planning	HIMURJA
			Department of Planning
<ul style="list-style-type: none"> • Provide parking space as 	Master Planning		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
per ECS factoring in hill conditions in all new building and township projects	Master Planning	Department of Transport	Department of Planning
<ul style="list-style-type: none"> Provide green areas and open spaces as per norms factoring in hill conditions in all new building and township projects, Make mandatory provision for use of new and renewable sources in street lighting, passive solar architectural features in plan layout . 	Energy Usage Planning		
<ul style="list-style-type: none"> Develop urban transport in line with policies such as National Urban Housing and Habitat Policy to ensure that cities remain dense and of mixed land-use with adequate provisions for housing for the poor to ensure that their travel distances remain small. Develop urban planning guidelines to encourage transit-oriented development, discourage sprawl, rationalize parking policies and charges, and mandate public transport accessibility indicators for large developments, institute intelligent transport systems to enable schemes such as congestion charging. Improving vehicle efficiency Shifting freight transport from road to railways and waterways and alternate modes of transport Shifting passenger transport to public transport Shifting vehicles to electric and hybrid varieties Greater penetration of biodiesel Earmark buffer zones 	Urban Transportation As Part Of Master Planning		
	Urban Transportation As Part Of Master Planning		Department of Urban development
	Urban Transportation As Part Of Master Planning		Town and Country Planning
	Urban Transportation As Part Of Master Planning		Zila Parishad
	Urban Transportation As Part Of Master Planning		
	Urban Transportation As Part Of Master Planning		
	Urban Transportation As Part Of Master Planning		
	Urban Transportation As Part Of Master Planning		
	Urban Transportation As Part Of Master Planning		
	Urban Transportation As Part Of Master Planning		
	National/ State Road/ High Way Planning		Department of Planning
	National/ State Road/ High Way Planning		Department of Urban development
	Master Planning & Land Use Planning	TCP	

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<p>along the national/ state highways/MDRS where no construction activity is allowed to come up to curb ribbon development</p> <ul style="list-style-type: none"> Consider freezing of land use along the national and state highways to curb the vicious trend of ribbon development and urban corridors Extend the Town and Country Planning Act, 1977, to include 25-30 metre wide strips along the national highways and the state highways (on both sides) to combat ribbon development 			
<ul style="list-style-type: none"> List vacant and under-utilised lands 	Master Planning & Land Use Planning	Department Planning	of TCP UD Dept ULBs
<ul style="list-style-type: none"> Prepare an updated list of vacant lands including government and private land, land notified for acquisition 	Master Planning & Land Use Planning	Department Revenue	of IPH Dept ULBs Transport Dept Directorate of Energy HP-PWD
<ul style="list-style-type: none"> Mark vacant land pockets on the map and assess the area available. 	Master Planning & Land Use Planning		Himachal Pradesh State Land Use and Wasteland Development Board
<ul style="list-style-type: none"> Examine the land use assigned to vacant pockets in the master Plan 	Master Planning & Land Use Planning		
<ul style="list-style-type: none"> Identify underutilized Government Lands and lands proposed for redevelopment. 	Master Planning & Land Use Planning		
<ul style="list-style-type: none"> Identify lands proposed for future residential development. 	Master Planning & Land Use Planning		
<ul style="list-style-type: none"> Assess land that would become available after enforcement of the pro-poor reforms. 	Master Planning & Land Use Planning		
<ul style="list-style-type: none"> Reservation of 20-25% of developed land for EWS/LIG housing in every new public/private residential development. 	Master Planning & Land Use Planning		
<ul style="list-style-type: none"> Assess land acquisition costs, land development costs and construction costs and market price of land. 	Master Planning & Land Use Planning		
<ul style="list-style-type: none"> Examine the current land assembly mechanisms and 	Master Plan Implementation & Monitoring		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
policy obstacles to land supply.	Master Planning		
<ul style="list-style-type: none"> Establish a system of redressal of continued alienation of land by the state government to the ULBs to ensure continuous supply of developed land for EWS/LIG housing. 	Master Planning		
	Master Planning		
	Project Programme Implementation & Monitoring		
	Financing of Urban Infrastructure Development		
	Master Planning		
<ul style="list-style-type: none"> Identify land ownership status of vacant pockets. 	Financing of Urban Infrastructure & Pricing of Service		
<ul style="list-style-type: none"> Ensure availability of sites for housing the Poor. 			
<ul style="list-style-type: none"> Creation of land pool for housing the poor. 			
<ul style="list-style-type: none"> Timely construction of houses. 			
<ul style="list-style-type: none"> Provide bank Loans to the beneficiaries. 			
<ul style="list-style-type: none"> Provide security of tenure to every Beneficiary. 			
<ul style="list-style-type: none"> Provide access to infrastructure services at affordable rates. 			

1.12 Municipal Solid Waste (MSW)

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Prepare and implement integrated solid waste management plan for rural/urban area/tourists destinations, including religious places & mela ground as per municipal solid waste (mgt & handling) rules. 	Rural/Urban/ Tourist Integrated Solid Waste Management Planning	Department of Urban Development Department of Rural development	ULBs, IPH, HPPCB, DEST PRIs, NGOs, CSOs, Health & Family Welfare Department, Municipalities
<ul style="list-style-type: none"> Monitor the progress of integrated solid waste management plan and community sanitation projects at household levels. 	Project/ Programme & Implementation & Monitoring	Department of Urban Development Department of Rural development	PRIs, NGOs, CSOs, Health & Family Welfare Department, Municipalities, ULBs, IPH, HPPCB, DEST Department of Tourism
<ul style="list-style-type: none"> Prepare and implement integrated solid waste management plan at rural/urban level. 	Project/ Programme & Implementation & Monitoring	Department of Urban Development Department of Rural development	IPH, PRIs, NGOs, CSOs, Health & Family Welfare Department, Municipalities, HPPCB, DEST, Department of Tourism
<ul style="list-style-type: none"> Promote door to door MSW collection and segregation through innovative mechanisms to meet the challenge of unavailability of personnel. 	Rural/Urban/ Tourist Integrated Solid Waste Management Planning	Department of Urban Development Department of Rural development	PRIs, NGOs, CSOs, Health & Family Welfare Department, HPPCB, Municipalities, DEST, Department of Tourism

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
• Prepare & implement micro level municipal solid waste projects to ensure proper solid waste management.	Rural/Urban/ Tourist Integrated Solid Waste Management Planning	Department of Urban Development Department of Rural development	IPH, Health, DEST, HPPCB, NGOs/CSOs, PRIs
• Develop and implement integrated solid waste management plan as part of tourism master plan.	Rural/Urban/ Tourist Integrated Solid Waste Management Planning	Department of Urban Development Department of Rural development	Infrastructure Developer, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism
• Design & implement fiscal mechanism to incentivize and provide for implementing integrated solid waste management plan.	Financing of Rural /Urban/ Tourist Integrated Solid Waste Management Planning & service Pricing	Department of Urban Development Department of Rural development, DEST	Infrastructure Developer, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism
• Deployment of appropriate technological option to prevent scatting of MSW by monkey stray dogs & other animals.	Rural/Urban/ Tourist Integrated Solid Waste Management Planning	Department of Urban Development Department of Rural development,	Forest, Infrastructure Developer, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism
• Implement periodical campaigns for MSW collection for monitoring aesthetics.	Awareness & Information Dissemination	Department of Urban Development Department of Rural development, DEST	Infrastructure Developer, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism
• Prepare and implement wetland management plan.	Wetland Management	Department of Urban Development Department of Rural development, DEST	Infrastructure Developer, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism
• Develop and implement basin wise / district wise rain water harvesting programme.	Basin Planning	Department of Urban Development Department of Rural development, DEST	Infrastructure Developer, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism
• Constitute a state level steering committee to implement the three plans in an integration manner.	Integrated Planning & Development	Department of Urban Development Department of Rural development, DEST	Infrastructure Developer, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism
• Ensure door to door MSW collection system.	Rural/Urban/ Tourist Integrated Solid Waste Management Planning	Department of Urban Development Department of Rural development, DEST	Infrastructure Developer, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism
• Promote door to door collection, transportation and disposal including outsourcing.	Rural/Urban/ Tourist Integrated Solid Waste Management Planning	Department of Urban Development Department of Rural development, DEST	Infrastructure Developer, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism
• Promote & implement waste management including composting	Rural/Urban/ Tourist Integrated Solid Waste Management Planning	Department of Urban Development Department of Rural development, DEST	Infrastructure Developer, DEST, HPPCB, Operators, NGOs/CSOs/ IPH/ULBs, DEST, HPPCB Department of Tourism

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Implement private sector participation for collection, transportation and disposal of MSW. 	Rural/Urban/ Tourist Integrated Solid Waste Management Planning and Public Private Partnership	ULBs	Infrastructure Developer, DEST, HPPCB, Operators, NGOs/CSOs/ IPH, Department of Urban Development
<ul style="list-style-type: none"> Carry out viability studies for different economic instruments. “Payment for Environmental Services / Polluter Pays” in sanitation sector in the state and implement the solution. 	Financing of MSW Infrastructure Planning & Development & Service Privacy	Department of urban development	Consultant, IPH, ULBs, DEST, HPPCB, Departments of Health & Family
<ul style="list-style-type: none"> Constitute a state level coordination committee to prioritize & implement sanitation plans integrated with, programmes and projects. 	Project/Programme Implementation & Monitoring	Department of urban development	DEST, HPPCB Department of rural development, Department of health & family welfare, ULBs
<ul style="list-style-type: none"> Monitoring the progress of prioritized plans, programs & projects quarterly. 	Project/Programme Implementation & Monitoring	Department of urban development	IPH Department of rural development, DEST, HPPCB, Department of health & family welfare, ULBs
<ul style="list-style-type: none"> Accelerate and implement time bound reforms / programmes / projects leading to private sector and NGOs participation in the sector. 	Project/Programme Implementation & Monitoring	Department of Urban development Department of Rural Development	DEST, HPPCB / PRIs / NGOs / CSOs, IPH, ULBs
<ul style="list-style-type: none"> Accelerate / implement actions/ projects under sanitation plans of PRI at village level. 	Project/Programme Implementation & Monitoring	Department of Urban development Department of Rural Development	IPH, PRIs / Health & Family Welfare Department, DEST, HPCB
<ul style="list-style-type: none"> Develop and implement gender empowerment and participation under rural sanitation projects. 	Rural Sanitation Planning	Department of Urban development Department of Rural Development	IPH, PRIs / Health & Family Welfare Department, DEST, HPCB
<ul style="list-style-type: none"> Accelerate / Initiate action for implementation of IEC programme under each health/urban scheme / programmes being implemented at state level. 	IEC Project / Programme Implementation & Monitoring	Department of Urban development Department of Rural Development	DEST/IPH, HPPCB Rural Development Departments / PRIs / CSOs, HPPCB, Health & Family Welfare Department, ULBs
<ul style="list-style-type: none"> Design & Initiate awareness development programmes / projects with NGOs / CSOs / PRIs / ULBs. 	IEC Project / Programme Implementation & Monitoring	ULBs/PRIs	PRIs / NGOs, Department of Urban Development, Department of Tourism
<ul style="list-style-type: none"> Mainstreaming of informal sector into MSW management. 	Rural/ Urban / Integrated Solid Waste Management Planning	ULBs/PRIs	Private sector, Department of Urban Development, Departments of Rural Development, PRIs, NGOs, CSOs, Private sector, Health & Family Welfare Department, Municipalities
<ul style="list-style-type: none"> Deployment of appropriate staff should be mandatory at least Council Level like Environmental Engineer and Health officer to address Environmental Issues and Management. 	Rural/ Urban / Integrated Solid Waste Management Planning		
<ul style="list-style-type: none"> Site selection for MSW facility should be as per MSW rule-2000. 	Rural/ Urban / Integrated Solid waste Management Planning	Town & Country Planning	Revenue Department, Department of Forest, ULBs, PRIs, Department of Urban Development,
<ul style="list-style-type: none"> Site should be marked for MSW facility in the City/ Towns development Plans at 	Rural/ Urban / Integrated Solid waste		Department of Rural

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
the planning stage if land is available.	Management Planning		Development, HP-PCB, DEST NGOs/CSOs
• Strict monitoring of all environmental issues.	Project / Programme Implementation & Monitoring		
• The role of HP Pollution Control Board should be increased at actual implementation level.	Project / Programme Implementation & Monitoring		

1.13 Hazardous Waste

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Undertake Regional EIAs / Cumulative Impact Assessment. Complete Zoning Atlas for Industrial Siting and strict implementation of siting criteria. 	Strategic/ Comprehensive Environmental Assessments	Dept. of Industries	Planning Department, HP State Land Use and Wasteland Development Board, Dept. of Industries, CPCB, HP-PCB, Industry Associations, DEST NGOs/CSOs
<ul style="list-style-type: none"> Preparation of Region specific map for siting (in GIS environment). 	Master Planning		
<ul style="list-style-type: none"> Preparation of Region-specific industrial siting guidelines. 	Land Use / Zonation And GIS & Remote Sensing		
<ul style="list-style-type: none"> Revisiting land-use surrounding hazardous units (in case industry is already commissioned). 	Master Planning		
<ul style="list-style-type: none"> Prepare district-wise Environmental Atlases. 	Compliance Monitoring		
<ul style="list-style-type: none"> Proper appraisal of the site with respect to the environmental issues. 	GIS & Remote Sensing		
<ul style="list-style-type: none"> Concept of sustainable development to be kept in view while considering mining project. 	Comprehensive Environmental Impact Assessment		
<ul style="list-style-type: none"> If all clearances are through for grant of mining lease, strict implementation of mining plan, mine closure plan, EIA/EMP document PCB conditions MOEF/ Forest Department conditions etc. 	Strategic Environmental Assessment		
<ul style="list-style-type: none"> Strict monitoring of all environmental issues. 	EMP Monitoring		
	Environmental Monitoring		
<ul style="list-style-type: none"> Strict implementation of urban master plan including zonation. 	Master Plan Implementation & Monitoring		Dept of Industries -do-
<ul style="list-style-type: none"> Preparation and implementation of green belt management plan and restoration of exposed area as part of industrial estate development plan. 	Master Plan Implementation & Monitoring		CPCB, HPPCB, Dept of Transport, HP PWD, HP Infrastructure Development Board, Department of Tourism
<ul style="list-style-type: none"> Disposal of loose material at designated places. 	Master Plan Implementation & Monitoring		
<ul style="list-style-type: none"> Optimization of usage by introducing concept of 3 Rs. (Reduce, Recover & Recycling and zero discharge industry. 	3 Rs (Reduce, Recover & Recycling) Programme	Department of Industries	CPCB, HPPCB, DEST NGOs/CSOs, Dept. of Industries, Central Ground Water Board, DEST
<ul style="list-style-type: none"> Prepare and implement water harvesting plan to ensure water conservation decreasing in areas of water table. 	Water Conservation & Water Harvesting		Department of Industries,

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Strictly monitor exposed area restoration plan as part of EMP of mines. 	EMP Monitoring		Industry, Association DEST Dept of Industries, HP Infrastructure Development Board Department of Tourism
	Water Quality Monitoring		Industry Associations IPH, ULBs HP Infrastructure Development Board Department of Tourism -do-
<ul style="list-style-type: none"> Strict implementation of Hazardous waste management plan as part of EMP. Implementation of hazardous waste infrastructure development plan e.g. CETPs/TSDf Strict monitoring of hazardous waste generation and disposal 	EMP Monitoring	Department of Industries	HPPCB, DEST
	Environmental Infrastructure development, Implementation & Monitoring	Industry Association	HPPCB, DEST
	Environmental Infrastructure development, Implementation & Monitoring & Implementation & EMP Monitoring	HPPCB	DEST, Industries, Industry Association CSOs, NGOs.
<ul style="list-style-type: none"> Development & implementation of exposed area restoration plan as part of EMP of mined areas. Restoration/conservation/industry mine areas of drainage pattern as part of exposed area restoration plan. Strict implementation of Catchment Area Treatment integrated with exposed area restoration plan. 	Environmental Infrastructure development, Implementation & Monitoring & Implementation & EMP Monitoring	HPPCB	Revenue Department, Planning Department, HP State Land Use and Wasteland Development Board, Industry Associations, HBSEB, HP PCL, HIMURJA, SJVNL
	Environmental Infrastructure development, Implementation & Monitoring & Implementation & EMP Monitoring	Department of Forests	Department of Energy, HP PWD HPPCB, DEST IPH
	EMP, Landscape. Rehabilitation & Restoration Plan Implementation & Monitoring		Industry Associations
<ul style="list-style-type: none"> Strict implementation of compensatory afforestation plan as part of EMP. Strict implementation of buffer zone management plan as part of industrial estate development/mine development areas Formulation and implementation of an integrated compensatory 	Master Planning	Dept. of Forests	Planning Department, HP State Land Use and Wasteland Development -do-
	EMP, Landscape. Rehabilitation & Restoration Plan Implementation & Monitoring	Dept. of Industries	All Line Departments
	EMP / Landscape / Rehabilitation &		Forest Department

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
afforestation, buffer zone management plan.	Restoration Plan Implementation & Monitoring	Office of Chief Secretary	Forest Survey of India
• Monitoring of green cover	EMP Monitoring	-do-	
• Identify the areas where introduction of clean technologies is possible;	Clean Technology/Cleaner Production Management	Industries Department	HPPCB DEST
• Identify the source(s) from where clean technology and data/details thereof can be obtained;	Clean Technology/Cleaner Production Management		
• Assess the technology available indigenously as well as those to be imported;	Clean Technology/Cleaner Production Management		
• Modify the technology, if necessary and demonstrate it to the satisfaction of the users so that it can be replicated;	Clean Technology/Cleaner Production Management		
• -Undertake Research and Development to develop technologies for cleaner production;	Clean Technology/Cleaner Production Management		
• -Collect, collate and disseminate information on clean technology	Clean Technology/Cleaner Production Management		
• -Maintain interaction with the industry, financial institutions and Research and Development Laboratories for adoption of clean technologies.	Clean Technology/Cleaner Production Management		
• Strict monitoring of safety systems in industries	OHS System	Department of labor	DEST/ HPPCB, Department of industries, Directorate of factory

2.0 Natural Resource Sector (NRM)

- 2.1 FOREST & WILDLIFE**
- 2.2 WETLAND**
- 2.3 FISHERIES**
- 2.4 HORTICULTURE**
- 2.5 AGRICULTURE**
- 2.6 ANIMAL HUSBANDRY**

2.1 FOREST & WILDLIFE

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<ul style="list-style-type: none"> Development of alternate Community based livelihood programs/ projects around/ in the vicinity of protected areas e.g. eco development programs. 	Community based Eco development	Forest Department	Department of Planning, Rural Development Department, VDCs
<ul style="list-style-type: none"> Maintaining the prescribed forest yield through natural regeneration, afforestation and plantation. Promote wild fruit trees in plantation in forests and degraded lands. 	Silviculture		
<ul style="list-style-type: none"> Introduction / Strengthening of Watershed (macro/micro) development programme in the state to conserve soil and water. 	Watershed Development		Forest, NGOs
<ul style="list-style-type: none"> Strengthening of Catchment area treatment plan in existing areas based on survival rates and soil & water conservation measures. 	CAT Plans	Forest Department	Project proponents /LADCs/ CSOs
<ul style="list-style-type: none"> Monitor project program/ (JFM)/Eco Development / Watershed/ CAT plan) Implementation. 	Monitoring & Evaluation	Forest Department	Village Development Committees/ user groups/ CSOs
<ul style="list-style-type: none"> Increase forest cover / per capita availability through JFM/PFM in degraded forests or wastelands or village common /panchayat land. 	Wasteland/ Degraded Land Development	Forest Department	Department of Planning Department of Rural Development JFM Committees
<ul style="list-style-type: none"> Specific development plans for managing wastelands, culturable fallow or other lands. 	Wasteland/ Degraded Land Development Migratory Community	Forest Department	Department of Planning Department of Rural Development JFM Committees
<ul style="list-style-type: none"> Development of long term literacy and livelihood programs for migratory <i>gujjar</i> graziers to encourage and adopt new agro-economic activities e.g. dairying, horticulture, livestock rearing, with cottage industry and vegetable cultivation. 	Alternative Livelihood & Poverty Alleviation	Department of Planning	Department of Planning Department of Rural Development Department of Social Justice and Empowerment Department of Forests
<ul style="list-style-type: none"> Develop policy instrument for restoration of ownership rights of common land to panchayats for promoting community based forestry projects. 	Public Policy Instruments in Community based Forestry Projects.	Forest Department	Department of Planning Department of Rural Development ZP/PS/GP
<ul style="list-style-type: none"> Promotion of alternatives to fuel-wood like LPG/ and renewable energy sources like Solar through incentives like subsidy. 	Renewable Energy	-Department of Planning Department of Rural Development	<i>Himurja</i> Forest Department
<ul style="list-style-type: none"> Promoting smokeless 	Renewable Energy		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
‘Dhauladhar Chulhas’ by providing subsidy for better kitchen hygiene and women’s health.			
• Identification & Development of village Common Land / Panchayat for pasture. Plantation of community orchards and fodder crops.	Silvi Pastoral Practices	Forest Department	VDC Dept of Animal Husbandry Dept of Rural Development Dept of Horticulture Dept of Planning
• Develop stall feeding and developing an equitable system for the distribution of grass from strips within closed and planted belts programs at household / community level.	Silvi Pastoral Practices	Dept of Animal Husbandry	VDC Dept of Rural Development Dept of Horticulture Dept of Planning
• Programmes for upgrading breeds and reducing non-productive livestock, thus increasing farmers’ returns.	Community Monitoring	Dept of Animal Husbandry	VDC Dept of Rural Development Dept of Horticulture Dept of Planning
• Regulation related to Timber distribution need to be updated/amended to plug the economic losses and to identify the genuine and needy users of timber.	Public Policy Regulation	Forest Department	Panchayats/ VDCs
• Develop a time bound program for gradual phasing out of timber distribution rights and provision of timbers at market rates. However, it may require amendments in the existing regulation/ provisions on rights.	Public Policy & Programme Implementation	Forest Department	HDFDC Panchayats/ VDCs
• Promote multiple timber yielding species e.g. Deodar and Kail along with Chil and fir/spruce in plantation and afforestation projects.	Silviculture	Forest Department	
• Initiate penal action against major defaulters such as suspension of timber distribution rights.	Monitoring & Regulatory Compliance	Forest Department	
• Community/ Panchayat monitoring of timber distribution/ usage.	Monitoring & Regulatory Compliance	Forest Department	
• Demarcate protected forests with boundary pillars.	Monitoring & Regulatory Compliance	Forest Department	VDCs Department of forest town and country planning
• Strict implementation of existing legislation and prosecution of offenders under. Forest Act, Town & Country planning Act.	Monitoring & Regulatory Compliance		
• Periodic monitoring by ZP and PS e.g. ZP to liaison with the with the Forest Department for ejection;			

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
PS to monitor the cases of over exploitation report to Forest Department.			
<ul style="list-style-type: none"> Enforce regulatory measures especially for private pharmaceutical companies harvesting medicinal plants for exploitation. 	Monitoring & Regulatory Compliance	Forest department	State Forest Corporation VDC
<ul style="list-style-type: none"> Monitoring by Panchayat/ VDC at the time of harvesting of forest produce and MAP and in prospecting activities relating to such forest produce. 	Monitoring & Regulatory Compliance	ZP/PS/VDC	Department of Forest
<ul style="list-style-type: none"> Use existing gene bank/ set up a gene bank, preserve and document the germplasm of medicinal and aromatic plants. 	Insitu/ Exsitu/ Germplasm Conservation	Forest department	DEST, State Agriculture Universities.
<ul style="list-style-type: none"> Use biotechnology for propagating and harvesting forest produce and MAP. 	Biotechnology	Forest department	DST, Deptt. Of Biotechnology, State Agriculture Universities. (SIR, ICAR)
<ul style="list-style-type: none"> Develop and implement district wise program to reduce pressure forest produce. 	Alternative Livelihood	Forest Department	
<ul style="list-style-type: none"> Undertake medicinal plants survey, identification, collection, cultivation conservation, utilization, marketing, value addition, research & development, training, development of nurseries & agro techniques, quality control and inter-linkage with other departments. 	Insitu/ Exsitu Conservation		Department of Ayurved
<ul style="list-style-type: none"> Felling in the nature of regeneration felling and thinning can be carried out to induce regeneration and to remove congestion in the crops. Thus, the working plan prescriptions, which is a tool for forest management, need to be implemented. Silvicultural operations are not necessarily commercial harvesting and therefore Govt. of India (MoEF) should be approached for approval. 	Silviculture	Forest Department	- HPFDC Himalayan Forest Research Institute GB Pant Institute of Himalayan Environment and Development

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<ul style="list-style-type: none"> Gather scientific data to assess the impacts and review changes by setting up of permanent plots for long term monitoring (in each Forest types) in the state to understand the forest ecosystem and dynamics in pristine and wilderness areas and those forest where trees have been logged before the ban on green felling was brought in. (This can be set up to gather scientific data on climatic and biological parameters, especially in Alpine and Shivalik ecosystems). 	Biological Monitoring	Forest Department	-HP University -Dr. Y.S. Parmar University of Horticulture & Forestry, Nauni, Solan Himalayan Forest Research Institute GB Pant Institute of Himalayan Environment and Development
<ul style="list-style-type: none"> Promote Deodar and Kail along with Chil and fir/spruce in plantation and afforestation projects. Promote mixed plantations of willow, poplar, oak, fir, bamboo, wild fruit species and others as per the requirement of the site. 	Silviculture	Forest Department / HPFDC	Dept of Planning Dept of Rural Development
<ul style="list-style-type: none"> PS to formulate plans in respect of lands identified by the Gram panchayats in coordination with concerned Range Officers for developing / organizing nurseries for afforestation. 	Nursery Development		ZP/PS/GP Dept of Planning Dept of Rural Development
<ul style="list-style-type: none"> Gram Panchayats (GP) to identify village common lands, other community and no forest lands for development of village wood lots in consultation with the local forest guards/Block officers. This will also include location of site, species to be planted and details of such areas, which need maintenance. 	Afforestation	Forest Department	Dept of Planning Dept of Rural Development
<ul style="list-style-type: none"> PS and GP to supervise monitor afforestation, plantation and nursery works within their area and report to the concerned Forest Officer. 	Community Based Monitoring		Deptt of Planning and Development of Rural Deptt.
<ul style="list-style-type: none"> Conservation of biological diversity should guide afforestation programmes and not carbon sequestration potential alone. 	Biodiversity Conservation		
<ul style="list-style-type: none"> Promote use of pine needles for making bio briquettes to enable regeneration flora as well as the reduce pressure on 	Renewable Energy	Forest Department	

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
fuel wood.			
<ul style="list-style-type: none"> GP to enlist the cooperation of the local people to protect forest from fires and to help Forest Department in extinguishing forest fires by constituting fire protection committee. 	Community based Conservation	Forest Department	-ZP/PS/GP -Department of Revenue -Dept -State Disaster Management Authority
<ul style="list-style-type: none"> PS / GP to recommend action under existing regulation against major and habitual defaulters and to report concerned authorities of the Forest Department. 	Regulation & Compliance Monitoring	Forest Department	-ZP/PS/GP -Department of Revenue -Dept -State Disaster Management Authority
<ul style="list-style-type: none"> ZP/PS/GP to incentivise community involvement in some mainstream forest department activities including forest protection, afforestation and fire fighting 	Community based Forest Management	Forest Department	-ZP/PS/GP -Department of Revenue -Dept -State Disaster Management Authority
<ul style="list-style-type: none"> Revise Relief manual. Strict implementation of Policy Guidelines for recommendation of FCA Cases approved by Govt of H.P. on 30th September, 2009. Strict implementations of notification for the preparation of the Catchment Area Treatment Plans stipulated vide notification No. FFE-B-F-(2)-72/2004-Pt-II dated the 30.9.2009. Promote usage of alternatives solutions like bio-engineering under catchment area treatment Plans, instead of only thrusting engineering solutions. 	Policy/ Programme Management CAT Plan Management & Monitoring Bioengineering & CAT Plan Management	Forest Department	HPPWD Road and Pathways Railway lines HPSEB/ HPPCL/ SJVNL/ Himurja/ (Transmission lines Industries/ Mining, IPH Other User agency/ departments Project Proponents and developers
<ul style="list-style-type: none"> Review of existing protected area network with respect to bio-geographic zones and forest types at regular intervals. (Coverage/ species protection) (extent/ Boundaries) to assess the needs for conservation and effectiveness of existing network at regular intervals. 	Protected Area Management	Forest Department	DEST/HP SCST
<ul style="list-style-type: none"> Develop action plan based on needs identification. 	Project Management	Forest Department	DEST/ HP SCST

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<ul style="list-style-type: none"> Creation of buffer zones around the Pas. Compensation payment. Implement Crop Insurance Schemes. Re-orienting afforestation programmes including vegetative barriers to focus on species that help mitigate man-animal conflict. 	Protected Area Management	Forest Department	Dept of Planning
	Protected Area Management	Forest Department	Dept of Rural Development
		Forest Department	Dept of Agriculture
		Forest Department	Dept of Horticulture
<ul style="list-style-type: none"> Develop & implement awareness program for ZP to educate masses against illicit felling and poaching. Monitoring of offences of illicit felling/poaching by ZP/PS monthly reporting to Range Officer for action GP to prevent and report the cases of illicit felling/poaching to the DFO concerned and take cognizance of patrolling of Forest Guards in their jurisdiction. 	Community based Awareness	Forest Department	ZP/PS/PG
	Regulatory compliance & Monitoring	Forest Department	ZP/PS/PG
	Regulatory Compliance & Monitoring	Forest Department	ZP/PS/PG
<ul style="list-style-type: none"> Working plans to identify areas infested with alien and invasive species and prepare a plan suitable intervention depending on the species, extent of the areas infested. Eradication of invasive and alien species from forest areas to check infestation of invasive and alien species into cropped areas. 	Working Plan	Forest Department	Dept of Planning, Rural Development, Agriculture, Horticulture ,
	Working Plan		
<ul style="list-style-type: none"> Develop techno-economic feasibility study and marked based incentives for utilization of products derived from <i>Lantana</i> bush. 	Micro Enterprise Development		Dept of Planning, Rural Development, Agriculture, Horticulture
<ul style="list-style-type: none"> Promote use of forest produce for value addition, like use of pine needles for making of bio-briquettes to be used as domestic fuel. 	Renewable energy	Forest Department	Dept of Planning, Rural Development, Agriculture, Horticulture

2.2 WETLAND

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
• Demarcate wetland boundary with clear core and buffer areas which can be regulated.	Wetland Inventory & Assessment	Department of Forests and Wildlife	-HPPCB -Dept of Agriculture -Dept of Horticulture
• Assign clear land tenure of wetland and surrounding area	Land Use Planning	HP State Council for Science and Technology (HP SC ST)	-Dept of Animal Husbandry -Dept of Tourism -Watershed Development Committees
• Undertake research studies for understanding impact of creation of new wetlands on local ecology, flora and fauna.	Wetland Inventory & Assessment		-CSOs -Bhakra Beas Management Board and other concerned dam management authority/agency
• Eject encroachment in coordination with relevant authorities e.g. BBMB which owns land in Pong but the catchment of Pong Dam is owned by the state of Himachal Pradesh.	Regulatory Compliance & Monitoring		LADCs
• Identify clear roles and responsibilities of authorities related to wetland management.	Institutional responsibilities & Regulatory Compliance		-Department of Revenue & HP State Council for Science and Technology (HP SC ST) -HP PCB -Dept of Agriculture -Dept of Horticulture -Dept of Animal Husbandry
• Undertake bathymetric mapping of wetlands.	Assessment & Monitoring	Department of Forests and Wildlife	-Dept of Tourism -Watershed Development Committees -CSOs -Bhakra Beas Management Board and other concerned dam management authority/agency LADCs
• Conduct Regular Monitoring of physiochemical parameters. Water quality and land use of wetland.	Assessment & Monitoring		-Department of Revenue & HP State Council for Science and Technology (HP SC ST) -HP PCB -Dept of Agriculture -Dept of Horticulture -Dept of Animal Husbandry
		Department of Forests and Wildlife	-Dept of Tourism -Watershed Development Committees -CSOs -Bhakra Beas Management Board and other concerned dam management authority/agency LADCs
		Department of Forests and Wildlife	-Dept of Tourism -Watershed Development Committees -CSOs -Bhakra Beas Management Board and other concerned dam management authority/agency LADCs
		Department of Forests and Wildlife	-Dept of Tourism -Watershed Development Committees -CSOs -Bhakra Beas Management Board and other concerned dam management authority/agency LADCs
		Department of Forests and Wildlife	-Dept of Tourism -Watershed Development Committees -CSOs -Bhakra Beas Management Board and other concerned dam management authority/agency LADCs
		Department of Forests and Wildlife	-Dept of Tourism -Watershed Development Committees -CSOs -Bhakra Beas Management Board and other concerned dam management authority/agency LADCs

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<ul style="list-style-type: none"> Preparation and implementation of catchment area treatment plans. Introduce fruit bearing trees in the CAT activities 	Cat Planning & Watershed Development	Department of Forests and Wildlife	-Bhakra Beas Management Board and other concerned dam management authority/agency LADCs HPPCB HPPCB, HPSCST, DEST -HPSEB, HPPCL/ SJVNL ZP/PS/GP/LADCs -Department of Agriculture Department of Horticulture
	Afforestation		
<ul style="list-style-type: none"> Ensure implementation of soil conservation measures should be taken to stop land slides. 	Soil & Water Conservation.	Department of Forests and Wildlife	-Department of Rural Department -Department of Animal Husbandry -Watershed Development Committees
<ul style="list-style-type: none"> Create check points for controlling graziers/cattle/ livestock 	Monitoring & Regulatory Compliance	Department of Forests and Wildlife	-HP SC ST -HP PCB -IPH
<ul style="list-style-type: none"> Undertake carrying capacity study of the number of cattle /livestock depending on area around the wetlands 	Carrying Capacity Assessments	Department of Forests and Wildlife	-Dept of Tourism -ULBs -NGOs
<ul style="list-style-type: none"> Conduct regular monitoring of catchment area treatment plans, muck disposal sites and grazing. 	Monitoring & Regulatory Compliance	Department of Forests and Wildlife	DEST Development of Animal Husbandry
<ul style="list-style-type: none"> Ensure muck disposal at designated sites. 	Monitoring & Regulatory Compliance	Department of Forests and Wildlife	DEST HPSCST, Department of animal husbandry
<ul style="list-style-type: none"> Air, water & noise pollution. Avoid blasting during exceeding / nesting season of birds. 	Monitoring & Regulatory Compliance	Department of Forests and Wildlife	DEST HPSCST/ HPPCL, Department of Rural Development Department of Agriculture.
<ul style="list-style-type: none"> Identify and map wetlands where draw down areas are being farmed. Zonation and inclusion of draw down 	GIS & Remote Sensing Under Wetland Inventory & Assessment GIS &	Department of Forests and Wildlife	DEST HPSCST/ HPPCL, Department of Rural Development . Department of Agriculture. PWD.
			HP- PCB Bhakhra Management Board (BBMB)

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
areas in core area.	Remote Sensing Under Wetland Inventory & Assessment		Department of Revenue Department of Agriculture
<ul style="list-style-type: none"> Regulate farming lakes, wetlands during draw down areas. 	Regulatory Compliance & Monitoring		
<ul style="list-style-type: none"> Prepare Wetland Management Plan for each wetland. As part of this plan, prepare & implement. 	Wetland Management Planning & Monitoring.	Department of Forests and Wildlife	ULBs, IPH, Department of tourism, HPPCB
<ul style="list-style-type: none"> Waste material including solid waste management plan. 	Wetland Management Planning & Monitoring.		
<ul style="list-style-type: none"> Suitable camping sites should be identified. 	Wetland Management Planning & Monitoring.		
<ul style="list-style-type: none"> Walking trails should be constructed. 	Wetland Management Planning & Monitoring.		
<ul style="list-style-type: none"> Prevention of pollution from point sources by intercepting, diverting and treating the pollution loads entering the lake. 	Wetland Management Planning & Monitoring. Pollution Control & Monitoring		
<ul style="list-style-type: none"> The interception and diversion works may include sewerage & 			
<ul style="list-style-type: none"> sewage treatment for the entire lake catchment area. 	Pollution Control & Monitoring		
<ul style="list-style-type: none"> Weed removal and wetland monitoring should be carried out. 	Wetland Management Planning		
<ul style="list-style-type: none"> Prepare and implement public health and safety management plan as part of wetland management plan. 	Wetland Management Planning	Department of Forests and Wildlife	
<ul style="list-style-type: none"> Ensure integration & implementation of Awareness program on health and sanitation of different line agencies e.g. IPH, health, tourism, forest & wild life. 	Awareness & Information Dissemination	Department of Forests and Wildlife	IPH, Deptt. of Health, Dept of Tourism, NGO, CSOs
<ul style="list-style-type: none"> Study of ecosystem dynamics, 	Wetland Inventory & Assessment	Department of Forests and Wildlife	-DEST -HP SCST -NGOs
<ul style="list-style-type: none"> Inventorize biodiversity of the wetlands as part of Wetland Management plan. 	Wetland management Planning.		-Department of Fisheries -CSOs -Fisheries Department
<ul style="list-style-type: none"> Carry out scientific study on wildlife and avifauna and its habitat and possible connectivity corridors with larger landscape as part of wetland management plan. 	Protected Area Management & biological Corridor	Department of Forests and Wildlife	-DEST -HP SCST -NGOs -Department of Fisheries -CSOs
<ul style="list-style-type: none"> Prevent and Control of introduced and invasive alien species specific to the 	Wetland Management	Department of Forests and Wildlife	Department of Agriculture Department of Fisheries.

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
wetland as part of wetland management plan.	Planning		
<ul style="list-style-type: none"> • Formulation and implementation of Wetland's Management Action Plan • Activities regarding conversion of wetlands to non-wetlands use, and reclamation and dredging • Enforce strict regulations related to poaching. • Training of enforcement/ regulatory staff and augmentation of enforcement infrastructure • -Seek collaboration with specialized National agencies in the area of wildlife monitoring and enforcement. 	Wetland Management Planning Regulatory Compliance & Monitoring Regulatory Compliance & Monitoring Wildlife Management Wildlife Management	Department of Forests and Wildlife	Department of Agriculture Department of Fisheries -Specialist National Institutions.
<ul style="list-style-type: none"> • Assessment of the hydrology in the immediate catchment/ river basin for small hydro projects • Ensure coordination between relevant authorities on the timing and volume for release of water. • Assessment of dredging needs be based on wetlands affected by siltation and not as a matter of annual management practice. 	River Basin Planning Reservoir Management Reservoir Management	Department of Forests and Wildlife Department of Forests and Wildlife Department of Forests and Wildlife	Himurja HPSEB, HPSEB, HPPCL SJVNL Himurja HPSEB, HPSEB, HPPCL SJVNL
<ul style="list-style-type: none"> • Develop water bodies as tourist spots with adequate ecological protection independently or as part of tourism master plan. 	Tourism Master Planning / Wildlife Management Plan	Department of Forests and Wildlife	Department of tourism, PWD, IPIA, ULB,

2.3 FISHERIES

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Assessment of baseline fisheries production in each wetland/ reservoir/ water body and conduct root cause analysis for decline in production and species. The baseline study should include the following: Inventorize fish species as part of aquatic biodiversity of the wetlands/ water body/ reservoir as part of wetlands/ water body/ reservoir Management plan Breeding season and the spawning grounds of major fish species Silt tolerance study of major fish species including species wise tolerance and duration Study of effect of sediment and silt on benthic communities Assist line department in identifying and implementing measure for dredge spoil stabilization as part of the reservoir/ water body/ wetland operation plan Desilting as part of reservoir/ water body/ wetland operation plan e.g. timing of desilting vis a vis flooding (1st/ 2nd/3rd desilting with 1st, 2nd and 3rd flood) Suggest improvement measures to address directly negative impacts on fish breeding and feeding grounds as part of the restoration of habitat while developing and implementing catchments area treatment plan and watershed development programmes Assist line department to implement measures to reduce fish mortality by maintaining adequate depth all the year round as part of the operation plan Water body/ wetland/ reservoir monitoring plan. Monitor the post project (catchment area treatment plan and watershed development programme) production to assess the efficacy of implemented measures for replications. Coordinate with line departments to formulate multi stakeholders action plan based on route cause analysis Develop and other fish breeding 	<ul style="list-style-type: none"> Sector Assessment & Studies Reservoir / Water body / Wetland Management Reservoir / Water body / Wetland Management Reservoir / Water body / Wetland Management & Watershed Development Reservoir / Water body / Wetland Management & Monitoring Reservoir / Water body / Wetland Management & Monitoring CAT & Watershed Development Route Cause Analysis Conservation Breeding Reservoir / Water body / Wetland Management & Monitoring 	Department of fisheries	<ul style="list-style-type: none"> -HP State Council for Science and Technology (HP SC ST) -HP PCB -Dept of Agriculture -Dept of Horticulture -Dept of Animal Husbandry -Dept of Tourism -Zila Parishad (ZP), Panchayat Samiti (PS) Gram Panchayat (GP) - Watershed Development Committees -CSOs Directorate of Energy (Power Utilities), PWD LADCs -Department of Revenue & HP State Council for Science and Technology (HP SC ST) Development Committees

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> programmes for Endangered/ indigenous species Develop and implement pilot project to reduce fish mortality related to annual silt fishing linked to operational strategy of reservoir Undertake investigative studies on the impact of insecticides and fertilizer residue on biotic life of aquatic lotic ecosystems and prioritize water bodies based on the level of concern Assist department of agriculture and horticulture department in formulating action plan in the identified areas based on level of concern according to investigative studies Promote bio-farming, IPM, IPNM, bio-fertilizer, bio-pesticide, etc. Assist the respective line departments to prepare wetland/ water body/ reservoir management plan (sewage, solid wastes, toxic chemicals, tourists destination and industries) for each prioritized wetland/ water body/ reservoir. As part of this plan, implement measures to protect and rehabilitate spanning and feeding areas. Carry out regular monitoring of the prioritized wetland/ reservoir/ water body as part of wetland/ reservoir/ water body management plan. Ensure dredge spoils do not re-enter the water body/ wetland/ reservoir. Since the introduction of new species is fraught with certain risks as such the biotic material if necessary be imported as strict quarantine procedures be adopted prior to their release in natural waters. Formulation and implementation of Wetland's Management Action Plan Enforce strict regulations related to poaching and other areas. Enhance capacity of personnel & training of enforcement/ regulatory staff and augmentation of enforcement 	<ul style="list-style-type: none"> Ecosystem based Fisheries Assessment Ecosystem based Fisheries Assessment Ecosystem based Fisheries Assessment Reservoir / Water body / Wetland Management & Monitoring Reservoir / Water body / Wetland Management & Monitoring Reservoir / Water body / Wetland Management & Monitoring Quarantining Reservoir / Water body / Wetland Management & Monitoring Regulatory Compliance & Monitoring Information 	<ul style="list-style-type: none"> Department of Fisheries Dept. of Fisheries DEST Dept. of Fisheries Department of Fisheries, Department of Forests & Wildlife, 	<ul style="list-style-type: none"> of -HP- PCB -Directorate of Energy (utilities) -ZP/PS/GP -Department of Revenue -Department of Agriculture -Department of Horticulture - Forest Deptt. of IPH, Municipalities, Deptt. of Forest and wild life, SPCB, Deptt. of health, Deptt. of Urban Development, NGOs, CSOs, Directorate of Energy (Utilities) - HPPCB -HP SCST -NGOs -Department of Fisheries -CSOs -ZP/PS/GP -Forest - DEST -HPPCB -HP SCST -NGOs -Department of Fisheries -CSOs -ZP/PS/GP -Forest Department of Agriculture, NGO's, CSO's, Department of Tourism, Directorate of Energy (Utilities), ULBs, IPH and HPPCB

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
infrastructure.	Dissemination & Awareness	HP State Council of Science & Technology	Deptt. of Fisheries, DEST, IPH, Himurja Directorate of Energy (Utilities)
<ul style="list-style-type: none"> Develop awareness programmes for all the stakeholders for education on conservation of fish. 			
<ul style="list-style-type: none"> Assist line department in assessment of the hydrology in the immediate catchment/ river basin for small hydro projects 	River Basin Planning		
<ul style="list-style-type: none"> Assist line department to ensure coordination between relevant authorities on the timing and volume for release of water 	Reservoir / Water body / Wetland Management		
<ul style="list-style-type: none"> Assessment sustainable environmental flow for each river and stream. 	River Basin Planning		
<ul style="list-style-type: none"> Ensure release of minimum 15% of lean flow or environmental flow downstream, whichever is higher to be made mandatory. 	River Basin Planning		
<ul style="list-style-type: none"> Assist line department in developing, design and implement appropriate fish ladder or fish pass from diversion structure or additional measure to facilitate minimum downstream discharge in order to maintain aquatic longitudinal connectivity (At the moment sluice gate are not designed in a manner to release 15% of minimum flow). 	River Basin Planning		
<ul style="list-style-type: none"> Ensure minimum downstream discharge to be maintained through fish pass 		Department of Tourism, HPPCB	Deptt. of Fisheries, PWD IPIA, ULB, Zila Parishad, Gram Panchayat
<ul style="list-style-type: none"> Identifying and advising on regulation the number of motorized tourist vessels in developing water bodies as tourist spots with adequate ecological/ fisheries protection. 	Ecotourism		

2.4 HORTICULTURE

Proposed Actions, Type of Response and Inter-sectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> • Introduction of water efficient micro-irrigation system. • Approach on rainwater harvesting. • Increased use of mulch, organic manures, drought tolerant crops, etc. 	☉Watershed development and management encompassing identification of small and micro watersheds, treatment of watershed ☉Transfer of technologies through extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc ☉Exposure visits to mountainous states where successful interventions in watershed management has been demonstrated ☉Orientation workshop on lab to land initiative	Horticulture	Agriculture, CSSRI, Horticulture/Agriculture Universities, NGO's, PRI's, IPH
	☉Watershed development and management encompassing identification of small and micro watersheds, treatment of watershed ☉Transfer of technologies through extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc ☉Exposure visits to mountainous states where successful interventions in watershed management has been demonstrated ☉Orientation workshop on lab to land initiative		
	☉Transfer of technologies through extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc ☉Exposure visits to mountainous states where successful interventions in watershed management has been demonstrated ☉Orientation workshop on lab to land initiative		
<ul style="list-style-type: none"> • Adherence to fruit and vegetable crops based cropping systems in line with soil fertility status in different agro climatic zones as per their suitability. • Integrated Nutrient Management needs more emphasis implementation. • Package of practices for the horticultural crops to be developed and practiced accordingly. 	☉Crop Management ☉ Transfer of technologies as suggested in Package of Practice (POP) extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc. ☉ Integrated Pest and Nutrient Management ☉ Transfer of technologies as	Agriculture	Horticulture, CSSRI, Agriculture Universities, NGO's, PRI's, UHF,

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
	suggested in Package of Practice (POP) extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc ④ Training and promotion of usage of glasshouses and polyhouses ④ Need based Training of Extension workers in implementation of POP		
• Proper surveillance of wild animals	④ Forest & Wildlife Management ④ Gaps in understanding of wildlife areas, their movement feeding and behavioral pattern ④ Orientation in wildlife conservation and land-use aspects of environmental security. ④ Fodder and pasture management		
• Protection of crops by advocating use of wired fencing.	④ Forest & Wildlife Management ④ Gaps in understanding of wildlife areas, their movement feeding and behavioral pattern ④ Orientation in wildlife conservation and land-use aspects of environmental security. ④ Fodder and pasture management	Forest	Agriculture, Horticulture
• Enactment of some policy	④ Forest & Wildlife Management ④ Gaps in understanding of wildlife areas, their movement feeding and behavioral pattern ④ Orientation in wildlife conservation and land-use aspects of environmental security. ④ Fodder and pasture management		
• Promote soil conservation measures by people participation.	④ Soil & Water Conservation	Agriculture	Horticulture / forest
• Increasing vegetation under fruits with concerted efforts.	④ Horticulture & Crop		
• Emphasis on water harvesting and water conservation.	④ Soil & Water Conservation		
• Propagation of micro irrigation system.	④ Soil & Water Conservation		
• Promotion of Bio pesticides & Bio-fertilisers.	④ Integrated Pest and Nutrient Management ④ Organic farming ④ Vermi composting	Horticulture	Agriculture
• Promotion of organic based farming	④ Organic farming		
• Identify and map areas infested with obnoxious weeds and prepare a plan with suitable interventions depending on the species, extent of the areas	④ Community Based Weeds Management Programme ④ Training on carrying out techno – economic feasibility study for utilization of products derived from	Horticulture	Agriculture, Research Institutes and ICAR

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
infested.	obnoxious weeds like Lantana camara.		
• Conduct techno economic feasibility study and market based incentives for utilisation of products derived from obnoxious weeds.	<ul style="list-style-type: none"> ④ Biotechnology ④ Short term Training in biotechnology/bioinformatics Short term training course On Bioinformatics in Genomics & Proteomics 		
• Genetically modified seeds to be thoroughly evaluated, tested and then promoted through R & D.	<ul style="list-style-type: none"> ④ Biotechnology ④ Short term Training in biotechnology/bioinformatics Short term training course On Bioinformatics in Genomics & Proteomics 	Agriculture	Horticulture
• Strengthening extension network Need to provide better communication network Investment in developing infrastructure	<ul style="list-style-type: none"> ④ Training in Off season vegetable production technologies ④ Training in Current Trends in Commercial Floriculture ④ Training in “Wild and Underutilized Fruits” through Distance Learning ④ Improved Agriculture Technology Vegetable growing, bee keeping , mushroom cultivation 	Horticulture	Agriculture
• Accelerate / initiate actions envisaged in project implementation plan for management of infrastructure facilities like local market/storage.	④ APMC Market Infrastructure	Horticulture	HPMC, APMB, Agriculture, PWD
• Monitor climatic conditions, e.g. moisture content, temperature, relative humidity, etc. as part of post harvest management plan.	④ Post Harvest Corp Management		
• Develop and implement MSW management Plan through APMC	④ APMC MSW Management		
• Enforcement of regulation strictly.	④ Regulatory Compliance & Monitoring	Horticulture	Horticulture/ Agriculture Universities, ICAR
• Creating awareness among farmers	④ Awareness & Information dissemination		
• Capacity Building of the Farmers	④ Awareness & Information dissemination		
• Promotion of Polyhouse / Nethouse and micro-irrigation system.	④ Soil & Water Conservation	Horticulture	Horticulture/ Agriculture Universities, ICAR
• Awareness / training to the farmers about benefits of such technology and its full crop geometry	<ul style="list-style-type: none"> ④ Training courses for floriculture and horticulture activities in green-houses ④ Setting up and promotion of oil extraction units ④ Preservation of Fruits and Vegetables, Refrigeration and air-conditioning mechanism with focus 	Horticulture	Horticulture/ Agriculture Universities, ICAR

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
	on HVAC technology ② Tea processing and packing spices production and packaging, pickles and starch production. ② Manufacturing of Apple Cider ② Vocational course for promotion of fruit processing units and pinestry for foam.		
• Promotion of Insurance Incentive schemes	② Crop Insurance	Agriculture	Horticulture/ Agriculture Universities, ICAR
• Integrated nutrient management and technology need more emphasis.	② Integrated Pest and Nutrient Management ② Vermi composting ② Organic farming		
• Soil testing and judicious use of fertilizers	② Integrated Pest and Nutrient Management ② Vermi composting ② Organic farming		
• Promotion of organic farming.	② Integrated Pest and Nutrient Management ② Vermi composting ② Organic farming		
• Early warning of natural calamities of heavy rains, hailstorms, cloud burst and temperature variation to be given by IMD Crop insurance and contingency crop planning to be implemented.	② Weather forecasting, Agriculture ② Production & Crop Insurance.	Horticulture	Agriculture, IMD, University/ Research Institutes
• Integrated Natural Resource Management need to be implemented.	② Short term Training in biotechnology/bioinformatics. Short term training course On Bioinformatics in Genomics & Proteomics		
• Develop (through R & D) and promote varieties tolerant to fluctuations of weather Strong support for protected cultivation need to be implemented.	② Training programme on Bioresources awareness and conservation ② Training Programme on Disaster Management covering disasters on human Lives, Property, Ecology and Environment. ② Training on Soil Resource mapping and Land use Planning		
• GIS methods for detailed soil resource mapping and land use planning to be carried out.	② GIS & Remote Sensing		
• Promote awareness and training programmes for post harvest management for farmers / handlers / warehouse managers / transporters.	② Awareness & Information Dissemination	Horticulture	HPMC, Agriculture, APMB, Horticulture/ Agriculture Universities and ICAR
• Develop and implement agriculture produce market management / solid waste management programme.	② APMC MSW Management		
• Creation of better marketing infrastructure facilities like marketing	② APMC Market Infrastructure ② Training programme on	Horticulture	HPMC, Agriculture, APMB, Horticulture/ Agriculture

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
yards, transportation, collection, storage, grading and packing near the production area.	opportunities in Food Processing Sector ⌚ Cold Chain Development and Post-harvest Management in Horticultural Crops ⌚ Training Post Harvest Management and Value Addition of Horticultural Produce		Universities and ICAR
• Need to develop and promote efficient post harvesting technologies like primary processing units	⌚ Post Harvesting Technology Management.		
• Need to establish rural connectivity by constructing farm access roads.	⌚ Rural Road Infrastructure Master Planning		
• Need to develop sound market intelligence network.	⌚ ADMC Market Information System ⌚ Training on promotion of polyhouses and formal training on harvest and post harvest practices ⌚ Exposure to farmers on Contract farming ⌚ Need for training and setting-up of Centre for Retail Management of agro products		
• Need to strengthen R & D to develop varieties / techniques / technologies to mitigate the adverse impact of climate change.	⌚ Horticulture Climate Change ⌚ Research and development for adaptation and mitigation of climate change ⌚ Training and capacity building for: <u>Scientists:</u> -Tools and methodologies in climate change research at advanced research institutes in India and abroad • -Short term visit of senior officers to advanced countries • -Inviting foreign experts to conduct hands on training setting up and calibration of state of the art facilities in the state <u>For State line department officers:</u> Implications of climate variability in crop management and contingency planning during floods and other extreme weather conditions • <u>For Farmers, NGOs, Self Help Groups (SHGs) and etc.:</u> • -Create awareness on climate change and simple adaptation measures farmers can follow to cope with climate variability -NGOs can be trained as trainers who in turn will train community based organizations (CBOs) and farmers • <u>For Development Banks, Co-operative Societies and Insurance Companies:</u>	Horticulture	Agriculture, Horticulture/ Agriculture Universities, IMD and ICAR

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
	<ul style="list-style-type: none"> -Climate risk assessment and modeling -Methods for crop loss assessment due to climatic events and weather insurance products <p><u>For Policymakers:</u> General awareness on climate change impact on agriculture and need for a policy framework for prudent use of energy and natural resources</p>		
<ul style="list-style-type: none"> • Conservation of germplasm <p>Strengthening of IMD to forewarning about weather up to micro level in hilly areas. Creating awareness among farmers.</p>	<ul style="list-style-type: none"> ⌚ Biotechnology ⌚ Weather Forecasting & Agriculture Production ⌚ Awareness – Information Dissemination 		

2.5 AGRICULTURE

Proposed Actions, Type of Response and Inter-sectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> • Introduction of water efficient micro-irrigation system 	- Watershed development and management encompassing identification of small and micro watersheds, treatment of watershed	Agriculture	Horticulture, SAU's and R.& D Institutes, NGO's, PRI's, IPH, Rural Development
	- Transfer of technologies through extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc		
	- Exposure visits to mountainous states where successful Interventions in watershed management has been demonstrated		
	- Orientation workshop on lab to land initiative		
<ul style="list-style-type: none"> • Approach on a large scale rainwater harvesting • Increase use of mulch, organic manures, drought tolerant crops, etc. 	- Watershed development and management encompassing identification of small and micro watersheds, treatment of watershed		
	- Transfer of technologies through extension interventions like trainings, demonstrations, exposure visits, replication of success stories etc		
	- Exposure visits to mountainous states where successful interventions in watershed management has been demonstrated		
	- Orientation workshop on lab to land initiative		
<ul style="list-style-type: none"> • Increase use of mulch, organic manures, drought tolerant crops, etc. 	- Transfer of technologies through extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc.		
	- Exposure visits to mountainous states where successful interventions in watershed management has been demonstrated		
<ul style="list-style-type: none"> • Watershed development approach for rainfed agriculture. 	- Orientation workshop on lab to land initiative		
	- Watershed development and		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
	management encompassing identification of small and micro watersheds, treatment of watershed		
	- Transfer of technologies through extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc.		
	- Exposure visits to mountainous states where successful interventions in watershed management has been demonstrated		
	- Orientation workshop on lab to land initiative		
<ul style="list-style-type: none"> Adherence to crops and cropping systems in line with soil fertility status in different agro climatic zones as per their suitability. 	- Crop Management	Agriculture	SAU's & HPMB.
	- Transfer of technologies as suggested in Package of Practice (POP) extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc.		
<ul style="list-style-type: none"> Need to identify crops which can adapt to climate change suitability. 	- Agriculture & Climate Change		
	- Transfer of technologies as suggested in Package of Practice (POP) extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc.		
	- Training and promotion of usage of glasshouses and polyhouses		
	- Need based Training of Extension workers in implementation of POP		
<ul style="list-style-type: none"> Package of practices for the crops to be developed and practiced accordingly 	- Cropping Practices & Transfer of technologies as suggested in Package of Practice (POP) extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc.		
	- Training and promotion of usage of glasshouses and polyhouses		
	- Need based Training of Extension workers in implementation of POP		
<ul style="list-style-type: none"> Promote soil conservation measures by people participation Increase vegetation and vegetative conservation. Emphasis on rain water harvesting and conservation. Promotion of contour 	- Soil & water conservation including rain water harvesting	Agriculture	Horticulture, Forest, IPH, Rural Development, SAU's , R & D Institute.

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
terracing on slopy fields. Follow watershed development approach			
<ul style="list-style-type: none"> • Promotion of Bio pesticides • Promotion of organic farming • Promotion of IPM technology. • Awareness campaigns to educate farmers. 	<ul style="list-style-type: none"> - Integrated Pest & Nutrient Management - Vermi Composting - Organic Farming - Integrated Pest Management - Awareness & Information Dissemination 	Agriculture	Horticulture
<ul style="list-style-type: none"> • Identity and map areas infested with obnoxious weeds and prepare an action plan with suitable interventions depending on the species and extent of the areas infested, through community involvements. • Conduct techno – economic feasibility study and market based incentives for utilization of products derived from obnoxious weeds. 	<ul style="list-style-type: none"> - Community Based Weeds Management Programme - Training on carrying out techno – economic feasibility study for utilization of products derived from obnoxious weeds like Lantana camara. - Community Based Weeds Management Programme - Training on carrying out techno – economic feasibility study for utilization of products derived from obnoxious weeds like Lantana camara. 	Agriculture	Forest and Rural Development, SAU's, & A.H.
<ul style="list-style-type: none"> • Strengthening extension network • Need to provide better extension and communication network. • Need based and location specific R&D 	<ul style="list-style-type: none"> - Production of disease free planting materials using tissue culture techniques - Training on setting up of Maize processing plants for production of starch and/or bio- fuel and need for vocational courses to develop training skills - Improved Agriculture Technology 	Agriculture	Horticulture, SAU's and R&D institute.
<ul style="list-style-type: none"> • Integrated nutrient management. • Soil testing and judicious use of nutrients • Promotion of organic farming 	<ul style="list-style-type: none"> - Integrated Pest & Nutrient Management - Integrated Pest & Nutrient Management - Vermi composting - Organic farming - Organic farming 	Agriculture	Horticulture, SAU's and R&D institute.
<ul style="list-style-type: none"> • Early warning of natural calamities of heavy rains, hailstorms, cloud burst and temperature to be given by IMD. 	<ul style="list-style-type: none"> - Weather Forecasting & Agriculture Production - Training Programme on Disaster Management covering disasters on human Lives, Property, Ecology and Environment 	Agriculture	Horticulture, IMD, SAU's &/ R&D Institutes.
<ul style="list-style-type: none"> • Crop insurance and contingency crop planning. 	<ul style="list-style-type: none"> - Training Programme on Disaster Management covering disasters on human Lives, Property, Ecology and 		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
	Environment	Agriculture	HPMC, Horticulture HPMB, SAU's and R&D Institutes.
	- Training programme on Bioresources awareness and conservation		
• Integrated Natural Resource Management.	- Training programme on Bioresources awareness and conservation		
• Develop and promote varieties tolerant to fluctuations of weather.	- Cropping Practices & Transfer of technologies as suggested in Package of Practice (POP) extension interventions like trainings, demonstrations, exposure visits, replication of success stories, etc.		
	- Training and promotion of usage of glasshouses and polyhouses		
	- Need based Training of Extension workers in implementation of POP		
• Strong support for protected cultivation. GIS methods for detailed soil resource mapping and land use planning.	- Training on Soil Resource mapping and Land use Planning		
• Market led production System.	APMC Market Research & Agriculture Produce logistics Systems.		
• Sensitization of farming community regarding efficient marketing & post Harvest technology.	- Training on promotion of polyhouses and formal training on harvest and post harvest practices		
	- Need for training and setting-up of Centre for Retail Management of agro products		
• Creation of better marketing infrastructure facilities like marketing yard, transportation, collection, storage, grading and packing near the production area	- APMC Market Infrastructure		
• Need to develop and promote efficient post harvesting technologies.	- Training on promotion of polyhouses and formal training on harvest and post harvest practices		
	- Need for training and setting-up of Centre for Retail Management of agro products		
• Need to establish rural connectivity by constructing farm access roads.	- Rural Roads Master Planning		
• Needs to develop sound market intelligence network.	- APMC Market Information System		
• Organise farmers into commodity groups & their capacity building. Contract farming	- Training on promotion of polyhouses and formal training on harvest and post harvest practices		

Proposed Actions		Institutional Responsibility	
Areas		Coordination Agency	Collaborating Agency
	<ul style="list-style-type: none"> - Exposure to farmers on Contract farming - Need for training and setting-up of Centre for Retail Management of agro products 	Agriculture	Horticulture, Revenue, & I&PH.
<ul style="list-style-type: none"> • Promotion of precision farming. 	<ul style="list-style-type: none"> - Conservation Agriculture & Precision Farming 		
<ul style="list-style-type: none"> • Increasing cropping intensity. 	<ul style="list-style-type: none"> - Agriculture Yield & Crop Diversification 		
<ul style="list-style-type: none"> • Promotion of high value crops. 	<ul style="list-style-type: none"> - Agriculture Yield & Crop Diversification 		
<ul style="list-style-type: none"> • Bringing fallow land under cultivation. 	<ul style="list-style-type: none"> - Agriculture Land Reclamation 		
<ul style="list-style-type: none"> • Bringing more area under efficient irrigation through rain water harvesting 	<ul style="list-style-type: none"> - Irrigation Efficiency & Rain Water Harvesting 		
<ul style="list-style-type: none"> • Consolidation of holdings. 	<ul style="list-style-type: none"> - Land Reforms 	Agriculture	Horticulture, SAU's and R&D Institute.
<ul style="list-style-type: none"> • Need to strengthen R & D to develop varieties/ techniques/ technologies to mitigate the adverse impact of climate change. 	<ul style="list-style-type: none"> - Agriculture & Climate Change Research and development for adaptation and mitigation of climate change - Training and capacity building for: 		
	Scientists:		
	<ul style="list-style-type: none"> - Tools and methodologies in climate change research at advanced research institutes in India and abroad 		
	<ul style="list-style-type: none"> • Short term visit of senior officers to advanced countries 		
	<ul style="list-style-type: none"> • Inviting foreign experts to conduct hands on training setting up and calibration of state of the art facilities in the state 		
	For State line department officers:		
	Implications of climate variability in crop management and contingency planning during floods and other extreme weather conditions		
	<ul style="list-style-type: none"> • For Farmers, NGOs, Self Help Groups (SHGs) and etc.: 		
	<ul style="list-style-type: none"> - NGOs can be trained as trainers who in turn will train community based organizations (CBOs) and farmers • For Development Banks, Co-operative Societies and Insurance Companies: 		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
	<ul style="list-style-type: none"> •Climate risk assessment and modeling <p>Methods for crop loss assessment due to climatic events and weather insurance products</p> <p>For Policymakers: General awareness on climate change impact on agriculture and need for a policy framework for prudent use of energy and natural resources</p>		
<ul style="list-style-type: none"> • Conservation of germplasm. 	- Biotechnology		
<ul style="list-style-type: none"> • Strengthening of IMD to forewarning about weather upto micro level in hilly areas 	- Weather forecasting & Agriculture production		
<ul style="list-style-type: none"> • Creating awareness among farmers. 	- Awareness & Information Dissemination		

2.6 ANIMAL HUSBANDRY

Proposed Actions, Type of Response and Inter-sectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Prepare and implement community level projects to overcome overgrazing. 	<ul style="list-style-type: none"> Improvement in breeding efficiency. 	Forest	Agriculture, Animal Husbandry/ Allied Departments
<ul style="list-style-type: none"> Demarcate boundaries of grazing land and prepare grazing plans. 	<ul style="list-style-type: none"> Fodder development programs 		
<ul style="list-style-type: none"> Make people aware about harmful effects of overgrazing/soil erosion. 	<ul style="list-style-type: none"> Fodder development programs 		
<ul style="list-style-type: none"> Ensure participation of villages/PRI. Departments should act as facilitators. 	<ul style="list-style-type: none"> Extension and training. Extension and training. 	PRI's	Agriculture, Animal Husbandry/ Patvaaris/ Gram Sewaks/ Forest Guards
<ul style="list-style-type: none"> Improvement of Indigenous livestock. 	<ul style="list-style-type: none"> Improvement in breeding efficiency. 		
<ul style="list-style-type: none"> Plan need to be prepared to monitor the effect of climate change on animal health 	<ul style="list-style-type: none"> Tools and methodologies in climate change research at advanced research institutes in India and abroad 	Research Institutes	Animal Husbandry/ allied (village level workers)
<ul style="list-style-type: none"> Livestock breeds to be developed, which can adapt to a particular climate. 	<ul style="list-style-type: none"> Tools and methodologies in climate change research at advanced research institutes in India and abroad Attention on livestock which has not received enough attention in climate change research in the past. In particular, the documentation of adaptive traits in indigenous breeds. 		
<ul style="list-style-type: none"> It is proposed to have polyclinics in the remaining districts of the state to provide better diagnostic services to the People. 	<ul style="list-style-type: none"> Animal Husbandry infrastructure planning & management 	Animal Husbandry	PRI's and stakeholders concerned.
<ul style="list-style-type: none"> Constant monitoring of surveillance of livestock diseases and mortality. 	<ul style="list-style-type: none"> Disease monitoring & surveillance 		
<ul style="list-style-type: none"> Specialized diagnostic centers to be established like laboratories at Sub-division and block levels. 	<ul style="list-style-type: none"> Animal Husbandry infrastructure planning & management Awareness & Information Dissemination 		
<ul style="list-style-type: none"> Create awareness among masses about consumption of only non-infected milk and meat products. 			
<ul style="list-style-type: none"> Animal health care centre/Labs to be properly equipped for diagnosing various diseases in animals 	<ul style="list-style-type: none"> Animal Husbandry infrastructure planning & management 	Animal Husbandry	Health & Family welfare,
<ul style="list-style-type: none"> Information to be disseminated of such communicable diseases to people 	<ul style="list-style-type: none"> Awareness & Information Dissemination 		
<ul style="list-style-type: none"> Increased collaboration between Veterinarians and Medicos regarding public health issues. 	<ul style="list-style-type: none"> Animal Husbandry & Public Health 	Animal Husbandry.	Health & Family welfare, PRI's, Local bodies and
<ul style="list-style-type: none"> Awareness regarding scientific livestock's management 	<ul style="list-style-type: none"> Short term training courses (as given in Annexure I) 		
<ul style="list-style-type: none"> Establishment of registered slaughter 			

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
houses at hospital level and amendment of laws for enforcing compulsory meat inspection at the slaughter houses before selling in the market even in the rural areas.	- Animal Husbandry & Public Health	Forest/ PRI's	Animal Husbandry, Agriculture, Rural Development
• Upgradation of Veterinary dispensaries to Veterinary Hospital so that the ratio of hospital: dispensary is not more than 1:8.	- Animal Husbandry infrastructure planning & management		
• Enhancing awareness of livestock diseases which adversely impact public health.	- Awareness & Information Dissemination		
• Encourage stall feeding of livestock by farmers.	- Livestock Feeding Practices		
• Promoting fodder cultivation.	- Pastureland Development		
• Establishment of fodder banks at Panchayat level.	- Fodder & Pasture Management		
• To increase the nutritive values of roughages by Urea treatment. Molasses treatment of rice crops/wheat straw, rice straw & poor nutrient value grasses etc	- Livestock Feeding Practices		
• Promote fodder (grass & trees) species in JFM and community forest projects.	- Pastureland Development		
	-Alternate Energy Source Development		
	- Awareness & Information Dissemination		
• Encourage biogas plants.	-Solid Waste	PRI's	Agriculture, HPPCB, Local Bodies, Rural Development
• Encourage the use of organic manure.	-Alternate Energy Source Development		
• Proper scientific disposal of dead animals' carcasses.	- Awareness & Information Dissemination		
• Steps to monitor and allow the migration of animals according to carrying capacity/availability of grazing lands/grazing facility.	- Solid Waste Management	Forest	Animal Husbandry, Agriculture, PRI's, Representatives of migratory community like Gaddies and Gujjars.
• Rearing of high yield improved breeds of animals	- Forestry & Wildlife Management		
• Promoting fodder cultivation.	-Improvement in breeding efficiency. development programs		
• Encouraging plantation of fodder trees/ improved fodder grasses etc.	- Fodder development program		
• Extensive mass campaign to eradicate obnoxious weeds.	- Fodder development program	Forest/ PRI's	Animal Husbandry, Rural Development, Public health department and HPPCB.
• Re-plantation of fodder trees, grass etc on a massive scale.	- Techno – economic feasibility study for utilization of products derived from obnoxious weeds like Lantana camara		
• Plantation of improved variety of fodder roots.	- Fodder development programs		
	- Fodder development programs		

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> • Development of community level dead animal carcasses management system. • Identification of proper sites/ places for the disposal of carcasses . 	<ul style="list-style-type: none"> - Community Level Environmental Pollution & Control Planning - Community Level Environmental Pollution & Control Planning 	PRI's	Animal Husbandry, Rural Development, Public health, HPPCB.
<ul style="list-style-type: none"> • Establishment of modern slaughter houses at appropriate locations. • Strict monitoring of slaughter houses' waste generation and its proper disposal. 	<ul style="list-style-type: none"> - Animal Husbandry Infrastructure Planning & Management - Solid Waste Management & Monitoring 	Local Bodies	Animal Husbandry, Public health, PRI's, IPH and HPPCB.
<ul style="list-style-type: none"> • Policy encouraging compassion towards animals in the society • Improved animal husbandry infrastructure i.e. provision for operation theatre facilities, medicines and kennels at sub-division level and imparting training to more Vets/Para-Vets in sterilization techniques. • Compulsory registration of livestock with the panchayats. • Provision of penalty for letting their animal & stray. • Implementation of animal birth control programme. • Strengthening of existing Go sadans and opening of new ones. 	<ul style="list-style-type: none"> - Community Level Environmental Pollution & Control Planning - Awareness & Information Dissemination - Animal Husbandry Infrastructure Planning, Implementation & Capacity Building - Regulatory Compliance & Monitoring - Regulatory Compliance & Monitoring - Animal Husbandry Infrastructure Planning & Implementation 	PRI's	Local bodies, Animal Husbandry, NGO's
<ul style="list-style-type: none"> • Scientific culling of monkeys • Provision of encouraging plantation of wild fruits trees etc in the forest area /, promotion of water bodies etc. • Policies that aim at minimum encroachment of human activities in the forest area. • Policies encouraging exports of monkeys etc. 	<ul style="list-style-type: none"> - Forestry & Wildlife Management - Forestry & Wildlife Management - Forestry & Wildlife Management - Forestry & Wildlife Management 	Forest (wildlife wings)	PRI's, Animal Husbandry, NGO's

3.0 SERVICES SECTOR

3.1 EDUCATION & VOCATIONAL TRAINING

3.2 IT & TELECOM

3.3 LIVELIHOOD

3.1 Education & Vocational Training

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
<ul style="list-style-type: none"> Development and implementation of environmental education programme as main subject at secondary and tertiary level in the state. 	Environmental Education Program of Teacher & other Stakeholders	Department of secondary / higher education,	State Universities, NGOs, CSOs, MNRE, MoEF, NCERT
<ul style="list-style-type: none"> Development of curriculum for environmental education at different levels (Primary, Secondary / Tertiary / Technical education) as part of environment education programme. Assess and develop curriculum for specific courses for e.g. energy conservation, Effluent treatment (operation and maintenance) as per needs of the business and industries groups and other agencies . 	Environmental Education Program of Teacher & other Stakeholders Environmental Education Program of Teacher & other Stakeholders	Department of secondary / higher education,	State Universities, NGOs, CSOs, MNRE, MoEF, NCERT
<ul style="list-style-type: none"> Development of training capacity building programme for teachers / skill personnel to augment their skills for imparting environmental education at primary, secondary and tertiary level. 	Environmental Education Program of Teacher & other Stakeholders	MoHRD UGC	State Universities, MNRE, MoEF, NCERT Department of Secondary / Higher Education
<ul style="list-style-type: none"> Ensure budgetary allocation for environmental education program at different levels 	Environmental Education Program of Teacher & other Stakeholders	Department of Education and Government of HP	State Universities and Higher Education.
<ul style="list-style-type: none"> Training needs assessment with respect to emerging areas in environment e.g. clean technology / cleaner production, climate change, ICT etc. 	Environmental Education Program of Teacher & other Stakeholders	Education Technical Education	DEST HPPCB, State Universities, NGOs, CSOs, MNRE, MoEF, NCERT
<ul style="list-style-type: none"> Development of training programs for stakeholders as per needs assessment. Assess and develop vocational long term/short term training courses, it is, etc. to address environmental issues. Introduce special papers/certificate courses (15 days to 3 months) in existing vocational courses and training 	Environmental Education Program of Teacher & other Stakeholders Environmental Education Program of Teacher & other Stakeholders Environmental Education under Vocational Training	HPPCB	DEST, State Universities, NGOs, CSOs, MNRE, MoEF, NCERT AICTE NABET
<ul style="list-style-type: none"> Development and implement of vocational training programs especially on resource conservation, cleaner technologies, cleaner production and pollution control. 	Environmental Education under Vocational Training	Department of technical education	State Universities, NGOs, CSOs, MNRE, MoEF, NCERT
<ul style="list-style-type: none"> Ensure budgetary allocation for vocational training programs 	Environmental Education under Vocational Training	Government of Himachal Pradesh	State Universities, NGOs, CSOs, MNRE, MoEF, NCERT
<ul style="list-style-type: none"> Assess and identify research and 	Environmental Education	Department of	UGC

				Institutional Responsibility	
				Coordination Agency	Collaborating Agency
development needs of business and Industries.				Higher and Department of Technical Education	AICTE State research and development institutions CII Business and Industries Groups and associations
• Mainstream and introduce the identified needs into research and development priorities.	the identified	Needs Assessment	Environmental Needs Assessment		

3.2 IT & TELECOM

Proposed Actions, Type of Response and Intersectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaborating Agency
• Development of e-waste inventory for the state.	E – Waste Management (Inventors, Collection, Transportation, Reuse, Recycling, Disposal)	DEST	HPPCB, Department of IT, ULBs, Department of industry, NGOs, CSO
• Development of e-waste management (collection, transportation & disposal) and principles of business model (take back) based on principles of 3 R's/EPR in the state.	E – Waste Management (Inventors, Collection, Transportation, Reuse, Recycling, Disposal)	DEST / HPPCB	DoIT, ULBs, Department of industry, NGOs, CSO
• Strict implementation of e-waste rules.	Regulatory compliance & Monitoring	HPPCB	DEST, DoIT, Department of industry, ULBs, NGOs, CSO
• EIA clearance of BPO should be conditional with a mandatory e-waste management plan.	E – Waste Management (Inventors, Collection, Transportation, Reuse, Recycling, Disposal)	State operational committee	EIA DEST, HPPCB
• Accelerate/Initiate programmes to raise awareness of the consumers.	Awareness & Information Dissemination	State operational committee	EIA DEST, HPPCB,
• Strict compliance to safety standards as per industry best practices / codes.	Regulatory compliance & Monitoring	DoT, DoIT	DEST, HPPCB, ULBs, NGOs, CSO
• Regulatory monitoring of radiation near telecom tower.	Regulatory compliance & Monitoring	Operator	DEST, HPPCB, DoIT, Department of Health, University, R & D institutes NIT, HPPCB, DEST
• Development of R & D projects focusing on impact of radiation of human health.	Research & Development	IT Department	
• Complete ban on informal sector recycling (if any) of e-waste in the state	Regulatory compliance & Monitoring	Dept. of industries	HPPCB, IT Department
• Identify and quantify occupational health risks due to e-waste recycling.	E – Waste Management	Dept. of Industries	HPPCB, DEST, ULBs / NGOs / CSOs
• Develop programmes for integration of informal recycling in the state	E – Waste Management	Producers	
• Development of state level manual for IT based industries	IT & Environment	HPPCB	Infrastructure Developer / DEST, SEIAA Operators, NGOs, DoIT / DoT
• Implementation of IT industry's environmental best practice	IT & Environment	DEST	Infrastructure Developer / HPPCB / Operators, NGOs, IT
• Implementation of Bureau of Energy Efficiency of the star rating BPO program	ECBC Compliance	DoIT, DoT / Operator	DEST / HPPCB, Infrastructure developers
• Implementation of Energy Conservation Building Code	ECBC Compliance		HP State Electricity Board
• Awareness generation to promote awareness about environmental issues related to IT/ICT products.	Awareness & Information Dissemination	DoIT, DoT	NGOs / CSOs

3.3 LIVELIHOODS

Proposed Actions, Type of Response and Inter-sectoral Responsibilities

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
• Development of alternative livelihood programs based on sub sector development under infrastructure, natural reservoirs and services	Alternate Livelihood Programs	Office of secretary	chief Committee of secretaries
• Close monitoring of livelihood programmes especially of BPL families under existing central and state government schemes	Livelihood Program Monitoring	Office of secretary	chief Committee of secretaries / department heads
• Development and implement sectoral development plans/ programmes / projects already identified under each sub sector to optimize natural resource use	Cross Sector Development Planning	Sub-sector department	line PRIs, NGOs, ULBs, CSOs, other departments
• Preparation and implementation of state wide water harvesting structure / drip irrigation programmes for multipurpose usage	Water Resource Conservation	Department of agriculture, department of horticulture	of of DEST, IPH, Department of rural development, HPPCB, Department of planning
• Preparation and implementation of agriculture productivity improvement program through technology e.g. biotechnology	Biotechnology	Department of agriculture, department of horticulture	of of DEST, IPH, Department of rural development, HPPCB, Department of planning, agriculture universities
• Preparation and implementation of crop diversification programmes adapting to climate change	Crop Diversification & Climate Change Adaptation	Department of agriculture, department of horticulture	of of DEST, IPH, Department of rural development, Department of planning
• Strict implantation and monitoring of air and water pollution control programmes and projects	Environmental Pollution Monitoring	DEST	HPPCB, IPH, ULBs, PRIs, Department of urban development, Department of rural development, Department of industries, Department of transportation, Department of health and family welfare
• Strict implementation and monitoring of CAT / water shed development / other soil erosion programmes and projects	CAT / Watershed Development	Department of forest	of Department of agriculture, department of horticulture, department of rural development, IPH, Utilities, PRIs, CSOs, NGOs
• Strict implementation and monitoring of state road / rural road / highway development and upgradation program / master plan	Road Sector Master Plan Implementation & Monitoring	Office of secretary	chief PWD, ULBs, PRIs, Department of rural development, Department of urban development, IPH, DEST
• Strict implementation and monitoring of market infrastructure development / upgradation program	Project Management & Monitoring	Office of principal secretary / agriculture / horticulture	Department of agriculture, Department of horticulture, HPAPMC, ULBs, PRIs, Department of rural development
• Development and implementation of district wise portfolio of subsistence livelihood program	Subsistence Livelihood Program	Department of panchayati raj	of Department of rural development, department of agriculture, department of horticulture,

Proposed Actions	Areas	Institutional Responsibility	
		Coordination Agency	Collaboration Agency
<ul style="list-style-type: none"> Preparation and implementation of awareness campaign for replication of successful projects under subsistence livelihood programs 	Awareness & Information Dissemination	Department of panchayati raj	department of industries, PRIs, ULBs, CSOs Department of rural development, department of agriculture, department of horticulture, department of industries, PRIs, ULBs, CSOs
<ul style="list-style-type: none"> Implementation and monitoring of recommendations of market research study recommended as part of market infrastructure development program 	Project Management & Monitoring	Office of principle secretary, Department of agriculture / horticulture	HPAMC, Department of agriculture, department of horticulture, department of rural development, PRIs, NGOs, CSOs
<ul style="list-style-type: none"> 2. Market related study to assess consumers choice/behaviour for diversification of livelihoods 	Market Research		
<ul style="list-style-type: none"> Strict implementation and monitoring of proposed actions recommended under guidelines for water supply and sewage 	Project Management & Monitoring	Office of chief secretary	Office of principle secretary, IPH, HPAMC, Department of agriculture, department of horticulture, department of rural development, PRIs, NGOs, CSOs
<ul style="list-style-type: none"> Strict implementation and monitoring of proposed actions recommended under guidelines for health sector 	Project Management & Monitoring	Office of chief secretary	Office of principle secretary, department of health, and family welfare, DEST, IPH, Department of rural development, ULBs, PRIs, Department of industries, Directorate of factories, CSOs, NGOs
<ul style="list-style-type: none"> Implementation and monitoring of infrastructure development under PPP. Tourism Roads / Highway Water supply / sewage Urban infrastructure development Rural infrastructure development Hydropower / Non-conventional energy sources Market infrastructure 	Project Management & Monitoring	Office of chief secretary	Office of principle secretary (tourism), Office of principle secretary (PWD), Office of principle secretary (IPH), Office of principle secretary (Urban development), Office of principle secretary (Rural development), Office of principle secretary (Energy), Office of principle secretary (Hydropower/ Non-conventional energy), Department of Agriculture & horticulture, DEST, All line departments
<ul style="list-style-type: none"> Strengthen Himachal Pradesh State Land Use and Wasteland Development Board reconstituted in 2007 for three years 	Training Needs Assessment	Head of the Integrated Land Use Planning Authority/	Department of Planning and head of department
<ul style="list-style-type: none"> Set up an institutional mechanism to foster Integrated Land Use Planning Authority in the state 	Land Use Planning	Himachal Pradesh State Land Use and Wasteland Development Board	

Annexure – 2

Proposed Areas for Training and Scope of Training Programs

Infrastructure Sector

Areas	Scope of Training Program
Water Supply & Sewage Master Planning	<ul style="list-style-type: none"> • Long term water supply master plan for tourist destination & tourist circuit. • Long term sanitation master plan for tourist destination & tourist circuit. • Reuse of water from treated sewage to reduce water demand from non drinking usage. • Dual system of plumbing to reuse grey water for flushing in buildings. • Siting Criteria of waste disposal site or dumping site above HFL in the river basin. • Potential Water schemes including water harvesting • Potential Schemes covering areas not connected to current sewerage networks • Potential new sewerage schemes to bring the uncovered areas under new sewerage network • Integrated water supply and sewerage projects • Water availability assessment for implementation of sewerage schemes in urban areas and low cost sanitation in rural areas/urban slums
Water Pollution, Water Supply & Sewage Monitoring	<ul style="list-style-type: none"> • Drinking water quality monitoring program at tourist transit point e.g. Dhabas / Restaurants. • Protection of water source programme at tourist transit points.
Master Planning Land Use & Siting	<ul style="list-style-type: none"> • Regulatory mechanism for siting and management of dhabas
Public Relation & Information Dissemination	<ul style="list-style-type: none"> • Information display mechanism.
Ecotourism	<ul style="list-style-type: none"> • Eco-friendly travel guidelines
Decentralized Energy / Electricity Supply Planning & Implementation	<ul style="list-style-type: none"> • Decentralized (off grid) rural / community / tourist resort / Forest resort (Solar / biogas) based electricity supply planning • Solar energy programs for tourist units / Hotels.
Building Energy Efficiency	<ul style="list-style-type: none"> • Compliance of national Energy Conservation Building Codes at new tourist resorts / hotels.
Tourism Master Planning	<ul style="list-style-type: none"> • Mainstreaming environment into development of new areas of Hill tourism e.g. corporate / business tourism / medical tourism / heritage tourism. • Carrying capacity of the new tourist circuits/destinations. • Carrying capacity for expansion of existing tourist circuits/destinations. • Land Use & master plan. • Eco-tourism master plan. • Preservation of valley slopes with aesthetic view under area specific tourism master plan. • Diversification of tourism activities such as Rural Haat (markets) as part of rural tourism. • Ecofriendly activities and appropriate guidelines for e.g. camping, trekking, cycling in existing and proposed tourist circuits/destinations. • Mainstreaming environment & development of guidelines on "Homestays" / bread and breakfast schemes.

Areas	Scope of Training Program
	<ul style="list-style-type: none"> • Tourist Traffic Transportation planning • Identification & Prioritization ecologically sensitive tourist destinations/circuits for e.g. Rohtang pass, Mani Mahesh, Sangla Valley, Mandi, sacred groves, etc. • Area specific master plan consisting of satellite destination aiming to decongest existing tourist destinations. • Good practices for Hill Tourism. • Infrastructure development in tourist circuits/destinations Hill architecture. • Rainwater harvesting structures. • Green ratings of resorts/ tourists units which promote and demonstrate optimal energy use and other natural resource use and disposal (water, liquid and solid waste) in hill tourism. • Sanitation plan for mela ground transit points, trekking routes, tourist as part of tourism master plan
Waste Management including Municipal / Biomedical / hazardous / Plastic / Battery / Electronic	<ul style="list-style-type: none"> • Non-biodegradable waste (plastic waste/pet bottles, tetrapacks, packets of snack food) collection & treatment infrastructure for tourist circuits in the state through PRIs • Decentralised composting of food waste at Dhabas/tourist transit points / tourist units/ tourist resorts. • Scope of non-biodegradable waste rules to cover dry battery cells/batteries from electronic items / Rules based on extended producer responsibility.
Monitoring of Waste	<ul style="list-style-type: none"> • Regulatory Compliance Monitoring - at tourist transit points.
Land Use Monitoring	<ul style="list-style-type: none"> • Regulatory Compliance Monitoring - Regulate and control land use change under long term area specific tourism master plan.
Transport Planning as part of Tourism master Planning	<ul style="list-style-type: none"> • Transportation Planning - Develop destination specific transportation plan.
Air Pollution, Air Quality Monitoring	<ul style="list-style-type: none"> • Regulatory compliance Monitoring - Strengthen air quality monitoring program at specific destination sites. • Strict compliance to air quality standards in industrial areas.
Water Supply and Sewage Master Plan implementation & Monitoring	<ul style="list-style-type: none"> • Sewage infrastructure like latrines, at tourist transit points / religious places / heritage sites. • Implementation of plans / projects for sewage collection, treatment and recycling. • Implementation of reforms for water supply distribution, metering and revenue collection; sewage collection; treatment & disposal; sanitation
Information Dissemination & Public Relation	<ul style="list-style-type: none"> • Development and implementation of environmental code of practice for trekking and campsites. • Development of Tourist Information Centres Information Kiosks, displays focusing on protection of environment and local art, culture and heritage at vantage locations e.g. hotels/resorts/mid ways, enroute tourist circuits/ destinations, public transport system, mass communication tools
Environmental Regulations, Compliances and Monitoring	<ul style="list-style-type: none"> • Review of the existing orders/directives and develop appropriate guidelines for various departments in relation to Tourism related duties for e.g. Tourist Police,
Regulation & Compliance Monitoring	<ul style="list-style-type: none"> • Increased surveillance on tourist activities.
Awareness & Information Dissemination	<ul style="list-style-type: none"> • Environmental awareness and capacity building programme on SWM / Sanitation / Water for Dhaba operators / transit point operators / trekkers / porters. • Environmental awareness and capacity building programme for Resort owners / Hotels Association.

Areas	Scope of Training Program
	<ul style="list-style-type: none"> • Environmental awareness programme for village communities involved in rural tourism. • Environmental awareness programmes for tour operators / Association. • Development of promotional materials on local art and architecture e.g. murals/frescoes/ wall scapings on the roadsides and pavements for aesthetic ambience in urban and rural settings. • Maintenance of the unprotected monuments by ULBs/PRIIs • Awareness generation for Promoting household drinking water storage, purification and prevention of microbial contamination programme in urban / rural areas. • Awareness generation for promoting personal hygiene and safe sanitation practices in urban & rural areas • Strengthening of existing awareness campaign for propagating personal hygiene and safe sanitation practices in rural / urban areas. • Strengthening awareness campaigns on health and environment theme and monitor the performance of awareness campaigns. • Awareness generation to promote awareness about health impacts of fuel wood / biomass usage as domestic fuel. • Strengthening of existing awareness campaigns for promoting safe / cleaner fuel and solar energy usage. • Strengthen awareness campaigns and monitoring air quality in urban areas. • Design & Initiate awareness development programmes /projects with NGOs/CSOs. • Decentralized Energy supply using solar/biogas in upcoming tourist resorts / hotels. • Develop awareness programs for usage of solar and biogas energy in the state. • Awareness for general public about the harmful affects of mercury • Promotion of culture of prevention, preparedness and resilience at all levels through knowledge, innovation and education. • Promoting awareness programmes on health safety. • Develop and promote awareness programs for using market information/ intelligence. • Expand environmental education facilities and infrastructure in rural areas in the state for e.g. IEC activities under Total Sanitation Campaign, watershed development programmes, MGNREGA, etc which links to increased health infrastructure and increased environmental awareness. • Enhance labor awareness and capacity by investing in health and environmental education, programs & projects. • Promote and facilitate Intrastate exposure visits to places where successful models of rural development programs with mainstreamed environment have been demonstrated • Study/Exposure visits of core group members and selected office bearers of Gram Panchayats outside the State and within the State. • Panchayat sammelan with environment as theme at regular intervals. • Awareness on Energy conservation Building Code (ECBC) • Periodical campaigns for MSW collection for monitoring aesthetics.

Areas	Scope of Training Program
Area Master Planning	<ul style="list-style-type: none"> • Planning and design of new buildings following the ridge approach and its strict compliance by all project proponents. • Use of local materials and resources in the planning, design and construction of new buildings following the prevalent local art, architecture and culture and which blends with the surroundings. • Plan, Design and Construct New buildings/infrastructure which blends with local art, architecture and culture. • Develop & depict Murals and frescoes in the new buildings/ infrastructure as per the prevalent local art, architecture and culture. • Develop and maintain green areas in and around the protected monuments and maintenance of sanitation for better aesthetics
Rain Water Harvesting Planning design & Implementation	<ul style="list-style-type: none"> • Promote rainwater harvesting programme both in rural and urban areas in the state • Prepare & implement community / household level projects on water storage structures in rural areas
Pricing Water Resources	<ul style="list-style-type: none"> • Develop a policy framework for allocating water and prices of allocated water.
Water Pollution & Health Impacts	<ul style="list-style-type: none"> • Promote household drinking water storage, purification and prevention of microbial contamination programme in urban / rural areas.
Disease Monitoring	<ul style="list-style-type: none"> • Monitoring of water borne diseases versus intervention at district level
Water Resource Planning	<ul style="list-style-type: none"> • Develop and implement source rejuvenation plan throughout the state
Compliance Monitoring	<ul style="list-style-type: none"> • Accelerate / initiate strict actions envisaged in the acts to stop unauthorized tapping of water.
Water Supply, Master Plan	<ul style="list-style-type: none"> • Develop district-wise existing programme to reduce leakage from significantly through strict compliance of laws and technical intervention and plugging.
Water Sector Reforms, Planning & Implementation	<ul style="list-style-type: none"> • Encourage water sector reforms in water supply distribution, metering and revenue collection.
Water Resources & Basin Planning	<ul style="list-style-type: none"> • Develop and implement basin plan consisting of water balance based on water availability, water requirement (different sectors) and its allocation and discharge in coordination with other states and central government.
CAT Planning Implementation & Monitoring	<ul style="list-style-type: none"> • Preparation and implementation of catchment area treatment (CAT) plans.
Institutional aspects of Integrated Resource Planning	<ul style="list-style-type: none"> • Constitute a state level steering committee to implement all the plans in an integration manner.
Institutional aspects of Integrated Resource Monitoring	<ul style="list-style-type: none"> • Monitor the basin plans, CAT plans and wetland management plans by concerned responsible agencies.
Information Dissemination	<ul style="list-style-type: none"> • Accelerate / Initiate action for implementation of IEC programme under each health scheme / programmes being implemented at state level. • Design & Initiate awareness development programmes / projects with NGOs/CSOs.
Drug distribution & Logistics Management	<ul style="list-style-type: none"> • Accelerate / initiate actions for drugs distribution envisaged in project implementation plan of NRHM for the state.
Health Infrastructure Development, Planning & Implementation	<ul style="list-style-type: none"> • Accelerate / initiate actions for health infrastructure development and project implementation plan for sanitation under NRHM.
Biomedical Waste Management	<ul style="list-style-type: none"> • Accelerate /implement / plans/ projects for biomedical waste management in rural/urban areas.

Areas	Scope of Training Program
Solid Waste Management Planning, Implementation & Monitoring	<ul style="list-style-type: none"> Accelerate / implement plans / projects for municipal solid waste in rural / urban areas.
SWM Planning, Implementation & Monitoring	<ul style="list-style-type: none"> Accelerate / implement actions/ projects under sanitation plans of PRI at village level.
Rural Sanitation Planning, Implementation & Monitoring	<ul style="list-style-type: none"> Develop and implement gender empowerment and women participation under rural sanitation projects e.g. water conservation project.
Plan / Program / Project Management & Implementation	<ul style="list-style-type: none"> Accelerate time bound reforms/programmes/projects leading to increased efficiency.
Resource Pricing	<ul style="list-style-type: none"> Carry out viability studies for different economic instruments. "Payment for Environmental Services / Polluter Pays" in water sector in the state.
Rural / Urban Sewage Master Planning, Implementation & Monitoring	<ul style="list-style-type: none"> Prepare and implement long term master plans for urban/ rural area including tourists destinations. The master plan should include strict siting of STP as per TCP acts / guidelines. Implement sanitation master plan. The implementation should include optimum operation & maintenance of the system including separate energy metering for STPs. The skill level of the personnel in the line departments should be upgraded to meet the project requirements. Monitor the execution/implementation of sanitation master plans and community sanitation projects. Prepare sewage interception, diversion and treatment plans for catchment areas of recipient water bodies. Prepare & implement community / household level projects on sanitation in rural areas/urban slums.
Surface & Ground Water Pollution Monitoring	<ul style="list-style-type: none"> Extensive water quality monitoring of surface and ground water bodies and complete disclosure of monitoring results.
Information Dissemination	<ul style="list-style-type: none"> Ensure publication of monitoring results including trend analysis & follow up actions. Accelerate / Initiate action for implementation of IEC programme under each health scheme / programmes being implemented at state level. Design & Initiate awareness development programmes / projects with NGOs/CSOs.
Decentralized Water Supply & Sewage Master Planning	<ul style="list-style-type: none"> Promotion of appropriate technology for recycling and treatment e.g. decentralized treatment, common septic tanks, soak pits, manuring as per CEPHHO guidelines/ manual.
Water Pricing	<ul style="list-style-type: none"> Carry out viability studies for different economic instruments e.g. Environmental services charge. Polluter pays principle in water and sewage sector in the state and implement the solution.
IT & Information Systems Development & Implementation	<ul style="list-style-type: none"> 3. Develop and implement IT solution e.g. online billing & payment.
Integrated Water Resource Planning & Management	<ul style="list-style-type: none"> Constitute a state level coordination committee to prioritize & implement integrated water resources /water supply/sanitation plans, programmes and projects.
Plan / Program / Project Monitoring	<ul style="list-style-type: none"> Monitoring the progress of prioritized plans, programs & projects quarterly.

Areas	Scope of Training Program
Water Sector Reforms Implementation & Monitoring	<ul style="list-style-type: none"> Accelerate and implement time bound reforms/ programmes/projects leading to private sector and NGOs participation in the sector.
Rural Sanitation Master Plan	<ul style="list-style-type: none"> Accelerate / implement actions/ projects under sanitation plans of PRI at village level. Develop and implement gender empowerment and participation under rural sanitation projects
Rural Water Supply & Sewage Master Planning	<ul style="list-style-type: none"> Prepare & implement community/household level “water supply source protection projects” in rural areas Prepare and implement community/ households level project on water storage structures in rural area
Water Quality Monitoring	<ul style="list-style-type: none"> Monitoring of water borne diseases by setting up water testing labs at district level Increase monitoring (frequency & location) of drinking water quality in rural, urban areas at source & household level. These part parameters could be pH, Total Dissolve Solid, Suspended Solid, Biological Oxygen Demand / Dissolve Oxygen, Bacteriological count (MPN)
Methods & Equipment for Potable Drinking Purification	<ul style="list-style-type: none"> Promote safe and potable drinking water by way of installing RO/UV based water treatment system in schools
Project Management	<ul style="list-style-type: none"> Accelerate / initiate actions envisaged in project implementation plan for sanitation
Program / Project Monitoring at grass root level	<ul style="list-style-type: none"> Monitor progress of performance of NRHM programme
Program / Project Monitoring at field / grass root level.	<ul style="list-style-type: none"> Monitor occurrence of water borne diseases versus intervention e.g functional latrines in households/ communities in rural areas & urban slums in each district. Ensure adequate water supply and provide proper sewerage system by connecting each households with sewerage system. Accelerate / initiate actions envisaged in project implementation plan for biomedical waste management under NRHM.
Program / Project Management / Monitoring	<ul style="list-style-type: none"> Accelerate/Initiate actions for Biomedical Waste Management by setting up incinerators at district level, Industrial Areas and also in ULBs which receive high number tourists in view of promotion of health tourism in the state. Monitor occurrence of infections disease in rural/urban areas versus intervention e.g. MSW/BMW in each district.

Areas	Scope of Training Program
Alternate Awareness & Information Dissemination	<ul style="list-style-type: none"> Promote alternate domestic safe / cleaner fuel to reduce dependence on fuel wood in urban areas. Promote solar energy application for domestic usage in rural / urban areas through incentives.
Alternate Fuel Development Program	<ul style="list-style-type: none"> Design and promote crematorium which minimise consumption of fuel wood. Promote electric crematorium.
Project / Program Management & Monitoring	<ul style="list-style-type: none"> Accelerate / initiate action for implementation of IEC programmes under each health scheme / programmes being implemented at state level. Accelerate / initiate actions for health infrastructure develop. Monitoring of Infants / Maternal nutrient supplement programmes under different schemes. Strict monitoring of health of workers.
Drugs Logistics & Distribution	<ul style="list-style-type: none"> Accelerate / initiate actions for drugs distribution envisaged in project implementation plan of NRHM for the state.
RCH Project Development & Management	<ul style="list-style-type: none"> Accelerate / initiate actions under RCH component of NRHM.
OHS Management System	<ul style="list-style-type: none"> Implementation occupational health & safety (OHS) management system.
Project / Program Management & Monitoring	<ul style="list-style-type: none"> Implementation of components of prevention, care & support and treatments under National AIDS Control Programme – III. This includes implementation of Information, Education & Capacity (IEC) building campaigns.
Waste Management Monitoring	<ul style="list-style-type: none"> Segregation of wastes from different streams. Undertake assessment of need for setting new treatment and disposal facilities.
Epidemiology	<ul style="list-style-type: none"> Assess and identify gaps in research and development in view of new and emerging health risks and diseases.
R & D Infrastructure Development	<ul style="list-style-type: none"> Undertake need assessment of setting up new super specialty health institutions in the state to address R and D needs, medical professional course and training including paramedical staff. Seek accreditation for existing and new health institutions undertaking R & D, imparting medical professional courses and trainings.

Areas	Scope of Training Program
Roads & Highways Master Planning	<ul style="list-style-type: none"> Development of state highway master plan in line with tourism master plan, horticulture development plan and other state plans.
Rural Roads Master Planning.	<ul style="list-style-type: none"> Development of state rural road master plan for rural roads connecting roads in line with tourism master plan, horticulture development plan and other plans. Develop rural roads infrastructure as per, IRC codes.
State Highways & Rural Road Master Planning.	<ul style="list-style-type: none"> Prepare state highway / rural road upgradation plan as part of state highway and rural road master plan.
Environmental Assessment of roads & Highways Sectors.	<ul style="list-style-type: none"> Make EIA & EMP mandatory for all development of new state highways. Provisions of funding mitigation measures as part of EIA & EMP should be made mandatory as part of project cost.
Strategic Environmental Assessment of Highway Sector.	<ul style="list-style-type: none"> Carry out strategic environmental assessment (EA) for state highway / rural road master plan. Develop environmental training and capacity building plan for PWD / other stakeholders as part of strategic EA plan.
Project/Programme Management & Monitoring.	<ul style="list-style-type: none"> Monitor both state highway / rural road master plan as per EA's recommendation. Strict implementation of state highways / rural road master plan and strategic road sector EA plan.
EMP Monitoring & Reporting.	<ul style="list-style-type: none"> Monitoring muck disposal plan of all state / national rural road project as part of EMP.
Regulation & Compliance Monitoring.	<ul style="list-style-type: none"> Strict implementation of municipal laws & by laws. Strict implementation of laws related to environment at state and national highways.
Urban Master Planning	<ul style="list-style-type: none"> Development of parking infrastructure as part of urban master plan.
Tourism Master Planning	<ul style="list-style-type: none"> Development of parking infrastructure as part of tourism master plan. Develop traffic management plan for specific tourist places where traffic is a bottleneck e.g. Rohtang pass, Kufri.
Public Private Partnership.	<ul style="list-style-type: none"> Ensure private sector participation in parking infrastructure. Identify and privatize places of tourist interest where traffic is a bottleneck. Ensure private sector participation in road infrastructure development. Project development under PPP.

Areas	Scope of Training Program
Regulatory Compliance & Monitoring	<ul style="list-style-type: none"> • Strict implementation of traffic rules. • Repatriation of migrant labor should be made mandatory as part of contractual condition of contractor. Contractor should be penalized for non-compliance.
Air Pollution Monitoring	<ul style="list-style-type: none"> • Monitoring of air quality at specific tourist spot.
Traffic & Transport Planning	<ul style="list-style-type: none"> • Develop traffic management plan for urban areas. • Develop urban transportation plan using alternate modes.
Air & Noise Pollution Monitoring.	<ul style="list-style-type: none"> • Monitoring air and noise pollution.
Disaster Management Planning	<ul style="list-style-type: none"> • Development and implementation of district wise rapid response plan for accidents and other emergencies.
Environmental Management Plan Costing & Budgeting.	<ul style="list-style-type: none"> • Environmental budget should be prepared for implementing mitigation measures as part of DPR.
Comprehensive Environmental Assessment	<ul style="list-style-type: none"> • Proper appraisal of the deposit with respect to the environmental issue. • Concept of sustainable development to be kept in view while considering mining project. • If all clearances are for granted mining lease, strict implementation of mining plan, mine closure plan, EIA/ EMP document PCB conditions MOEF/ Forest Department conditions etc. should be carried out. • Strict monitoring of all environmental issues.

Areas	Scope of Training Program
Air Pollution Control, Management & Monitoring in Mining Sector	<ul style="list-style-type: none"> • To identify potential sources of dust. • Prediction of the dust levels likely to occur near the mines site. • Evaluating the potential of dust particles to effect environment and human health. • Incorporating dust predications and control measures into mine planning and design which include. • Dust be controlled by erecting enclosures. • Internal roads be surfaced. • Dust be suppressed by water sprays. • Green barriers along mine roads. • Before charging and blasting consider atmosphere conditions. • Regular monitoring for SPM, NOX and SO₂ levels at fixed locations
Water Pollution Control Management & Monitoring in Mining Sector.	<ul style="list-style-type: none"> • To follow zero discharge policy into natural water sources, thereby eliminating the causes of continuation. • Recycling of water and setting up of water treatment plants. • Suitable treatment of water passing through a settling tank before discharging into natural courses. • Water be systematically stored and used for plantation. • Benches the sloped inward. Proper drains towards hillside be constructed for proper drainage of rain water.

Areas	Scope of Training Program
Noise Control, Management & Monitoring in Mining Sector.	<p>For abatement of noise:</p> <p>Barriers to acoustic line of sight serve as feasible solution. Barriers may be:</p> <ul style="list-style-type: none"> • Walling • Planting • Control of noise by: <ul style="list-style-type: none"> • Reducing sound at source. • Interrupting the path of noise. • Protecting the receiver. • Other techniques • Reducing time of exposure. • Lubrication maintenance and speed rating. • Design of equipments • Green belts. • Ear protection
Mine Waste Control, Management & Monitoring. Mine Area Restoration Planning.	<ul style="list-style-type: none"> • No mining to be allowed where ore overburden ratio is more than 1 – 0.20. • Disposal of overburden and waste to be done at predetermined locations as per the mining plan. • Location to be properly designed for stabilization and re-vegetation and to resist long term erosion. • Proper drainage to be constructed to handle heavy rainfall events. • Appropriate garland drains to be provided all around. • Proper aesthetic to the waste dumps be given in relation to the surrounding landscape so that the area blends with the natural land after rehabilitation.
Mine Closure. Rehabilitation & Restoration Planning	<ul style="list-style-type: none"> • Any substantial change from the pre mining land form should be contemplated only after full consultation with the local community regulatory authorities and research has been undertaken. • The post mining land form, drainage and vegetation association should be stable, self sustaining visually compatible with surrounding land and also meet community expectation. • Strict compliance of Mine Plans and Mine Closure Plans which are approved by Indian Bureau of Mines, Government of India.
Top Soil Management, Afforestation, Rehabilitation Planning.	<ul style="list-style-type: none"> • Strict implementation of compensatory afforestation plan as part of EIA/EMP and the mining plan. • Cataloguing individual species for identification of rare and endangered plants and animals. • Minimising impacts of mines on flora and fauna through proper layout and designs. • Proper top-soil management for ensuring proper rehabilitation of land by plantation. • Improve aesthetic beauty by planning proper locations of dumps, plants, residential areas along with plantation • Visual safeguards like tree screens and screening with bunds be considered. • Proper check dams for controlling the debris flow to improve aesthetic of the area.

Areas	Scope of Training Program
Strategic Environmental Assessment	<ul style="list-style-type: none"> Contouring of reshaping the worked out benches/pits or dumps of waste rock. Undertake Regional EIAs / Cumulative Impact Assessment.
GIS & Remote Sensing	<ul style="list-style-type: none"> Preparation of Region specific map for siting (in GIS environment) Prepare district-wise Environmental Atlas.
Master Planning	<ul style="list-style-type: none"> Preparation of Region-specific industrial siting guidelines Strict implementation of urban master plan including zonation. Strict implementation of buffer zone management plan as part of industrial estate development plan Strict implementation of compensatory afforestation plan as part of EMP. Promote development of State of the Art Industrial Areas Creation of Area Specific Statutory Development Agencies and entrusted them with the task of managing urban growth in areas of their jurisdiction and for ensuring creation and strengthening of planned growth of social, housing, health, commercial and other related infrastructure. Promote Self certification for industrial units including approval of building plans of plot sizes to be specified would be automatically deemed to have been given, provided the units certify themselves that they have adhered to the basic norms Promote Cluster based approach to Industrial development Prioritisation of Industries that can be promoted in HP, Promote industries categorised as green rather than those listed as orange and red. Promote and incentivise non polluting industries e.g. IT, Biotechnology Demarcate specific areas around such industrial clusters where housing infrastructure could be created both in the government and private sector. Permission for purchase of land for captive housing would be given in a time bound manner for purchase of land to the industrial units set up in the State. Ensure supply of power and water to such housing complexes. Encourage Industries to tie up with local adjoining panchayats and villages for arranging captive accommodation by helping such villagers augment their accommodation so as to cater to the specific needs of the workers who could be housed in such units

Areas	Scope of Training Program
	<ul style="list-style-type: none"> • Prepare Master Plan of new and existing Industrial Area focusing on provision of infrastructure, including social infrastructure • Provide parking space as per ECS factoring in hill conditions in all new building and township projects • Provide green areas and open spaces as per norms factoring in hill conditions in all new building and township projects, • Identify land ownership status of vacant pockets. • Ensure availability of sites for housing the Poor. • Creation of land pool for housing the poor. • Provide security of tenure to every Beneficiary. • Complete Zoning Atlas for Industrial Siting and strict implementation of siting criteria. • Preparation of Region-specific industrial siting guidelines. • Strict implementation of compensatory afforestation plan as part of EMP.
Complacence Monitoring	<ul style="list-style-type: none"> • Revisiting land-use surrounding hazardous units (in case industry is already commissioned)
Comprehensive EIA	<ul style="list-style-type: none"> • Proper appraisal of the site with respect to the environmental issues.
Strategic Environmental Assessment	<ul style="list-style-type: none"> • Concept of sustainable development to be kept in view while considering mining project.
EMP Monitoring	<ul style="list-style-type: none"> • If all clearances are through for grant of mining lease, strict implementation of mining plan, mine closure plan, EIA/ EMP document PCB conditions MOEF/ Forest Department conditions etc. • Strict monitoring of all environmental issues. • Strictly monitor exposed area restoration plan as part of EMP of mines. • Monitoring of Green cover
Master Planning & Rehabilitation restoration Plan	<ul style="list-style-type: none"> • Preparation and implementation of green belt management plan and restoration of exposed area as part of industrial estate development plan. • Disposal of loose material at designated places

Areas	Scope of Training Program
3Rs (Reduce, Recover, Recycling) Planning & Implementation	<ul style="list-style-type: none"> Optimization of usage by introducing concept of 3 Rs. (Reduce, Recover & Recycling) and zero discharge industry.
Water Harvesting Plan Conceptualization & Implementation	<ul style="list-style-type: none"> Prepare and implement water harvesting plan to ensure water conservation decreasing in areas of water table.
Water Quality Monitoring	<ul style="list-style-type: none"> Strictly monitor water quality in mined areas and industries.
EMP Implementation & Monitoring	<ul style="list-style-type: none"> Strict implementation of noise mitigation measure as part of EMP. Strict implementation of Hazardous waste management plan as part of EMP.
Environmental Infrastructure Development, Implementation & Monitoring	<ul style="list-style-type: none"> Implementation of hazardous waste infrastructure development plan e.g. CETPs/TSDF Strict monitoring of hazardous waste generation and disposal
EMP Implementation & Monitoring	<ul style="list-style-type: none"> Development & implementation of exposed area restoration plan as part of EMP of mined areas. Restoration/conservation/industry mine areas of drainage pattern as part of exposed area restoration plan.
EMP, Landscaped, Rehabilitation & Restoration Plan Implementation & Monitoring	<ul style="list-style-type: none"> Strict implementation of Catchment Area Treatment integrated with exposed area restoration plan. Strict implementation of buffer zone management plan as part of industrial estate development/mine development areas Formulation and implementation of an integrated compensatory afforestation, buffer zone management plan. Strict implementation of landscape restoration plan as part of exposed area restoration plan.
HR Development	<ul style="list-style-type: none"> Capacity building/strengthening of ITIs, to develop a cadre of trained professional

Areas	Scope of Training Program
Clean Technology / Cleaner Production Management	<ul style="list-style-type: none"> Identify the areas where introduction of clean technologies is possible; Identify the source(s) from where clean technology and data/details thereof can be obtained; Assess the technology available indigenously as well as those to be imported; Modify the technology, if necessary and demonstrate it to the satisfaction of the users so that it can be replicated; Undertake Research and Development to develop technologies for cleaner production; Collect, collate and disseminate information on clean technology Maintain interaction with the industry, financial institutions and Research and Development Laboratories for adoption of clean technologies.
Master Plan Monitoring	<ul style="list-style-type: none"> Regulate the new cement industries based on the master plan of the given Industrial Area
Logistics Management	<ul style="list-style-type: none"> Evolve an efficient mechanism on competitive rates so that transportation of raw material and industrial products is smooth and on competitive rates Foster conducive environment of mutual appreciation and trust between Industry and Transport Unions and encourage regular Dialogues between them so as to solve contentious issues at the local level
Basin Planning & Management	<ul style="list-style-type: none"> Assessment of the hydrology in the immediate catchment/ river basin for small hydro projects

Areas	Scope of Training Program
Basin Plan, Implementation & Monitoring	<ul style="list-style-type: none"> Assist line department to ensure coordination between relevant authorities on the timing and volume for release of water Assessment of sustainable ecological flow (15% or more, whichever is higher) Ensure release of minimum 15% flow in downstream section of the river which is made mandatory and as stipulated in the policy Ensure monitoring of downstream flow Assess effectiveness of the downstream flow
Strategic Environmental Assessment as Part of Basin Plan	<ul style="list-style-type: none"> Cumulative Impact Assessment at basin level (Strategic Environmental Assessment prior for hydro-power development)
Basin Planning	<ul style="list-style-type: none"> Guideline for LADA to make it environmentally sustainable Development of detailed Guidelines for every project with clear cut out put on quick-pro-quo basis Maintenance of Longitudinal Aquatic Connectivity of stream/ river
Resource Pricing	<ul style="list-style-type: none"> Payment for Ecosystem Services (PES) for Energy sector Earmark 1% of budget of the CAT plan for PES through quid pro quo basis
Hydro Power Development as part of Basin Planning	<ul style="list-style-type: none"> River bed modification between diversion and tailrace out fall in a ROR scheme so as to derive higher environmental benefits of releasing downstream discharge Fish pass is must in all barrage irrespective of finding of fish whether reported or not Routing of downstream discharge through fish pass in the diversion structure even if fish is not reported
Basin Plan Management (Implementation & Monitoring)	<ul style="list-style-type: none"> Develop and implement river basin management plan. Develop and implement silt management plan.

Areas	Scope of Training Program
State Level Environmental Master Plan Implementation & Monitoring	<ul style="list-style-type: none"> Promulgation of policies to ensure that all development agencies (including Central Govt.) working in the state adopt Environmentally benign Sustainable technologies Develop and Promote Green Road technologies
CAT Plan Implementation & Monitoring	<ul style="list-style-type: none"> Develop and seek synergy in Hydro projects Implement CAT plans and EMP Monitor implementation of CAT plans and EMP with reference to silt load and composition (Chemical & Physical) including gravity, Hardness and shape of particles
Project / Programme Monitoring	<ul style="list-style-type: none"> Monitor construction phase and post project (catchment area treatment plan, silt monitoring plan, watershed development programme) programmes / plans to assess the efficacy of proposed and implemented measures for replications.
Reservoir Operations Monitoring	<ul style="list-style-type: none"> Prescribe seasonality of the flushing and its monitoring Ensure dredge spoils do not re-enter the water body/ wetland/ reservoir as part of implementation reservoir management plan Carry out effect of sediment and silt on benthic communities as part of water body/ reservoir management and monitoring plan. Identifying and implementing measure for dredge spoil stabilization as part of the reservoir/ water body/basin management Maintenance of Longitudinal Aquatic Connectivity of stream/ river
Basin Planning & Management (Implementation & Monitoring)	<ul style="list-style-type: none"> Maintaining adequate depth all the year round as part of reservoir operation plan. River bed modification between diversion and tailrace out fall in a ROR scheme so as to derive higher environmental benefits of releasing downstream discharge Fish pass is must in all barrage in respective of finding of fish whether reported or not Routing of downstream discharge through fish pass in the diversion structure even if fish is not reported

Areas	Scope of Training Program
Post Project Ecological & Environmental Assessment	<ul style="list-style-type: none"> Undertake investigative studies on the impact and insecticidal and fertilizer residue biotic life of aquatic lotic ecosystems and prioritize water bodies based on the level of concern.
Post Project Ecological/ Environmental Management Plan	<ul style="list-style-type: none"> Assist department of agriculture and horticulture department in formulating action plan in the identified areas based on level of concern according to investigative studies.
R & R Planning Management and Monitoring	<ul style="list-style-type: none"> Formulation and Implementation of R&R Plan in conformity with NRRP-2007 , State Guidelines and Standard R&R Plan to be made mandatory for all power projects through dedicated, qualified and experienced R&R staff
EMP implementation & Monitoring	<ul style="list-style-type: none"> Strict implementation of (R & R) plans Implementation of EMPs Promote bio-farming, IPN, IPNM, bio-fertilizer, bio-pesticide, etc.
Basin Planning, Implementation & Monitoring	<ul style="list-style-type: none"> Preparation of integrated CAT plan for the entire basin on the pattern of integrated EIA/EMP
Resource Pricing, Allocation & Recovery	<ul style="list-style-type: none"> Creation of Basin CAT plan fund for expeditious implementation of CAT plans Mechanism to be developed for cost sharing on project to project basis should be based on proportionate method instead of any limitation of percentage of project cost
GIS & Remote Sensing	<ul style="list-style-type: none"> Remote sensing based and other suitable technology based monitoring mechanism to be promoted
Basin Planning & Management (Implementation & Monitoring)	<ul style="list-style-type: none"> Formulation and implementation of Reservoir Management and Action Plan Formulation and implementation of dumping area management plans
Regulatory Compliance & Monitoring	<ul style="list-style-type: none"> Training of enforcement/ regulatory staff and augmentation of enforcement infrastructure.
Reservoir Monitoring	<ul style="list-style-type: none"> Promotion and adaptation of suitable technology for continuous (24 hour) monitoring particularly during lean season
Basin Plan Monitoring	<ul style="list-style-type: none"> Development and implement river water monitoring plan downstream of dams/reservoir

Areas	Scope of Training Program
Extended Producer Responsibility based Regulations.	<ul style="list-style-type: none"> Develop and implement extended producer responsibility based collection, transportation and disposal regulation
Decentralized Energy Supply Planning & Implementation.	<ul style="list-style-type: none"> Develop and implement community based decentralized grid programs/ energy programmes using solar and biogas energy for rural areas
Building Energy Efficiency	<ul style="list-style-type: none"> Make implementation of energy conservation building code mandatory for tourist resorts / commercial establishments, government buildings
Energy Planning & Implementation.	<ul style="list-style-type: none"> Progressive and increased use of energy mix (including non conventional energy) for energy generation and consumption in the state
Resource Pricing	<ul style="list-style-type: none"> Review the pine needle collection mechanism and its pricing policy
Resource Planning & Development.	<ul style="list-style-type: none"> Develop and implement pine needle collection mechanism involving locals Engage with and incentivise industrial units to develop and promote pine needles for use as combustible materials
Disaster Management Planning & Implementation	<ul style="list-style-type: none"> Undertaking reconstruction as an opportunity to build disaster resilient structures and habitat for ensuring safer living Preparation of inundation map Disaster management plan- formulation, implementation and periodic preparedness check on preparedness Integration of project disaster management plan with district or state disaster management plan Preparation of Safety, Safeguarding plans and their approval by third party.
Disaster Management Planning & Implementation Monitoring.	<ul style="list-style-type: none"> Implementation of Safety measures and their periodic check
IT & Agriculture Produce logistics System	<ul style="list-style-type: none"> Development and implement IT interventions in agriculture / horticulture produce collection, transportation, storage and selling.

Areas	Scope of Training Program
APMC Market Information System	<ul style="list-style-type: none"> Develop & implement state level APMC market information system and integrate it with national / international system. Maintain and manage product logistic system based on market information / intelligence
Waste Management	<ul style="list-style-type: none"> Identify decentralised waste treatment opportunities particularly for predominantly organic waste including options of composting/ vermi composting in suitable climatic condition
APMC Market Infrastructure	<ul style="list-style-type: none"> Develop market infrastructure in line with national benchmark. Renovate and upgrade existing market infrastructure to minimize spoilage and wastage. Identify and access long term infrastructure needs in view of crop diversification and shift in cropping pattern for the next twenty years. Develop and implement a business plan and an action plan including financing requirements. Identify market infrastructure needs to support new / existing markets.
IT & Agriculture Produce logistics Management	<ul style="list-style-type: none"> Develop and implement efficient and conducive transportation plan with private sector participation.
APMC Market Research	<ul style="list-style-type: none"> Identify and access long term infrastructure needs in view of crop diversification and shift in cropping pattern for the next twenty years. Mandis could be developed as outlets for selling compost Since APMC waste is rich in organic content, develop vermi composting / organic compost plan to dispose APMC solid waste. This compost can be sold at the outlets in APMC market.
APMC Market Infrastructure & Public Private Partnership	<ul style="list-style-type: none"> Implement action plan with private sector participation.
Agricultural Packaging	<ul style="list-style-type: none"> Development and implement upgradation plan for packing and packaging mechanism in line with international standards.

Areas	Scope of Training Program
3 R's (reduce , Recover, Recycle)	<ul style="list-style-type: none"> Promote reuse and recycling of disposed packing material
Conservation Agriculture	<ul style="list-style-type: none"> Identification and adoption of good practices to reduce/eliminate waste generation.
Agriculture Produce logistics Management	<ul style="list-style-type: none"> Accelerate / initiate actions for renovation / upgradation envisaged in project implementation plan for management of existing storage facility. Develop and implement storage infrastructure development plan based on market research and operations management study envisaged for agriculture / horticulture.
Aviation Infrastructure as part of Agriculture logistics Management	<ul style="list-style-type: none"> Develop and implement aviation infrastructure development plan in the states as an alternative to road infrastructure
IT Systems in Agriculture Produce logistics Management	<ul style="list-style-type: none"> Integrate operations of storage and warehousing infrastructure with logistics management through automated online system.
Waste Management.	<ul style="list-style-type: none"> Develop and implement waste management system at storage areas.
Market Research for NTFP	<ul style="list-style-type: none"> Promote marketing of medicinal plants and NTFP.
Project/Programme Management	<ul style="list-style-type: none"> Promote the plans / programmes for maintenance of all weather state highways / arterial roads. Design & Initiate programs / projects for promoting products from organic farming.
Project/Programme Management under PPP	<ul style="list-style-type: none"> Promote development of alternate roads infrastructure as per infrastructure development plan under public private partnership.
Agriculture Produce logistics Management	<ul style="list-style-type: none"> Develop parking and storage infrastructure at transit points on major routes.
Air Quality Monitoring Post Harvest Crop Management	<ul style="list-style-type: none"> Monitoring the performance of air quality. Undertake research and development to reduce/eliminate post harvesting losses. Identify and adapt good practices in reducing the post harvesting practices.

Areas	Scope of Training Program
Solid Waste Management	<ul style="list-style-type: none"> • Prepare and implement APMC solid waste collection, segregation and disposal management plan.
Water Pollution Sewage & Drainage	<ul style="list-style-type: none"> • Prepare and implement APMC sewage collection and disposal management plan.
OHS Management System	<ul style="list-style-type: none"> • Implement occupational health & safety (OHS) management system.
Agriculture Produce Market Research & Infrastructure Market Research Planning	<ul style="list-style-type: none"> • Commission a market research study for identify new markets both in country and abroad in view of product diversification and differentiation for the next ten / twenty and thirty years.
Agriculture Produce Market Research & Infrastructure Development Planning	<ul style="list-style-type: none"> • Implement and operationalize both product marketing and infrastructure development plan.
Disease control & Crop Protection.	<ul style="list-style-type: none"> • Accelerate / Initiate action plan/ program at state level for implementation of control methods such as biological, chemical, cultural methods.
Post Harvest Crop Protection& Disease Control	<ul style="list-style-type: none"> • Strictly implement disease quarantine measures in APMC market.
APMC Market Information System	<ul style="list-style-type: none"> • Develop and implement training programs for ICT penetration and usage for farmers. • Develop and implement a program of kisan kiosks at panchayat office where ICT infrastructure can be operationalised
Decentralized Rural Planning & Environmental Management	<ul style="list-style-type: none"> • <u>Extend Sectoral Decentralised Planning (SDP) to Tribal Areas and backward areas of HP</u> with environmental mainstreaming as per decision of the Government. • Integrate planning principles of inclusive development in all rural development planning in State Government programmes/ schemes with environmental mainstreaming as per decision of the Government
Rural Development & Poverty Alleviation	<ul style="list-style-type: none"> • Generate employment opportunities by ensuring better coordination among Government, CSOs and private sector by promoting investment • Strengthen implementation of Integrated Watershed Management Plan (IWMP) and MGNREGA focusing on agriculture production.
Clean Technology & Vocational Skills in Rural Development	<ul style="list-style-type: none"> • And improving marketable vocational skills especially in clean technologies.

Areas	Scope of Training Program
Agriculture & Allied Sector Reforms	<ul style="list-style-type: none"> Implement agricultural and allied sector reforms in the state.
Diversified Agriculture support Program	<ul style="list-style-type: none"> Develop and implement crop and horticulture diversification plans, programs & projects including herbs and medicinal plantations and floriculture.
Pre & Post Harvesting Crop Management System	<ul style="list-style-type: none"> Implement backward and forward linkages to farm and horticulture sector to increase resource conservation & reduce waste generation.
Rural Infrastructure Planning & Environmental Management	<ul style="list-style-type: none"> Prioritize future infrastructure investment for creating rural and improve management practices of existing infrastructure planning by mainstreaming environmental safeguards at every level e.g. state, district, block & Panchayat. Maintain and upgrade existing rural infrastructure including transport, power, rural water supply and sanitation with mainstreamed environmental safeguards. Strengthen industrial units in all districts and backward pockets as per Revised Backward Area Industrial Policy with environmental safeguards. Expand health facilities with increased health & infrastructure development in rural areas with biomedical waste management.
Financing Rural Infrastructure	<ul style="list-style-type: none"> Promote and strengthen institutional finance for financing long term rural environmental infrastructure development, programs & projects. Promote Microfinance Institutions for financing village level water supply/sanitation & clean technologies projects. Provision of income generating assets aimed at encouraging small scale and cottage industries and providing gainful employment opportunities through backward and forward linkages. Promote rural enterprise catering to skills and needs of rural populace.
Biotechnology & Rural Employment	<ul style="list-style-type: none"> Promote biotechnology for generating employment in the field of Agriculture and horticulture.

Areas	Scope of Training Program
Project/ Programme Management & Coordination	<ul style="list-style-type: none"> Develop and foster coordination among panchayats, government and CSOs for upgradation of skills Promote Joint training of Government officials working with PRIs.
Rural Infrastructure Planning & Environmental Management	<ul style="list-style-type: none"> Preparation of Model Guidelines/Manual to facilitate the preparation of best Micro Plans with environmental mainstreaming by the Panchayats. Promote and facilitate network of elected women representatives, CBOs and Mahila Mandals for undertaking environmental projects.
Project & Programme Management & Monitoring	<ul style="list-style-type: none"> Constitution of core group of experts for monitoring and advocacy regarding Micro Planning mainstreamed with environmental safeguards.
Rural Water Supply & Sewage Master Planning	<ul style="list-style-type: none"> Enable and empower Water Users/ PRIs and stakeholders to plan, implement and manage the drinking water and minor irrigation systems
Rural Development & Poverty Alleviation	<ul style="list-style-type: none"> Empower families and broaden the below the poverty line by enlarging the scope of the rural development programmes of poverty alleviation and welfare of women, the Scheduled Castes and Scheduled Tribes Empower Women, SC/ST by imparting new skills/capacity enhancement especially in clean technologies to end exclusion.
Rain Water Harvesting Plan as part of Water Supply & Sewage Master Planning	<ul style="list-style-type: none"> Beneficiary mapping and identification Ensuring availability of water equitably Make RWHS mandatory in all commercial and residential in new buildings and townships.
Water Pollution Control & Management Water Supply & Sewage Master Planning	<ul style="list-style-type: none"> Prevention and control of water pollution. Make waste water treatment and recycling mandatory in new buildings and townships
Municipal Solid Waste Master Planning	<ul style="list-style-type: none"> Identify suitable sites in the Master Plan for MSW Treatment and Disposal facility keeping in mind the hilly conditions Adopt regional approach in the development of MSW Treatment and Disposal facility Attempt setting up decentralized MSW Treatment and Disposal facility

Areas	Scope of Training Program
Building Energy Efficiency	<ul style="list-style-type: none"> Mandatory implementation of ECBC in all Government and commercial buildings
Energy Usage Planning	<ul style="list-style-type: none"> Make mandatory provision for use of new and renewable sources in street lighting, passive solar architectural features in plan layout .
Urban Transportation As Part Of Master Planning	<ul style="list-style-type: none"> Develop urban transport in line with policies such as National Urban Housing and Habitat Policy to ensure that cities remain dense and of mixed land-use with adequate provisions for housing for the poor to ensure that their travel distances remain small. Develop urban planning guidelines to encourage transit-oriented development, discourage sprawl, rationalize parking policies and charges, and mandate public transport accessibility indicators for large developments, institute intelligent transport systems to enable schemes such as congestion charging. Improving vehicle efficiency Shifting freight transport from road to railways and waterways and alternate modes of transport Shifting passenger transport to public transport Shifting vehicles to electric and hybrid varieties Greater penetration of biodiesel
National/ State Road/ High Way Planning	<ul style="list-style-type: none"> Earmark buffer zones along the national/ state highways/ MDRS where no construction activity is allowed to come up to curb ribbon development Consider freezing of land use along the national and state highways to curb the vicious trend of ribbon development and urban corridors

Areas	Scope of Training Program
Master Planning & Master Land Use Planning	<ul style="list-style-type: none"> List vacant and under-utilized lands Prepare an updated list of vacant lands including government and private land, land notified for acquisition Mark vacant land pockets on the map and assess the area available. Examine the land use assigned to vacant pockets in the master Plan Identify underutilized Government Lands and lands proposed for redevelopment. Identify lands proposed for future residential development. Assess land that would become available after enforcement of the pro-poor reforms. Reservation of 20-25% of developed land for EWS/LIG housing in every new public/private residential development. Assess land acquisition costs, land development costs and construction costs and market price of land. Examine the current land assembly mechanisms and policy obstacles to land supply. Extend the Town and Country Planning Act, 1977, to include 25-30 metre wide strips along the national highways and the state highways (on both sides) to combat ribbon development
Project Programme Implementation & Monitoring	<ul style="list-style-type: none"> Establish a system of redressal of continued alienation of land by the state government to the ULBs to ensure continuous supply of developed land for EWS/LIG housing. Timely construction of houses.
Financing of Urban Infrastructure Development	<ul style="list-style-type: none"> Provide bank Loans to the beneficiaries.
Financing of Urban Infrastructure & Pricing of Service	<ul style="list-style-type: none"> Provide access to infrastructure services at affordable rates.

Areas	Scope of Training Program
Rural/Urban/ Tourist Integrated Solid Waste Management Planning	<ul style="list-style-type: none"> • Prepare and implement integrated solid waste management plan for rural/urban area/tourists destinations, including religious places & mela ground as per municipal solid waste (mgt & handling) rules. • Promote door to door MSW collection and segregation through innovative mechanisms to meet the challenge of unavailability of personnel. • Prepare & implement micro level municipal solid waste projects to ensure proper solid waste management. • Develop and implement integrated solid waste management plan as part of tourism master plan. • Deployment of appropriate technological option to prevent scattering of MSW by monkey stray dogs & other animals. • Ensure door to door MSW collection system. • Promote door to door collection, transportation and disposal including outsourcing. • Promote & implement decentralize waste management including composting. • Mainstreaming of informal sector into MSW management. • Deployment of appropriate staff should be mandatory at least Council Level like Environmental Engineer and Health officer to address Environmental Issues and Management. • Site selection for MSW facility should be as per MSW rule- 2000. • Site should be marked for MSW facility in the City/ Towns development Plans at the planning stage if land is available.

Areas	Scope of Training Program
Project/ Programme & Implementation & Monitoring	<ul style="list-style-type: none"> • Monitor the progress of integrated solid waste management plan and community sanitation projects at household levels. • Prepare and implement integrated solid waste management plan at rural/urban level. • Constitute a state level coordination committee to prioritize & implement sanitation plans integrated with, programmes and projects. • Monitoring the progress of prioritized plans, programs & projects quarterly. • Accelerate and implement time bound reforms / programmes / projects leading to private sector and NGOs participation in the sector. • Accelerate / implement actions/ projects under sanitation plans of PRI at village level. • Design & implement fiscal mechanism to incentivize and provide for implementing integrated solid waste management plan.
Financing of Rural /Urban/Tourist Integrated Solid Waste Management Planning & service Pricing	
Wetland Management	<ul style="list-style-type: none"> • Prepare and implement wetland management plan.
Basin Planning	<ul style="list-style-type: none"> • Develop and implement basin wise / district wise rain water harvesting programme.
Integrated Planning & Development	<ul style="list-style-type: none"> • Constitute a state level steering committee to implement the three plans in an integration manner.
Rural/Urban/ Tourist Integrated Solid Waste Management Planning and Public Private Partnership	<ul style="list-style-type: none"> • Implement private sector participation for collection, transportation and disposal of MSW.
Financing of MSW Infrastructure Planning & Development & Service Privacy	<ul style="list-style-type: none"> • Carry out viability studies for different economic instruments. "Payment for Environmental Services / Polluter Pays" in sanitation sector in the state and implement the solution.
Rural Sanitation Planning	<ul style="list-style-type: none"> • Develop and implement gender empowerment and participation under rural sanitation projects.
IEC Project / Programme Implementation & Monitoring	<ul style="list-style-type: none"> • Accelerate / Initiate action for implementation of IEC programme under each health/urban scheme / programmes being implemented at state level. • Design & Initiate awareness development programmes / projects with NGOs / CSOs / PRIs / ULBs.
Project / Programme Implementation & Monitoring	<ul style="list-style-type: none"> • Strict monitoring of all environmental issues. • The role of HP Pollution Control Board should be increased at actual implementation level.

Areas	Scope of Training Program
Strategic/ Comprehensive Environmental Assessments	<ul style="list-style-type: none"> Undertake Regional EIAs / Cumulative Impact Assessment.
Land Use / Zonation And GIS & Remote Sensing	<ul style="list-style-type: none"> Preparation of Region specific map for siting (in GIS environment).
Compliance Monitoring	<ul style="list-style-type: none"> Revisiting land-use surrounding hazardous units (in case industry is already commissioned).
GIS & Remote Sensing	<ul style="list-style-type: none"> Prepare district-wise Environmental Atlases.
Comprehensive Environmental Impact Assessment	<ul style="list-style-type: none"> Proper appraisal of the site with respect to the environmental issues.
Strategic Environmental Assessment	<ul style="list-style-type: none"> Concept of sustainable development to be kept in view while considering mining project.
EMP Monitoring	<ul style="list-style-type: none"> If all clearances are through for grant of mining lease, strict implementation of mining plan, mine closure plan, EIA/ EMP document PCB conditions MOEF/ Forest Department conditions etc. Strictly monitor exposed area restoration plan as part of EMP of mines. Strict implementation of Hazardous waste management plan as part of EMP. Monitoring of green cover
Environmental Monitoring	<ul style="list-style-type: none"> Strict monitoring of all environmental issues.
Master Plan Implementation & Monitoring	<ul style="list-style-type: none"> Strict implementation of urban master plan including zonation. Preparation and implementation of green belt management plan and restoration of exposed area as part of industrial estate development plan. Disposal of loose material at designated places.
3 R _e (Reduce, Recover & Recycling)	<ul style="list-style-type: none"> Optimization of usage by introducing concept of 3 Rs. (Reduce, Recover & Recycling and zero discharge industry.
Water Conservation & Water Harvesting	<ul style="list-style-type: none"> Prepare and implement water harvesting plan to ensure water conservation decreasing in areas of water table.
Water Quality Monitoring	<ul style="list-style-type: none"> Strictly monitor water quality in mined areas and industries.
Environmental Infrastructure development, Implementation & Monitoring	<ul style="list-style-type: none"> Implementation of hazardous waste infrastructure development plan e.g. CETPs/TSDF

Areas	Scope of Training Program
Environmental Infrastructure development, Implementation & Monitoring & Implementation & EMP Monitoring	<ul style="list-style-type: none"> • Strict monitoring of hazardous waste generation and disposal • Development & implementation of exposed area restoration plan as part of EMP of mined areas. • Restoration/conservation/industry mine areas of drainage pattern as part of exposed area restoration plan.
EMP, Landscape. Rehabilitation & Restoration Plan Implementation & Monitoring	<ul style="list-style-type: none"> • Strict implementation of Catchment Area Treatment integrated with exposed area restoration plan. • Strict implementation of buffer zone management plan as part of industrial estate development/mine development areas • Formulation and implementation of an integrated compensatory afforestation, buffer zone management plan.
Clean Technology/ Cleaner Production Management	<ul style="list-style-type: none"> • Identify areas where introduction of clean technologies is possible; • Identify the source(s) from where clean technology and data/details thereof can be obtained; • Assess the technology available indigenously as well as those to be imported; • Modify the technology, if necessary and demonstrate it to the satisfaction of the users so that it can be replicated; • Undertake Research and Development to develop technologies for cleaner production; • Collect, collate and disseminate information on clean technology • Maintain interaction with the industry, financial institutions and Research and Development Laboratories for adoption of clean technologies.
OHS System	<ul style="list-style-type: none"> • Strict monitoring of safety systems in industries

Natural Resources Management Sector

Areas	Scope of Training Program
Community based Eco Development	<ul style="list-style-type: none"> Development of alternate Community based livelihood programs/ projects around/ in the vicinity of protected areas e.g. eco development programs.
Silviculture	<ul style="list-style-type: none"> Maintaining the prescribed forest yield through natural regeneration, afforestation and plantation. Promote wild fruit trees in plantation in forests and degraded lands. Promote multiple timber yielding species e.g. Deodar and Kail along with Chil and fir/spruce in plantation and afforestation projects. Felling in the nature of regeneration felling and thinning can be carried out to induce regeneration and to remove congestion in the crops. Thus, the working plan prescriptions, which is a tool for forest management, need to be implemented. Silvicultural operations are not necessarily commercial harvesting and therefore Govt. of India (MoEF) should be approached for approval. Promote Deodar and Kail along with Chil and fir/spruce in plantation and afforestation projects. Promote mixed plantations of willow, poplar, oak, fir, bamboo, wild fruit species and others as per the requirement of the site.
Watershed Development	<ul style="list-style-type: none"> Introduction / Strengthening of Watershed (macro/micro) development programme in the state to conserve soil and water.
CAT Plans	<ul style="list-style-type: none"> Strengthening of Catchment area treatment plan in existing areas based on survival rates and soil & water conservation measures.
Monitoring & Evaluation	<ul style="list-style-type: none"> Monitor project program/ (JFM)/Eco Development / Watershed/ CAT plan) Implementation.
Wasteland/ Degraded Land Development	<ul style="list-style-type: none"> Increase forest cover / per capita availability through JFM/ PFM in degraded forests or wastelands or village common / panchayat land. Specific development plans for managing wastelands, culturable fallow or other lands.
Migratory Community	<ul style="list-style-type: none"> Specific development plans for managing wastelands, culturable fallow or other lands.
Alternative Livelihood & Poverty Alleviation	<ul style="list-style-type: none"> Development of long term literacy and livelihood programs for migratory gujjar graziers to encourage and adopt new agro-economic activities e.g. dairying, horticulture, livestock rearing, with cottage industry and vegetable cultivation.

Areas	Scope of Training Program
Public Policy Instruments in Community based Forestry Projects.	<ul style="list-style-type: none"> Develop policy instrument for restoration of ownership rights of common land to panchayats for promoting community based forestry projects.
Renewable Energy	<ul style="list-style-type: none"> Promotion of alternatives to fuel-wood like LPG/ and renewable energy sources like Solar through incentives like subsidy. Promoting smokeless 'Dhauladhar Chulhas' by providing subsidy for better kitchen hygiene and women's health. Promote use of pine needles for making bio briquettes to enable regeneration flora as well as the reduce pressure on fuel wood. Promote use of forest produce for value addition, like use of pine needles for making of bio-briquettes to be used as domestic fuel.
Silvi Pastoral Practices	<ul style="list-style-type: none"> Identification & Development of village Common Land / Panchayat for pasture. Plantation of community orchards and fodder crops. Develop stall feeding and developing an equitable system for the distribution of grass from strips within closed and planted belts programs at household / community level.
Community Monitoring	<ul style="list-style-type: none"> Assessment of timber needs and monitoring by Panchayats / VDCs for felling of marked trees.
Public Policy Regulation	<ul style="list-style-type: none"> Regulation related to Timber distribution need to be updated/amended to plug the economic losses and to identify the genuine and needy users of timber.
Public Policy & Programme Implementation	<ul style="list-style-type: none"> Develop a time bound program for gradual phasing out of timber distribution rights and provision of timbers at market rates. However, it may require amendments in the existing regulation/ provisions on rights.

Areas	Scope of Training Program
Monitoring & Regulatory Compliance	<ul style="list-style-type: none"> Initiate penal action against major defaulters such as suspension of timber distribution rights. Community/ Panchayat monitoring of timber distribution/ usage. Strict implementation of existing legislation and prosecution of offenders under Forest Act, Town & Country planning Act. Periodic monitoring by ZP and PS e.g. ZP to liaison with the Forest Department for ejection; PS to monitor the cases of over exploitation report to Forest Department. Enforce regulatory measures especially for private pharmaceutical companies harvesting medicinal plants for exploitation. Monitoring by Panchayat/ VDC at the time of harvesting of forest produce and MAP and in prospecting activities relating to such forest produce. Conduct regular monitoring of catchment area treatment plans, muck disposal sites and grazing. Ensure muck disposal at designated sites. Air, water & noise pollution. Avoid blasting during exceeding / nesting season of birds. Create check points for controlling graziers/ cattle/ livestock.
Insitu/ Exsitu/ Germplasm Conservation	<ul style="list-style-type: none"> Use existing gene bank/ set up a gene bank, preserve and document the germplasm of medicinal and aromatic plants.
Biotechnology	<ul style="list-style-type: none"> Use biotechnology for propagating and harvesting forest produce and MAP.
Alternative Livelihood	<ul style="list-style-type: none"> Develop and implement district wise program to reduce pressure on forest produce.
Insitu/ Exsitu Conservation	<ul style="list-style-type: none"> Undertake medicinal plants survey, identification, collection, cultivation conservation, utilization, marketing, value addition, research & development, training, development of nurseries & agro techniques, quality control and inter-linkage with other departments.

Areas	Scope of Training Program
Biological Monitoring	<ul style="list-style-type: none"> Gather scientific data to assess the impacts and review changes by setting up of permanent plots for long term monitoring (in each Forest types) in the state to understand the forest ecosystem and dynamics in pristine and wilderness areas and those forest where trees have been logged before the ban on green felling was brought in. (This can be set up to gather scientific data on climatic and biological parameters, especially in Alpine and Shivalik ecosystems).
Nursery Development	<ul style="list-style-type: none"> PS to formulate plans in respect of lands identified by the Gram panchayats in coordination with concerned Range Officers for developing / organizing nurseries for afforestation.
Afforestation	<ul style="list-style-type: none"> Gram Panchayats (GP) to identify village common lands, other community and no forest lands for development of village wood lots in consultation with the local forest guards/Block officers. This will also include location of site, species to be planted and details of such areas, which need maintenance. Introduce fruit bearing trees in the CAT activities
Community Based Monitoring	<ul style="list-style-type: none"> PS and GP to supervise monitor afforestation, plantation and nursery works within their area and report to the concerned Forest Officer.
Biodiversity Conservation	<ul style="list-style-type: none"> Conservation of biological diversity should guide afforestation programmes and not carbon sequestration potential alone.
Community based Conservation	<ul style="list-style-type: none"> GP to enlist the cooperation of the local people to protect forest from fires and to help Forest Department in extinguishing forest fires by constituting fire protection committee.

Regulation & Compliance Monitoring	<ul style="list-style-type: none"> • PS / GP to recommend action under existing regulation against major and habitual defaulters and to report concerned authorities of the Forest Department. • Monitoring of offences of illicit felling/poaching by ZP/ PS monthly reporting to Range Officer for action • GP to prevent and report the cases of illicit felling/ poaching to the DFO concerned and take cognizance of patrolling of Forest Guards in their jurisdiction. • Eject encroachment in coordination with relevant authorities e.g. BBMB which owns land in Pong but the catchment of Pong Dam is owned by the state of Himachal Pradesh. • Regulate farming lakes, wetlands during draw down areas. • Activities regarding: Conversion of wetlands to non-wetlands use, and reclamation and dredging • Enforce strict regulations related to poaching and other areas. Enhance capacity of personnel & training of enforcement/ regulatory staff and augmentation of enforcement infrastructure. • Enforce strict regulations related to poaching.
Community based Forest Management	<ul style="list-style-type: none"> • ZP/PS/GP to incentivise community involvement in some mainstream forest department activities including forest protection, afforestation and fire fighting • Revise Relief manual.
Policy/ Programme Management	<ul style="list-style-type: none"> • Strict implementation of Policy Guidelines for recommendation of FCA Cases approved by Govt of H.P. on 30th September, 2009.
CAT Plan Management & Monitoring	<ul style="list-style-type: none"> • Strict implementations of notification for the preparation of the Catchment Area Treatment Plans stipulated vide notification No. FFE-B-F-(2)-72/2004-Pt-II dated the 30.9.2009.
Bioengineering & CAT Plan Management	<ul style="list-style-type: none"> • Promote usage of alternatives solutions like bio- engineering under catchment area treatment Plans, instead of only thrusting engineering solutions.

Areas	Scope of Training Program
Protected Area Management	<ul style="list-style-type: none"> Review of existing protected area network with respect to bio-geographic zones and forest types at regular intervals. (Coverage/ species protection) (extent/ Boundaries) to assess the needs for conservation and effectiveness of existing network at regular intervals. Creation of buffer zones around the Pas. Implement Crop Insurance Schemes. Re-orienting afforestation programmes including vegetative barriers to focus on species that help mitigate man-animal conflict.
Project Management	<ul style="list-style-type: none"> Develop action plan based on needs identification.
Community based Awareness	<ul style="list-style-type: none"> Develop & implement awareness program for ZP to educate masses against illicit felling and poaching.
Working Plan	<ul style="list-style-type: none"> Working plans to identify areas infested with alien and invasive species and prepare a plan suitable intervention depending on the species, extent of the areas infested. Eradication of invasive and alien species from forest areas to check infestation of invasive and alien species into cropped areas.
Micro Enterprise Development	<ul style="list-style-type: none"> Develop techno-economic feasibility study and market based incentives for utilization of products derived from Lantana bush.
Wetland Inventory & Assessment	<ul style="list-style-type: none"> Demarcate wetland boundary with clear core and buffer areas which can be regulated. Undertake research studies for understanding impact of creation of new wetlands on local ecology, flora and fauna. Study of ecosystem dynamics.
Land Use Planning	<ul style="list-style-type: none"> Assign clear land tenure of wetland and surrounding area
Institutional responsibilities & Regulatory Compliance	<ul style="list-style-type: none"> Identify clear roles and responsibilities of authorities related to wetland management.
Assessment & Monitoring	<ul style="list-style-type: none"> Undertake bathymetric mapping of wetlands. Conduct Regular Monitoring of physiochemical parameters. Water quality and land use of wetland.

Areas	Scope of Training Program
CAT Planning & Watershed Development	<ul style="list-style-type: none"> • Preparation and implementation of catchment area treatment plans. • Suggest improvement measures to address directly negative impacts on fish breeding and feeding grounds as part of the restoration of habitat while developing and implementing catchments area treatment plan and watershed development programmes • Monitor the post project (catchment area treatment plan and watershed development programme) production to assess the efficacy of implemented measures for replications.
Soil & Water Conservation.	<ul style="list-style-type: none"> • Ensure implementation of soil conservation measures should be taken to stop land slides.
Carrying Capacity Assessments	<ul style="list-style-type: none"> • Undertake carrying capacity study of the number of cattle / livestock depending on area around the wetlands
GIS & Remote Sensing Under Wetland Inventory & Assessment	<ul style="list-style-type: none"> • Identify and map wetlands where draw down areas are being farmed. • Zonation and inclusion of draw down areas in core area.
Wetland Management Planning & Monitoring.	<ul style="list-style-type: none"> • Prepare Wetland Management Plan for each wetland. As part of this plan, prepare & implement. • Waste material including solid waste management plan. • Suitable camping sites should be identified. • Walking trails should be constructed.
Pollution Control & Monitoring	<ul style="list-style-type: none"> • The interception and diversion works may include sewerage & sewage treatment for the entire lake catchment area. • Prevention of pollution from point sources by intercepting, diverting and treating the pollution loads entering the lake.
Awareness & Information Dissemination	<ul style="list-style-type: none"> • Ensure integration & implementation of Awareness program on health and sanitation of different line agencies e.g. IPH, health, tourism, forest & wild life.
Protected Area Management & biological Corridor	<ul style="list-style-type: none"> • Carry out scientific study on wildlife and avifauna and its habitat and possible connectivity corridors with larger landscape as part of wetland management plan.

Areas	Scope of Training Program
Wetland Management Planning	<ul style="list-style-type: none"> • Prevent and Control of introduced and invasive alien species specific to the wetland as part of wetland management plan. • Weed removal and wetland monitoring should be carried out. • Formulation and implementation of Wetland's Management Action Plan • Inventorize biodiversity of the wetlands as part of Wetland Management plan. • Prepare and implement public health and safety management plan as part of wetland management plan.
Wildlife Management	<ul style="list-style-type: none"> • Training of enforcement/ regulatory staff and augmentation of enforcement infrastructure • Seek collaboration with specialized National agencies in the area of wildlife monitoring and enforcement.
River Basin Planning	<ul style="list-style-type: none"> • Assessment of the hydrology in the immediate catchment/ river basin for small hydro projects • Assist line department in assessment of the hydrology in the immediate catchment/ river basin for small hydro projects • Assessment sustainable environmental flow for each river and stream. • Ensure release of minimum 15% of lean flow or environmental flow downstream, whichever is higher to be made mandatory. • Assist line department in developing, design and implement appropriate fish ladder or fish pass from diversion structure or additional measure to facilitate minimum downstream discharge in order to maintain aquatic longitudinal connectivity (At the moment sluice gate are not designed in a manner to release 15% of minimum flow). • Ensure minimum downstream discharge to be maintained through fish pass

Areas	Scope of Training Program
Reservoir Management	<ul style="list-style-type: none"> • Ensure coordination between relevant authorities on the timing and volume for release of water. • Assessment of dredging needs be based on wetlands affected by siltation and not as a matter of annual management practice.
Tourism Master Planning / Wildlife Management Plan	<ul style="list-style-type: none"> • Develop water bodies as tourist spots with adequate ecological protection independently or as part of tourism master plan.
Sector Assessment & Studies	<ul style="list-style-type: none"> • Assessment of baseline fisheries production in each wetland/ reservoir/ water body and conduct root cause analysis for decline in production and species. The baseline study should include the following: <ul style="list-style-type: none"> ▪ Inventorize fish species as part of aquatic biodiversity of the wetlands/ water body/ reservoir as part of wetlands/ water body/ reservoir Management plan • Breeding season and the spawning grounds of major fish species • Silt tolerance study of major fish species including species wise tolerance and duration • Study of effect of sediment and silt on benthic communities
Route Cause Analysis	<ul style="list-style-type: none"> • Coordinate with line departments to formulate multi stakeholders action plan based on route cause analysis
Conservation Breeding	<ul style="list-style-type: none"> • Develop and other fish breeding programmes for Endangered/ indigenous species
Ecosystem based Fisheries Assessment	<ul style="list-style-type: none"> ▪ Undertake investigative studies on the impact of insecticides and fertilizer residue on biotic life of aquatic lotic ecosystems and prioritize water bodies based on the level of concern • Assist department of agriculture and horticulture department in formulating action plan in the identified areas based on level of concern according to investigative studies • Promote bio-farming, IPM, IPNM, bio-fertilizer, bio-pesticide, etc.

Areas	Scope of Training Program
Reservoir / Water body / Wetland Management & Monitoring	<ul style="list-style-type: none"> Assist line department in identifying and implementing measure for dredge spoil stabilization as part of the reservoir/ water body/ wetland operation plan Desilting as part of reservoir/ water body/ wetland operation plan e.g. timing of desilting vis a vis flooding (1st/ 2nd/3rd desilting with 1st, 2nd and 3rd flood) Assist line department to implement measures to reduce fish mortality by maintaining adequate depth all the year round as part of the operation plan Water body/ wetland/ reservoir monitoring plan. Develop and implement pilot project to reduce fish mortality related to annual silt fishing linked to operational strategy of reservoir Assist the respective line departments to prepare wetland/ water body/ reservoir management plan (sewage, solid wastes, toxic chemicals, tourists destination and industries) for each prioritized wetland/ water body/ reservoir. As part of this plan, implement measures to protect and rehabilitate spawning and feeding areas. Carry out regular monitoring of the prioritized wetland/ reservoir/ water body as part of wetland/ reservoir/ water body management plan. Ensure dredge spoils do not re-enter the water body/ wetland/ reservoir. Formulation and implementation of Wetland's Management Action Plan Assist line department to ensure coordination between relevant authorities on the timing and volume for release of water
Quarantining	<ul style="list-style-type: none"> Since the introduction of new species is fraught with certain risks as such the biotic material if necessary be imported as strict quarantine procedures be adopted prior to their release in natural waters.
Information Dissemination & Awareness	<ul style="list-style-type: none"> Develop awareness programmes for all the stakeholders for education on conservation of fish.
Ecotourism	Identifying and advising on regulation the number of motorized tourist vessels in developing water bodies as tourist spots with adequate ecological/ fisheries protection.

Services Sector

Areas	Scope of Training Program
Environmental Education Program of Teacher & other Stakeholders	<p>Development and implementation of environmental education programme as main subject at secondary and tertiary level in the state.</p> <ul style="list-style-type: none"> Development of curriculum for environmental education at different levels (Primary, Secondary / Tertiary / Technical education) as part of environment education programme. <p>Assess and develop curriculum for specific courses for e.g. energy conservation, Effluent treatment (operation and maintenance) as per needs of the business and industries groups and other agencies.</p> <p>Development of training capacity building programme for teachers / skill personnel to augment their skills for imparting environmental education at primary, secondary and tertiary level.</p> <p>Ensure budgetary allocation for environmental education program at different levels</p> <p>Training needs assessment with respect to emerging areas in environment e.g. clean technology / cleaner production, climate change, ICT etc.</p> <p>Development of training programs for stakeholders as per needs assessment.</p> <p>Assess and develop vocational long term/short term training courses, it is, etc. to address environmental issues.</p>
Environmental Education under Vocational Training	<ul style="list-style-type: none"> Development and implement of vocational training programs especially on resource conservation, cleaner technologies, cleaner production and pollution control. Introduce special papers/certificate courses (15 days to 3 months) in existing vocational courses and training Ensure budgetary allocation for vocational training programs
Environmental Education Needs Assessment	<ul style="list-style-type: none"> Assess and identify research and development needs of business and Industries. Mainstream and introduce the identified needs into research and development priorities.
E – Waste Management (Inventors, Collection, Transportation, Reuse, Recycling, Disposal)	<ul style="list-style-type: none"> Development of e-waste inventory for the state. Development of e-waste management (collection, transportation & disposal) and principles of business model (take back) based on principles of 3 R's/EPR in the state.

Areas	Scope of Training Program
Regulatory compliance & Monitoring	<ul style="list-style-type: none"> EIA clearance of BPO should be conditional with a mandatory e-waste management plan. Strict implementation of e-waste rules. Strict compliance to safety standards as per industry best practices / codes. Regulatory monitoring of radiation near telecom tower. Complete ban on informal sector recycling (if any) of e-waste in the state
Awareness & Information Dissemination	<ul style="list-style-type: none"> Accelerate/Initiate programmes to raise awareness of the consumers. Awareness generation to promote awareness about environmental issues related to IT/ICT products. Preparation and implementation of awareness campaign for replication of successful projects under subsistence livelihood programs
Research & Development	<ul style="list-style-type: none"> Development of R & D projects focusing on impact of radiation of human health.
E – Waste Management	<ul style="list-style-type: none"> Identify and quantify occupational health risks due to e-waste recycling. Develop programmes for integration of informal recycling in the state
IT & Environment	<ul style="list-style-type: none"> Development of state level manual for IT based industries Implementation of IT industry's environmental best practice
ECBC Compliance	<ul style="list-style-type: none"> Implementation of Bureau of Energy Efficiency of the star rating BPO program Implementation of Energy Conservation Building Code
Alternate Livelihood Programs	<ul style="list-style-type: none"> Development of alternative livelihood programs based on sub sector development under infrastructure, natural resources and services
Livelihood Program Monitoring	<ul style="list-style-type: none"> Close monitoring of livelihood programmes especially of BPL families under existing central and state government schemes
Cross Sector Development Planning	<ul style="list-style-type: none"> Develop and implement sectoral development plans/ programmes / projects already identified under each sub sector to optimize natural resource use
Water Resource Conservation	<ul style="list-style-type: none"> 1Preparation and implementation of state wide water harvesting structure / drip irrigation programmes for multipurpose usage
Biotechnology	<ul style="list-style-type: none"> Preparation and implementation of agriculture productivity improvement program through technology e.g. biotechnology
Crop Diversification & Climate Change	<ul style="list-style-type: none"> Preparation and implementation of crop

Areas	Scope of Training Program
Adaptation	diversification programmes adapting to climate change
Environmental Pollution Monitoring	<ul style="list-style-type: none"> • Strict implantation and monitoring of air and water pollution control programmes and projects
CAT / Watershed Development	<ul style="list-style-type: none"> • Strict implementation and monitoring of CAT / water shed development / other soil erosion programmes and projects
Road Sector Master Plan Implementation & Monitoring	<ul style="list-style-type: none"> • Strict implementation and monitoring of state road / rural road / highway development and upgradation program / master plan
Project Management & Monitoring	<ul style="list-style-type: none"> • Strict implementation and monitoring of market infrastructure development / upgradation program • Strict implementation and monitoring of proposed actions recommended under guidelines for water supply and sewage • Strict implementation and monitoring of proposed actions recommended under guidelines for health sector • Implementation and monitoring of infrastructure development under PPP. • Tourism • Roads / Highway • Water supply / sewage • Urban infrastructure development • Rural infrastructure development • Hydropower / Non-conventional energy sources • Market infrastructure • Implementation and monitoring of recommendations of market research study recommended as part of market infrastructure development program
Subsistence Livelihood Program	<ul style="list-style-type: none"> • Development and implementation of district wise portfolio of subsistence livelihood program
Market Research	<ul style="list-style-type: none"> • Market related study to assess consumers choice/behaviour for diversification of livelihoods
Training Needs Assessment	<ul style="list-style-type: none"> • Strengthen Himachal Pradesh State Land Use and Wasteland Development Board reconstituted in 2007 for three years
Land Use Planning	<ul style="list-style-type: none"> • Set up an instiuttional mechanism to foster Integrated Land Use Planning Authority in the state

Annexure - 3

Training Institutes

International

Environmental Management and Assessment

IEMA, Institute of Environmental Management and Assessment, St Nicholas House,
70 Newport, Lincoln, LN1 3DP (UK) Tel: +44 (0)1522 540069
Fax: +44 (0)1522 540090
E-mail: info@iema.net

I: Infrastructure Sector (Sector specific) Institutes

Roads and Transport Central Road Research Institute

Delhi-Mathura Road, New Delhi-110020

2. Hydropower

Alternate Hydro Energy Centre,

Indian Institute of Technology Roorkee, Roorkee-247667, Uttarakhand

Ph.D. Programme is also offered by AHEC in the field of “Alternate Hydro Energy”. A M.Tech. programme in “Environmental Management of Rivers and Lakes” fully sponsored by Ministry of Environment and Forests, GOI is being offered since 2004 to the officers state / local / central government organizations.

AHEC offers M.Tech in .Environmental Management of Rivers & Lakes and M.Tech. in Alternate Hydro Energy Systems/.

AHEC has signed a Memorandum of Understanding with Government of Uttaranchal, Bihar and Himachal Pradesh, Jammu & Kashmir to work as expert agency for the development of small hydropower in Uttaranchal. It has set up Instrumentation laboratory to provide independent performance testing of hydropower plants.

A real time digital SHP simulator has been established for training and design with the support from MNRE, Govt of India and UNDP under CCFIL.

Training Programmes

➤ International

- International Training Course on “Small Hydropower Development” at Roorkee
- Two weeks International Training Programme on Rural Electrification with Small Hydropower sponsored by Ministry of External Affairs and Ministry of New and Renewable energy, Govt of India, under Africa India Forum Summit-II only for participants from African Countries

Real time digital simulator for small hydropower plants for training has been established at AHEC

1. Real Time Digital Simulator for Small Hydropower Plants
2. Training Modules
 - In-Service shp plant engineer
 - Fresh shp plant engineer
 - Shp plant technician
 - Shp plant owner
3. Training Schedule
 - For International Participants
 - For National Participants
4. Film on Simulator

3. Irrigation and Public health

Ministry of urban development has recognized twelve renowned academic institutions in various parts of the country to conduct Post Graduate degree courses of 24 months duration in Public Health Engineering/Environmental Engineering.

1.	Sri Jayachamarajendra College of Engineering, : Mysore.
2.	Veermata Jijabai Technological Institute, Mumbai :
3.	Shri G.S. Institute of Technology & Science, : Indore.
4.	Motilal Nehru National Institute of Technology, : Allahabad.
5.	Visvesvaraya National Institute of Technology, : Nagpur.
6.	Indian Institute of Technology, Bombay, Mumbai :
7.	Malviya National Institute of Technology, Jaipur :
8.	Anna University, Chennai:
9.	Indian Institute of Technology, Kharagpur :
10	Indian Institute of Technology, Delhi:
218 11	Jawaharlal Nehru Technological University, Hyderabad :
12	All India Institute of Hygiene & Public Health (AIHH&PH), Kolkata.

4. Industries and Mining

National Institute of Industrial Engineering (NITIE) Vihar Lake, Mumbai – 400087

NITIE offers following Post Graduate diploma:

Post Graduate Diploma in Industrial Engineering (PGDIE), Post Graduate Diploma in Industrial Management (PGDIM), Post Graduate Diploma in Industrial Safety and Environmental Management (PGDISEM) and Post Graduate Diploma in Information Technology Management (PGDITM).

The Management Development Programme of NITIE provides many programmes for practising managers, engineers, professionals and administrators including Senior Management Programme (SMP), Middle Management Programme (MMP), Junior Management Programme (JMP).

Indian School of Mines (ISM)
Dhanbad - 826004, Jharkhand

5. Planning (Rural and Urban)

Center for Environmental Planning and Technology, Ahmadabad (CEPT)
Kasturbhai Lalbhai Campus,

Near Dada Saheb Na Pagla Univerity Road, Ambavadi, Ahmedabad, Gujarat 380015

CEPT is a State Level Anchor Institute for Infrastructure Sector: The following focus areas have been identified for training at various Levels. Essentially, the modules are designed to meet the requirements of three tier system wherein the topmost tier is of the professionals involved in planning and policy making. The second tier comprises professionals involved in design, implementation, maintenance and supervision and the third tier comprises skilled personnel involved at the grassroots in construction and on-site activities.

- Regional Infrastructure
- Urban & Industrial Infrastructure
- Building Services and
- Land Development, Real Estate, SEZ, SIRs

Post graduate programmes offered by CEPT are Urban and Regional Planning, Environmental Planning, Housing, Urban Design, Landscape Architecture, Construction and Project Management, Structural Design, Infrastructure Planning, Masters in Architecture - Theory and Design, Masters in Architecture – Conservation Studies, Masters in Interior Architecture and Design, Industrial Area Planning and Management, Technology Management, and Geomatics.

Institute of rural Management (IrM)
Anand, Post Box No. 60, Anand 388001

IRM's MDPs address the in-service training needs of the executives and managers working in the co-operatives, not-for-profit organisation, and government and semi-government organisations engaged in rural development.

6. Market Infrastructure

National Institute of Agricultural Marketing

Ch.charan Singh National Institute of Agricultural Marketing
Bambala, Kota Road, Jaipur-302033 (Rajasthan)

National Institute of Agricultural Marketing is engaged in imparting training to the senior and middle level officers from various State Governments, Co-operatives, Boards, Entrepreneurs, etc. The training programmes are organized to facilitate acquisition of knowledge, development of skills and competencies. The training programmes are delivered as Core Programmes, Awareness programmes, Workshops, Exhibition, MDPs and Buyer Seller Meets for different clientele.

7. Health

Central Pollution Control Board (CPCB)

Parivesh Bhawan, CBD-cum-Office Complex East Arjun Nagar, DELHI - 110 032, CPCB plans and organises training of persons engaged in programme on the prevention, control or abatement of water and air pollution through various point and non point sources of pollution including, Hazardous waste, solid waste, biomedical waste, etc.

8. Tourism and Ecotourism

Centre for Eco-tourism and Sustainable Livelihoods

Corbett Tiger Reserve,
Ramnagar – 244 715, Uttarakhand

Centre for Environment Educatio, Thaltej Tekra Ahmedabad Gujrat

In order to address the crucial issue of 'appropriate' forms of tourism management and planning, CEE is working with the University of Central Lancashire, UK, to jointly develop a Masters Degree programme in Ecotourism. The programme will engage Indian tourism professionals, tourism students, government employees and others engaged in tourism management and planning, in order to promote the values and practicalities of ecotourism for the social, economic and environmental benefit of the nation.

II: Natural resources Management

Institutions for training and Sources related to forestry and Wildlife Ministries, Organizations and Institutions of Government of India

Indira Gandhi National Forest Academy
(Director), MoEF, P O New Forest, Dehradun – 248 006
Uttarakhand
Tel: +91(135) 2754657
Fax: 2757314
EPBX: 275316
E-mail: director@ignfa.gov.in
Website: www.ignfa.gov.in

Autonomous organisations under the Government of India

Forest Research Institute, (Director), ICFRE

P O New forest, Dehradun – 248 006

Uttarakhand

Tel: +91(135) 2755277

Fax: 2757326

E-mail: negiss@icfre.org

Himalayan forest research Institute director), Icfre

Conifer Campus, Panthaghati Shimla – 171 009 (HP) India Tel: +91(177) 2626778

Fax: 2626779, EPBX: 2627804 - 06

E-mail: hfri@hotdak.net

Website: www.hfri.icfre.org

Institute of Wood Science and technology (director), Icfre

18th Cross, Malleswaram,

Bangalore – 560 003 (Karnataka), India Tel: +91(80) 23346811

Fax: 23340529

E-mail: iwst@iwst.res.in

Website: www.iwst.res.in

Wildlife Institute of India (director), MoEF

P.B No. 18, Chandrabani,

Dehradun – 248 001, Uttarakhand

Tel: +91(135) 2640111 to 15, Fax: 2640117

E-mail: wii@wii.gov.in

Website: www.wii.gov.in

GB Pant Institute of Himalayan

Environment and Development, MoEF Kosi - Katarmal,

Almora. Pin: 263 643, Uttarakhand.

Tel: +91 (5926) 261015 (O)/241157 (R) EPBX: 241014/241041/241154

Telefax: 241150/231507

E-mail: ao@gbpihed.nic.in

Website: www.gbpihed.nic.in

Council of Scientific and Industrial research, (director General)

Ministry of Science and Technology

Anusandhan Bhawan,

2 Rafi Marg, New Delhi – 110 001

Tel: +91 (11) 23710472

Fax: 23710618

E-mail: dgcsir@csir.res.in

EBPX: 23710138/23710144/23710158/

23710468/23710805/23711251/

23714238/23714249/23714769

Websites: www.csir.res.in & www.csirhrdg.res.in

Private organisations / International bodies in India

Amity School of Natural Resources and Sustainable Development
Amity University Campus, Sector – 125, Noida – 201 303, Uttar Pradesh
Tel: +91(120) 5392153
Fax: 2431907
E-mail: Makhalid@amity.edu
Website: www.amity.edu

The Energy and resources Institute

(Fellow, Forestry and Biodiversity Area)
Darbari Seth Block Habitat Place, Lodhi Road New Delhi – 110 003
Tel: +91(11) 24682100/11
Fax: 24682144/45
E-mail: mailbox@teri.res.in
Website: www.teriin.org

World Wide fund for nature India, (Programme director)

172 – B, Lodi Road, New Delhi – 110 003
Tel: +91(11) 51504815 to 18, Fax: 51504779 / 51504795
E-mail: igcmc@wwfindia.net
Website: www.ecoweb.com/register/01561.html

Wildlife Trust of India

A – 220, New Friends Colony, New Delhi – 110 065
Tel: +91(11) 26326025/26326026
Fax: 26326027
E-mail: info@wti.org.in
Website: www.wildlifetrustofindia.org

Society for Promotion of Wastelands development

14A Vishnu Digamber Marg,
(Rouse Avenue Lane) New Delhi – 110 002
Tel: +91(11) 3236440/3236387
E-mail: spwd@vsnl.com
Website: www.spwdindia.org

Ashoka trust for research in Ecology and the Environment

659, 5th A Main, Hebbal, Bangalore 560 024
Tel: +91(80) 23533942 / 23530069
Fax: 23530070
E-mail: info@attre.org
Website: www.atree.org

BAIF Development Research Foundation

Dr manibhai Desai nagar NH 4, Warje, Pune – 41 058
Tel: +91(20) 5231661 / 5231662
Email: Baif@vsnl.com
Website: www.baif.org.in

Indian Institute of Bio-Social research and development (IBrAd)

3 A, Hindustan Road, Gariahar, Kolkata – 700 029, West Bengal Tel: +91 (33) 24643105 / 7370
Fax: 2466655
E-mail: ibrad@giase101.vsnl.net.in

RCDC centre for forestry and Governance

N4/342, IRC Village, Nayapalli
Bhubaneswar – 751 015
Tel: +91(674) 255249
Fax: 2540716
E-mail: Rcdcbg@sancharnet.in Website: www.banajata.org www.rcdcindia.org

Centre for Science and Environment

41, Tughlakabad Institutional Area
New Delhi – 110 003
Tel: +91(11) 29955124/29956110/
29952995/29956394/29956399
Fax: 29955879
E-mail: cse@cseindia.org
Website: www.cseindia.org

Foundation for revitalisation of local Health traditions

74/2 Jarakabande Kaval, Post Attur, Via Yelankanka, Bangalore 560 064
Tel: +91(80) 28568006
EPABX: 28568000 Fax: 28567926
Website: www.frlht.org

Contact Sources for more information

S. No.	Topics	Offices to be Contacted
1.	Extent of Forests, Tree Cover and Forest Types	FSI, RT Division, MoEF
2.	Biogeographic Zones	WII, MoEF
3.	Forest Policy and Legislative Framework	Forest Policy Division, MoEF
4.	Principles of Forest Management	Regional Offices Division, MoEF
5.	Sustainable Forest Management	Forest Policy Division, MoEF
6.	Afforestation Programmes	NAEB, MoEF
7.	Capacity Building	RT Division, MoEF
8.	Forestry Research	ICFRE, IPIRTI, Division, MoEF
9.	Externally Aided Projects	EAP Division, MoEF
10.	Trade in Forestry Products	SU Division, MoEF
11.	Trade in Wildlife Products	Wildlife Division, MoEF
12.	Forests and People	Forest Protection Division, MoEF
13.	Forests in National Economy	SU Division, MoEF
14.	Joint Forest Management	Forest Protection Division, MoEF
15.	Eco-tourism	Wildlife Division, MoEF
16.	NTFPs and Livelihoods	SU Division, RT Division, MoEF
17.	Medicinal Plants	National Medicinal Plants Board, Ministry of Health
18.	Bamboos: Mainstay of Rural India	RT Division, MoEF, National Mission on Bamboo Applications, DST and National Bamboo Mission, Ministry of Agriculture
19.	Forests in Tribal Development	Forest Policy Division, MoEF and Ministry of Tribal Affairs
20.	Intangible Benefits from Forests	SU Division, MoEF; WII
21.	Biodiversity	Conservation and Survey Division, Wildlife Division, MoEF; WII
22.	Forest Conservation Act: Rules and Regulations	Forest Conservation Division, MoEF
23.	Forest Protection	Forest Protection Division, MoEF
24.	Forests Management Challenges	Forest Policy Division, MoEF
25.	Forest Invasive Species	RT Division, MoEF
26.	Other Conservation Schemes	Various Divisions of MoEF
27.	Public Awareness	Media Division, MoEF
28.	Forestry Organizations	RT Division, CZA, MoEF
29.	Forest Development Corporations	SU Division, MoEF
30.	Forestry Services	IFS Division, Forest Establishment Division, MoEF
31.	Protected Area Network	Wildlife Division, MoEF
32.	Wildlife Research	WII, Wildlife Division, MoEF
33.	International conventions/Treaties – Forestry	FP, SU and RT Divisions, MoEF
34.	International Conventions – Wildlife	Wildlife and other Divisions, MoEF

III: Services sector

1. Livelihoods

National Institute of Rural Development, Hyderabad

National Institute of Rural Development Rajendranagar, Hyderabad-500030

Training programme on 'Strategies in Agroforestry for Environmental and Rural Livelihood Development'

Institute of Rural Management (IRM),

Anand, Post Box No. 60, Anand 388001

IRMA's MDPs address the in-service training needs of the executives and managers working in the co-operatives, not-for-profit organisation, and government and semi-government organisations engaged in rural development.

2. IT and Telecom

National Informatics Centre (NIC)

NIC, Department of Information Technology

Ministry of Communications and Information Technology

A-Block, CGO Complex, Lodhi Road, New Delhi - 110 003

National Informatics Centre (NIC) is a premiere S & T institution of the Government of India, established in 1976, for providing e-Government / e- Governance Solutions adopting best practices, integrated services and global solutions in Government Sector.

NIC is a Premier Information Technology Organisation in India providing State-of-Art Solutions for Information Management and Decision Support in Government and Corporate Sector. A number of Services are being provided by NIC to all the Government Ministries / Departments / States / Districts.

NIC is providing network backbone and e-Governance support to Central Government, State Governments, UT Administrations, Districts and other Government bodies. It offers a wide range of ICT services including Nationwide Communication Network for decentralised planning, improvement in Government services and wider transparency of national and local Governments.

NIC assists in implementing Information Technology Projects, in close collaboration with Central and State Governments, in the areas of (a) Centrally sponsored schemes and Central sector schemes, (b) State sector and State sponsored projects, and (c) District Administration sponsored projects. NIC endeavours to ensure that the latest technology in all areas of IT is available to its users. It is one of the total solution providers to the Government and is actively involved in most of the IT enabled applications and has changed the mindset of the working community in the Government to make use of the latest state of the art technology in their day to day activities to provide better services to the citizens.

3. Educational and Vocational Training

Centre for Environment Education (CEE) Thaltej Tekra, Ahmedabad, Gujarat

Training and capacity building programmes of CEE are

- South and South East Asia Network for Environmental Education (SASEANEE), an IUNC-CEC and CEE initiative
- South Asia Youth Environment Network (SAYEN), a UNEP initiative
- ENVIS (Environmental Information System) Node
- WASH South Asia Focal Point
- Focal Point for South Asia Cooperative Environment Programme (SACEP)
- Training in Education and Communication for Sustainable Development, three month programme for in-service professional from around the world
- 'EE Processes in Formal Education Systems', an advanced International Training Programme for in-service professionals in the field of environment in Asia and Africa .
- Teach and Learn Environmental Education Modules (TALEEM) , short duration modules focusing on areas of special interest to educators, professionals and volunteers involved in Environment and Development
- Environmental Education Bank , a five day training programme for environmental educators, teachers, etc
- Internship Programme in Environment and Development Communication , to train graduates and post graduates with an aptitude and flair for writing for a media career in journalism and/or development communication
- Training in Librarianship and Documentation, an internship programme for fresh post-graduates in Library and Information Science

Distance Learning Programmes (DLP):

- Green Teacher – Diploma in Environmental Education, a one-year distance education programme for middle-school teachers
- Environmental Journalism, a three-month course that gives intensive training to develop analytical, research and writing skills among participants.

Tailor-made Programmes

CEE also offers tailor-made programmes on request from the Government, NGOs, academic institutions in India and other countries, for instance.

- Training of IFS Officers of Various States
- How to be an Effective Environmental Educator: Training in Self Development, EE and Communication
- Teachers Training Programme for Infosys Foundation
- Training Module on Zoo Education and Interpretation for Wildlife Institute of India, Dehradun
- Activity Training Workshop for Gujarat Secondary and Higher Secondary Education Board

Some Other Programmes

- Education for Sustainable Development (ESD) in Formal Education: An international advanced training programme
- Environmental Education for Teacher Educators
- EE/EES Alumni Follow-up Workshop for Asia, 2007
- Virda Capacity Building
- TECSD Online
- Training of Key Resource Persons of UP in Environmental Education
- School Sanitation and Hygiene Education Project - Teacher Training
- State Council of Education Research & Training (SCERT)
- Capacity Building Programme for State Level Trainers in Uttar Pradesh
- AGTP on Renewable Energy



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