CHAPTER 4

Chapter 4

Compliance to Specific Environment Clearance Conditions

4.1 Introduction

Environment Clearances (EC) are granted for Category A projects by MoEF&CC after following the due processes as per EIA Notification 2006. EC is issued to the Project Proponent (PP) of the project and lays down conditions to be adhered as per the commitments made by PP in EIA report. Apart from general conditions, it also stipulates certain specific conditions either relating to sectors or to the project to be followed by PPs. This Chapter contains observations on non-compliance to 18 specific EC condition relating to projects spread across all States. The 18 conditions are as under:

(i) Implementation of Emergency Preparedness Plans
(ii) Preservation of Topsoil
(iii) Management of Over Burden dumps
(iv) Preparation and implementation of action plan for conservation of flora and fauna
(v) Ensuring installation/functioning of pollution control systems like Effluent Treatment Plants
(vi) Implementation of Occupational Health Surveillance Programme and non-identification of risk
(vii) Construction of rain water harvesting structures
(viii) Construction of residential facilities for labourers
(ix) Relief and Rehabilitation
(x) Handling of hazardous waste materials
(xi) Obtaining of clearance for the handling of explosive materials
(xii) Storage of Fly Ash in case of Thermal Power Projects
(xiii) Utilisation of coal with ash content within permitted level in case of Thermal Power Projects
(xiv) Control of fugitive emission of fly ash in case of Thermal Power Projects
(xv) Utilization of Fly Ash generated in case of Thermal Power Projects
(xvi) Consolidation and compilation of the muck in the designated muck dumping sites in case of River Valley and Hydro Electric Power projects
(xvii) Implementation of the Fishery Conservation & Management Plan
(xviii) Implementation of the Catchment Area Treatment Plans

In order to ensure that PPs are complying with the EC conditions, we examined records/information furnished by the PPs relating to 352 projects that were granted EC by MoEF&CC between calendar years 2008-2012 across the country relating to seven sectors. Result of audit findings are summarised in Chart 4.1.

Chart 4.1: Evaluation of Non-Compliance to Specific EC Conditions

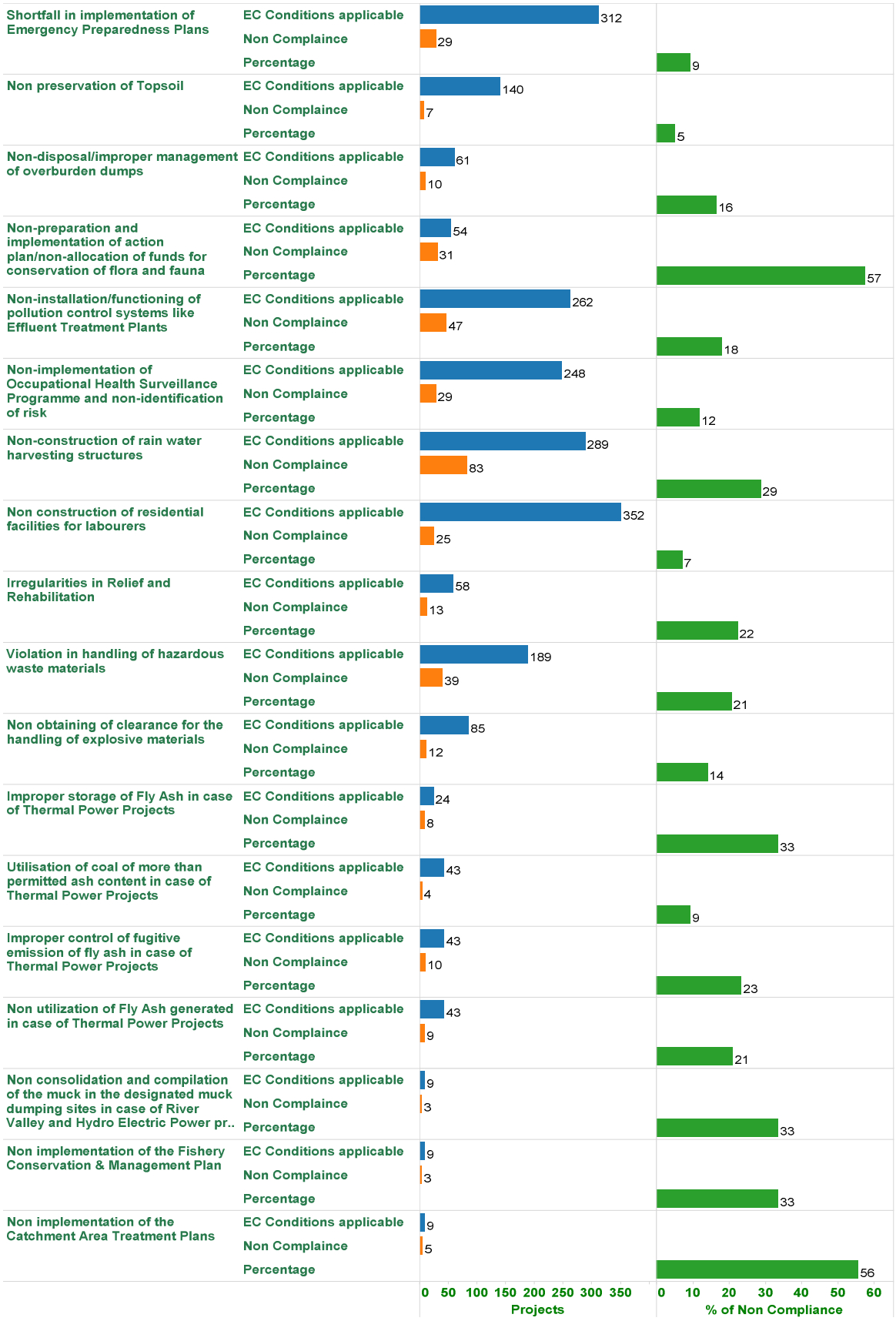

Chart 4.1 shows that that percentage of non-compliance by sampled projects to specific conditions ranged from five to 57 *per cent*. Projects in which non-compliance is more than 25 *per cent* relate to six specific EC conditions and most relate to River Valley and Hydro Electric Power projects and Thermal Power Projects. These are as under:

(i) Non-preparation and implementation of action plan/non-allocation of funds for conservation of flora and fauna
(ii) Non implementation of the Catchment Area Treatment Plans
(iii) Non consolidation and compilation of muck in the designated muck dumping sites in case of River Valley and Hydro Electric Power projects
(iv) Non implementation of the Fishery Conservation and Management Plan
(v) Improper storage of Fly Ash in Thermal Power Projects
(vi) Non-construction of rain water harvesting structures.

Out of the 352 projects test checked in audit, 10 projects which exhibited maximum number of non-compliance of specific EC conditions are as indicated in Table 4.1 below.

Table 4.1: 10 projects with maximum number of non-compliance of specific EC conditions

State	Project	Proponents	Non-Compliance
1. Bihar	2x195 MW (Stage-II) Coal Based Thermal Power Plant	M/s Kanti Bijli Utpadan Vitaran Ltd.	Storage of fly ash, Control of fugitive emission of fly ash, Utilisation of more than permitted ash content, Non-implementation of Occupational Health Surveillance Programme, Non-construction of Rain Water Harvesting Structure, Non-implementation of Relief and Rehabilitation Programme.
2. Meghalaya	Mawmluh Limestone Mine	M/s Mawmluh Cherra Cement Ltd.	Shortfall in Emergency Preparedness Plan, Non preservation of Topsoil, Non-Management of Overburdens, Non Conservation of Flora and Fauna, Non-installation of ETPs, Non-implementation of Occupational Health Surveillance Programme, Non-construction of Rain Water Harvesting Structure.
3. Jammu & Kashmir	Khrew Limestone	M/s Jammu & Kashmir Cement Ltd.	Shortfall in Emergency Preparedness Plan, Non Conservation of Flora and Fauna, Non-implementation of Occupational Health Surveillance Programme, Non-construction of Rain Water Harvesting Structure.
4. Uttarakhand	Residential Complex of Omaxe Riveira, Rudrapur.	M/s Omaxe Ltd	Shortfall in Emergency Preparedness Plan, Non-construction of Rain Water Harvesting Structure, Non-installation of ETPs, Handling of Explosives, Handling of Hazardous Waste Materials.
5. Meghalaya	Construction phase of Ferro Silicon Plant with 10 MW CPP at Riwiang	M/s Shree Shakambari Ferro Alloys Pvt. Ltd.	Shortfall in Emergency Preparedness Plan, Non-installation of ETPs, Non-construction of Rain Water Harvesting Structure, Non-implementation of Occupational Health Surveillance Programme, Handling of Hazardous Waste Materials.

State	Project	Proponents	Non-Compliance
6. Jammu & Kashmir	Proposed Integrated Cement Plant	M/s Tramboo Cement Industries Ltd.	Shortfall in Emergency Preparedness Plan, Non-construction of Rain Water Harvesting Structure, Hazardous Waste Materials, Non preservation of Topsoil, Non Conservation of Flora and Fauna.
7. Bihar	Construction of AIIMS, Phulwari Sarif, Patna	Department of Health, Government of Bihar	Non preservation of Topsoil, Non-construction of Rain Water Harvesting Structure, Non-installation of ETPs, Handling of Hazardous Waste Materials, Non-construction of shelter for labourers.
8. Madhya Pradesh	Lower Goi Irrigation Project	M/s NVDA Barwani	Shortfall in Emergency Preparedness Plan, Non preparation of Catchment Area Treatment, Non-implementation of Occupational Health Surveillance Programme. Non implementation of relief and rehabilitation.
9. Himachal Pradesh	Sainj HEP 100 MW	M/s Himachal Pradesh Power Corporation Ltd.	Non preservation of top soil, Non implementation of Fishery Conservation and Management Plan, Non preparation of Catchment Area Treatment, Non Conservation of Flora and Fauna, Non consolidation and compilation of Muck Disposal Plan, Non implementation of Relief and Rehabilitation.
10. Karnataka	1.120 KLPD Mollasses based distillery unit, Bagalkote	M/s Nirani Sugars Ltd	Shortfall in Emergency Preparedness Plan, Non-installation of ETPs, Non-construction of Rain Water Harvesting Structure.

Detailed audit findings relating to 18 specific EC conditions arising from test check of records of 352 PPs are in succeeding paragraphs.

4.2 Shortfall in implementation of Emergency Preparedness Plans

EIA reports and EC conditions in most of the projects require the PPs to prepare and implement the Emergency Preparedness Plan (EPP) after assessing the risks at the project sites. The Generic Structure of EIA document as per EIA Notification, 2006, Appendix III, also provided for inclusion of emergency procedures.

We observed that out of the 352 sampled projects pertaining to seven sectors, in 312 projects the EPPs was stipulated in EIA Report/EC conditions. Out of these 312 projects, in 29[21] projects, the PP did not comply with this condition. In 206 projects, the PPs complied with this condition and in 77 projects the information was not available.

Non-compliance to EPPs included non-availability of ambulance, fire fighting facilities, explosion hazards, medical facilities, protection against cyclones, floods, earthquakes, cloudbursts, mine inundation, early warning system, mock drills for disaster preparedness, training etc.

A few illustrative cases are given below:

[21] 13 projects did not comply with the EC conditions and 16 projects partially complied.

In case of, **Mawmluh Limestone Mine of M/s Mawmluh Cherra Cement Ltd, Meghalaya,** the nature of emergencies indicated in EIA report were slope failures at the mine faces and accident due to explosive and heavy mining equipment sabotage. The PP had to prepare a documented procedure for emergency preparedness and responses for control of different types of accidents. However, it was observed that proponent had not prepared the EPP.

Similarly, in another project, **Khrew Limestone, of M/s Jammu & Kashmir Cement Ltd, Jammu & Kashmir,** it was observed that the Disaster Management Plan was discussed in detail in EIA Report, however, no such plan was in place.

MoEF&CC replied (October 2016) that the District Authorities and the Inspectorate of Factories and Boilers are empowered under the law to approve EPPs and ensure compliance.

MoEF&CC should have ensured that the District Authorities had ensured compliance to EPP conditions so that mismanagement and mishandling of the situation at the time of emergency could be ruled out.

4.3 Non preservation of topsoil

Topsoil is the most fertile portion of soil. Plants generally concentrate their roots in and obtain most of their vital nutrients from this layer. The actual depth of the topsoil layer can be measured as the depth from the surface to the first densely packed soil layer known as subsoil. As per the EC, every proponent involved in any type of excavation has to (i) preserve the top soil to reclaim the excavated areas and dumps or (ii) all the topsoil excavated during construction activities to be stored for use in horticulture/landscape development within the project site. This would ensure that the top soil was properly stacked, for utilization later for reclamation and plantation.

We observed that out of the 352 sampled projects pertaining to various sectors, in 140 projects the condition of preservation of topsoil was stipulated in EC letter. Out of 140 projects, we found that in seven projects, PPs did not comply with this condition and in 50 projects information was not furnished by PPs.

MoEF&CC, while accepting the audit observation, stated (October 2016) that steps were being taken to improve compliance of the condition.

4.4 Non-disposal/improper management of Over Burden dumps

EC letters issued to various PPs specifically in coal/non-coal mining sectors contain condition in respect of management of Over Burden (OB) dumps created during such mining operations. The OB so generated was to be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo-textile was to be under taken for stabilization of the dump. The OB should not be left idle for long period and the mining area was to be backfilled with OB at the end of the mine life.

Out of the 352 sampled projects pertaining to various sectors, this condition was stipulated in the EC letter of 61 mining projects. We found violation of this EC condition in 10 projects.

A few illustrative cases are given below:

In case of **Enhancement of iron ore production of M/s V.S. Lad & Sons Iron ore mine, Bellary, Karnataka,** the EC included a condition that protection of dumps against erosion should be carried out. Thick plantation of native trees was to be carried out. However, the OB was noticed to be vertical and no stabilising measures like benching, geo-coir matting, construction of toe wall, etc were done. As per the Central Empowered Committee survey the OB has eroded and spread to the adjoining forest areas resulting in encroachment due to which the mining lease stood cancelled.

In case of **Enhancement of iron ore production of M/s. Ashwathnarayana Singh, Karnataka,** the EC stipulated that the OB shall be stacked at earmarked dumpsites and shall not be kept active for long periods and the height of the OB shall not exceed 30 meters. Audit noticed that OB dumps were not properly stabilized during the period of operation, the slope and height of the mines were not maintained at the limits prescribed which led to the frequent sliding and rolling down of the dumps creating deep gullies. Though plantation was taken up in the OBs, erosions during the rainy seasons had reduced the survival rates of plantations. Encroachment was also reported on the OBs by the Indian Council of Forestry, Research and Education.

MoEF&CC, while accepting the audit observation, stated (October 2016) that steps were being taken to improve compliance of the condition.

Thus, improper management of Over Burden excavated during project execution may lead to erosion of soil and may affect the surface runoff.

4.5 Non-preparation and non implementation of action plan/non-allocation of funds for conservation of flora and fauna

The EC letters of some of the projects contained a stipulation for preparation and implementation of action plan and allocation of funds for the conservation of flora and fauna. Such plans should contain a data compiled after survey of the area in and around the project area listing out the species of flora and fauna and the proposed action to be taken for the conservation of the same. Generally, the concurrence of the State Forest Department shall be obtained before submitting the same to MoEF&CC. Necessary allocation of funds for implementation of the conservation plan are to be made and the funds so allocated are to be included in the project cost. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to the project site was to be effectively implemented. A copy of action plan was to be submitted to the MoEF&CC and its ROs.

We observed that out of the 352 sampled cases, the condition in respect of preparation/implementation of action plan/allocation of funds for conservation of flora and fauna was stipulated in respect of 54 projects. Compliance to this condition was observed in 18 projects. In respect of one project, condition in respect of action plan for flora and fauna was not applicable as it had just commenced. In respect of four projects, the shortfall could not be determined because the information in respect of action plan for flora and fauna was not furnished by the PP.

We observed that in respect of 31 projects (57 *per cent*), there was shortfall with respect to preparation and implementation of action plan/allocation of funds for conservation of flora and fauna in consultation with the State Forest and Wildlife Department.

A few illustrative cases are given below:

In case of, **Development of Harbour facilities at Katchal of M/s Port Management Board (PMB), Andaman & Nicobar Islands,** the EC stipulated a condition on monitoring the impacts on the reefs and corals. As all the species of corals were under Schedule-I of the Wildlife Protection Act, 1972. PMB thus approached Zoological Survey of India (ZSI) to undertake survey of corals. ZSI recommended that periodic monitoring of the health of coral reefs should be undertaken during construction as well as post construction periods. Andaman and Nicobar Island Coastal Zone Management Authority (ANCZMA) directed that PP should earmark one *per cent* of the estimated cost of the projects at the disposal of the ANCZMA for monitoring of the coral, its associates as also marine flora and fauna during the construction period and two years thereafter. In 90th meeting, the EAC while recommending the project, directed that impacts on the reefs and corals shall be monitored as suggested by ZSI.

We noticed that the impacts on the reefs and corals were not periodically monitored by PMB and it had not deposited 1 *per cent* of the estimated cost (₹ 127.28 crore) of the project to ANCZMA.

In another project namely, **Pakhar Bauxite Mine of M/s Hindalco Industries Ltd, Jharkhand** the EC stipulated that the critical habitat in the area including dens of python, fox and bear should be protected by adopting appropriate wildlife conservation measures by preparing conservation plan specific to this project in consultation with the State Forest and Wildlife Department. For this purpose, PP was directed to spend ₹ 48.24 lakh as capital cost and ₹ 10 lakh as recurring cost. However, we observed that neither precautionary measures for conservation and protection of endangered fauna was planned by the PP nor the funds earmarked were spent over wildlife conservation measure.

MoEF&CC while accepting the audit observation, stated (October 2016) that the Ministry would issue necessary direction in this respect to the State Authorities.

4.6 Non-installation/functioning of pollution control systems like Effluent Treatment Plants

The EC letters of 262 projects stipulated that an Effluent Treatment Plant (ETP) of adequate capacity for treatment of effluents from the process, sedimentation tanks for treatment of mine discharge or a Sewage Treatment Plant (STP) for treatment of the domestic effluent should be established. The purpose of this stipulation was to stop ground/surface water contamination.

We observed that out of the 262 cases where the condition was stipulated, pollution control systems like ETPs and STPs were seen installed in 161 projects. In case of three projects, records were not furnished by the PP and in 51 cases, the condition was not applicable as the projects were either in the construction phase or the units were not generating waste.

We also observed that in respect of 23 projects, ETP/STP not installed and in remaining 24 cases, these were either not functioning or working at lesser capacity.

Due to non-installation of ETPs and STPs at project premises, the untreated waste water was discharged and was being allowed to flow down through drains thereby contaminating the surface/ground water.

A few illustrative cases are given below:

In a project in Uttarakhand - **Residential complex of Omaxe Riveria, Rudrapur of M/s Omaxe Ltd,** the EC stipulated installation of STP certified by an independent expert and submission of report in this regard to MoEF&CC before the project was commissioned for operation. We observed that the STP was found installed but of less capacity i.e. 600 KLD as compared to 1,430 KLD. The STP was found to be non-functional during the Joint Physical Verification. We also observed that the STP had been non-functional for months together which were supported by non-maintenance of STP log book after April 2014 and non-monitoring of treated water after May 2013.

Non-operational STP of OMAXE Reveria Infrastructure, Rudrapur, Uttarakhand

In case of **Mohanpur Open Cast Coal Mine of M/s Eastern Coalfields Ltd, West Bengal,** the EC stipulated providing of ETP of adequate capacity for workshop. Also, the industrial wastewater (workshop and wastewater from the mine) was to be properly

collected and treated so as to conform to the standards prescribed. However, during site visit it was observed that no ETP was installed in the project area and the waste water was being discharged into the open low lying area just after passing through settling tank.

Water discharge in open area at Mohanpur OCP, West Bengal

MoEF&CC stated (October 2016) that non-compliances for non-installation of ETPs/STPs in case of industrial projects had been taken up by the Ministry and CPCB in July 2015 and it has been mandatory for all industries to have online monitoring system including flow meter in the ETP system thereby reducing physical monitoring which was not possible due to shortage in staff strength in Ministry and CPCB.

However, measurable outcomes of the above action were not indicated by MoEF&CC.

4.7 Non-implementation of Occupational Health Surveillance Programme and non-identification of risk

In some projects, the EC condition entailed that the occupational health and safety measures for the workers including identification of work related to health hazards, training on malaria eradication, HIV, and health effects on exposure to mineral dust etc. should be carried out. Review of impact of various health measures should be undertaken periodically by the PP.

We observed that out of the 248 cases where the condition was applicable, the implementation of Occupational Health Surveillance Programme was seen in 179 projects. The condition was not applicable in 10 projects as the project had not yet been operationalized or were defunct. In case of 30 projects, the records/information were not furnished by the PP. Occupational Health Surveillance Programme was not found to be implemented in 29 projects (12 *per cent*). We found cases where periodical medical examination was not done, health records not maintained, personal protections not used by the personnel in dusty and risk prone areas, first aid room not provided at the project site etc.

A few illustrative cases are given below:

In case of **Expansion of Manal Lime Stone Mining Project by M/s Cement Corporation of India Ltd, Himachal Pradesh,** EC stipulated that occupational health surveillance programme of the workers was to be undertaken periodically and personnel working in dusty areas should wear protective respiratory devices. However, during the physical

verification, we noticed that the workers were not wearing personal protection equipment.

Workers working without personal protection equipments in Manal Lime Stone Mining Project, Himachal Pradesh

In case of **Kagmadar Soapstone Mining Project, Rajsamand of M/s Apec Mineral Industry, Rajasthan,** EC stipulated that personnel working in industry areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed. However, at the time of physical verification, we observed that no systematic records were being maintained as desired in EC.

MoEF&CC stated (October 2016) that to improve the compliance, the observations would be forwarded to Statutory Authorities of the concerned State Governments.

4.8 Non-construction of rain water harvesting structures

The EC letters of 289 projects stipulated that the PP shall implement suitable conservation measures including suitable rain water harvesting measures to augment Ground water resources in the area in consultation with the Regional Director, Central Ground Water Board and submit a copy of the same to the MoEF&CC and its ROs. In 32 projects, the condition stipulated that oil and Grease trap shall be provided to remove oil and grease from the surface run off and suspended matter shall be removed in a settling tank before its utilization for rainwater harvesting.

We found that out of the 289 cases where this condition was stipulated, the rainwater harvesting structures was found constructed in 186 projects. In case of six projects, the records were not furnished by PP and in 14 projects, this condition was not applicable as the projects were under construction. Rainwater harvesting structures were not found constructed in case of 83 projects which was essential for enriching the Ground water table and which also helps in reducing the reliance on other naturally available sources.

A few illustrative cases are given below:

In case of **Portland Pozzolona Cement Unit of M/s Eco Cement Ltd, Bihar,** the EC stipulated that efforts should be made to make use of rain water harvesting, if needed, capacity of the reservoir should be enhanced to meet the maximum water requirement.

Only balance water requirement should be met from other sources. We observed that a pit was shown as the rainwater harvesting structures which was dry and filled with grass. Further, the pit structure was not in conformity with the design as in the EMP.

In another case of **Imported Coal Based CPP of M/s NR Agarwal Industries Ltd, Gujarat**, the EC stipulated that the PP should undertake rain water harvesting measures and should develop water storage for use in operation of the plant. Rain water harvesting system should be put in place which should comprise of rain water collection from the built up and open area in the plant premises. Action plan for implementation should be submitted to the RO of the MoEF&CC. We observed that the Company had not taken rain water harvesting measures and not developed water storage system to use in operation of the plant and not submitted the action plan to MoEF&CC.

MoEF&CC stated (October 2016) that CGWA and the concerned RO of MoEF&CC would be advised to ensure compliance.

4.9 Non-construction of residential facilities for labourers

Labour welfare is a vital part of business organizations and managements needed to attach more importance to the human angle. Providing residential facility is one of the primary welfare measures which induce a sense of belonging to the labourer thereby increasing the productivity, as well as efficiency of the workers.

MoEF&CC vide OM dated 22 September 2008 had made it mandatory to stipulate a condition regarding providing of housing for construction labour with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche, etc in all the projects while granting ECs.

We observed that out of 352 sampled projects, no condition to this effect was stipulated in 115 (33 *per cent*) projects and was found mentioned only in 166 (47 *per cent*) projects. Compliance could not be verified in 71 (20 *per cent*) projects as either the construction phase of the project was already over/not started or necessary information was not available.

Out of 166 projects, the PPs did not provide residential facilities to the labourers during construction work in 25 (15 *per cent*) projects (including 17 projects where the PP stated that the same was not done as the labour was from nearby areas) though there was a condition to this effect in their ECs.

A few illustrative cases are given below:

In case of **Collection of Minor minerals from River Kosi, Nainital of Forest Development Corporation of Uttarakhand,** EC stipulated providing of housing for construction labour with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche, etc. We observed that no housing or other infrastructure facilities were provided by the PP.

In case of **Yanakandla Limestone Mine of M/s Shree Jayajyothi Cements Ltd, Andhra Pradesh,** the EC stipulated for provision of residential facilities for labourers. However, we observed that such facility was not provided by the PP.

MoEF&CC stated (October 2016) that it had made it mandatory in September 2008 to stipulate this condition in all the ECs. However, the fact remained that inspite of making the condition mandatory, we found non-compliance in providing of residential facilities in 25 cases.

4.10 Irregularities in Relief and Rehabilitation

Relief and Rehabilitation (R&R) of the project affected people assumes prime importance as the displacement process often poses problems that make it difficult for the affected persons to continue their earlier livelihood activities after resettlement.

Generally, the conditions stipulated in EC state that R&R plan for the Project Affected Population (PAP) including tribals shall be implemented as per the policy of the State Government; a monitoring committee for R&R should be constituted which must include representative of project affected persons from SC & ST category and women beneficiary; and the compensation to be paid to the land loser shall not be less than norms as per the policy on National Resettlement and Rehabilitation Rules, 2007.

We observed that out of 352 sampled projects, in 294 projects, condition of R&R plan was either not specified in the EC letter or not applicable for R&R. In 23 projects, the PPs did not furnish the details of R&R.

In remaining 35 projects, 22 projects had implemented the R&R activities. In seven projects, PPs did not implement the R&R at all and in six projects it was partially implemented. Conditions like resettlement Project Affected Families (PAFs), transfer of money for land acquisition, payment of compensation to PAFs, etc were not fully implemented by the PPs.

In case of **Sonepur Bazari OCP of M/s Eastern Coalfields Ltd, West Bengal,** as per EC condition, R&R involving the 12 villages comprising 2,284 PAFs was to be implemented within a specified time frame. As per project report, there were initially 2,284 PAFs which increased to 3,765 PAFs. However, it was observed that only 441 PAFs were rehabilitated till June 2016 and 3,324 PAFs were still to be rehabilitated.

MoEF&CC did not offer any comments on the issue.

4.11 Violation in handling of hazardous waste materials

The EC letters of 189 projects stipulated that the PPs shall obtain authorization for collection, storage and disposal of hazardous waste under Hazardous Waste (Management, Handling and Trans boundary Movement) Rules 2008, as amended time to time for management of hazardous waste and prior permission from SPCB shall be obtained for disposal of solid/hazardous waste in the Treatment, Storage and Disposal Facility (TSDF).

We found that out of the 189 cases where this condition was stipulated, compliance was observed in 106 projects. In case of six projects, the records were not furnished by PP and in 38 projects; this condition was not applicable as no hazardous waste was generated. Violation in handling of hazardous waste materials was observed in case of 39 projects which may lead to contamination of water courses and dump sites.

A few illustrative cases are given below:

In case of, **Expansion of Steel Plant at Kutch of M/s Jindal Saw Ltd, Gujarat,** the EC stipulated that spent/used oil and lubricants shall be sold to the registered recyclers as per the Hazardous Waste (Management & Handling) Rules, 1989 and subsequent amendments. However, we observed that old barrels filled with waste/contaminated oil and lubricants were stocked and there was leakage of such waste oil on open ground. One such sample was collected by the GPCB officials and analysed in GPCB laboratory. Test report was found positive.

In case of **Expansion of Ferro Alloy Plant at Bankura of M/s Cosmic Ferro Alloys Ltd, West Bengal,** the EC stipulated that the hazardous slag generated from the furnace shall be disposed of in accordance with the Hazardous waste (M&H) Rule 2003. Audit observed that the testing of slag to ascertain the nature of slag was not done by the PP. Hazardous waste authorisation was not obtained from WBPCB. It was also seen that huge quantities of slag were dumped in a haphazard manner all around the premises without any plan for safe disposal.

MoEF&CC stated (October 2016) that non-obtaining hazardous waste authorisation was a serious violation which should be evaluated by concerned SPCBs which are delegated with powers to issue such authorisations. PCBs would be directed not to delay issue of authorisation after obtaining application from the projects.

4.12 Non-obtaining of clearance for the handling of explosive materials

As per the conditions of the EC clearance, handling of explosive materials needs to be done in a systematic and scientific manner with the consent of the authorities concerned.

Out of the 352 sampled projects pertaining to various sectors, the EC letter had stipulated such condition in 85 construction/infrastructure projects. We found violation of EC conditions in 12 projects (14 *per cent*).

A few illustrative cases are given below:

In case of **Pride Soft City Project of M/s Pride Builders Pvt Ltd, Maharashtra,** the EC stipulated that all other statutory clearances such as the approvals for storage of diesel should be taken from Chief Controller of Explosives. However, the PP could not furnish the clearance obtained from the Chief Controller of Explosives.

In case of **Shopping Mall cum Multiplex and Hotel, Haridwar of M/s Lotus Infra Project Pvt Ltd, Uttarakhand,** the EC stipulated that the diesel required for operating DG Set should be stored in underground tanks and if required, clearance from the Chief Controller of Explosives should be taken. Audit observed that this condition was not complied with by the PP.

MoEF&CC replied (October 2016) that the condition mostly relates to construction projects. In case there was no storage of explosive materials underground and diesel was purchased from the market, permission may not be required. However, such projects should have applied for modification of the stipulations.

4.13 Improper storage of fly ash in Thermal Power Projects

As per commitments made in EIA report and conditions stipulated in EC, Thermal Power Plants (TPP) need to store fly ash in dry form in silos and slurry form in specially constructed ash ponds. Regular monitoring of heavy metals at the base of the ash pond also had to be ensured.

Disposal of ash produced from coal based plant poses a serious threat to environment hence safe practices need to be implemented for proper utilization of the ash. Environmentally safe practices include but are not limited to collection of ash in dry form and storage in silos, disposal of remaining ash in ash ponds in form of slurry and continuous monitoring of the ash pond to check possible seepage of heavy metals into the ground.

We verified the storage of the fly ash in 24 out of 43 sampled TPP. In the remaining 19 projects the plants were yet to be operational or no information was received.

In these 24 projects, 16 projects were found to be in adherence to laid down conditions. Out of remaining eight projects, in one[22] project in Punjab, none of the EC conditions were followed and in seven projects, there was non-compliance of certain conditions as detailed in the Table 4.2.

Table 4.2: Details of non-compliance conditions relating to storage of fly ash

State	Project Proponent	EC condition	Our observations
1. Chhattisgarh	M/s Jindal Power Ltd.	Fly Ash shall be collected in dry form and storage facility (Silos) shall be provided. Unutilised fly ash shall be disposed of in the ash pond in the form of slurry. Mercury and other heavy metals (Arsenic, Mercury, Chromium, Lead	Checking of heavy metals in the bottom ash of the ash pond was not done.
2. Rajasthan	M/s Adani Power Rajasthan Ltd		During the year 2014-15 14,420 tonnes of fly ash was disposed of in low lying area.
3. Uttar Pradesh	National Thermal Power Corporation Ltd		Checking of heavy metals in the bottom of the ash pond was not being done. Fly ash was also being disposed of in low lying area.

[22] 6MW Cogen Power Project of M/s Nector Life Science Ltd.

State	Project Proponent	EC condition	Our observations
4. West Bengal	M/s West Bengal Power Dev. Corp Ltd.	etc) will be checked in the bottom of ash pond. No ash shall be disposed of in the low lying area.	Checking of heavy metals in the bottom of the ash pond was not being done.
5. Madhya Pradesh	M/s Sasan Power Ltd. Singrauli, M.P.		It was observed that fly ash was disposed of in low lying area.
6. Bihar	M/s Kanti Bijlee Utpadan Nigam Ltd.		Approximately 20 *per cent* of fly ash was collected in dry form and distributed to agencies frees of cost. 80 *per cent* fly ash generated from Stage-I was collected and disposed of in wet form in a river lagoon 80% of the fly ash generated was disposed of in a low lying area in wet form. No ash dyke was constructed.
7. Gujarat	M/s N R Agarwal Industries Limited		Checking of heavy metals was not done.

The non-compliances included non-monitoring of heavy metals in bottom ash, disposal of fly ash in low lying areas and non-creation of ash ponds for disposal of ash in slurry form thereby posing a serious risk to environment.

4.14 Utilisation of coal of more than permitted ash content in Thermal Power Projects

As per commitments made in EIA report and conditions stipulated in EC, PPs were to procure and utilize coal from designated mines. ECs also include conditions related to maximum permissible ash content in the coal to be procured.

Higher ash content in coal indicates low calorific value and thus poor quality of the fuel. In turn, it impacts environment indirectly as relatively higher quantity of fuel is required for the same output, due to lower efficiency of fuel.

We observed that in four projects, there was no specific EC condition with regards to permissible ash content. Further, in another four projects, higher percentage of ash content in coal against the levels permitted through EC condition was noticed.

We scrutinized the issue of ash content in the coal being utilized and found that in four (nine *per cent*) out of 43 sampled TPP, the ash content was higher than the permissible levels hence defeating the very purpose of environmental clearances i.e. to keep a check on quality of environment.

In case of remaining 35 projects, we found that either they were complying with the laid out conditions or the plants were yet to be operational.

A few illustrative cases are given below:

In case of **M/s Talwandi Sabo Power Ltd, Punjab** the percentage of ash content in coal being utilized was 39.63 *per cent* against the mandated 34 *per cent* in EC. Similarly, in another project of **M/s Jindal Power Ltd, Chhattisgarh** it was observed that ash content in utilized coal was 44 to 49 *per cent* as against mandated 34 *per cent* in EC.

4.15 Improper control of fugitive emission of fly ash in Thermal Power Projects

Fugitive emission[23] poses a health hazard due to adverse impact of particulate matters (PM) on general health, therefore due measures need to be taken for control of fugitive emissions.

As per EIA report and conditions prescribed in EC, PPs are to commit effective measures for proper control of fugitive emission of fly ash in case of TPPs.

We scrutinized the issue of proper control of fugitive emission of fly ash in 43 sampled TPPs. In case of 13 projects, we found it to be in compliance. In 20 projects, we found that either the plants were yet to be operational or did not furnish information.

In remaining 10 projects, we observed that in eight projects, EC did not contain any specific condition for proper control of fugitive emissions by PPs. In two projects, one each in Bihar and Maharashtra, though EC mandated relevant conditions compliance was nil. In case of Maharashtra, a formal complaint was received from a farmer about **M/s Adani Power Maharashtra Ltd**, which was dumping ash in land outside the premises.

4.16 Non utilization of fly ash generated in Thermal Power Projects

As per commitments made in EIA report and conditions stipulated by EC, PPs were to utilize 100 *per cent* fly ash from 4th year of operation of their projects.

We scrutinized the utilization of the fly ash in 43 sampled TPPs. There were 23 projects which were yet to enter the fourth year of commencement or information was not furnished.

In remaining 20 projects, we found that 11 projects (55 *per cent*) were in compliance of stated conditions. In nine projects, non-utilization of fly ash to the extent committed in EC was observed as detailed in Table 4.3. Though show cause notices were issued in two cases but no penal action was taken in any of these cases. In one case in Haryana, variation in EC conditions was noticed, as usually EC mandates for 100 *per cent* utilization of fly ash from fourth year of operation, however, in this project, EC mandated compliance by the ninth year of operation. Thus, it indicates that in 45 *per cent* of the projects examined, satisfactory utilization of ash for brick making did not exist and no definite punitive action was taken against defaulters.

[23] Fugitive Emissions are emissions of gases or vapors from pressurized equipment due to leak and other unintended or irregular releases of gases, mostly from industrial activities.

Table 4.3: Non-utilisation of fly ash generated in Thermal Power Projects

	State	Project Proponent	Our Observations
1	**Bihar**	Kanti Bijlee Utpadan Nigam Ltd.	80 *per cent* of the fly ash generated in the Stage-I had been disposed of in the lagoon of Budhi Gandak river. Show cause notice was issued by the Bihar SPCB.
2	**Haryana**	Haryana Power Generation Corporation Ltd	EC in this case allowed upto Ninthth year of operation for utilization of fly ash, which was in variation with EC granted in all other cases.
3	**Jharkhand**	Usha Martin, Ranchi	Only 81 *per cent* disposal in fourth year of operation.
4	**Punjab**	Nectar Life Science, Saidpura	Utilisation of ash was nil in violation of EC condition. However no penal action was taken for non-utilization.
5		Talwandi Sabo Power Ltd, Banawala	2,94,808.32 MT (2014-15) and 8,17,755.25 MT (2015-16) fly ash was generated out of which 15,457.88 MT and 2,08,160.49 MT was utilized during 2014-15 and 2015-16 respectively. No penal action was taken for non-utilization.
6		BCL Industries and Infrastructure Ltd, Bathinda	Utilisation of ash was nil in violation of EC condition. However no penal action was taken for non-utilization.
7	**Uttar Pradesh**	NTPC Rihand Super TPP Stage-III	Utilisation of ash was nil in violation of EC condition. However no penal action was taken for non-utilization.
8		Rosa Power Supply Company Ltd. Sahajahanpur	Utilisation of ash was nil in violation of EC condition. However no penal action was taken for non-utilization.
9	**West Bengal**	West Bengal Power Development Corp Ltd, Bakreswar	In response to a show cause notice issued by NGT for polluting a nearby river Chandrabhaga, thermal power station incurred an expenditure of ₹4.64 crore to clean up the river.

MoEF&CC recognised (October 2016) the unsatisfactory compliance by coal based TPP in respect of management of ash and assured better compliance by end of December 2017 in the wake of its recent notification of January 2016 which mandated that all construction and mining activities are to utilize fly ash within a radius of 300 kilometers from the TPPs.

4.17 Non-consolidation and non-compilation of muck in the designated muck dumping sites in case of River Valley and Hydro Electric Power projects

Huge quantity of stones/muck is generated at various points in River Valley and Hydro Electric power projects which, if not properly disposed of, would invariably slide down into the river and would lead to adverse impacts on the performance of the project and development of the aquatic life present. Thus, a Muck Disposal Plan was needed in River Valley and Hydro Electric power projects. In this plan quantity of muck generated during the dam construction and allied activities is estimated and measures for its proper disposal at certain identified areas are suggested. The excavated material needed to be relocated and dumped according to the muck disposal plan so that it does not impose any negative impact on terrestrial and aquatic environment.

We observed that out of nine River Valley and Hydro Electric power projects, there was no condition of consolidation and compilation of the muck at the designated dumping sites in three (33 *per cent*) projects. In two projects, the condition could not be verified as information was not made available. The condition was complied with in one project of **Sri Rameshwara Lift Irrigation Scheme of Karnataka Neeravari Nigam Limited** since entire muck was utilised in the project itself, hence, dumping of muck was not required.

In three projects, the condition was not being complied with and the same was not ensured by MoEF&CC.

A few illustrative cases are given below:

In case of **Sainj HEP Project at Kullu of Himachal Pradesh Power Corporation Ltd** in Himachal Pradesh, during physical verification, we noticed that out of seven muck dumping sites, the muck was stacked at five dumping sites. The protection walls of dumping sites number 2 and 7 were found damaged and the muck was directly flowing into the river. Resultantly, the SPCB had not given renewal of CTE for the project.

Muck overflowing to the river due to damaged muck site in Sainj Hydroelectric Power Project, Kullu, Himachal Pradesh

Similarly, in **Dikchu HEP (96 MW) project of M/s Sneha Kinetic Power Projects Ltd in Sikkim,** we observed that the EC had wrongly said that the muck was to be disposed at six dumping sites in North and South districts but as per the EMP, muck was to be disposed at four sites in North and East Districts. Muck was disposed at three sites near (Power house, Surge shaft and Dam site). The muck dumping site near the Power house (East District) was yet to be landscaped/protected. The muck dumping site near the surge shaft was stated to have been landscaped and plantation was being done.

Dumping site at Lingdok, Sikkim

Muck dumping site at Dikchu, Sikkim

Thus, non-incorporation of the condition in the ECs as to the consolidation and compilation of the muck at the designated dumping sites and improper disposal of the muck may lead to adverse impacts on terrestrial and aquatic environment around the project areas.

MoEF&CC stated (October 2016) that the delay in stabilization and reclamation of muck dumping areas had also been a cause of concern as observed by the Ministry through the monitoring reports of ROs.

4.18 Non maintenance of minimum environmental flow of discharge

Environmental Flows (EF) are the flows of water in rivers that are necessary to maintain aquatic ecosystems. In other words, a flow regime in the river, capable of sustaining a complex set of aquatic habitats and ecosystem processes are referred to as EF. The EF is designed to maintain or upgrade a river in desired, agreed or pre-determined status.

We observed that out of nine River Valley and Hydro Electric power projects no condition as to minimum EF was stipulated in six (67 *per cent*) projects. The condition could not be verified in two projects as the projects were yet to be made operational. Compliance was seen in case of Kelo Major Irrigation Project, Chhattisgarh.

Non-incorporation of a condition as to the minimum environmental flow to be maintained in six projects may lead to adverse impact on aquatic ecosystems around the areas where the projects are situated.

MoEF&CC stated (October 2016) that it would review to ascertain the impact to stipulate additional condition, if required.

4.19 Non implementation of the Fishery Conservation and Management Plan

A water resources project may have adverse or beneficial effects on the fish fauna, depending upon the particular situation and the fish fauna inhabiting the concerned river. Similarly, it has various impacts on the people, the livelihood of which depends on the fish. The construction of the dam leads to fragmentation of habitat, modification in hydrologic regime and may have adverse effects on the indigenous and migratory fish.

Hence, Fishery Conservation and Management Plan (FCMP) in case of River Valley and Hydro Electric power projects is necessary.

We observed that out of nine River Valley and Hydro Electric power projects, no condition as to implementation of FCMP was stipulated in five (56 *per cent*) projects. Out of the remaining four projects where such a condition was mentioned in the EC, the condition was being complied in one project viz Kelo Major Irrigation Project, Chhattisgarh. FCMP was not found implemented in Krishna Delta Modernization Project, Andhra Pradesh, Sainj HEP Project (100 MW), Himachal Pradesh and Dikchu HEP (96 MW), Sikkim.

Non-incorporation of condition for implementation of FCMP in five projects and non-implementation of the plan in three projects may have adverse impact on the fish fauna and the fishermen dependent on them.

MoEF&CC stated (October 2016) that in most of the cases the projects had deposited the money to the concerned Department of the State Government but the implementation had been delayed. The concerned State Authorities will be issued necessary direction to achieve satisfactory compliance.

4.20 Non implementation of the Catchment Area Treatment Plans

Soil erosion in the catchment areas of reservoirs and transport of detached material through the drainage network gives rise to a series of problems like siltation, depletion of flow capacity, steady loss of storage capacity, consistent drop in hydro-electric power generation and frequent floods. A well-designed Catchment Area Treatment (CAT) Plan is essential to ameliorate the adverse process of soil erosion in the catchment area.

We observed that out of nine River Valley and Hydro Electric power projects, condition as regards to CAT Plan was not stipulated in four (44 *per cent*) projects. In the other five projects the CAT Plan was not found implemented by the PPs **(Kelo Major Irrigation Project, Chhattisgarh, Sainj HEP Project (100 MW), Himachal Pradesh, Sri Rameshwara Lift Irrigation Scheme, Belgaum, Karnataka, Lower Goi Irrigation Project, Barwani, Madhya Pradesh and Dikchu HEP (96 MW), Sikkim).**

Ecological damage in the Sainj Hydroelectric project area Kullu, Himachal Pradesh due to non-treatment of Catchment Area

In the absence of any condition regarding implementation of CAT plan in four projects and of non- implementation of CAT plan as per the EIA/EMP report in five projects, effective control of erosion in the catchment area around these projects may get impacted. Erosion may cause the removal of top soil which may adversely impact the agriculture production and have a serious effect on the life span of the reservoir as the life of the reservoir depends on the nature of the catchment, underlying rock/soil type, vegetation type, drainage pattern, etc.

MoEF&CC stated (October 2016) that in most of the cases the projects had deposited the money to the concerned Department of the State Government but the implementation had been delayed. The concerned State authorities will be issued necessary direction to achieve satisfactory compliance.

4.21 Conclusion

MoEF&CC had stipulated certain specific conditions in the EC either relating to sectors or to the project which were to be followed by PPs. It was observed that the monitoring agencies were not able to ensure compliance to the EC conditions. PPs had not prepared and implemented the Emergency Preparedness Plan (EPP) after assessing the risks at the project sites.

The topsoil excavated during construction activities was not stored for use in horticulture/landscape development within the project sites as per the requirements of the ECs. In case of coal/non-coal mining sectors the overburden dumps created during such mining operations were not scientifically vegetated with suitable native species to prevent erosion and surface run off and in critical areas, geotextiles were not used to stabilize the dumps. PPs had not prepared and allocated funds for Action plan for conservation of flora and fauna and implemented it in consultation with the State Forest and Wildlife Department. Due to non-installation of ETPs and STPs at project premises, untreated waste water was being discharged through drains thereby contaminating the surface/ground water. Non-implementation of Occupational Health Surveillance programme and non-utilisation of protective respiratory devices and personal protection equipment may lead to breathing problems/respiratory illnesses among the personnel working in and around the project site.

Rainwater harvesting had not been taken up. Residential facilities were not provided to the labourers during construction phase. There were cases of violation in handling of hazardous waste materials by the PPs which lead to contamination of water courses and dump sites and prior permission from the concerned authority was not taken for handling of explosive material. Relief and Rehabilitation plan was either not implemented or partially implemented.

In Thermal Power Plants, environmentally safe practices of storage of fly ash were not adhered to, coal of more than permitted ash content was being used, fugitive emission

of fly ash was not properly controlled and the fly ash generated was not being fully utilised as per the EC conditions.

In River Valley and Hydro Electric power projects, consolidation and compilation of the muck at the designated dumping sites and proper disposal of the muck was not being done, minimum environmental flow of discharge was not being maintained, Fishery Conservation and Management plan and Catchment Area Treatment Plans were not being implemented.

4.22 Recommendations

i. MoEF&CC should work out strategies in co-ordination among ROs, CPCB, SPCBs/UTPCCs and other Departments of State Governments to strictly monitor the compliance of conditions mentioned in the EC periodically.

(Paragraphs 4.2 to 4.20)

ii. MoEF&CC and SPCBs may consider adopting risk based approach to monitor the conditions stipulated in the ECs of the project and devise schedule for percentage check of six-monthly compliance reports and environment statements.

(Paragraphs 4.2 to 4.20)