Project "Efficient usage of solar energy for better future- SP- FUTURE"
IPA Cross-Border Programme CCI Number 2007CB16IPO007-2011-2
Contract No RD 02 – 29 – 158

Environmental Management Plan for Municipality of Strumica and Municipality of Petrch

Project "Efficient usage of solar energy for better future- SP- FUTURE"
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Contract No RD 02 – 29 – 158

LP: Centre for development of the South-East planning region
PP2: Municipality of Strumica
PP3: Association of South-Western Municipalities
PP4: Municipality of Strumica

Lead Partner: Centre for development of the South-East planning region

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Signature: _____

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Preparation of environmental management plan is required for formulation, implementation and monitoring of environmental protection measures during and after commissioning of projects. The plan indicates the details as to how various measures have been or are proposed to be taken including cost components as may be required. Cost of measures for environmental safeguards should be treated as an integral component of the project cost and environmental aspects should be taken into account at various stages of the projects:

- Conceptualization: preliminary environmental assessment
- Planning: detailed studies of environmental impacts and design of safeguards
- Execution: implementation of environmental safety measures
- Operation: monitoring of effectiveness of built-in safeguards

The management plans is based on considerations of resource conservation and pollution abatement, some of which are:

- Liquid Effluents
- Air Pollution
- Solid Wastes
- Noise and Vibration
- Occupational Safety and Health
- Prevention, maintenance and operation of Environment Control Systems
- House-Keeping
- Human Settlements
- Transport Systems
- Recovery - reuse of waste products

- Vegetal Cover
- Disaster Planning
- Environment Management Cell

1. Liquid Effluents

- Effluents from the industrial plants should be treated well to the standards as prescribed by the Central/State Water Pollution Control Boards.
- Soil permeability studies should be made prior to effluents being discharged into holding tanks or impoundments and steps taken to prevent percolation and ground water contamination.
- Special precautions should be taken regarding flight patterns of birds in the area. Effluents containing toxic compounds, oil and grease have been known to cause extensive death of migratory birds. Location of plants should be prohibited in such type of sensitive areas.
- Deep well burial of toxic effluents should not be resorted to as it can result in re-surfacing and ground water contamination. Re-surfacing has been known to cause extensive damage to crop and livestock.
- In all cases, efforts should be made for re-use of water and its conservation.

2. Air Pollution

- The emission levels of pollutants from the different stacks, should conform to the pollute control standards prescribed by Central or State Boards.

- Adequate control equipment should be installed for minimising the emission of pollutants from the various stacks.
- In-plant control measures should be taken to contain the fugitive emissions.
- Infrastructural facilities should be provided for monitoring the stack emissions and measuring the ambient air quality including micro-meteorological data (wherever required) in the area.
- Proper stack height as prescribed by the Central/State Pollution Control Boards should be provided for better dispersion of pollutants over a wider area to minimise the effect of pollution.
- Community buildings and townships should be built up-wind of plant with one-half to one kilometre greenbelt in addition to physiographical barrier.

3. Solid Wastes

- The site for waste disposal should be checked to verify permeability so that no contaminants percolate into the ground water or river/lake.
- Waste disposal areas should be planned down-wind of villages and townships.
- Reactive materials should be disposed of by immobilising the reactive materials with suitable additives.
- The pattern of filling disposal site should be planned to create better landscape and be approved by appropriate agency and the appropriately pre-treated solid wastes should be disposed according to the approved plan.

- Intensive programs of tree plantation on disposal areas should be undertaken.

4. **Noise and Vibration**

   Adequate measures should be taken for control of noise and vibrations in the industry.

5. **Occupational Safety and Health**

   Proper precautionary measures for adopting occupational safety and health standards should be taken.

6. **Prevention, maintenance and operation of Environment Control Systems**

   - Adequate safety precautions should be taken during preventive maintenance and shut down of the control systems.
   - A system of inter-locking with the production equipment should be implemented where highly toxic compounds are involved.

7. **House - Keeping**

   Proper house-keeping and cleanliness should be maintained both inside and outside of the industry.

8. **Human Settlements**

   - Residential colonies should be located away from the solid and liquid waste dumping areas. Meteorological and environmental conditions should be studied properly before selecting the site for residential areas in order to avoid air pollution problems.
   - Persons who are displaced or have lost agricultural lands as a result of locating the industries in the area, should be properly rehabilitated.

9. **Transport Systems**

- Proper parking places should be provided for the trucks and other vehicles by the industries to avoid any congestion or blocking of roads.
- Siting of industries on the highways should be avoided as it may add to more road accidents because of substantial increase in the movements of heavy vehicles and unauthorised shops and settlements coming up around the industrial complex.
- Spillage of chemicals/substances on roads inside the plant may lead to accidents. Proper road safety signs both inside and outside the plant should be displayed for avoiding road accidents.

10. **Recovery - reuse of waste products**

Efforts should be made to recycle or recover the waste materials to the extent possible. The treated liquid effluents can be conveniently and safely used for irrigation of lands, plants and fields for growing non-edible crops.

11. **Vegetal Cover**

Industries should plant trees and ensure vegetal cover in their premises. This is particularly advisable for those industries having more than 10 acres of land.

12. **Disaster Planning**

Proper disaster planning should be done to meet any emergency situation arising due to fire, explosion, sudden leakage of gas etc. Firefighting equipment and other safety appliances should be kept ready for use during disaster/emergency situation including natural calamities like earthquake/flood.

13. **Environment Management Cell**

Each industry should identify within its setup a Department/Section/Cell with trained personnel to take up the model responsibility of environmental management as required for planning and implementation of the projects.

This Environmental Management Plan (EMP) outlines programs of actions which have been identified as part of the UWS Environmental Management System. These are required as part of due diligence and compliance with environmental legislation and regulations. A complementary program of actions which reflect broader aspirational objectives relating to sustainability are outlined in a similar format in the interim Greening UWS Action Plan. Within each of the following programs, each objectives outlined below has identified actions, key performance indicators, timeframes, and responsibilities. This document will be reviewed and updated, as part of the philosophy of continuous improvement which underpins the UWS Environmental Management System.

1. Water Conservation and Management Program in the municipalities of Strumica and Petrich

This program will ensure compliance with water saving action plans, and the assessment of water borne pollution discharged from UWS campuses.

Objective 1.1: Develop and implement strategies to minimise water consumption on the two campuses identified as designated water users (Strumica and Petrch)

Objective 1.2: Ensure surface water discharges from UWS Campuses is monitored, assessed and managed with respect to environmental values ANZECC (2000) Guidelines. -1- -2- 2. Waste Avoidance and Resource Recovery Program This program will promote waste avoidance and 'extended producer responsibility' in relation to key waste products.

Objective 2.1: Promote practical and responsible means and engagement in programs to avoid waste.

3. Hazardous Waste and Dangerous Goods Management Program This program will ensure compliance with all requirements for the use, storage and disposal of hazardous materials and dangerous goods.

Objective 3.1: Minimise environmental risk from the use and storage of hazardous materials and dangerous goods.

Objective 3.2: Achieve best practice in hazardous waste disposal ensuring legislative compliance, and complementing those requirements under OH&S legislation.

4. Biodiversity Management Program

This program will support the use of best practice in conserving endangered ecological communities of Strumica and Petrch

Objective 4.1: Retain and protect existing Cumberland Plain communities on all campuses, and manage existing vegetation.

5. Environmental Awareness and Training Program

This program will promote environmental awareness throughout the Universities in Strumica and Petric/Blagoevgrad.

Objective 5.1: To ensure awareness by staff and students of Universities Environmental Policies, Procedures and appropriate behaviours in their work environments.

6. Contractor and Lessee Environmental Impacts Program

This program will ensure that all UWS contractors and lessees conduct their activities in an environmentally responsible manner and in compliance of legislation.

Objective 6.1: Encourage the wide scale use of engaging contractors with environmental certifications and to ensure that all contractors are environmentally inducted to a satisfactory level.

Objective 6.2: Ensure all UWS lessees are aware of their environmental responsibilities and are in compliance of legislation.