

## PROJECT BENEFITS

The benefits arising from improved solid waste management results in improved environmental and living conditions and public health in the Project City Aizawl. Benefits are achieved through more effective removal of solid waste from in and around living areas and prevention of solid waste leachate entering drains and waterways and, in some areas, broken water supply pipelines. Improved disposal of solid waste will result also in more pleasant surroundings through a reduction in odour and an improvement in the aesthetic quality of drains, waterways, low-lying areas and other areas where solid waste is dumped.

### 11.1 Health Benefit

However, quantifying environmental and health benefits is difficult because of the need for data to establish the magnitude of impacts of the improvements and to separate out the effects of an improved solid waste collection and scientific disposal system from other factors such as personal hygiene habits, housing standards, water quality, etc.

Research findings indicate that sanitation improvements results in more health benefits, mainly in terms of reducing the waterborne diseases

According to the National Sample Survey Organisation survey findings, the monthly percapita expenditure on non-institutional medicine in urban areas was Rs 32.30 (2004-05)<sup>1</sup> and estimated to Rs 41 for 2008-09. If one include the institutional medical expenditure, the total household medical annual medical expenditure will be high and at national level this is estimated to be Rs 5000 – Rs 6000. Sanitation improvements in urban areas will help to reduce this high incidence of annual household medical expenditure by reducing the impact of waterborne diseases considerably. This will apply to the present project city also.

The inadequacies of the SWM system were considered major contributing factors to personal hygiene and public health conditions. The risk of environmental sanitation related diseases would be reduced with properly maintained and functioning SWM, together with increased public awareness on the effects of indiscriminate disposal of wastes into waterways and dumping of rubbish in open areas.

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<sup>1</sup> *Household Consumption of Various Goods and Services in India, 2004-05, NATIONAL SAMPLE SURVEY ORGANISATION, MINISTRY OF STATISTICS AND PROGRAMME IMPLEMENTATION, Press Note Dated 30th April 2007*

## **11.2 Economic Benefit**

The economic benefits considered in the present analysis for the SWM component in Aizawl city include:

- (i) Reduction of household medical expenditure cost due to wastewater related disease & Reduction in earning lost due to illness;
- (ii) Time Savings in Solid Waste Disposal; and
- (iii) Economic revenue from compost plant through manure sales.
- (iii) Reduction cost in private and public costs of mosquito control;
- (iv) Reduction in public costs of flooding, including traffic disruption and road
- (vi) Positive impact on tourism and tourist-related businesses.

The proposed project is coming up within the backward area. With the coming up of the project there will be many positive impact on the area. The project benefits are described in different sections of this chapter.

## **11.3 MARKET POTENTIAL**

There is a lot of demand for natural biofertilizer. The country having predominance of agriculture and horticulture is now facing acute shortage of good quality compost. Since required quantities of compost are not available, most of the users are currently relying on synthetic chemical fertilizer sources for nourishment of crops. There is now resistance from consumers of food items against chemically grown products. The trend in last 7-8 years has shifted in favour of originally produced food items.

Even horticulturists, landscapers and home garden promoters are reluctant to use chemical sources of plant nutrients due to their soil sickening effects and possible toxicity to water resources.

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## **11.4 Major markets for compost**

Following are the key areas for consumption of compost made from city wastes:

**Agriculture:** - In the farming of cereals, vegetables and flowers.

**Landscaping:** - Various grades of soil conditioners, moisture retainers and nutrient provider.

**Horticulture and plantations:** As growing media, soil conditioner, mulching material, nutrient supplier, alternative to peat, moisture retainer.

**Land restoration programme:-** For soil conditioning effect, to overcome salinity problems mulching material to control water evaporation losses.

**Motorway, highway:-**As green belt creator and site stabilization.

**Silviculture/ Afforestation:-**For biomass/ greenification promotion.

**Bioremediation:-**As degrader of contaminating agents in soil such as oil spills, chemical toxicants.

**Aquaculture:** As pond bottom stabilizer and promoter of plankton, zoo-plankton.

**Golf course/ lawns:** Fine quality compost is most essential input for lawn and golf courses, turfs.

**Avenue trees in city beautification:** As a nutrient supplier, moisture retainer.

**Green houses:** As a potting media and root conditioner.

### **11.5 Marketing of compost**

There is significant potential of compost in market, the compost is sold at a very good price and is found to be very good soil conditioner.

### **11.6 Recycling of materials**

The materials like paper, metals, plastic, glass etc will be segregated first from the waste generated. The segregated waste will then be sold to authorized vendors to minimize the raw material consumption.

### **11.7 SOCIO-ECONOMIC BENEFITS**

- With coming up of the proposed project the employment opportunities (direct as well as indirect) will increase and local people will be employed on the priority basis as per their skills.

- During construction phase, approximately 45-50 people will get employment. During operational phase will also have 50 people will get direct employment opportunity in the proposed project.
- The transportation of the material will involve a network of 30 persons engaged in collection and transportation of material, thus developing the indirect employment opportunity.
- The proposed project will help in creating pollution free clean environment and will generate source of income from otherwise considered waste. This will help in improving the living conditions of the people.
- The project will generate source of income to Aizawl Municipal Council.
- The project will involve the treatment of municipal solid waste in a scientific way without causing environmental problems such as mal odour, health hazard, etc.
- Local people will be employed hence; there will no strain on the community infrastructure as well as will not create any social due to changing patterns of social interaction.
- Due to coming of the proposed project the surrounding environment will not face any problem related to pollution since appropriate pollution control equipments will be followed.
- During operational phase about 33% of the area will be under landscape so as to rejuvenate the important site feature.

## **11.8 Findings and Recommendations**

1. The positive impacts of the Project include: i) the improved health and hygienic condition of (ii) prevention of solid waste leachate entering drains and waterways (iii) Improved disposal of solid waste will result also in more pleasant surroundings through a reduction in odour and an improvement in the aesthetic quality of drains, waterways, low-lying areas and other areas where solid waste is dumped. (iv) Reduction of household medical expenditure cost due to wastewater related disease & Reduction in earning lost due to illness; (v) Time Savings in Solid Waste Disposal; (vi) Economic revenue from compost plant through manure sales. (vii) Reduction cost in private and public costs of mosquito control; (viii) Positive impact on tourism and tourist-related businesses.

2. The negative and deemed ‘significant’ impacts identified are: (a) impacts due to loss of land and displacement of people, (b) Minor change of natural nearby drain, erosion and siltation, (c) occasional disturbance from noise generated during construction of project work, (d) occasional high concentrations of airborne dust during construction of project work resulting in deposition and some damage to vegetation, crops. The predicted negative impacts will occur mostly during the construction stage but for short term and reversible. These are also manageable and almost all of them can be minimized through engineering solutions incorporated in the design and implementation of the EMP and monitoring plan. For all works, the SIPMIU will, have to obtain necessary statutory applicable clearances from concerned department. The EMP should also be improved during implementation if there is any change in design or proposed site (if deemed necessary) is envisaged. Any major changes or any major additional work other than the proposed project activities will require preparation of another environmental assessment.
3. Executing agency shall ensure that EMP and monitoring plan is included in Bill of Quantity (BOQ) and forms part of bid document and civil works contract. The same shall be revised if necessary during project implementation or if there is any change in the project design

### **11.9 Conclusions**

4. Environmental Impact Assessment (EIA) of the project ascertains that the project is unlikely to cause any significant environmental impacts. Most of the impacts are localised and temporary in nature and can be mitigated with minor to negligible residual impacts.
5. The proposed project site is not located around/near any National Park, Wild life Sanctuary, Reserved Forests or any other ecologically sensitive areas. Adequate mitigation options have been proposed in EIA to avoid/minimise impact on nearby environment. No archaeological/protected monument is located in the project vicinity. The land use pattern around the project site is predominantly agricultural and there will not any major change in land use pattern.

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