Urban Waste Classification and Management

Subject: Geography

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Semester: IV

CC: 10T- Environmental Geography

Point : 7

Urbanization

Urbanization is a process that leads to the growth of cities due to industrialization and economic development, and that leads to urban- specific changes in specialization, labor division and human behaviors. The population is growing at the rate of about 17 million annually which means a staggering 45,000 births per day and 31 births per minutes. If the current trend continues, by the year 2050, India would have 1620 million populations. Due to uncontrolled urbanization in India, environmental degradation has been occurring very rapidly and causing many problems like shortages of housing, worsening water quality, excessive air pollution, noise, dust and heat, and the problems of disposal of solid wastes and hazardous wastes.

IMPACT OF URBANIZATION OVER ENVIRONMENT

Probably most of the major environmental problems of the next century will result from the continuation and sharpening of existing problems that currently do not receive enough political attention. The problems are not necessarily noticed in many countries or then nothing is done even the situation has been detected. The most emerging issues are climate changes, freshwater scarcity, deforestation, and fresh water pollution and population growth. These problems are very complex and their interactions are hard to define. It is very important to examine problems through the social-economic-cultural system. Even the interconnections between environmental problems are now better known, we still lack exact information on how the issues are linked, on what degree they interact and what are the most effective measures. One problem is to integrate land- and water use planning to provide food and water security (UNEP 1999).

WASTE

The waste generated by industry and society needs to be classified in order to apply the correct form of management. There are different classifications, depending on their origin, composition, danger, etc.

1. "***Domestic Waste***": Household-generated waste as a result of domestic activities. Similar waste generated in the service sector and in some industries, are also considered to be domestic.

1. "***Industrial Waste***": Waste resulting from the processes of manufacture, processing, utilisation, consumption, cleaning or maintenance generated by industrial activity,
2. "***Inert Waste***": Solid or as paste that once deposited in a landfill do not undergo significant physical-chemical or biological transformations.
3. "***Non-hazardous Waste***": Non-hazardous wastes are those that are not classified as hazardous as they do not possess dangerous characteristics.
4. "***Biodegradable Waste***": Waste generated from gardens and parks, food and kitchen waste from homes, restaurants, collective catering services, retail establishments and from food processing plants.

Table 5.8 Classification of Solid waste.

Types of solid waste	Description	Sources
Food waste (garbage)	Wastes from the preparation, cooking & serving of food. market reuse, waste from the handling storage, & sale of meat & vegetables	Households, institutions, & commercials such as hotels, stores, restaurants, markets etc.
Rubbish	Combustible (primary organic), paper, cardboard, cartons, wood, boxes, plastics, rags, cloth, bedding, leather, rubber, grass, yard trimmings. Noncombustible(inorganic) metals, tin cans, metal foils, dirt, stones, bricks, ceramics, crockery, glass bottles, other mineral reuse.	
Ashes & residues	Residue from fires used for cooking & for heating buildings, cinders, clinkers, and thermal power plants.	
Bulky wastes	Large auto parts, tyres, stoves, refrigerators, other large appliances, furniture, large crates, trees, branches, palm fronts, stumps, floatage.	
Street waste	Street sweepings, dirt, leaves, catch basin dirt, animal droppings, contents of litter receptacles, dead animals.	Streets, side walks, alleys, vacant lots etc.
Dead animals	Small animals: cats, dogs, poultry, etc. large animals: horses, cows etc.	
Construction & demolition waste	Lumber, roofing & sheathing scraps, crop residues, broken concrete, rubble, plaster, conduit, pipe, wire, insulation etc.	Construction & demolision sites, remodeling, repairing sites
Industrial waste & sludge	Solid waste resulting from industry processes & manufacturing operations, such as food processing wastes, boiler house cinders, wood, plastic & metal scraps & shaving etc. effluent treatment plant sludge of industries & sewage treatment plant sludges, coarse screening, grit & septic tank.	Factories, power plants, treatment plants, etc.
Hazardous wastes	Hazardous wastes, pathological wastes, explosives, radioactive materials, toxic wastes etc.	Households, hospitals, institutions, stores, industry etc.

Table 17.3 Industrial products and hazardous waste

Products	Hazardous Wastes
Medicines	Organic solvents and residues, heavy metals (mercury and zinc)
Metals	Heavy metals, fluorides, cyanides, acids and alkaline cleaners, solvents, pigments etc.
Paints	Heavy metals, pigments, solvents, organic residues
Leather	Heavy metals, organic solvents
Oil, Petroleum products	Oils, phenols, organic compounds, heavy metals etc.
Pesticides	Organic chlorine compounds, organic phosphate compounds.
Plastics	Organic chlorine compounds
Textiles	Heavy metals, dyes, organic chlorine compounds, solvants

WASTE MINIMISATION

It is a process of elimination that reduces the amount of waste produced in society and helps eliminate the generation of harmful and persistent wastes, supporting the efforts to promote a more sustainable society.

Waste minimization involves

- Redesigning products or changing societalpatterns,
- Concerning consumption and production, of waste generation,
- To prevent the creation of waste.
- Efforts to minimize resource and energy use during manufacture.
- For the same commercial output, usually the less materials are used, the less waste is produced.

- Waste minimization usually requires knowledge of the production process, cradle-to-grave analysis

Measures to control:

- Resource optimization
- Reuse of scrap material
- Waste exchanges
- Durability

1. **Resource optimization**

Minimizing the amount of waste produced by organizations or individuals goes hand-in-hand with optimizing their use of raw materials

For example, a dressmaker may arrange pattern pieces on a length of fabric in a particular way to enable the garment to be cut out from the smallest area of fabric.

2. **Reuse of scrap material**

- Scraps can be immediately re-incorporated at the beginning of the manufacturing line so that they do not become a waste product. Many industries routinely do this.
- For example, paper mills return any damaged rolls to the beginning of the production line, and in the manufacture of plastic items, off-cuts and scrap are re-incorporated into new products

3. **Waste exchanges**

- This is where the waste product of one process becomes the raw material for a second process.
- Waste exchanges represent another way of reducing waste disposal volumes for waste that cannot be eliminated.
- In this way waste exchange practices are high on the waste hierarchy.

4. **Durability**

- Durability means your product needs long term needs resisting damage and stays relevant to users.
- Improving product durability can reduce waste and usually much improves resource optimization

- But in some cases it has a negative environmental impact. Older vehicles consume more fuel and produce more emissions than their modern counterparts.