	irrigation and provides for service charges - Deals with the protection, repair and maintenance of irrigation systems

Unit-V

Environmental health Management

Meaning of housing

Housing" - a modern concept includes not only the physical structure providing shelter but also immediate surroundings related community surrounding and related community services and facilities.

A WHO expert committee on Public Health aspects of housing prefers to use term. "residential environment."

It is defined as the physical ~~environment~~ structure that man uses and the environs of the structure including all necessary services, facilities, equipments and devices needed or desired for the physical and mental health and the social well being of the family and the individual.

Social goal of housing

- Shelter- That the house should provide a sanitary shelter, which is a basic need.

- Family life- house should provide ~~aquate~~ adequate space for family life and related activities, viz preparation and storage of food, relaxation, recreation, etc.

- Access to community facilities - health services, schools, shopping areas, place of workship, etc.

- Family participation in community life.

- Economic stability - Housing is a form of investment of personal savings. It provides for economic stability and well being of the family.

- Principles of housing and health / Criteria for healthful housing

1 Healthful housing provides physical protection and shelter

2 Provides adequately for cooking, eating, washing, and excretory functions;

3. It is designed, constructed, maintained and used in a manner such as to prevent the spread of communicable diseases.

4. Provides ~~of from~~ protection from hazards of exposures to noise and pollution.

5. Is free from unsafe physical environments due to construction or maintenance and from toxic or harmful materials.

6. Encourages personal and community development, promotes social relationships, reflects a regard for ecological principles and by these means promotes mental health.

Standards of housing

Social and economic characteristics such as family income, family size and composition, standard of living lifestyle, stage in life cycle, education and cultural factors are taken into account.

housing standards

- Sites
- set back
- Floor
- Walls
- Roofs
- Rooms
- Floor area
- Cube space
- Windows
- Lightning
- Kitchen
- Privy
- Garbage and washing
- water supply

1 Sites

- should be elevated from its surroundings - ~~with~~ should have an independent access to a street of adequate width

- should be away from breeding place of mosquito and flies.
- should be away from nuisances such as dust, smoke, smell, excessive noise, and traffic.
- should be in pleasant surroundings.
- sub-soil water should be below 10 feet.

2 set back

- It is the open space for all around the house which allows proper ventilation and lightening.
- In rural areas - built up not exceed one third of total areas.
- In urban areas - allowed up to two third of total areas.
- The set back should be such that there is no obstruction of lightning and ventilation.

3 Floor

- should be pucca and satisfy the following criteria
  - should be waterproof
  - easy to clean and dry must be smooth and free from cracks
  - prevents the breeding of insects and harborage of dust
  - it should be damp-proof - the height of the plinth should be 2-3 feet.

4 Walls

- reasonably strong
- should have a low heat capacity
- weather resistance
- Unsuitable for harbour of rats and vermin

5 Room - should not be less than two, at least one of them can be closed for security.
→ the other may be open on one side if that side is a private courtyard.
- No. should be increased as per the family members.

6 Roof - should not be less than 10 feet in the absence of air conditioning for comfort.
- should have a low heat transmittance co-efficient.

7 Floor area - should be atleast 120 sq ft for more than one person and atleast 100 sq. feet for single person
- Floor area per person should not be less than 50 sq.mt.

8 Cubic space - at least 500 cubic ft per capita preferably 1000 c.ft.

9 Windows - every living rooms should be provided with atleast 2 windows and one of them should open directly on to an open space.

- The window should be placed at the height of 3 feet (1 m) above the ground of living rooms.

- Window area should be 1/5 of the floor area doors and windows combined should have 2/5th floor area.

10 Lightening - the day light factors should exceed 1% over half the floor area.

11 Kitchen - must have a seporate kitchen.

- must be protected against dust and smoke, adequately lighted provided with water supply, provided with a sink for washing utensils and fitted with arrangements for proper drainage.

12 Privy - A sanitory privy is a must for every house.

13 Garbage and refuse - should be removed from the dwelling at least daily and disposed of in a sanitory manner.

14 Bathing and washing - House should have a facility of bathing and washing belonging exclusively to it and providing proper privacy.

15 Water supply - House should have a safe and adequate water supply available at all times.

- Rural housing

In rural areas, the "approved" standards may be lower than in towns. The standards suggested are:-

- there should be at least two living rooms.
- ample verandah space may be provided.
- the built area should not exceed one-third of the total area.
- there should be a separate kitchen with a paved skin or platform for washing utensils.
- the house should be provided with a sanitary latrines.

- the window area should be atleast 10% of floor area.
- there should be a sanitary well or a tube well within quarter of a mile from the house.
- cattle sheds should be 25 fts away from dwelling areas. A cattle shed should be open on all sides, area 8x4ft 2/head

- there should be adequate arrangement for the disposal of waste water, refuse and garbage.

- Detrimental effects of Poor housing

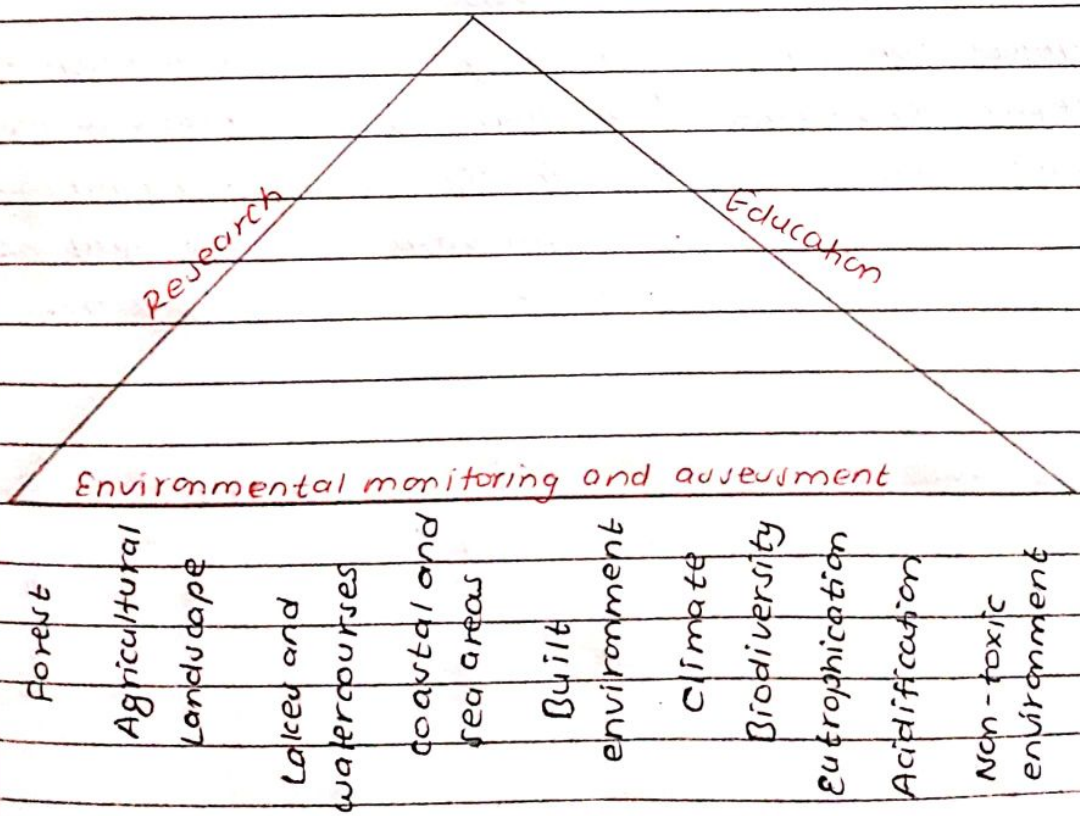
1. Respiratory infections - common cold tuberculosis, Influenza diphtheria, bronchitis, measles, whooping cough, etc.
2. Skin infections - Scabies, ~~rabies~~ ringworm, Impetigo leprosy.
3. Rat infestation - Plague
4. Arthopods - housefties, mosquitoes, fleas and bugs
5. Accidents - Poor housing environment
6. Morbidity and mortality - high morbidity & mortality rates are observed.

7. Psychosocial effects - The sense of isolations felt by persons living the upper floors of high buildings, which may lead to neurosis and behavioural disorders

Environmental monitoring and Evaluation

Environmental monitoring can be defined as the systematic sampling of air, water, soil and biota in order to observe and study the environment, as well as to derive knowledge from this process

- Environmental evaluation is the objective process that is intended to disclose to decision makers and the public the significant environmental effects of proposed projects, to require agencies to reduce or avoid environmental effects.



Environmental monitoring

Define
- Test type
- Specification
- Location (sample point)

Control
- Real time reporting
- Continuous monitoring

Measure
- Perform tests
- Track reports
- Micro ID

Goal
- Increased efficiency
- Improved quality
- Proof of control

Improve
- Corrective action
- Preventive action

Analyze
- Population frequency
- Chart and graph
- Root cause analysis

time →

Monitoring, Evaluation and Reporting

	Project design	Implementation (all phases)	Follow-up phase
Environmental objectives →	Project Planning reflects environmental concerns.	monitoring, Evaluation, and Reporting reflects environmental concerns.	Transition reflects needs to maintain environmental standard and capacities.

Visualization → Sharing

Environmental Operational life cycle management

Evaluation ← Monitoring

Environmental Management in disaster

Types of disaster
- natural
- man-made
- Human dimensions

Environmental impact from disaster

1. Deforestation
2. Fire
3. Forest management Practices
4. Agricultural systems
5. storm or typhoon
6. Landslides
7. Flooding
8. Silting
9. Earthquakes
10. Ground/surface water contamination

environmental management in disaster

Stages on environmental disaster management.

1. Preventing E(PM)$_2$A
2. Preparing
3. Managing
4. Mitigating
5. Addressing

- concentrations of nitrates, nitrites, phosphates in drinking-water
- Levels of pesticide residues in drinking water

Unit-VII

Prevention and Regulation on Environmental Health

- Stages of Environmental health Prevention

Environmental health prevention and management

Environmental health prevention and management seeks to change the environment in order to prevent or minimize vector propagation and human contact with the vector. pathogen by destroying, altering, removing or recycling non-essential container that provides egg / larval / pupal habitats

① Environmental modification - long-lasting physical transformations to reduce vector larval habitats,

② Environmental manipulation - temporary changes to vector habitats involving the management of "essential" containers such as frequent emptying and cleaning by scrubbing of water-storage vessels, flower vases and dessert cooler room

③ Changes to human habitation or behaviour - actions to reduce human-vector contact

- Stages of environmental health prevention

@ACP IE

Assessment

Profile popn needs, resources, and readiness to address needs and gaps

Capacity

mobilize and/or build capacity to address needs

Planning

Develop comprehensive strategic plan

Implement evidence based prevention programs and activities

Implementation

Evaluation

Monitor, Evaluate, sustain, and improve or replace those that fail

Sustainability & Cultural competence

Step 1: Need Assessments - Why do we need assessments?

- To guide the prevention effort
- To provide information about the target popn and their corresponding substance abuse problem.

Step 2: Capacity building

- To find out what we already have and what we need.
- Different types of capacity (fiscal, physical, staff, etc)

Step 3: Planning - what kind of planning is done?

- Identifying the most powerful factors (intervening variables) contributing to the target behaviour
- Investigating appropriate evidence-based strategies to match population's needs
- Planning expected outcomes (both short and long-term)

Step 4 Implementation what do we do?

- Develop Action plan for implementing the strategies
- Take fidelity of implementation into account
- Write detailed Evaluation Plan that includes process and outcomes measurements.

Step 5 Evaluate - what do we evaluate?

- the effectiveness of the selected evidence-based program, Policy or Practice (EBP)
- How? - By collecting required outcome data
  - Recommendations made for quality improvement

Environmental Prevention strategies - 5 types

1. Policy @ $P(EC)_2$
2. Enforcement
3. Education
4. communication
5. collaboration

- Principles of Environmental health prevention

1. The sustainable development principle

Defn: Sustainable development is the development that meets the needs of present generation without comprising the ability of future generation to meet their own needs.

2. Precautionary Principle

The precautionary Principle is a strategy to cope with possible risks where scientific understanding is yet incomplete such as the risk of nano technology, genetically modified organisms and systemic insecticides.

3. Intergenerational equity

Intergeneration equity promotes the idea that urban development should not draw on finite resource bases and degrade ecological systems in ways that compromise the ability of future generations to meet their own needs.

4. Access to information and the decision-making process

- This means providing people access to information and to the courts.
- This means that members of the public should be able to participate at different stages of environmental decision-making processes.
- Decision about environmental protection often formally integrates the views of the public.

5. Integrated decision making

- Integration between and within organizations involved at a policy, implementation and evaluation.
- It is the organized approach to identifying and evaluating creative options and making choices in complex decision situations.

6. Polluter pays principle

The 'polluter pays' Principle is the commonly accepted practice that those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment.

However, it is possible to implement the 'polluter pays' principle through a so-called carbon price.

Sustainable Development Agendo for Nepal in respe
of Environmental health

1 Renewable Energy Transition

- Promotes the use of renewable energy sources such as hydroelectrics, solar and wind power.
- Implement polices and incentives

2 Rural Development and Agriculture:

- Support sustainable agriculture practices to reduce the environmental impact of farming
- Promotes organic farming, agroforestry and efficient water management techniques.

3. Waste management

- Develop and implement effective waste management systems to reduce, reuse and recycle waste.
- Establish waste-to-energy initiatives to generate power from organic waste.

4. Biodiversity conservation

- Protect and restore critical ecosystem, including forests, wetlands, and biodiversity-rich areas.
- Implement measures to prevent illegal logging, poaching, and habitat measures destruction.

5. Water resource Management

- Protect watersheds, rivers and lakes from pollution and over-extraction.
- Promote water conservation practices in agriculture, industris and households.

6. Urban planning and Transportation

- Develop sustainable urban planning strategies to reduce pollution and congestion.
- Invest in public transportation, cycling infrastructure, and pedestrian-friendly initiatives.

7. Climate change mitigation and Adaptation

- Develop and implement strategies to mitigate the impact of climate change.
- Enhance resilience in vulnerable communities through climate adaptive.

- Environmental health related legislation, policies, plan and programs of Nepal

Environmental health related legislation of Nepal

Provision in Nepal

Constitution of Nepal

The Article 30 (1) of the ~~Inte~~Constitution of Nepal, ~~2072~~ 2072, assures the right to Every citizen shall have the right to live in a clean and healthy environment.

Environment related Acts and Regulation

1. Environment Protection Act, 1997

deals with 'Prevention and control of pollution' and restricts people from causing pollution that will have adverse effects on environment and public health.

- It also has a provision for the appointment of environmental inspectors to carryout inspection and examinations and stop activities that causes Pollution.

- It further has a provision to provide additional concessions and facilities to encourage any industry, enterprise, technology or process that causes positive impacts on environmental protection.
- Maintain clean and healthy environment and contribute to sustainable development.

2 Environmental Protection Rule, 1997 : Prohibits emission of noise, heat, radioactive material, and waste that cause problem to public health.

3. Environmental Protection Act, 2019 (2076)

4. Environmental Protection Regulation 2077

@WIFE V -1992

5 Water Resources Act, 1992 - Promote environmental assessment water quality, standard and avoid significant impacts on local environment in the course of water use.

6 Industrial Enterprises Act, 1992: Promote the adoption of industrial pollution control measures, including incentive and ~~disin~~ disincentive provisions

7. Forest Act 1992: Conserve and manage forest and Biodiversity

8. Electricity Act, 1992: Avoid environmental effects during electricity generation and transmission.

9 Vehicle and Transport Management Act, 1992: Regulate vehicular Exhaust emission according to standard.

QLP-1991

10. Pesticide Act, 1991 - Regulates the use, production and distribution of pesticide.
11. Labour Act, 1991 - Adopt preventive and curative measures for occupational health and safety.
. National conservation strategy, 1987
12. Soil and water conservation Act 1982: Ensure soil conservation through land use regulation.
13. Solid waste (Management and Resource Mobilization) Act, 1986: Ensure solid waste management through the collection, transportation, recycling, disposal and the classification of hazardous wastes.

14. Solid waste Management Act. 2068 (2011)
15. Tourism Act 1978: Minimize environmental pollution during ~~mounteering~~ mountaineering activities

16. National Parks and wildlife conservation Act, 1973: Declare and Manage national parks, wildlife reserves and conservation area.

Guidelines, Manuals, codes and standards

1. National EIA Guidelines, 1993
2. EIA Guidelines for the Forestry sector. 1995
3. Forest Products collection and sales Distribution Guidelines, 2058 (2011)
4. Guidelines on Use of Forest Area for other purposes, 2063 (2006

- Environment related plans and polices in Nepal

plan
1. Three year Interim Plan (2010-2013) and its polices and strategies with emphasize on transport and environment sector.
2. Climate Change Policy, 2011
3. National Environment Action Plan (NEPAP)
4. Industrial Policy, 1992
5. Nepal Environment Policy and Action plan (NEPAP), 1993
6. Transportation Policy, ~~1991~~ 2001
7. National sanitation Policy, 1994
8. National water Plan, 2005
9. National Urban policy 2007
10. sanitation and Hygiene Mauter Plan 2010

Recents plans and policies

11. National Climate change policy, 2019
12. National Environment Policy, 2076
13. Hr'

- Environment related programs in Nepal

1. National Adaptation Programme on Action (NAPA) to climate change
2. National Framework on local Adaptation Plans for Action