Learning Unit 4: Sustainability

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MOOC

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Prologue

- “We do not inherit the earth from our ancestors; we borrow it from our children.”
- Today, humans have reached almost entire part of the globe.
- We have altered almost every acre of its extent, perhaps not a single piece of area is free from any human impact.
- The current world that we are living in right now, would not be the same after the next decades, or even next years.
- Thus comes the notion of ‘sustainability’- which talks about how well are we in preparing the best condition for our future generations.
- But what is ‘Sustainability’?

INTRODUCTION

Sustainability is a word that is used by different disciplines to mean different things.

Sustainability comes from the ecological science literature and refers to the long-term ability of an area to support its population without conflicting effects on people, species, or areas.

Sustainability arose out of the Brundtland Commission, which famously stated that sustainable development is that which meets the needs of the present without compromising the ability of future generations to meet their own needs.

It goes on to declare the importance equity, as through it, the concept of equity is broadened to include persons in the future rather than just in the present time. This means, impacts of development must not just be seen in terms of their effects on current populations, but the very long-term impacts must be considered as well.

BUT HOW THE SUSTAINABILITY ISSUES ARE RELATED TO THE BUILT ENVIRONMENT?


SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

SUSTAINABLE ISSUES IN THE BUILT ENVIRONMENT

1 standard development practices had little regard long-term environmental effects

2 many cities expanded without considering their environmental impact on the land around them.

3 *Wetlands were drained, forests cleared, and hillsides were graded without concern for the plant and animal populations displaced or the ecosystems destroyed.*

4 *Some cities allowed new subdivisions to spread across the landscape and new streets were often added without accommodation to topography or local conditions*

SUSTAINABLE ISSUES IN THE BUILT ENVIRONMENT

5 Designing against the grain of nature is inherently problematic

6 *Economic development is very necessary for all economies because of the problem of poverty, unemployment, low living standard and economic backwardness and maintain there growth level.*

7 *almost 40% of world consumption of materials converts to built environment and 30% of energy use due to housing*

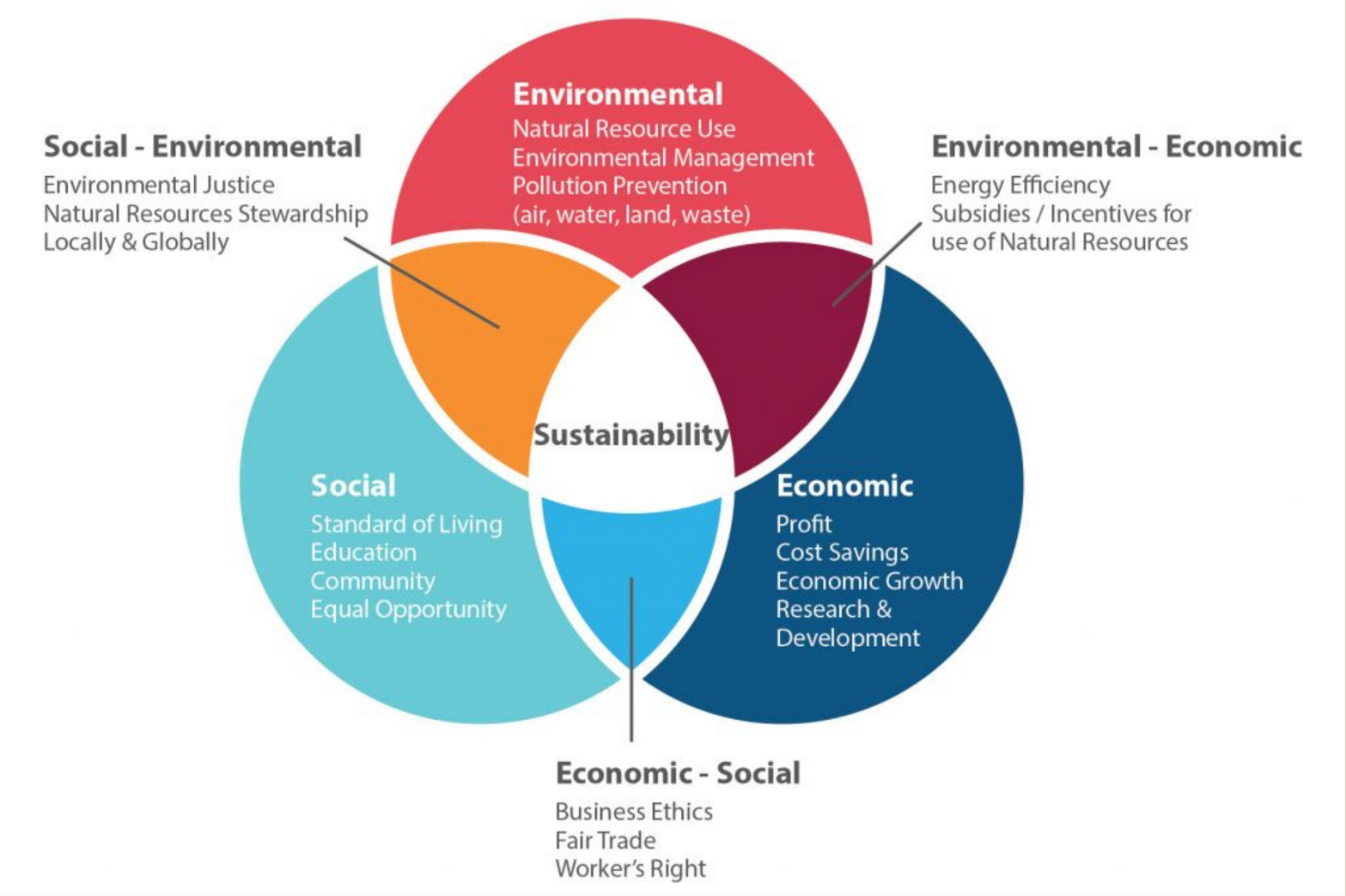
8 *The construction exploits natural resources such as forest for timber, housing and industry without proper control that contributes to the environmental problems*

Sustainable issues in Built Environment

- People are seeking new ecological understanding and methods to reduce this dependency on non-renewable resources and artificial systems.
- Ironically, the ‘new methods’ being sought are not new methods at all
- They are methods that were employed for centuries before through traditional practices by the indigenous societies that, by necessity and adaptive ingenuity, shaped the built environment in harmony with nature.
- This sustainable movement of pursuing a better world for the future can then be achieved through sustainable approaches in the development of our houses, cities, regions and the world.

Three (3) Pillars of Sustainability

To achieve sustainability, we must balance economic, environmental and social factors in equal harmony.



1. Environmental Sustainability

- We have talked about this just now.
- To live in true environmental sustainability, we need to ensure that we are consuming our natural resources, such as materials, energy fuels, land, water and so on, at a sustainable rate.
- Leave something for our future, or even better, we optimize or produce our resources.
- But achieving this alone, does not guarantee that we have achieve the goal of full sustainability just yet.
- We would also need to balance economic and social factors.

2. Economic Sustainability

- Economic sustainability requires us to use our resources efficiently and responsibly so that it can operate in a sustainable manner to consistently produce an operational profit.
- Without an operational profit a business cannot sustain activities.

3. Social Sustainability

- **Social sustainability is the ability of society to persistently achieve a good social well-being.**
- **Achieving social sustainability ensures that the social well-being of a community can be maintained in the long term.**

Five (5) principles to achieve social sustainability

(8 minutes)

HOW CAN BUILT ENVIRONMENT DO TO ACHIEVE TRUE SUSTAINABILITY?

Strategies for Sustainable Development

Climate and geography have proven to b the critical factors in impacting a design and the consequences for a sustainable development.

We are actually looking into controlling smaller climatic and geographical factors, such as Solar radiation, temperature, wind, humidity, rainfall and perhaps in other part of the world, snow and so on.

Reduce the extremes of each condition that might cause discomfort and dysfunction on humans, such as giving shades for occupants from extreme hot sun or protecting them from the rain.

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Strategies for Sustainable Development

Special qualities of each climatic zone and seasons, such as allowing the flow of tropical breeze entering your home, or the beauty of sound and movement of rain.

Having to address this, or better, balance these factors, we are at the basic of achieving an environmentally sustainable design.

Usage of natural resources and degrade the environment. There is a needs for sustainable utilization of natural resources.

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Urban Greening Effort

Many cities lost a substantial part of their tree canopy by the beginning of the twenty-first century, due to factors including poor maintenance and poorly planned strategy.

Tree loss can result in reduced pedestrian activity, warmer temperatures, increased air pollution, and a reduced capacity to absorb carbon dioxide. It can also increase risks of flooding, due to reduced volume of rain water runoff.

Well-managed and planned planting of trees as part of the urban greening or re-greening efforts in recent years have led to a more sustainable environment for urban areas.

GREEN ROOF

GREEN ROOF

- An urban area that is significantly warmer than its surrounding rural areas due to human activities is known as the urban heat island
- Green roofs are used as one of the solutions to this. o Green roofs are roofs planted with vegetation adapted to maximize local climate conditions, or they can be almost the equivalent of public parks, containing grass, trees, and heavily manicured landscapes.
- It is part of a green building design solution, which is not necessarily through the architectural features alone.

GREEN BUILDING DESIGN

- In the effort to promote sustainability, the architects and designers have turned to what is known as green building design to reduce the impacts of development on the environment.
- The involvement of the architect, engineers and quantity surveyor in design stage is very important to ensure that all parties are involved starting beginning until the end of the project.
- The goal is to make a building contribute to sustainability while still ensuring that occupants are satisfied with the building.
- Green buildings should be designed and operated to reduce the overall impact of the built environment on its surroundings.

GREEN BUILDING DESIGN

- Green building design must meet the environmental practice according to global and local standards and targets.
- In Malaysia construction industry, the Green Building Index (GBI) recognised as green rating tool for the building.
- Architects try to reduce the environmental impacts at each stage in the development, construction, maintenance, and demolition of a building.
- Ecological materials including using reusable concrete formworks are one of the ways to achieve this.

GREEN BUILDING DESIGN

- Good life cycle assessment, integrated building design, effective commissioning, operation and maintenance complement to continuous cost savings.
- It includes cost savings in lower energy, waste disposal, water cost, lower environmental and emission costs and etc.
- Clearly, it is important to have high collaboration among design team members and to have detailed understanding of the concept in order to produce high performance green building.

SUMMARY

IDEAL DIRECTION

In theory, sustainability seems an ideal direction for everyone to go, especially in the Built Environment field. But in reality, it may not be easy and perfect.

CONTINUAL & PROGRESSIVE PROCESS

considering the discussion on sustainability is a continual and progressive process. Expanding the discourse is therefore expected.

CULTURE

We often look into the environmental, economic and social sustainability that we may overlook how cultural sustainability is also important for society.

FUNDAMENTAL PRINCIPLE OF SUSTAINABILITY

understand the fundamental principle of sustainability and the role that you can play in shaping our Built Environment to achieve it.


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