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Environmental Management and Sustainable Development

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Your global future begins here

Sustainable development is defined as:

“development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” … in essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.”
Brandtland Report 1987

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Global Footprint Network data shows that humanity uses the equivalent of 1.6 planet Earths to provide the renewable resources we use and absorb our waste. If all 7+ billion of us were to enjoy a European standard of living - which is about half the consumption of the average American - the Earth could sustainably support only about 2 billion people. (World Economic Forum)

Distribution of Wealth, 2014

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Country/Region	GDP/$billion	% world's total	Population (million)	% World's total	$per capita income
World	97,140.4	-----	7,243.8	---	13,964
Very High human Development	46,814.6	48.2	1,185.3	16.4	41,395
High Human development	33,466.1	34.5	2,516.7	34.7	13,549
Medium human Development	13,654.0	14.1	2,288.2	31.6	6,106
Low human Development	3,205.5	3.3	1,185.2	16.4	1,692.9
Arab states	5,508.7	5.7	373.1	5.2	16,697

Source: Human Development Report 2015

Total Wealth, $ per capita and percentage share (2000)

Income group	Natural capital	Produced capital	Intangible capital	Total Wealth	Natural capital share	Produced capital share	Intangible capital share
Low-income	1,925	1,174	4,434	7,532	26%	16%	59%
Middle-income	3,496	5,347	18,773	27,616	13%	19%	68%
High-income	9,531	76,193	353,339	439,063	2%	17%	80%
MENA	7,989	4,448	9,749	22,186	36%	20%	44%
World	4,011	16,850	74,998	95,860	4%	18%	78%

Source: World Bank: Where is the Wealth of Nations? 2006

Total Wealth of Nations

- *Total wealth:* The measure of total (or comprehensive) wealth is built upon the intuitive notion that current wealth must constrain future consumption.
- *Produced capital:* This comprises machinery, structures, and equipment.
- *Natural capital:* This comprises agricultural land, protected areas, forests, minerals, and energy.
- *Intangible capital:* This asset is measured as a residual, the difference between total wealth and produced and natural capital. It implicitly includes measures of human, social, and institutional capital.

Reasons for resources depletion

1. Rapid population growth
2. Pollution
3. High consumption of resources
4. Deterioration of land

Classification of natural resources:

1. Non-renewable and non-recyclable resources such as fossil fuels
2. Non-renewable but recyclable resources such as minerals
3. Quickly renewable resources such as forests
4. Environmental resources such as air, water and soil
5. Flow resources, such as solar and wind energy

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Challenges Facing Human Sustainability

1. The impact of climate change
2. Hunger and malnourishment
3. Income inequality within and among nations
4. Rapid urbanization

Population

1. Our current global population is 7.2 billion and growing.
2. Earth's total resources are only good for 2 billion people at the current demand.
3. The way we're living, we are already using 2 to 3 times more of the Earth's natural resources than what is sustainable.
4. If we do not act now our natural resources are running out
5. Life expectancy at birth is currently at 67.9 years, and is expected to increase to 75.6 years by 2045-2050, based on increases in all regions and development groups.
6. It is crucial to understand that the longer we continue consuming more resources than the Earth can sustainably provide, the less able the Earth can meet our resource needs in the future - and the fewer people the planet can support - long-term

7. It is estimated that 1 out of 7 persons in the world lives in poverty in urban areas, mainly in informal settlements of the developing world, with inadequate provision of water, sanitation, health care and schools.
8. About 1 billion people, lacking basic infrastructure and services, currently live in slums, whose number may multiply threefold by 2050 if no policy framework is in place to reduce their growth
9. More than half of urban dwellers in countries of sub-Saharan Africa and 40 per cent in Asia lack access to basic sanitation.
10. Population in slums almost doubled in sub-Saharan Africa between 1990 and 2010, rising from 103 million to 200 million
11. At the start of the twentieth century, just 16 cities had 1 million or more people, with the majority located in advanced industrialized countries. By 2010, there were 449 cities with 1 million people or more, of which three quarters were located in developing countries

UN, Sustainable development challenges 2013

What are the top 3 natural resources being depleted and what are the consequences?

1. Water Resources

What will we drink without water?

- Only 2.5% of the world's total water volume is fresh water. Of that 2.5%, 70% is frozen (2).
- The depletion of our water resources is more serious that the current oil depletion. There are substitutes for oil but nothing can replace our drinking water.
- 70% of the available fresh water that remains in used in agriculture, 20% in industry and only 10% is being used for human consumption.

Water Stress

Demand pressures include population growth and an increase in water-intensive diets as a portion of the population moves into increasingly higher water-consumption behaviors. Demand pressures also include growing urban, domestic and industrial water usage.

Climate change plays a role by creating additional water demand for agriculture and for reservoir replenishment.

On the supply side, issues such as water transport, availability and variability present challenges, as does the decline in renewable water resources

UN, Sustainable development challenges 2013

2. Oil

. Oil reserves are a non-renewable resource
. Oil accounts for 40% of all energy we use
. EIA's International Energy Outlook 2013 shows that we have enough Oil to last for 25 years.
. Efforts are underway to develop cheaper and more sustainable energy such as solar power, wind power and other forms of renewable energy that can replace oil and fossil fuel.
. Nothing can be moved, manufactured, transported, built, planted, mined or harvested without the liquid fuels that we get from petroleum.

3. Forests

Imagine a world without trees.

. An estimated 18 million acres of forests are destroyed each year.
. Half of the world's forest has been cleared.
. Deforestation contributes 12 to 17% of global greenhouse gas emissions annually. (5)
. Trees absorb greenhouse gases and carbon dioxide.
. They produce the oxygen we breathe.
. Forests are the habitats of millions of species.

Towards Sustainable Cities

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1. Urbanization provides new jobs and new opportunities for millions of people in the world, and has contributed to poverty eradication efforts worldwide.
2. At the same time, rapid urbanization adds pressure to the resource base, and increases demand for energy, water, and sanitation, as well as for public services, education and health care.
3. Since 2007, more than half of the world's population has lived in urban centres
4. It is estimated that the proportion will have exceeded 70 per cent by 2050.
5. Eighty per cent of the world's urban population will live in developing regions, especially in cities of Africa and Asia.
6. During 1950-2010, a net 1.3 billion people was added in small cities, more than double the number of people added in medium cities (632 million) or large cities (570 million).

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Ensuring Food and Nutrition Security

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1. Basic food insecurity still affects 1 billion people, as many as in 1970
2. Estimates indicate that food production will have to increase 70 per cent globally to feed an additional 2.3 billion people by 2050.
3. Food demand is anticipated to continue to shift towards more resource-intensive agricultural products, such as livestock and dairy products, thereby exerting additional pressure on land, water and biodiversity resources
4. Currently, it is estimated that 32 per cent of the total food produced globally is wasted.
5. Investment needs for primary agriculture and its downstream industries in developing countries were estimated at US$ 9.2 trillion (2009 dollars) over the 44-year period from 2005-2007 to 2050.

Steps for promoting sustainable development

1. Improving regional capacity for sustainable development
2. Strengthening economic security in regional development
3. Fostering sustainable growth in regional development
4. Enhancing human capabilities for sustainable development
5. Enhancing productive and sustainable change in the Middle East
6. Coping with the impact of environmental degradation on human security
7. Strengthening natural resource management