

B.A. (Hons) Geography
Semester IV
Paper:
Sustainable Development
(Generic Elective)
Unit
5

(Note: Compilation from various sources such as scientific reports, research articles, websites and books for student reference)

Unit 5

Syllabus: *Sustainable Development Policies and Programmes: The proposal for SDGs at Rio+20; Illustrative SDGs; Goal-Based Development; Financing for Sustainable Development; Principles of Good Governance; National Environmental Policy, CDM, Need for Public Awareness about Environment.*

Sustainable Development Policies and Programmes

Sustainable Development Policies and programmes seeks to ensure that development is undertaken not only in the right way but more importantly to ensure that the right things are done. It therefore requires that there are no inherent conflicts between substance and process. Over the past four decades, the World have become increasingly aware of environmental problems. The environmental issues since 1972 (when the first international conference on the environment problems was hold), has been only growing worldwide. The world institutions (like the United Nations Conference on Environment and Development (UNCED) concentrate their attention on major global issues mostly including depletion of the Earth's protective ozone layer, destruction of tropical and old-growth forests and wetlands, species extinction, and the steady build-up of carbon dioxide and other "greenhouse" gases causing global warming and climate change. However, over four decade of efforts taken on overcoming the environmental problems very fable progress has been achieved. The UNEP reports offer evidence that the global environmental problems identified at the UNCED gathering back in 1992 have continued or worsened. With the exception of ozone depletion, an area in which major reduction in emissions has been achieved by international agreement, in addition, UNEP points to exposure to toxic chemicals and hazardous wastes, nitrogen pollution in freshwater and oceans, water contamination and declining groundwater supplies, forest and freshwater ecosystem damage, overexploitation of major ocean fisheries, urban air pollution and wastes. Underlying all these problems is the demography issue, including population growth which adds more than 70 million people a year. The world population, which had passed 7 billion by the year 2015, is expected to grow to around 9 billion by 2030. Under urgent pressure of environmental destruction, scientists and politicians have begun to work on finding solutions for sustainable development. The main research questions in this regard are: How to prevent irreversible damage to the planetary systems that supports life? How to avoid high environmental price caused by non-responsible behaviour of businesses? How to find a balance between economic development and environment operating the "environment-friendly" development concept? The notion of sustainable development encompasses both economic and environmental goals with the use of sustainable techniques for better agricultural production, energy use, natural resource management, and industrial production. Today we have enough evidence to state that these techniques have significant potential, but have yet to be widely adopted. A sustainable global economy also implies limits on population growth and material consumption. The question of economic activity sustainability has already become the major issue, and will be even more important in the coming decades. Sustainable development has been defined in a variety of ways, but in practice it has three dimensions – economic, environmental and social ones. The word "sustainability" has become a global buzzword as a potential solution for many international, regional, and local problems facing society today: overpopulation, diseases, political conflicts, infrastructure deterioration, pollution, and unlimited urban expansion under limited resources' availability. The United Nations World Commission on Environment and Development (WECD, 1987) coined a definition of sustainable development, which is probably the most well-known in all of sustainability literature: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

Therefore, sustainability of region is the process suggested to improve the quality of human life within the limitations of the global environment. It involves solutions for improving human welfare that does not result in degrading the environment or impinging on the wellbeing of other people. This concept are involved in sustainable measures: understanding the interconnections among economy, society,

and environment; living within certain limits of the earth's capacity to maintain life; and maintaining a fair distribution of resources and opportunity for this generation and the next. The above concept was redefined as the community as whole system, made up of three concentric circles: the economy is found within society, and both the economy and society exist within the environment. Sustainability indicators are set to measure the extent to which these boundaries are respected. A different framework was proposed by the economist H. Daly (1990) who rearranged sustainability into a triangular setup of the 3E's - Environment, Equity and Economy (figure 2). At the bottom of the triangle is the Environment or the 'Ultimate Means' which represents natural resources as a precondition for decent human life.

The Proposal of SDG at Rio+20

Overview

The United Nations (U.N.) Conference on Sustainable Development (UNCSD or "Rio+20") had convened June 20-22, 2012 in Rio de Janeiro, Brazil. This conference marks the 20th anniversary of the U.N. Conference on Environment and Development (UNCED) in Rio in 1992 and the 10th anniversary of the World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa. As many as 115 Heads of State attended, with up to 50,000 other participants. Rio+20 organizers seek three objectives:

- securing renewed political commitment to sustainable development,
- assessing the progress and implementation gaps in meeting already agreed commitments, and
- addressing new and emerging challenges.

No legally binding agreements are expected to be made at the meeting. Government delegations agree to a process to identify new Sustainable Development Goals (SDGs).

In addition, reform of international environmental institutions is on the conference agenda, with a focus on the U.N. Commission on Sustainable Development and the U.N. Environment Program (UNEP).

In 1992, governments attending the "Rio" conference (formally called the United Nations Conference on Environment and Development or UNCED) politically endorsed the objective of "sustainable development"—achieving economic, environmental, and social development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." High-level government representatives produced a political declaration, Agenda 21, and a Statement of Forest Principles—none of which contain legally binding commitments.

Agenda 21 led to establishment of the U.N. Commission on Sustainable Development, under the U.N. Economic and Social Council, as well as creation of national commissions on sustainable development in many countries, including the United States.

The Rio meeting also opened for signature two treaties:

- United Nations Framework Convention on Climate Change (UNFCCC) and
- United Nations Framework Convention on Biological Diversity (CBD).

This report summarized the objectives and major issues of Rio+20 and gives a sampling of the wide diversity of views to be discussed by government officials, non-governmental organizations (NGOs), business leaders and trade associations, and representatives of youth,

women, landlocked countries, cities, researchers, artisans, farmers, and many, many others who will be present at Rio+20. It also outlines United States policy toward the conference and possible issues for congressional consideration, including possible action on conference outcomes; the role of Agenda 21, and, more broadly, the possible role of sustainable development in the United States and U.S. foreign policy.

Agenda 21 Concerns

Agenda 21, a 40-volume “plan of action,” was produced in preparation for the 1992 U.N. Conference on Environment and Development in Rio, and has been the subject of a high level of concern and misunderstanding by segments of the U.S. population. For example, some people express concern that Agenda 21 contains binding commitments or actions and infringes on U.S. sovereignty. In fact, Agenda 21 does not. Agenda 21 will undoubtedly be referenced at Rio+20 and could be raised by constituents concerned, on the one hand, about lack of progress on international goals toward sustainable development or, on the other hand, about proposals to strengthen agencies of the United Nations, or gain commitments to increase financing to low-income countries. For more information on Agenda 21, request from CRS the congressional distribution memorandum “Agenda 21” by Luisa Blanchfield.

Rio+20 Conference Focus and Objectives

Rio+20 includes three days of public meetings (Sustainable Development Dialogues)

Followed by three days of meetings among diplomatic delegations from 193 nations, including many Heads of State.

Governments outlined three overall objectives for the conference:

- securing a renewed political commitment for sustainable development;
- assessing progress and remaining gaps in implementation of sustainable development efforts; and
- addressing new and emerging challenges.

As part of these objectives, governments are expected to assess the implementation of international environmental agreements, such as the Kyoto Protocol under the U.N. Framework Agreement on Climate Change (UNFCCC), and the Millennium Development Goals (MDGs), a set of eight internationally agreed-to development goals created in 2000.

Many participants and observers hope that Rio+20 outcomes will address the Rio+20 objectives in a Communique from high level officials, which may contain agreement to a process to produce new Sustainable Development Goals, and affirmation of—and a Framework for Action to implement—internationally agreed goals.

The draft Communique, entitled “**The Future We Want**,” is eclectic and sweeping, like the background reports and side meetings. As of the beginning of the third and last Preparatory Committee, only one-quarter of the draft text had been agreed and was “unbracketed” (i.e., does not contain proposed alternative language). Tens of pages, however, had been eliminated from earlier drafts. Delegations will likely continue previous differences over proposals to create a new global environment agency, “strengthen” financing,¹⁰ enhance technology transfer, and increase capacity in nations. In addition, the Rio+20 conference process includes collection of voluntarily submitted commitments to action from all stakeholders. The U.N. established a registry for such commitments.

Rio+20 Conference Priority Areas and Proposals

Organizers identified seven priority areas: jobs, energy, cities, food, water, oceans, and disaster readiness. A sampling of related proposals includes:

Decent Jobs: some advocates seek stronger standards to both reduce adverse environmental impacts and provide decent working and living conditions for all workers and respect for workers' rights; others call for addressing the needs of rural communities; some propose attention to job opportunities associated with investment in natural capital (natural resources), a low-carbon economy, and sustainable resource management;

Energy: many agree on a general goal of affordable access to energy for all people; some press for goals to increase energy efficiency and the share of renewable energy sources; some seek greater financial and technological sources, and other seek commitments to phase out subsidies to fossil fuels;

Sustainable Cities: increasing urbanization is understood to be an ongoing trend, and the form of cities, especially of megacities, is viewed as a critical element of sustainable development. Cities seek greater recognition of their roles and actions, greater authority, and augmented resources; proposals also call for A 3rd Conference on Housing and Sustainable Development in 2016;

Food Security: proposals call for a right to food and proper nutrition, and needing to eliminate trade barriers and politics that distort production and trade of agricultural products;

Water: some advocates press for a goal of universal access to clean water and adequate sanitation, as well as reform of water and wastewater management; some call for the Secretary General's Advisory Board on Water and Sanitation to begin consideration of new goals for managing water resources after 2013;

Oceans: the rise in attention to the "blue economy" includes calls for an agreement for conservation and sustainable use of marine biological diversity, and addressing governance of marine areas beyond national jurisdictions; others propose to end fishing subsidies; some call for another conference in 2014 or 2016 on Small Island Developing States (SIDs); and

Disaster Readiness: proposals call for actions to carry out the Hyogo Framework for Action 2005-2015.

Many other topics also discussed as well, including health, migration, forests, protection and assistance to the family, gender equality, sustainability accounting and reporting, and others. Despite having initially identified seven priority areas, the expanded list under discussion is reflected in likely disagreement of what priorities should be beyond the Rio+20 conference.

The Green Economy

The first theme of Rio+20 is "The Green Economy." Government delegations agreed that "each country will choose its own green economy approach and policy mix, assessing national priorities and adapting measures to national institutions and economic systems." A major point of discussion, however, has been lack of agreement on what the green economy is, and what its relationship to sustainable development may be. Some see it as an element of achieving sustainable development, which was described in 1992 as consisting of three "pillars" economic, social, and environment, all of which were critical to supporting the edifice

of development. Rio+20 organizers described the green economy as “the intersection between environment and economy;” others expressed concern that this formulation gave too much emphasis to the economic pillar and not enough to social aspects (e.g., equality of women, engagement of civil society in decision-making, etc.), and risked supplanting the three-pillar concept of sustainable development. Organizers may wish to see high-level officials agree at Rio+20 on policy options to facilitate the green economy and foster greater international cooperation. Background documents and side meetings identify a host of practices to foster a green economy by community, national, international, and corporate actors. The conference preparations emphasize a diversity across regions and countries of meanings and approaches to sustainable development.

One element of the green economy that seems to enjoy widespread agreement is the importance of the private sector in sustainable development. Some observers have suggested that one outcome from the proceedings may be a large number of private deals on renewable energy, pollution control, water infrastructure, and other commercial and development investments. Issues of trade also have been examined, including risks of protectionism, subsidization, compatibility of national measures with World Trade Organization (WTO) rules, and the importance of countries’ domestic conditions and institutions (e.g., protection of intellectual property) to enable trade. For example, participants may debate how technologies essential to environmentally compatible development should be developed and disseminated across countries, with disagreements on such topics as “transfer” versus commercial sales.

Outcome of Rio+20

The two-day meeting, organised by UNEP in partnership with UN-DESA, Stakeholder Forum and The Green Economy Coalition provided an opportunity for Major Groups and Stakeholders from across the globe to come together to discuss the outcomes of Rio+20, agree on action items to accelerate these outcomes, and address areas where no progress or agreement was made.

- Took stock of the overall outcomes of Rio+20, including determining the successes and implications for the Major Groups model of participation;
- Discussed the role of Major Groups and other stakeholders in the implementation of the Rio+20 outcomes;
- Discussed the new governance architecture post Rio+20, including the space for engagement and the role of stakeholders.
- Looked forward to the post-2015 development agenda, in particular the Sustainable Development Goals (SDGs) and the role of Major Groups in the design and implementation;
- Discussed and agreed on the input into UNEP's Governing Council/Global Ministerial Environment Forum, as well as the 20th Session of the Commission on Sustainable Development (CSD 20).

Summary

Rio Convention, the first ever legal convention on global climate change and biological diversity, was convened for addressing urgent problems of environmental protection and socio-economic development at the global level. The convention endorsed the Global Forest Principles and adopted Agenda-21 for achieving sustainable development in the 21st century.

Sustainable Development Goals

What is the Post 2015 Development Agenda?

“Environmental, economic and social indicators tell us that our current model of progress is unsustainable. Ours is a world of looming challenges and increasingly limited resources. Sustainable development offers the best chance to adjust our course.” (Ban Ki Moon, UN secretary general.)

Introduction

The Sustainable Development Goals (SDGs) are a collection of 17 global goals set by the United Nations. The broad goals are interrelated though each has its own targets to achieve. The total number of targets is 169. The SDGs cover a broad range of social and economic development issues. These include poverty, hunger, health, education, climate change, gender equality, water, sanitation, energy, environment and social justice. The SDGs are also known as "Transforming our World: the 2030 Agenda for Sustainable Development" or Agenda 2030 in short. The goals were developed to replace the Millennium Development Goals (MDGs) which ended in 2015. Unlike the MDGs, the SDG framework does not distinguish between "developed" and "developing" nations. Instead, the goals apply to all countries. Sustainability is not just about environment but the sustainability is anthropocentric. In Rio declaration on environment and development (UNCED, 1992): principle 1: human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Historical Background

In 1984, The United Nation (UN) Establish an independent group of 22 people drawn from member state of both developing and developed world and charge them with identifying long term environmental strategies for the international community. The report on the world commission on environment and development entitled Our Common Future (WCED, 1987). This report putting the Sustainable Development to the political arena of international development thinking. The term Sustainable Development is extensively defined it as “Development that means the needs of the present without compromising the ability of the future generation to meet their own needs”. This report has been translated into more than 24 languages so that the world will understand the gravity of the environmental crisis and the concept of Sustainable Development. The recommendation focused: Integrating world Strategies, Environmental policies, Global Partnership.

The work of commission has undertaken as the basis for the UN WCED to held 5 year later. In 1992 – The Earth Summit at Rio-de-Janeiro at Brazil, 116 Head of the states, 8000 Delegates and more than 3000 NGO's were participated. The central Aim: To identify the principles for action toward sustainable development. Key Outcome: ‘Agenda 21’ – 40 chapters and 600 Pages. Which includes Socio-economic dimension – Combating Poverty, population, Health etc. Conservation and management of resources- desertification, deforestation etc. Strengthening the role of major groups- women, farmer, NGO's, local authority etc. Means of implementation- transfer sound technology, role of education, capacity building etc. No. of international conventions were agreed Convention on Biodiversity- unsustainable use of ecosystem. Framework convention on climate change – Human induced climate change

In 2002, UN World Summit for Sustainable Development (UNWSSD) at Johannesburg in South Africa. This was the more inclusive (Human Right, Social justice, Business Accountability etc.) and more decentralized Summit. Aim: Global Partnership to achieve Sustainable Development Interdependence – Economy, Society, Environment. But Still Environmental deterioration continue, persistence of poverty and a wide gap between developing and the developed world. The globalization was a major concern because it is not discussed in the Rio summit.

In 2012, a further UN summit at Rio-de-Janeiro in Brazil. All the stakeholders are invited not just to the conference but to contribute in advance working in document. The SDGs build on the principles

entitled "The Future We Want". Two themes are considered priority ie., Challenge of moving to a 'Green Economy' and Future institution framework for Sustainable Development. Now it was to that the number of crisis facing the world like climate, economy, food, energy, ecology and poverty are interlinked and should address simultaneously under the one umbrella.

The Goals and targets will stimulate action over the next fifteen years in areas of critical importance for humanity and the planet:



Goal 1. End poverty in all its forms everywhere

1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day

1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions

1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable

1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including micro finance

1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

I. a Ensure significant mobilization of resources on a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions

I. b Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender sensitive development strategies, to support accelerated investment in poverty eradication actions

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round

2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment

2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries

2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility

Goal 3. Ensure healthy lives and promote well-being for all at all ages

3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births

3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being

3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol

3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents

3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes

3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

- 3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate
- 3.b Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all
- 3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing states
- 3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

- 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes
- 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education
- 4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university
- 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
- 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
- 4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy
- 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development
- 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, nonviolent, inclusive and effective learning environments for all
- 4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
- 4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

Goal 5. Achieve gender equality and empower all women and girls

- 5.1 End all forms of discrimination against all women and girls everywhere
- 5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
- 5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation

5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life

5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences

5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws

5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women

5.c Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

Goal 6. Ensure availability and sustainable management of water and sanitation for all

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

6.5 By 2030, implement integrated water resources management at all levels, including through trans boundary cooperation as appropriate

6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

6.a By 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

6.b Support and strengthen the participation of local communities in improving water and sanitation management

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

7.1 By 2030, ensure universal access to affordable, reliable and modern energy services

7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

7.3 By 2030, double the global rate of improvement in energy efficiency

7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology

7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked

developing countries, in accordance with their respective programmes of support

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries

8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training

8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms

8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment

8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products

8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all

8.a Increase Aid for Trade Support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries

8.b By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries

9.3 Increase the access of small-scale industrial and other enterprises, in particular, in developing countries, to financial services, including affordable credit, and their integration into value chains and markets

9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

- 9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing states
- 9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities
- 9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.

Goal 10. Reduce inequality within and among countries

- 10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average
- 10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status
- 10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard
- 10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality
- 10.5 Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations
- 10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions
- 10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies
- 10.a Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements
- 10.b Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes
- 10.c By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance with costs higher than 5 per cent

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

- 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums
- 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
- 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
- 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage
- 11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
- 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels

11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials

Goal 12. Ensure sustainable consumption and production patterns

12.1 Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries

12.2 By 2030, achieve the sustainable management and efficient use of natural resources

12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities

12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production

12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities

Goal 13. Take urgent action to combat climate change and its impacts*

13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

13.2 Integrate climate change measures into national policies, strategies and planning

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation

actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible

13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiations

14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries

14.b Provide access for small-scale artisanal fishers to marine resources and markets

14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of 'The Future We Want'

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements

15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase Afforestation and reforestation globally

15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and achieve a land degradation-neutral world

15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed

15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products

15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species

15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems

15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation

15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

16.1 Significantly reduce all forms of violence and related death rates everywhere

16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children

16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all

16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime

16.5 Substantially reduce corruption and bribery in all their forms

16.6 Develop effective, accountable and transparent institutions at all levels

16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels

16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance

16.9 By 2030, provide legal identity for all, including birth registration

16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements

16.a Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime

16.b Promote and enforce non-discriminatory laws and policies for sustainable development

Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development Finance

17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection

17.2 Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of ODA/GNI to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries

- 17.3 Mobilize additional financial resources for developing countries from multiple sources
- 17.4 Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress
- 17.5 Adopt and implement investment promotion regimes for least developed countries Technology
- 17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism
- 17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed
- 17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology
- 17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation Trade
- 17.10 Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda
- 17.11 Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020
- 17.12 Realize timely implementation of duty free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by illustrating that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access systemic issues *Policy and institutional coherence*
- 17.13 Enhance global macroeconomic stability, including through policy coordination and policy coherence
- 17.14 Enhance policy coherence for sustainable development
- 17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development *multi-stakeholder partnerships*
- 17.16 Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries
- 17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships *Data, monitoring and accountability*
- 17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts
- 17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries

To sum up all the seventeen SDG's, five facets such as people, planet, prosperity, peace and partnership is the key and discussed below:

People: We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.

Planet: We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.

Prosperity: We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.

Peace: We are determined to foster peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.

Partnership: We are determined to mobilize the means required to implement this Agenda through a revitalised Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focussed in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.

The inter linkages and integrated nature of the Sustainable Development Goals are of crucial importance in ensuring that the purpose of the new Agenda is realised. If we realize our ambitions across the full extent of the Agenda, the lives of all will be profoundly improved and our world will be transformed for the better.

So, there is an urgent action needed to mobilize, redirect and unlock the transformative power of trillions of dollars of private resources to deliver on sustainable development objectives. Long-term investments, including foreign direct investment, are needed in critical sectors, especially in developing countries. These include sustainable energy, infrastructure and transport, as well as information and communications technologies. The public sector will need to set a clear direction. Review and monitoring frameworks, regulations and incentive structures that enable such investments must be retooled to attract investments and reinforce sustainable development. National oversight mechanisms such as supreme audit institutions and oversight functions by legislatures should be strengthened.

Role of SDGs in India

India has, over the past years, directed its development pathway to meet its priorities of employment, economic growth, food, water and energy security, disaster resilience and poverty alleviation. India has also aimed to restore its natural capital and adopt transparent and robust governance along democratic lines. However, emerging challenges of climate change impacts, increasing inequities, and lagging human development indices are well recognised by both the citizens as well as the government. The post 2015 UN Sustainable Development Agenda framework provides an opportunity to renew and integrate efforts in order to meet, to a significant degree, national and global aspirations in a defined time frame.

Goal-Based Development

(Goal-Based Development including MDGs, SDGs already discussed with the students in detail.)

Financing for Sustainable Development

Finance: The Elephant in the Room

Financing needs We began our analysis by assessing sustainable financing needs, existing financing flows and their effectiveness, as well as potential sources of financing. Since the adoption of the Millennium Declaration in 2000, many developing countries have experienced significant economic growth, and the availability of all types of finance has increased. Despite these achievements, there are differences between and within countries, and progress has been insufficient to realize all of the MDGs. Risks and vulnerabilities—including environmental degradation and climate change, as well as risks within the international financial system—have become more pronounced. Against this backdrop, we provide order of magnitude estimates of financing requirements for sustainable development. We acknowledge that identifying financing needs is complex and necessarily imprecise, since estimates depend on a host of assumptions, including the macroeconomic and policy framework, and therefore vary widely. In addition, aggregating needs can be misleading because of synergies across sectors. Nonetheless, all studies show that needs are enormous. For example, the order of magnitude of additional investment requirements for climate-compatible and sustainable development scenarios is estimated to be several trillion dollars per year, with additional financing for infrastructure more broadly estimated at between 5 and 7 trillion dollars annually. While global savings—at around US\$22 trillion a year—would be sufficient to meet these needs, resources are currently not allocated adequately. The challenge for policymakers lies in facilitating greater investment of disperse financing flows into areas of global need, and in improving the quality of present policies, approaches and instruments, addressing inefficient and harmful subsidies, corruption, tax evasion, illicit financial outflows, and inaction particularly in the environmental sector, where its costs often exceed the costs of corrective measures. Achieving this will not easy: it will take a transformative change to the way financing is done, in both public and private spheres.

The SDGs will be more ambitious than the MDGs, covering a broad range of interconnected issues, from economic growth to social issues to global public goods. To realise this vision, a just-as-ambitious plan for financing and implementation is needed. The magnitude of the SDG financing challenge far exceeds the capacity of any one organisation and demands a strong partnership among governments, the private sector, and development organisations.

The SDGs will have very significant resource implications worldwide. At the global level, total investment needs according to UNCTAD are in the order of USD 5 to USD 7 trillion per year. Total investment needs in developing countries alone could be about USD 3.9 trillion per year, mainly for basic infrastructure (roads, rail and ports, power stations, water and sanitation), food security (agriculture and rural development), climate change mitigation and adaptation, health, and education. Current investment in these sectors is around USD 1.4 trillion leaving a gap of around USD 2.5 trillion and implying an annual investment gap of between USD 1.9 and USD 3.1 trillion (UNCTAD, 2014).

Principles of Good Governance

In a global village where we live at present, it is in everyone's interest that any society ideally meets the above-mentioned conditions. However, some societies have difficulties achieving those conditions, despite their best effort to actively seek and work towards these goals. On the other hand, some societies have the capability and means to assist other because of their experience, working knowledge, as well as available resources. Therefore, a proactive effort to achieve such conditions should become prime vehicle for global cooperation. The objective of Good Governance in Sustainable Development (GGSD) Program is to assist societies to develop on effective government within a democratic system, and to implement sustainable development principles through global partnership.

Objectives

To enhance local implementation actions of the Rio Resolutions and Agenda 21 for real progress towards sustainable development

To assist societies to develop an effective government within a democratic system and to implement sustainable development principles through global partnerships by way of:

1. Empowering the public to enable them to effectively participate in decision making for public interest and to undertake local initiatives;
2. Developing and strengthening good governance at the local level;
3. Developing the capacity of public and the government at the local level to cooperate in increasing welfare of the people.

The full realization of the Sustainable Development Goals and other internationally agreed development objectives strongly depends on a common understanding of the basic principles of effective governance for sustainable development. On 2 July 2018, the UN Economic and Social Committee endorsed a set of 11 principles prepared by the UN Committee of Experts on Public Administration (CEPA) and UN DESA. This is an important starting point: without such guiding principles, implementation of the SDGs risks being inconsistent and ineffective. The 11 basic principles should clarify the governance agenda, taking into account different governance structures, national realities, capacities and levels of development and respecting national policies and priorities. They have been developed to help interested countries, on a voluntary basis, build effective, accountable and inclusive institutions at all levels, with a view to achieving the shared vision for the people and the planet embodied in the 2030 Agenda for Sustainable Development. As basic principles, they apply to all public institutions, including the administration of executive and legislative organs, the security and justice sectors, independent constitutional bodies and State corporations. The principles are given depth and made operational through a selection of commonly used strategies and related practices, which are an integral and evolving part of this work.

Operationalizing the principles and undertaking related strategic actions that are known to be effective in particular contexts is essential to taking the work on principles to the next level.

To be helpful, associated practices will need to be clearly relevant, feasible to implement, and based on sufficient empirical evidence of their impact on the achievement of the targets of the Sustainable Development Goals. To that end, it would be important to define criteria and mechanisms for evaluating the strength of the evidence of impact, together with other experts, and ensure that practices are well defined and actionable in different contexts, while allowing space for experimentation. Meanwhile we hope that the 11 principles, presented below, will already now be used to guide SDG implementation. Each principle is followed by examples of commonly used strategies.

The first three principles focus on **effectiveness**.

1. Competence

To perform their functions effectively, institutions are to have sufficient expertise, resources and tools to deal adequately with the mandates under their authority. Commonly used strategies include promotion of a professional public sector workforce, strategic human resources management, leadership development and training of civil servants, performance management, results-based management, financial management and control, efficient and fair revenue administration, and investment in e-government.

2. Sound policymaking

To achieve their intended results, public policies are to be coherent with one another and founded on true or well-established grounds, in full accordance with fact, reason and good sense. This regards strategic planning and foresight, regulatory impact analysis, promotion of coherent policymaking, strengthening national statistical systems, monitoring and evaluation systems, science-policy interface, risk management frameworks, and data sharing.

3. Collaboration

To address problems of common interest, institutions at all levels of government and in all sectors should work together and jointly with non-State actors towards the same end, purpose and effect. This includes centre of government coordination under the Head of State or Government, and collaboration, coordination, integration and dialogue across levels of government and functional areas.

Three more principles address **accountability**:

4. Integrity

To serve in the public interest, civil servants are to discharge their official duties honestly, fairly and in a manner consistent with soundness of moral principle. This is about promotion of anti-corruption policies, practices and bodies, codes of conduct for public officials, competitive public procurement, elimination of bribery and trading in influence, conflict of interest policies, whistle-blower protection, and provision of adequate remuneration and equitable pay scales for public servants

5. Transparency

To ensure accountability and enable public scrutiny, institutions are to be open and candid in the execution of their functions and promote access to information, subject only to the specific and limited exceptions as are provided by law. Examples are proactive disclosure of information, budget transparency, open government data, registries of beneficial ownership, and lobby registries.

6. Independent oversight

To retain trust in government, oversight agencies are to act according to strictly professional considerations and apart from and unaffected by others. This covers promotion of the independence of regulatory agencies, arrangements for review of administrative decisions by courts or other bodies, independent audit, and respect for legality.

Five principles focus on **inclusiveness**:

7. Leaving no one behind

To ensure that all human beings can fulfil their potential in dignity and equality, public policies are to take into account the needs and aspirations of all segments of society, including the poorest and most vulnerable and those subject to discrimination. This includes promotion of equitable fiscal and monetary policy, promotion of social equity, data disaggregation, and systematic follow-up and review.

8. Non-discrimination

To respect, protect and promote human rights and fundamental freedoms for all, access to public service is to be provided on general terms of equality, without distinction of any kind as to race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth, disability or other status. Strategies include promotion of public sector workforce diversity, prohibition of discrimination in public service delivery, multilingual service delivery, accessibility standards, cultural audit of institutions, universal birth registration, and gender-responsive budgeting.

9. Participation

To have an effective State, all significant political groups should be actively involved in matters that directly affect them and have a chance to influence policy. Examples are free and fair election, regulatory process of public consultation, multi-stakeholder forums, participatory budgeting, and community-driven development.

10. Subsidiarity

To promote government that is responsive to the needs and aspirations of all people, central authorities should perform only those tasks which cannot be performed effectively at a more intermediate or local level. Examples include fiscal federalism, strengthening urban governance, strengthening municipal finance and local finance systems, enhancement of local capacity for prevention, adaptation and mitigation of external shocks, and multilevel governance.

11. Intergenerational equity

To promote prosperity and quality of life for all, institutions should construct administrative acts that balance the short-term needs of today's generation with the longer-term needs of future generations. This includes sustainable development impact assessment, long-term public debt management, long-term territorial planning and spatial development, and ecosystem management.

National Environment Policy (NEP)

National Environment Policy 2006 is a response to India's national commitment to a clean environment, mandated in the Constitution in Articles 48 A and 51 A (g), (DPSP) strengthened by judicial interpretation of Article 21. It is recognized that the maintenance of the healthy environment is not the responsibility of the state alone. It is the responsibility of every Citizen and thus a spirit of partnership is to be realized through the environment Management of the country.

A diverse developing society such as ours provides numerous challenges in the economic, social, political, cultural, and environmental arenas. All of these coalesce in the dominant imperative of alleviation of mass poverty, reckoned in the multiple dimensions of livelihood security, health care, education, empowerment of the disadvantaged, and elimination of gender disparities. The present national policies for environmental management are contained in the, the National Conservation Strategy and Policy Statement on Environment and Development, 1992, National Population Policy, 2000, Some sector policies such as the National Agriculture Policy, 2000 National Population Policy, 2000 National Water Policy, 2002. All of these policies have recognized the need for sustainable development in their specific contexts and formulated necessary strategies to give effect to such recognition. The National Environment Policy seeks to extend the coverage, and fill in gaps that still exist, in light of present knowledge and accumulated experience. It does not displace, but builds on the earlier policies.

The National Environment Policy (NEP) by the Ministry of Environment and Forests (MoEF) aims at mainstreaming environmental concerns into all developmental activities. It emphasises conservation of resources, and points that the best way to aid conservation is to ensure that people dependent on resources obtain better livelihoods from conservation, than from degradation of the resources. It argues that environmental degradation often leads to poverty and poor health outcomes among populations.

The document goes on to highlight the principles underlying the policy that emphasise the

- Important role of human beings in the sustainable development processes
- The non-negotiability and incomparable value of environmental resources
- Right to development for all
- Equity in the use of environmental resources and
- The need for the decentralised and multi sectoral approach in dealing with environmental issues.

The objectives of the policy include:

- Conservation of critical environmental resources
- Intra-generational equity
- Livelihood security for the poor
- Inter-generational equity
- Integration of environmental concerns in economic and social development
- Efficiency in environmental resource use
- Environmental governance
- Enhancement of resources for environmental conservation

The document outlines a range of strategies to meet these objectives that aim at:

- Conservation of existing environmental resources through regulatory reforms
- Emphasis on education, information, research, capacity building and technological innovations

- Inter sectoral collaboration and periodic evaluations of the existing policies.

Key Environment Challenges

The key environmental challenges that India faces are related to the nexus of environmental degradation with poverty in its many dimensions, and economic growth. Challenges are intrinsically connected with the state of environmental resources, such as land, water, air, and their flora and fauna.

Drivers of Degradation

Proximate drivers of environmental degradation are population growth, inappropriate technology and consumption choices, and poverty, leading to changes in relations between people and ecosystems, and development activities such as intensive agriculture, polluting industry, and unplanned urbanization. Other drivers of degradation are the lack of clarity or enforcement of rights of access and use of environmental resources, policies which provide disincentives for environmental conservation (and which may have origins in the fiscal regime), market failures (which may be linked to shortcomings in the regulatory regimes), and governance constraints.

Impact on Health

Poor environmental quality has adversely affected human health. Environmental factors are estimated as being responsible in some cases for nearly 20 percent of the burden of disease in India, and a number of environment-health factors are closely linked with dimensions of poverty (e.g. malnutrition, lack of access to clean energy and water). Interventions such as reducing indoor air pollution, protecting sources of safe drinking water, protecting soil from contamination, improved sanitation measures, and better public health governance, offer tremendous opportunities in reducing the incidence of a number of critical health problems.

Objectives of the Policy

- Conservation of Critical Environmental Resources
- Intra-generational Equity: Livelihood Security for the Poor
- Inter-generational Equity
- Integration of Environmental Concerns in Economic and Social Development:
- Efficiency in Environmental Resource Use
- Environmental Governance
- Enhancement of Resources for Environmental Conservation

Principles of National Environment Policy 2006

The Policy evolved from the recognition that only such development is sustainable, which respects ecological constraints, and the imperatives of justice. The Objectives stated above are to be realized through various strategic interventions by different public authorities at Central, State, and Local Government levels. They would also be the basis of diverse partnerships. The principles followed in the policy are:

- Human Beings are at the Centre of Sustainable Development Concerns:
- Right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.
- In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.
- Where there are credible threats of serious or irreversible damage to key environmental resources, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

- In various public actions for environmental conservation, economic efficiency would be sought to be realized

“Polluter Pays” principle

Impacts of acts of production and consumption of one party may be visited on third parties who do not have a direct economic nexus with the original act. Such impacts are termed “externalities”. The National Environment Policy promotes the internalization of environmental costs, including through the use of incentives based policy instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest, and without distorting international trade and investment.

Legal Liabilities in the Policy

The environmental redressal mechanism based on doctrines of criminal liability, have not proved sufficiently effective, and need to be supplemented. The policy adopts the civil liability for environmental damage that would deter environmentally harmful actions, and compensate the victims of environmental damage. The alternatives to Civil Liability may also apply viz. Fault Based liability and Strict Liability. In Fault Based Liability a party is held liable if it breaches a pre-existing legal duty, for example, an environmental standard. Strict liability imposes an obligation to compensate the victim for harm resulting from actions or failure to take action, which may not necessarily constitute a breach of any law or duty of care.

The Doctrine of Public Trust

As per this doctrine, the State is not an absolute owner, but a trustee of all natural resources, which are by nature meant for public use and enjoyment, subject to reasonable conditions, necessary to protect the legitimate interest of a large number of people, or for matters of strategic national interest.

Legislative Reforms

A judicious mix of civil and criminal processes and sanctions will be employed in the legal regime for enforcement, through a review of the existing legislation. The policy calls for identification of the emerging areas for new legislation, due to better scientific understanding, economic and social development, and development of multilateral environmental regimes, in line with the National Environment Policy. It also calls for review the body of existing legislation in order to develop synergies among relevant statutes and regulations.

Environment Impact Assessment

The policy focuses on encouraging the regulatory authorities, Central and State, to institutionalize regional and cumulative environmental impact assessments (R/CEIAs) to ensure that environmental concerns are identified and addressed at the planning stage itself.

Coastal Regulation Zone (CRZ)

The policy aims to revisit the Coastal Regulation Zone (CRZ) notifications to make the approach to coastal environmental regulation more holistic, and thereby ensure protection to coastal ecological systems, coastal waters, and the vulnerability of some coastal areas to extreme natural events and potential sea level rise. In pursuance with the Policy CRZ Notification 2011 was released recently.

The Problem of Living Modified Organisms (LMOs)

LMO refers to the Living Modified Organisms. LMOs result from modern biotechnology is broadly equivalent to genetically modified organisms. The difference between an LMO and a GMO is that a

Living Modified Organism is capable of growing, and typically refers to agricultural crops. Genetically Modified Organisms include both LMOs and organisms which are not capable of growing, i.e. are dead.

The National Environment Policy says that Genetically Modified Organisms require evaluation of their potential benefits and risks as part of relevant regulatory processes. The subset of LMOs, may, however, owing to their potential for replication, involve environmental concerns in addition. LMOs may pose significant risks to ecological resources, and perhaps, human and animal health. In order to ensure that development of biotechnology does not lead to unforeseen adverse impacts, the policy aims to review the regulatory processes for LMOs so that all relevant scientific knowledge is taken into account, and ecological, health, and economic concerns are adequately addressed.

Environmentally Sensitive Zones (ESZs)

The Environmentally Sensitive Zones are the areas with identified environmental resources having “Incomparable Values” which require special attention for their conservation. In order to conserve and enhance these resources, without impeding legitimate socio-economic development of these areas, the National Environment policy aims to identify and give legal status to Environmentally Sensitive Zones in the country having environmental entities with “Incomparable values” requiring special conservation efforts. The policy also envisages formulating area development plans for these zones on a scientific basis, with adequate participation by the local communities.

Desert Habitats

The arid and semi-arid region of India covers 127.3 mha (38.8%) of India’s geographical area and spreads over 10 states. The Indian desert fauna is extremely rich in species diversity of mammals and winter migratory birds. However, the pressures of a rapidly increasing population on the natural resource base necessitate adoption of innovative and integrated measures for conservation of desert ecosystems. The policy aims at measures such as Intensive water and moisture conservation through practices based on traditional and science based knowledge, and relying on traditional infrastructure.

Panchayats and Women Participation

The policy aims at working towards giving the legal recognition of the traditional entitlements of forest dependent communities taking into consideration the provisions of the (PESA). This would remedy a serious historical injustice, secure their livelihoods, reduce possibilities of conflict with the Forest Departments, and provide long-term incentives to these communities to conserve the forests.

Wild life

The policy aims to expand the Protected Area (PA) network of the country, including Conservation and Community Reserves, to give fair representation to all bio-geographic zones of the country. In doing so, develop norms for delineation of PAs in terms of the Objectives and Principles of the National Environment Policy, in particular, participation of local communities, concerned public agencies, and other stakeholders, who have a direct and tangible stake in protection and conservation of wildlife, to harmonize ecological and physical features with needs of socio-economic development.

Wetlands

The Ramsar Convention defines wetlands as, ‘areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters’, thereby giving a wide scope to the term. Wetlands are under threat from drainage and conversion for agriculture and human settlements, besides pollution. The policy aims at setting up a legally enforceable regulatory mechanism for identified valuable wetlands, to prevent their degradation and enhance their conservation. Develop a national inventory of such wetlands.

Clean Development Mechanism (CDM)

The Clean Development Mechanism (CDM) is an offset mechanism under the Kyoto Protocol that allows the crediting of emission reductions from greenhouse gas (GHG) abatement projects in developing countries. The CDM has two purposes: it should assist developing countries in achieving sustainable development and help industrialised countries to reduce the costs of greenhouse gas abatement. Ten years after the adoption of the Kyoto Protocol, the CDM has become an immense global market, having more than 800 registered projects and a value of several billion Euros. In this regard, the CDM has been a great success in developing a new market for GHG emission reduction projects. However, the CDM has also recently been heavily criticised for not delivering on its environmental and sustainable development objectives.

CDM is one of the Flexible Mechanisms defined in the Kyoto Protocol (IPCC, 2007) that provides for emissions reduction projects which generate Certified Emission Reduction units (CERs) which may be traded in emissions trading schemes.

The CDM, defined in Article 12 of the Protocol, was intended to meet two objectives:

- to assist parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC), which is to prevent dangerous climate change; and
- to assist parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments (greenhouse gas (GHG) emission caps).

The CDM addresses the second objective by allowing the Annex I countries to meet part of their emission reduction commitments under the Kyoto Protocol by buying Certified Emission Reduction units from CDM emission reduction projects in developing countries (*Carbon Trust*, 2009, p. 14). Both the projects and the issue of CERs units are subject to approval to ensure that these emission reductions are real and "additional." The CDM is supervised by the CDM Executive Board (CDM EB) under the guidance of the Conference of the Parties (COP/MOP) of the United Nations Framework Convention on Climate Change (UNFCCC).

The CDM allows industrialized countries to buy CERs and to invest in emission reductions where it is cheapest globally (Grubb, 2003, p. 159). Between 2001, which was the first year CDM projects could be registered and 7 September 2012, the CDM issued 1 billion Certified Emission Reduction units. As of 1 June 2013, 57% of all CERs had been issued for projects based on destroying either HFC-23 (38%) or N₂O (19%). Carbon capture and storage (CCS) was included in the CDM carbon offsetting scheme in December 2011.

However, a number of **weaknesses** of the CDM have been identified by World Bank. Several of these issues were addressed by the new Program of Activities (PoA), which moves to approving 'bundles' of projects instead of accrediting each project individually. In 2012, the report *Climate Change, Carbon Markets and the CDM: A Call to Action* said governments urgently needed to address the future of the CDM. It suggested the CDM was in danger of collapse because of the low price of carbon and the failure of governments to guarantee its existence into the future. Writing on the website of the Climate & Development Knowledge Network, Yolanda Kakabadse, a member of the investigating panel for the report and founder of Fundación Futuro Latinoamericano, said a strong CDM is needed to support the political consensus essential for future climate progress.

Need for Public Awareness about Environment

The Earth is the only known life-supporting planet in the solar system. The fresh water, atmosphere, favourable climatic conditions are few features which led to the formation of life in the pre-historic era. But now, the same planet is facing difficulty in running its natural systems. Excessive demands of human beings are leading threats to the planet and as a result, to themselves. As we know our natural resources are degrading rapidly, about 80% of water resources are polluted. Rivers such as Ganga, Yamuna, Cauvery, Godavari as well as their tributaries are highly polluted.

Air pollution from industries and transportation vehicles is a great threat to human health. Automobile pollution contributes to 60% of air pollution in urban areas such as New Delhi, Kolkata, and Chennai etc. This will lead to environmental degradation which can lead to extinction of life. Today we are facing ecological imbalance and challenges which are need to be addressed. This can be done by public awareness. The main challenges we are facing are mainly due to some primary factors...

Increasing population: Every year the population of over thousands of millions is growing, which is at a rate of 2.1 percent per year. Over 17 million people are added each year. This has put pressure on natural resources and reduces gains of development. Increasing population creates pressure on the limited available resources, thus damaging them. The greatest challenge is to control population through public awareness.

Poverty: Our country India is a country with both rich and poor people. Excessive population leads to poverty in India, as demand for resources is greater than their availability. The population depends upon natural resources for food, fuel, fodder and shelter. About 40 percent of population depends on these resources. Increasing population and poverty are directly related, so it is a great challenge to our country. Poor people struggle for survival and protecting the environment is not in their priority. This increases the need for public awareness.

Agricultural Growth: People must be acquainted with the methods in order to sustain and increase the agricultural growth without damaging the environment. High yielding varieties (HYV) during the green revolution have caused salinity and damage to the physical structure of soil. Therefore, this can be reduced by public awareness.

Degradation of Land: Most of the land is degraded and polluted. Degradation of land should be avoided. This can be done by public awareness. Lack of knowledge about environmental degradation, the use of excessive amount of chemical fertilizers and pesticides results in killing of the microorganisms present in the soil, which in turn contributes to the degradation of land, loss in fertility and also pollutes groundwater.

Reorientation of institutions: The people must be awarded for orienting institutions, attitudes as well as infrastructure to suit contemporary conditions and needs. This change must be brought by keeping India's traditional use of resources and management in mind. This can be done by bringing change in educational attitude, administration procedures etc.

Air and Water Pollution: Air and water pollution is increasing because of industrialization, urbanization, vehicles etc. Advertisements have been made but they require proper implementation of these acts. Indian rural population needs expertise in resource management as well as taking care of the environment. People need proper awareness of these rules.

Reduction of Genetic Diversity: There is a need to conserve genetic diversity. Wild genetic stocks are disappearing from nature, for example: Asiatic lions. The protected areas like sanctuaries; national parks etc. must be developed.

Ill effects of Urbanization: 26% to 28% of Indian people live in urban areas. People migrate from rural areas to towns in search of a better quality life and secure jobs, thus creating a pressure on cities, and ultimately creation of slums. Slums have unhygienic living conditions, thus resulting in soil, water and

air pollution in the surrounding area. Increasing industrialization creates large amount of air pollution. Slums, pollution, environmental degradation are some of the ill effects of the urbanization. This needs immediate addressing through public awareness.

Forest Resources and Associated Problems

Human population is growing day-by-day. Continuous increase in population caused an increasing demand for natural resources. Due to urban expansion, electricity need and industrialization, man started utilising natural resources at a much larger scale. Non-renewable resources are limited. They cannot be replaced easily. After some time, these resources may come to an end. It is a matter of much concern and ensures a balance between population growth and utilisation of resources. This over utilisation creates many problems. In some regions there are problems of water logging due to over irrigation. In some areas, there is no sufficient water for industry and agriculture. Thus, there is need for conservation of natural resources.

There are many problems associated with forest resources:

a) Forest Resources: Use and over exploitation, deforestation, case studies. Timber extraction, mining, dams, and their effects on forest and tribal people.

i) Use and over exploitation: Forests are one of the most important renewable natural resource on earth. Forest defined as the aggregate of innumerable number of various wild plants which are in dominance in specific area at given time. The forest are complex ecosystem with many layers of characteristic population of plants, animals and lower organisms with a typical organization. About 1/3rd of the world's land surface (approx. 4.038 hectors) is covered with forest, which are ecosystems that are dominated by trees. These forests not only produce innumerable material goods like fuel, timber, paper, fodder, water yield, medicine, resins, gums, various animal products like silk, honey, hide, bones, wool, etc but also provide several environmental services which are essential for life.

Use of forest

Forest provide us a large number of commercial goods, they are as firewood, resins gums, pulp wood, non-edible oils, food, fodder, rubber, silk, lac, fibres, bamboo, medicine, honey, and many more raw products, the total worth of which is estimated to be more than \$ 350 billion per year. Some advantages of forest given below:

- Many organic fertilizers and pesticides are produced from the wild plants.
- Large quantities if various plant and animal products like fire wood, furniture, pulp for paper industry, medicinal plants like aloe vera, *Asparagus*, *Raulfia*, hirda, beheda, amla, safed musli, etc. honey, silk, resins, lac, wool, hides, bones, and so on.
- Tribal and adivasi people get employment and earn money from forest products.
- It helps to decrease air, soil and water pollution.
- Forest are associated with culture and civilization.
- Various raw materials like pulp, paper, timber for construction, silk, honey, skin etc. provided by forests.
- Indian forests supply minor forest products like canes, gums, resins, dyes, tannins, fibres, katha etc.,
- It gives protection to the wild life against strong cold, heat and winds thereby protect biodiversity.
- Forests have aesthetic and tourist values.
- Forest serves as a gene reserve.
- It tends to increase water holding capacity of soil therefore it helps to increase the ground water level.
- It regulates earth's temperature, regime, and water cycle.
- It maintains fertility of the soil by returning nutrient to it through litter.
- It maintains the food chains and food webs of the ecosystems.

- The forest helps to reduce particulate matter, dust and carbon dioxide in air to decrease the air pollution.
- Forests are also useful to reduce the soil erosion and increase the rainfall.

Over exploitation

Since time immemorial human beings have depended heavily on forest products like firewood, resins, gums, pulp wood, non-edible oils, food, fodder, rubber, silk, lac, fibres, bamboo, medicine, and also the growing demand in various sectors like agriculture, shipping, railways, industries, mining, and residence puts pressure on available resources like forest, water, soil, minerals, energy sources etc. More than 45 % of the total forest area is standing barren today and the deforestation is continuous at an alarming rate. Recent study shows that deserts of the world are increasing because of deforestation, agriculture and raw materials. Over grazing, illicit cutting, reckless uses are the chief reasons decreasing the forest cover of the world. Thus excessive use of timber, firewood, fuel wood, urbanization, industrialization, and over grazing have together led to over exploitation of our forest leading to their rapid degradation. Therefore, the problem of deforestation of the earth creates many hazards.

Deforestation: The destruction of forests by nature or manmade cause is called deforestation. Or the clearing or cutting down of forest trees is called deforestation. The total forest area of the world in 1900 was estimated to be 7,000 million hectares which was reduced to 2,890 million hectares in 1975 and fell down to just 2,300 million hectares by 2000. Deforestation rate is very alarming in tropical countries as compared to temperate countries. As per FAO (Food and Agriculture Organization) estimate deforestation rate per unit population in India is the lowest amongst the major tropical countries, despite the fact that we have a huge population size and very low per capita forest (0.075 hectare per capita). There are various reasons for deforestation as follows:

1. **Fuel requirements:** Increasing demand for fuel, India consumes nearly 170 million ton of firewood annually and near about 11 million hectares of forest cut down every year.
2. **Grazing food needs:** To meet demands of rapidly growing population (urbanization), agricultural lands, industrialization, and settlements responsible for deforestation.
3. **Shifting cultivation:** Near about 300 million people living as shifting cultivators and are supposed to clear more than 5 lakh hectares of forest per year.
4. **Overgrazing:** The poor people in the tropics mainly depend on wood as a source of fuel, earn money, for construction of huts and energy source to cleared forest and turned in to grazing land. Local cattle's, goats, sheep and other grazing animals pull out the roots of plants leads to further degradation of these lands.
5. **Raw material for industrial use:** Industrial use resulted in the deforestation, for example: wood for making boxes, furniture, railway sleepers, plywood, match boxes, pulp for paper industry have exerted pressure on forests. Plywood is in great demand for packing tea in tea industry in Assam while fir tree wood is used greatly for packing apples in Jammu and Kashmir.
6. **Development projects:** Mining operations have a serious impact on forest areas. Massive destruction of forest due to various developmental projects like hydroelectric projects, construction of large dams, roads etc.
7. Forest sometimes may suffer from **forest fires**. Some of the forest fires are deliberately burning of tree by smugglers.

Major consequences of deforestation

The problem of deforestation has brought many hazards as follows.

- Deforestation has impact on the productivity of crop lands.
- Problems of soil erosion and loss of soil fertility increases and soil actually gets washed leading to accentuated cycle of floods and droughts
- Hydrological cycle gets affected thereby influencing rainfall.

- Deforestations create shortage of firewood ultimately poor people use cowdung and crop waste as fuel mainly for cooking. These waste products of plants and cow dung used for bio-fertilizers by farmers but nothing goes back to the soil. Hence soil lost its fertilizers and crop productivity decreases
- Biodiversity and ecosystem is lost and along with that genetic diversity is eroded.
- It threatens the existence of many wild life species due to destruction of their natural habitat
- The mineral extraction (mining) drastically alters the physical and biological nature of mixed area.
- The growing need of population on for wooden material resulted in large scale deforestations. The main reason being its use for door windows and other household furniture from ancient days.
- Other Problems of deforestations such as
- imbalance of atmosphere conditions and helps global warming by releasing CO₂ which is a green house gas (CO₂, Ozone layer)
- Aridity of climatic conditions
- Environmental pollution etc.
 - Therefore looking at deforestation process, this is a peak time to examine the rate of plants in conservation of environment.
- Major activities in forests:
- Timber Extraction: India and other tropical countries have particularly abundant timber resources. Timber accounts for 25% of all photosynthesis materials produced on the earth and about half of the total biomass produced by a forest. The valuable timber like sissum, teak, pine, sandal, mahogany, fir etc greatly demanded for making furniture, pulp, ship building and other purposes.
- Mining: Extraction of minerals and fossil fuels like coal from the earth is known as mining. Mining is the primary economic activity of man for obtained energy. More than 80,000 hectors land of the country is presently under the stress of the mining activities. Mining and its associated activities require removal of vegetation along with underlying soil mantle and overlying rock masses. This results in defacing the topography and destruction of the landscape in the area.

In Goa, since 1961 indiscriminate mining in forests has destroyed more than 50,000 of forest land. Coals mining in raniganj, Jharia and singrauli area have caused extensive deforestation in Jharkhand. Mining of magnetite and soap stones have destroyed 14 hectors of forest in the hill slopes at khirakot, kosi valley, almora, mining of radioactive minerals in kerala, tamilnadu and Karnataka has become threats in Kerala. The rich forest of western ghats are also facing a lot of problems because of mineral extraction like magnetite, bauxite, copper, chromites. Large scale of deforestation has been reported in Mussorie and Deharadun valley due to indiscriminate mining of various minerals over a length of about 40 km.

Effect of mining on forest

Ecosystem destruction by mining for coal, extraction of minerals and other purposes to meet demand of industries is an evitable part of civilization. The mineral extraction process drastically alters the physical and biological nature of mining area. The following are impacts on forest:

- The original plants are inevitably destroyed
- The soil is lost in mining areas.

- Strip mining can cause compaction changes in soil textures, loss of soil structure and reduced water infiltration
- In some mining area minerals when exposed to moisture produce acids and soluble salts which destroy vegetation.
- The fertile land is turned into a barren land.

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