

1. What do you understand by ‘human fingerprint on greenhouse gases’? What are its implications for the shared future of humanity? Does it require quick and drastic response? Analyse.

Introduction

‘Human fingerprint on greenhouse gases’ is the emission of Green House Gases as a result of human induced activities. Evidences have mounted that these emissions are causing changes to the climate in the lower and upper reaches of the atmosphere. Researchers have compared a human signal with natural causes of climate variability such as the El Niño-Southern Oscillation, volcanoes and solar variability. The pattern of a warm troposphere and cool stratosphere can only be explained by manmade greenhouse gas and ozone-depleting emissions.

Body

Implications for the shared future of humanity

- **Global resources outlook 2019**
 - Resource extraction has more than tripled since 1970
 - Resource extraction is responsible ~ 50% of greenhouse gas emissions and over 90 per cent of biodiversity loss and water stress.
- **More cooperation at global forums** – Some countries pulling out of Paris agreement is not a good news to solve a problem that is truly global in nature.
- **Global contribution in funding - 2018 UNEP Emission Gap report** highlights the radical inadequacy of current contributions.
- **Food security is at risk** – due to climate change and agricultural stress
- **Global socio-cultural misery**
 - Migration due to distressed agriculture.
 - Displacement of indigenous people
 - Increased incidences of disaster

It require quick and drastic response

- Exploding human consumption is the driving force for Anthropocene extinction (The living planet report, WWF)
- Sustainable future is one three biggest challenges as per World Economic Forum.
- IPCC report says that this is the last chance for the world to deal with climate change.

- UN climate secretariat estimates that current contributions place the planet on a 2.6°C to 3.2°C pathway.
- WMO report - global average surface temperature in 2018 was 4th highest recorded.
- Lancet medical journal – 46% increase in weather related disaster since 2000.

Issues arising out of climate change

- Shrinking of Islands
 - Munroe island in Kerala
 - Many islands Lakshadweep, Maldives, of Philippines
- Disaster - Lancet medical journal – 46% increase in weather related disaster since 2000.
 - Kerala flood havoc
- Loss of livelihood
- Disproportionate effect on low lying nations
- Climate refugee
- Damage to biodiversity

Conclusion

In order to attain a sustainable future the need of the hour is to take urgent action against emission of GHG (SGD 13) and preserving the humanity and future of the mankind.

2. What is carbon trading? How does carbon trading occur? Is it an effective strategy to mitigate the effects of global warming? Critically examine.

Introduction

Carbon trading is a market-based system aimed at reducing greenhouse gases that contribute to global warming, particularly carbon dioxide emitted by burning fossil fuels.

Body

Carbon trading allow countries to reduce their own carbon emissions and sell the saved emissions to other countries for money or technology transfer or project investments. Carbon markets existed under the Kyoto Protocol, which is being replaced by the Paris Agreement in 2020.

E.g. A developed country like USA which is unable to meet its reduction target can provide money or technology to the Tidal energy project in Indonesia, and thus claim the reduction of emission as its own.

Alternatively, the Tidal energy investors can make the investment, and then offer on sale the emission reduction, called carbon credits. Another party, struggling to meet its own targets, can buy these credits and show these as their own.

As an effective strategy:

Any emission reduction is a step closer to tackle global warming and carbon trading scheme helps in the same.

- It achieves the objective of GHG emission reduction at low cost with caps in emissions, sanctions in the form of trade and fines as seen in Kyoto protocol.
- It helps in more effective way to address the global warming with the development of new technologies and technology transfer to utilize the renewable energy potential. E.g. Hydro electric project investments in countries like Bhutan by India.
- Emission trading provides a way of establishing rigour around emissions monitoring, reporting and verification – essential for any climate policy to preserve integrity.
- Emission trading results in a synergetic effect by way of integrations and collaborations and collective effort to fight the climate change. E.g. an industrial area in a third-tier town may not be able to contribute to climate change if not collaborations with global companies which is facilitated by the emission trading.

However, emission trading has several disadvantages which has made it an ineffective tool to fight global warming.

- It becomes ineffective if the companies have the wherewithal to invest heavily offsetting the carbon price they pay.
- Determining physical actions that companies must take, with no flexibility, is not guaranteed to achieve the necessary reductions.
- Establishing a regulated price is a policy nightmare and take years to come to a consensus and also faces a backlash. E.g. Carbon cess.
- As accounting the exact emissions is difficult, the issues in emission counting rendered by the developed countries has resulted in just number magic rather than actual reduction in emissions.
- Creating a market in something with no intrinsic value such as carbon dioxide is very difficult.
- The low carbon pricing mixed with politics has made the scheme ineffective where in the overall emissions have increased rather than decrease.

Conclusion

Emission trading works on the principle of 'pay and pollute'. It would be successful only when the carbon reduction price exceeds the profit after carbon emissions. **Thus**, the idea should be gradually reducing the number of available permits from year to year, transparent/deterrent carbon pricing there by nudging firms to increasingly find more ways to reduce carbon emissions.

3. What are the recent setbacks to global climate change negotiations? What can be its possible implications?

Introduction

A UN report released last month warned that the world is currently headed toward a 3.2 degrees temperature rise by the end of the century, highlighting the impending danger of climate change for world where recently fight against climate change has seen some serious setbacks which may aggravate the fragile situation further.

Body

- The UNFCCC entered into force in 1994. Its objective is to stabilise the concentrations of greenhouse gases in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Kyoto Protocol, which requires a limited number of developed country Parties to limit or reduce their greenhouse gas emissions up to 2020, was adopted under the Convention in 1997.
- In order to address climate change more broadly, the Paris Agreement was negotiated and adopted in 2015. The goals of the Paris Agreement are to hold the increase in global average temperature to well below 2°C above pre-industrial levels, to pursue efforts to limit this increase to 1.5°C, to increase the ability to adapt to the adverse impacts of climate change and to make finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.
- Under the Paris Agreement, Parties regularly communicate their Nationally Determined Contributions (NDCs) as part of the global response to climate change; the ambition of these contributions has to increase over time. The Paris Agreement also provides for a global stocktake which assesses the collective progress of all Parties towards achieving the goals of the agreement.
- In the previous climate change conference in Katowice in December 2018, the rules for the implementation of the Paris Agreement were largely defined. These include the information that Parties shall provide when communicating their NDCs, guidance for accounting for NDCs, guidelines for reporting on mitigation, adaptation and support to developing countries, and rules for the global stocktake.
- However, agreement on some aspects is still pending, such as common timeframes for NDCs or detailed provisions for the reporting of greenhouse gas emissions, mitigation actions and support. Most importantly, Parties still

have to agree on the rules for voluntary cooperation between Parties, including the use of international carbon market mechanisms.

- One of the most serious setbacks in recent times seem to be the announcement in 2017 of USA to withdraw from Paris Agreement. In light of the fact that the United States was the first major economy that ratified the Paris Agreement in 2016 and is also the largest greenhouse gas emitter, it will have serious consequences on the effectiveness of global climate change negotiations.
- In addition, the United States cut its contributions to the UNFCCC process and its support to developing countries in the area of climate change mitigation and adaptation. As a consequence, activities under the UNFCCC such as reviews or capacity building had to be scaled down.
- In light of this, it will not be easy for the country to keep its promises intact. For example, India's participation in the agreement was conditional upon receiving financial aid from developed countries to reduce its carbon footprints. India accounts for four percent of global emissions and, at Paris, it promised "to reduce its carbon footprint by 35 percent from its 2005 levels by 2030."
- Furthermore, the recent UN climate talks in Madrid ended in stalemate, with the negotiations running two days over time as countries squabble over rules for a new global carbon trading market. The talks, known as COP25, ran for 14 days and set a record for the longest-ever climate negotiations, but failed to produce any agreement on trading in carbon credits.
- The failure of COP25 to agree on the carbon market rules will complicate the task facing the UK, which takes over the presidency of the next UN climate talks in Glasgow next year. Almost 200 countries failed to agree unanimously on Article 6 of the Paris Agreement rulebook concerning the carbon markets system,
- If China dominates future negotiations, the ongoing tensions between the two nations will have a significant impact on India's place in such negotiations. To meet its solar targets, India needs around USD 100 billion, and this sector has enormous potential for foreign investments. These challenges will be the result of the failure of negotiations.
- Furthermore, Authoritative surveys of the mitigation pledges adopted to date by different countries strongly suggest that these will fall far short of what is required to achieve the 2°C goal if the present state of deadlock between countries is continued.
- While the developed countries are bent on diluting the North-South divide, citing the growing economic and political clout of developing nations, developing countries like India insist on retaining equity. This is evident from the multiple rounds of negotiations at international forums.

Conclusion

Thus, recent developments at the international level have renewed claims that cooperation would be more effective under a less formal approach, driven by

decisions taken at the national level, with greater flexibility to accommodate domestic circumstances and priorities while also effectively addressing the global needs.

4. What measures has the Indian Government taken to address climate change? What further role can India play in the global efforts towards mitigating climate change? Suggest.

Introduction

India has the world's second largest population and fourth largest economy, where climate change is no more an environmental concern. It has emerged as the biggest developmental challenge for the planet. Its economic impacts, particularly on the poor, make it a major governance issue as well. Such a scenario has necessitated momentous efforts from India to tackle the global menace while also prioritising its developmental needs.

Body

Over several decades India has pursued policies and publicly funded programs focused on energy conservation and deployment of renewable energy technologies to fight climate change. This has been backed by legislation, regulation and tariffs arrangements. Some of these are:

- India ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1993 and the Kyoto Protocol in 2002.
- In June 2008, India announced its National Action Plan on Climate Change (NAPCC). The Action Plan effectively pulls together a number of the government's existing national plans on water, renewable energy, energy efficiency, agriculture and others – bundled with additional ones – into a set of eight missions. The Prime Minister's Council on Climate Change is in charge of the overall implementation of the plan. The plan document elaborates on a unique approach to reduce the stress of climate change and uses the poverty-growth linkage to make its point.
- Under the 2015 Paris Agreement, India set three major goals to be achieved for the period between 2020 and 2030—increase the share of non-fossil fuels to 40% of the total electricity generation capacity, to reduce the emission intensity of the economy by 33 to 35% by 2030 from 2005 levels, and to create additional carbon sink of 2.5 -3 billion tonnes of CO₂ equivalent through additional forest and tree cover.
- India has emerged as a global leader in renewable energy, where investments top those into fossil fuel. After adopting its National Electricity Plan (NEP) in 2018, India remains on track to overachieve its “2°C compatible” rated Paris Agreement climate action targets.

- Since 2010, the Indian Government has doubled the coal tax three times, reaching 400 rupees per tonne (around USD 3.2 per tonne) of coal produced and imported in the 2016–2017 budget.
- On transport, the Faster Adoption and Manufacturing of Electric Vehicles in India scheme came into effect in April 2019, and provides incentives to purchase electric vehicles, while also including provisions to ensure adequate charging infrastructure.
- The main instrument to increase energy efficiency in industry is the Perform, Achieve and Trade (PAT) Mechanism, which is implemented under the 'National Mission on Enhanced Energy Efficiency'. PAT resembles an emissions trading scheme (ETS) and has been in place since 2012. The scheme is currently in its second phase (2016–2019). PAT differs from traditional cap-and-trade systems as it sets intensity-based energy targets
- Rural Electrification Policy, 2006: The policy promotes renewable energy technologies where grid connectivity is not possible or cost-effective.
- Energy Conservation Building Code, 2006: This regulatory code is designed to ensure energy efficiency in all buildings with above 500 kVA connected load or air-conditioned floor area over 1000 square metres.

India's future role in the global efforts towards mitigating climate change can be seen from the following points :

- In 2007, then Indian Prime Minister Singh pledged that India's per capita emissions would never exceed those of the developed world. Meeting this pledge does not require any emissions reductions compared to current policy projections up to 2030.
- Despite the negative trend in the power sector due to coal, India's Paris Agreement target is within the range of what is considered to be a "2°C compatible" fair share of the global effort. Further, India could become a global climate leader with a "1.5°C compatible" rating if it abandons plans to build new coal-fired power plants.
- The Government is in the process of implementing carbon pricing mechanisms to encourage energy efficiency in industry. A pilot system for small to medium enterprises is expected soon. This can form the basis for global carbon pricing mechanism.
- The government is also attempting to harness the potential of off-grid solar PV pumps to not only provide reliable electricity for pump sets, but also to provide additional income generation opportunities for farmers.
- India has said that it will finalise its long-term plan strategies for development that result in lower levels of carbon dioxide and other greenhouse gas emissions by 2020. India also said that it will increase its climate pledges, or nationally determined contributions (NDCs), under the Paris Agreement.
- The Indian Government is considering long-term growth strategies over the period 2030–2045 that would result in a decoupling of carbon emissions from economic growth.

Conclusion

Climate Change has emerged as one of the most serious environmental concerns of our times, which is a global phenomenon with diverse local impacts. The New Delhi Declaration should provide us with a sound basis for global cooperation, reflecting the consensus that addressing the challenge of climate change as an integral part of achieving sustainable development to create a better world for all our people.

5. Why should conserving biodiversity be a priority? What globe efforts have been started to reduce biodiversity loss? Examine. What role is India playing in this front? Discuss.

Introduction

Biodiversity refers to all the varieties of life that can be found on Earth (plants, animals, fungi and microorganisms) as well as to the communities that they form and the habitats in which they live.

In recent times there has been huge loss to the biodiversity

Living planet report of WWF

- 60% of biodiversity declined from 1970 to 2014.
- 80% fresh water vertebrates.
- 50% bleached coral reefs.
- Only ~ 25% of land is substantively free of impact of human activity.

Eg – 20% of Amazon rain forest has disappeared in last 5 decades.

Body

Conserving biodiversity should be a priority

Biodiversity as resource

- Agriculture – crucially dependent on pollinators population
- Blue economy – based on aquatic biodiversity
- Pink revolution – for food & nutritional security and exports.
- Non-major forest resource – livelihood for forest dwellers and some tribal population.
- Industry – furniture etc
- Eco - tourism – eg- Kerala economy
- Pollution mitigation

Global efforts to reduce biodiversity loss

- **Convention on Biological Diversity** - signed during the Earth Summit in 1992. It focuses not only on conserving biodiversity but also on sustainable use of biological resources and equitable sharing of benefits arising from its use.

- The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) – an international treaty which is designed to protect wild plants and animals affected by international trade.
- Ramsar Convention - It provides a framework for international cooperation for the conservation of wetland habitats.
- Convention on the Conservation of Migratory Species of Wild Animals - or the Bonn Convention aims to conserve terrestrial, marine and avian migratory species throughout their range.
- The International Treaty on Plant Genetic Resources for Food and Agriculture – the objectives are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security.
- International Plant Protection Convention (IPPC) - aims to protect world plant resources, including cultivated and wild plants. The convention provides the mechanisms to develop the International Standards for Phytosanitary Measures (ISPMs), and to help countries to implement the ISPMs.
- Basel Convention - It is designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs).

Role is India playing in this front

India currently spends about \$2 billion per year on biodiversity conservation efforts

- **Legislations**
 - Wildlife Protection act 1972
 - Biological diversity act
 - Forest conservation act 1980
- **Institutions**
 - National Green Tribunal
 - Wildlife Crime Control Bureau
 - National Tiger Conservation Authority
 - Laboratory for conservation of endangered species.
- **Regulations**
 - Banned diclofenac drug that were killing vultures
- **Biodiversity governance**

- E-Surveillance
 - ~47, 000 crore funding under CAMPA to states for forest conservation.
 - **Awareness**
 - Hati mere Saathi
 - Green budgeting
 - **Judicial activism**
 - SC in
 - Dehradun quarrying case (1998) recognised right to live in healthy environment as part of art 21.
 - MC Mehta case - right to live in pollution free environment is par to life.
 - Vellore citizens welfare forum case – polluters pay principle are essential for sustainable development
- Uttarakhand High Court declared River Ganga and Yamuna as living entity.

Conclusion

WWF Called international treaty on the line of Paris Agreement to protect wildlife. Greater range of targets under CBD has been suggested. These measures must be adopted urgently to preserves biodiversity, which has been described as the 'infrastructure' that supports all life on earth.