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Sustainable Development & Climate Change

- Rising to the Challenge

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From the President's Desk



Dear Members,

Sustainable development and climate change are the most pressing challenges of our times, at both the local and the global levels. Policymakers need to come up with long-term solutions for confronting them effectively. We need clear strategies based on achievable targets, and we must also be bold in deploying all the knowhow at our disposal. Further, any credible strategy to deal with climate change should also factor in

today's exponentially growing technological innovation.

Policymakers need to closely examine how they intend moving their societies away from fossil fuels and towards renewables. The focus should be on enhancing the use of fuels and energy sources that do not compromise biodiversity. Governments should promote the use of fuels that adhere to strict sustainability criteria and also reduce emissions throughout their lifecycles. All industrial activity in the country should be suitably incentivized to move in that direction.

In this regard, special mention should be made about bioenergy and the use of electric vehicles as well as vehicles powered by renewable energies. Doing so will not only reduce the carbon footprint, but it will also help in building a self-reliant India (Atmanirbhar Bharat) as we will save considerably on foreign exchange by using indigenous resources to fuel our power requirements. Thus, policy needs to stress on encouraging innovations and start-ups in these emerging areas.

Installing renewable energy systems is only one piece of the resilience puzzle. Strengthening grid infrastructure, energy efficiency and system flexibility must all occur in parallel to build truly sustainable systems. Each one of these factors will drive an economic, social and environmental return on investment in its own right.

Many of these new technologies and processes could initially be out of reach of the majority of the population. But as we have seen with much of solar energy and fuel cells, a technology's costs tend to fall as soon as its usage begins to scale-up. Global markets for climate-friendly technologies are also developing rapidly, though they vary in depth and scope depending on the level of the underlying government support and regulatory structure. Ultimately, the best climate change solutions will be the ones that remain the most scalable in both developed and developing countries.

New technologies will enable a major shift towards sustainably fuelled transportation in all major metropolitan areas. They will not only allow

us to reduce our carbon footprint, but also will position many of our domestic industries to become carbon-negative in the coming years. That will aid their integration with their global peers.

Technology is important, but it will not (by itself) solve the climate change issue for us. We also need to create the right policy environment for it to succeed. A key component to this green transition would be higher carbon pricing. This requires global coordination and support. Governments should also do more to support structural changes in their economies through the development of appropriate regulatory frameworks and financial incentives.

An environmentally-friendly growth strategy requires recognition of the seismic political forces at work. The transition to clean energies really isn't an orderly process. It is a series of agricultural and industrial revolutions, paving the way for a more rational use of available resources. Engineering will be important to this ... but a continually evolving and mature political strategy is the key. These revolutions need a push from both the public and the private sectors, along with consumers and investors. The good news is that all stakeholders increasingly recognize the tunes being played and the action that will be required.

Sustainable development and climate change will also have repercussions on the agricultural sector, which still comprises the backbone of our economy. Thus, proper awareness about the same and promoting sustainable agricultural and agro-food processing practices should be a policy priority.

Ultimately, the green transformation we need is nothing less than a revolution in attitudes. Creating that revolution and holding it together will require political allies whose power gets stronger the more the revolution succeeds. Decades ago scholars studying trade policy discovered that the same was true for globalization. Over time, free trade and its political support went hand-in-hand. The forces of sustainable development are at that same point today.

While there is much to celebrate, it is important that advocates for green growth do not overlook what those seeking free trade did not learn adequately – that a failure to be strategic, to deliver benefits for the bottom of the pyramid, and to remain relevant to the core mandate can generate a backlash that could derail the whole process.

The paths to sustainable development must be continually repaved in ways that align with what society is able and willing to support. The success of such a socioeconomic transformation needs leaders from a diverse range of fields including government, industry and finance having strategic vision, clear ambition, and a laser focus on execution and implementation. We have no doubt that they are found abundantly all over Maharashtra and India.

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Re-Instilling Resilience to Climate Change: A Necessity

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Introduction

The close relationship between climate change and sustainable development is indisputable.¹ Poor and developing countries, particularly lower and middle income countries, are the most vulnerable to being adversely affected by climate change and least capable of coping with the inevitable shocks to their socioeconomic and environmental systems.² Global warming has impacted the availability of basic resources integral to continuing survival, such as freshwater, food security, and energy. Extreme weather pattern changes have been induced by climate change, leading to increasing levels of floods and flood risk in low-lying coastal areas.³

These emerging trends reflect the frequency and magnitude of both floods and droughts which affect local weather and location of agricultural crop

growth. Ben Cook, researcher at NASA's Goddard Institute for Space Studies and Columbia University in New York City, has stated "Climate change is not just a future problem. This shows it's already affecting global patterns of drought, hydroclimate, trends, variability — it's happening now. And we expect these trends to continue, as long as we keep warming the world."⁴

According to climate forecasts, the future of fresh water poses serious challenges to safety of life, health, food and water access in some regions through floods and droughts. The question of adapting our infrastructure and redesigning drainage systems is no longer a theoretical consideration in light of the seriousness of the global future. Examination of these questions have informed and shaped the global development agenda through Rio Earth Summit 1992 and Paris Climate

Change Agreement of 2015.⁵ The Sustainable Development Goals to be achieved by 2030 explicitly expresses commitment



to protect the planet from degradation and calls on all Member States to take climate action. The Agenda for SDGs identifies climate change as "one of the greatest challenges of our time" and underscores the concern for all countries' ability to achieve sustainable development.⁶

SDG 13 focuses on the integration of climate change measures in domestic policies in furtherance of its clarion call

1 Climate Action and Sustainable Development are Inseparable, *IISD* 2019 <https://sdg.iisd.org/commentary/guest-articles/climate-action-and-sustainable-development-are-inseparable/>.

2 Climate Change, *Sustainable Development Goals Knowledge Platform* <https://sustainabledevelopment.un.org/topics/climatechange#:~:text=The%20links%20between%20climate%20change,social%2C%20economic%20and%20natural%20systems>.

3 How Climate Change is making record-breaking floods the new normal, *UNEP* <https://www.unep.org/news-and-stories/story/how-climate-change-making-record-breaking-floods-new-normal#:~:text=Floods%20are%20made%20more%20likely,climate%20change%20increase%20flood%20risk>.

4 Ellen Gray, Earth's Freshwater Future: Extremes of Flood and Drought, *NASA* 2019 <https://climate.nasa.gov/news/2881/earths-freshwater-future-extremes-of-flood-and-drought/>.

5 Impacts of Climate Change on Sustainable Development Goals Highlighted at HLPF, *UNFCCC* 2019 <https://unfccc.int/news/impacts-of-climate-change-on-sustainable-development-goals-highlighted-at-high-level-political-forum>.

6 Ibid (n 2).

for a unified approach to combating climate change through action that targets improvement of education, awareness generation and institutional capacity building. Climate change mitigation, adaptation, impact reduction and increased

It is crucial to effectiveness of all mechanisms to have wide, inclusive participation of all States in a cohesive international response to climate change and sustainable development.

planning and management in least developed countries and Small Island countries are some suggested mechanisms in furtherance of a strategy to combat this phenomenon. It is crucial to the effectiveness of all mechanisms to have wide, inclusive participation of all States in a cohesive international response to climate change and sustainable development.

Through this paper, the author examines the approach of South Asia in Bhutan, Bangladesh and India in combating climate change while ensuring sustainable development. The second part of the paper analyzes the role of water as a risk factor and tool that can be utilized to address impacts of climate

change and assist in achieving SDGs. The third part of the paper studies the significance of Ecosystem Based Adaptation (EbA) in providing a sustainable solution to the rising challenges of climate change and studies the case of Meghalaya to demonstrate models of efficacy that are replicable.

1. South Asia's Approach to Climate Change and Sustainable Development

The South Asian region comprises of Bhutan, Nepal, Bangladesh, India, Sri Lanka and Maldives. Topographically, the area ranges from Himalayan Peaks to fertile deltas, peninsula and islands. The climate change impacts on this region are equally diverse, including glacial melts, forest fires, landslides, rising sea levels, soil erosion, floods and droughts. More than half of the world's poor of over 600 million people, who depend on climate-dependent sectors like agriculture, forestry and fishing are facing the repercussions of aggravated natural disasters.⁷ The resulting impact on health, biodiversity, agriculture, food security, water, and energy continue to be adverse as climate change's effects intensify on major cities and migration grows.

India's coastline is prone to erosion with 26% of the length vulnerable, resulting in 450

hectares of land being lost every year. South Asia remains extremely risk prone to natural disasters. Besides floods which account for more than 50% of 900 disasters reported in the last four decades in the region, there are disturbing increases in incidence of landslides, windstorms, sea surges and cyclones.⁸ This risk is only likely to increase with changing precipitation patterns and rising temperatures with projections of intense droughts in India and Bangladesh and landslides and outburst floods in Bhutan and Nepal.

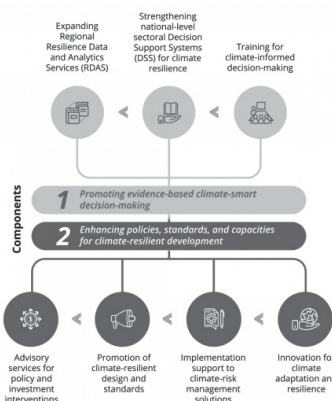
1.1. Regional Responses

In this context, the South Asian region has responded by reaffirming their commitment to work unitedly in addressing common climate change and developmental challenges which have a transboundary effect. For example, in 2007, the SAARC Council of Ministers adopted the SAARC Declaration on Climate Change calling on States to collectively examine, assess and address climate change risks and impacts. The Dhaka Declaration on Climate Change of 2008 envisioned a three year action plan that urged international partnership and promised additional financial support to meet the challenges of the phenomenon. During this conference of the SAARC countries, the Committee

⁷ Climate Change in South Asia: Strong Responses for Building a Sustainable Future, *Asian Development Bank* 2020 <https://www.adb.org/sites/default/files/publication/27475/climate-change-sa.pdf>.

⁸ Why is South Asia Vulnerable to Climate Change? *World Bank* 2009 <http://go.worldbank.org/OJ4FWPUB10>.

observed the practice of South Asian countries in responding to climate change



through National Action Plans for Climate Change.⁹ The SAARC Summit of 2010 concluded with the outcome of the Thimphu Declaration on Climate Change, envisioned with the goal of a “Green Asia” which set an ambitious goal “for South Asia to lead the world in furthering renewable energy, cutting carbon emissions, and reducing poverty while strengthening resilience to climate change.”¹⁰

1.2. Country Specific Responses: Bangladesh

The Bangladesh Government in 2004 established Climate Change Cells (CCCs) in climate-relevant ministries to include climate change concerns in development efforts. In 2010, with the Thimphu Declaration, a Climate Change Unit was instituted in

the Ministry of Environment and Forest to facilitate and coordinate with the CCCs and manage climate change funds. The Government also adopted the Bangladesh Climate Change Strategy and Action Plan with focus on six areas of food security and health; disaster management; infrastructural development and adaptation; knowledge management; mitigation and low-carbon development; capacity building and institutional resilience.¹¹

To emancipate its urban cities with climate resilience strategies, the Urban Governance and Infrastructure Improvement Project was initiated in 2008 which works towards improvement of environment, quality of life, reduction of GHG emissions and strengthening climate resilience by capacity building of secondary towns and access to urban infrastructure.¹³ In a bid to empower its rural communities, the Bangladesh Government is preparing a Strategic Program for Climate Resilience to “fortify embankments, raise coastal greenbelt; improve drainage, connectivity and water resource management; promote climate resilient agriculture and food security; and ensure that drinking water is safe in vulnerable coastal

communities.”¹³ The Asian Development Bank supported Second Crop Diversification Project in Bangladesh since 2016, and has worked towards identifying and developing “new varieties of resilient crops and alternative cropping patterns capable of withstanding weather extremes, flooding, pests, and disease.”¹⁴ These efforts have been founded on environmentally sustainable growth which ensures food security in a climate change affected country.

1.3. Bhutan

Bhutan completed its National Adaptation Programme of Action launched in furtherance of its commitment to integrate climate resilience and sustainable growth, in 2006.¹⁵ Bhutan’s policy guidelines of Vision 2020 and Good Government Plus¹⁶

Through its National Water Mission, India prepared a strategic framework for meeting climate challenges in the water sector, improving water-use efficiency and capacity building on integrated water resource management

9 Regional Cooperation on Climate Change Adaptation and Disaster Risk Reduction in South Asia 2008 <https://www.ifrc.org/docs/IDRL/Regional%20strategies%20on%20disaster%20management/Regional%20Cooperation%20on%20Climate%20Change%20Adaption%20on%20Disaster%20Risk%20Reduction%20in%20South%20Asia.pdf>

10 <https://mea.gov.in/bilateral-documents.htm?dtl/3886/16th+SAARC+Summit+Declaration+29+April+2010>.

11 https://www.iucn.org/downloads/bangladesh_climate_change_strategy_and_action_plan_2009.pdf.

12 <https://www.adb.org/projects/40559-013/main>.

13 Ibid (n 7).

14 <https://www.adb.org/projects/40534-013/main#project-pds>.

15 <https://unfccc.int/resource/docs/napa/btn01.pdf>.

16 <https://www.greengrowthknowledge.org/sites/default/files/downloads/policy-database/Bhutan%20Vision%202020%20L.pdf>.

energy resources that include hydropower and solar energy. In furtherance of its obligations under Kyoto Protocol, prior to the Paris Agreement, Bhutan has focused on integrated water resource management, renewable energy generation and Clean Development Mechanism (CDM) measures.

To meet the demands of its urban populace and improve internal connectivity, Bhutanese Government in collaboration with Asian Development Bank is devising a Bhutan Transport 2040 Integrated Strategic Vision to propel long-term sustainable transport infrastructure development.

Through its CDM efforts, Bhutan registered the first cross-border project called the Green Power Development Project with UNFCCC in 2010. The Project's focus was targeted towards the rural poor who were provided access to clean, renewable energy through extension of the power grid and provision of hydro-electricity to over 8000 rural households and off grid areas. Carbon trading of this clean energy resulted in lowering GHGs of coal-dominated Indian power market by 500,000 tons per year.¹⁷ To meet the demands of its urban populace and improve internal connectivity, Bhutanese

Government in collaboration with Asian Development Bank is devising a Bhutan Transport 2040 Integrated Strategic Vision to propel long-term sustainable transport infrastructure development.¹⁸

1.4. India

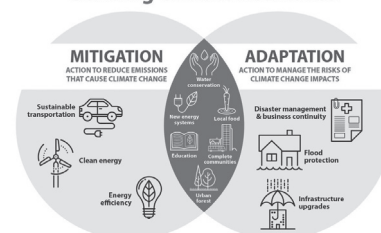
India's National Action Plan on Climate Change commenced in 2008 under the aegis of which eight national missions were established to specifically address several diverse but interlinked attributes of climate change mitigation and adaptation. These include National Mission on Solar Energy, Enhanced Energy Efficiency, Sustainable Habitat, Water, Sustainability of Himalayan Ecosystem, Green India, and Agriculture and Knowledge on Climate Change. Through its National Water Mission, India prepared a strategic framework for meeting climate challenges in the water sector, improving water-use efficiency and capacity building on integrated water resource management.

2. Water as a Tool to Combat Climate Change and Achieve Sustainable Development

Through their satellites NASA scientists are monitoring and evaluating the impact of climate change on water distribution.¹⁹ Climate change has and will continue to affect the

availability, quality and quantity of water required to meet basic human needs, threatening the enjoyment of basic human rights to safe water and sanitation.²⁰ The deterioration of water crisis is a blatant obstacle to the achievement of SDG 6, guaranteeing access to safe drinking water and sanitation to all persons. Presently, 2.2 billion people do not have access to potable water and 55% of the global population lives without sanitation.²¹ And water use is rising by 1% annually. In this scenario, increased frequency and intensity of extreme weather disasters like storms, floods and droughts have been estimated to aggravate in countries experiencing "water stress" already.

Building Climate Resilience



Moreover, water quality will be affected adversely by rising water temperatures and decreased dissolved oxygen which will impact self-purification capacity of freshwater basins, threatening aquatic biodiversity. Pathogen contamination due to floods or concentration of disease causing microbes in drought prone areas

17 Ibid (n 7).

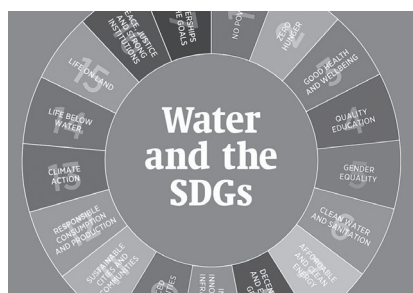
18 Ibid.

19 Ibid (n 4).

20 World Water Development Report 2020- Water and Climate Change, UNESCO <https://en.unesco.org/themes/water-security/wwap/wwdr/2020>.

21 Water Resources an Essential Part of the Solution to Climate Change, UNESCO 2020 <https://en.unesco.org/news/water-resources-essential-part-solution-climate-change>.

impact health, food production and results in displacement of people.²²



2.1. Adaptation and Mitigation

To combat the impending crisis, we need to change the way we use water to strengthen ecosystems and reduce extreme disaster prone risk which has led to unpredictability, scarcity and increased pollution of water. UNESCO's Director General stressed "water does not need to be a problem – it can be part of the solution. Water can support efforts to both mitigate and adapt to climate change."²³ This could include using lesser quantities of freshwater for daily use and emphases on rainwater for agricultural purposes, sanitation and generally improving wastewater management systems.²⁴ The UN Water Report identifies and recommends two complementary strategies for implementation- adaptation and mitigation, as solutions to the inevitable water crisis.²⁵

Adaptation strategies combine natural, technical and

technological options with socio-institutional measures that mitigate and exploit the limited positive repercussions of climate change to benefit local levels at a rapid rate. Mitigation comprises of human actions required to reduce GHGs emissions while exploiting carbon sinks to decrease atmospheric CO₂. A cited example of successful models that combine the two strategies is that of the Green Climate Fund Project in Sri Lanka. The Project aims to enhance irrigation systems in vulnerable rural communities and propagate climate-smart agricultural practices in three river basins, offering adaptation and mitigation benefits that conserve and protect water sources.

The advantages of water and climate change initiatives with cohesive adaptation and mitigation strategies include employment generation, improved public health, poverty reduction, gender equality and alternative livelihood creation that act as an incentive for climate action funding for donors.²⁶

2.2. Nature-Based Solutions and Climate Resilience

The IUCN recommends nature based solutions such as

mangrove forest plantations to protect coastlines from storms and act as water catchment areas that absorb excess water runoff and replenish depleted groundwater tables.²⁷

Climate resilience on the other hand is strengthened through "healthy ecosystem services that rely on well-functioning river basins." Towards that end, suggestions include placing adaptive Integrated Water Resources Management at the centre of planning and investment for climate change action and adaptation. This is integral to mitigation actions' success due to the inextricable dependence of reduced GHGs emissions on access to reliable water resources. Another recommendation is to promote investment and implementation of natural infrastructure (like mangrove forest plantations mentioned above) that incorporates restoration and sustainability of ecosystems. The last is to support actions at scale to develop climate resilience through an integrated approach to "watershed management, sustainable infrastructure [development], empowerment and learning through adaptive institutions."²⁸

²² Ibid.

²³ Ibid.

²⁴ The link between Water and Climate Change, *Henkel* <https://www.henkel.com/spotlight/2020-03-20-saving-water-and-tackling-climate-change-1046204#:~:text=The%20link%20between%20water%20and%20climate%20change&text=Changing%20the%20way%20we%20use,more%20polluted%2C%20and%20more%20scarce.>

²⁵ Ibid (n 20).

²⁶ Ibid.

²⁷ Water and Climate Change, *IUCN Issues Brief* 2015 <https://www.iucn.org/resources/issues-briefs/water-and-climate-change>.

²⁸ Ibid.

3. Ecosystem Based Adaptation and Climate Resilience

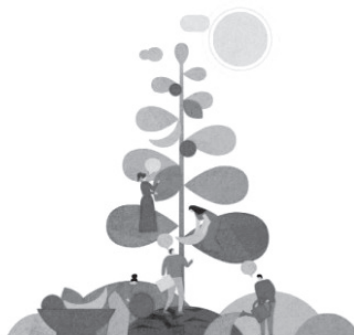
To effectively implement adaptation and mitigation strategies, ecosystem-based adaptation (EbA) are a significant tool. Since 2009, IUCN has promoted the use of EbA as a nature-based solution to address the negative impact of climate change on communities and their environment.²⁹ The integral role of ecosystems in climate adaptation is a well-established principle of international law, recognized in the UN Framework Convention on Climate Change, Convention on Biological Diversity and the UN Convention to Combat Desertification.

Restoring and conserving wetlands has been described as being of “critical importance” since they store twice as much carbon as forests, purify water, provide a habitat for ecosystems of dependent species and play a preventive role in floods. The success of this model in combating effects of climate change and indiscriminate hunting of terrestrial and avian species can be seen in the case of Meghalaya.

The Integrated Basin Development and Livelihood Promotion Programme, launched in 2012, over a near decade of its existence

Our Nature. Our home. Leave no one behind.

ECOSYSTEM-BASED ADAPTATION Nature-based Solutions to Climate Change



Restores, maintains and improves
the surrounding nature in a participatory way

has significantly boosted the Meghalaya economy (previously majorly below poverty line) and restored its natural infrastructure through EbA. Another mechanism to improve climate resilience and combat its impact on food security is the implementation of conservation agriculture that results in minimal disturbance to soil, reduces carbon emissions and preserves water needed in intensive farming irrigation.³⁰

Recognizing the need for adaptation financing to meet costs, Inger Andersen, Executive Director of UNEP has said “We need a global commitment to put half of all global climate finance towards adaptation in the next year. This will allow a huge step up in adaptation — in everything from early warning systems to resilient water resources to nature-based solutions.”³¹ Adaptation measures should

include installing systems for climate information and early-warnings to people in affected areas.

Conclusion

The endeavor of this paper has been to reiterate the close ties of climate change and sustainable development. In the aftermath of the Covid-19 pandemic, the significance of climate change that is upon us and “for which we do not have a vaccine” is underscored by its close links to public health, safety and life. Through an examination of the South Asian region’s approach to climate change and sustainable development in rural and urban areas by citing the cases of Bangladesh, Bhutan and India, the author has demonstrated the interlinked relationship between climate change and sustainable economic growth in developing countries which are most vulnerable to vagaries of disturbed weather-pattern induced disasters. The impact of climate change on water is mutually reinforced and the paper reflects the utility of adopting water management as a tool to combat climate change through adaptation and mitigation strategies that are nature-based and strengthen climate resilience. Finally, the author reflects upon the efficacy of ecosystem-based adaptation models as a nature-based tool to successfully mitigate climate change impacts on environment and societies.

29 Ecosystem Based Approaches to Climate Change Adaptation, IUCN <https://www.iucn.org/theme/ecosystem-management/our-work/ecosystem-based-approaches-climate-change-adaptation>.

30 Megan Rowling, Water in an under-used weapon in Climate Change Fight, Thomson Reuters 2020 <https://www.reuters.com/article/global-water-climate-change-idUSL8N2BD7OJ>.

31 ‘The World is Not Prepared for Climate Change- UN Environment Chief’, Earth.Org 2021 <https://earth.org/the-world-is-not-prepared-for-climate-change/>.

Revisiting Sustainability: Chances and Challenges

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Sustainability has been clarified and explained much more than being understood. Especially, in the climate change milieu, sustainability has almost become a conduit for delivering solutions to mitigate, as well as adapt to the impacts of change. Although, there is no reason to connote sustainability as a paradigm for environmental conservation neither as a panacea to combat climate change, yet it is done promiscuously. Probably that has led to the seventeen faceted perception of sustainability, commonly known today as the sustainability development goals. Rather, in actuals, it is just a 'tool kit' for development in this anthropocene, designed with wisdom and used in ignorance. If this appears to be an oversimplified statement, then one must explain, why the trade-offs between the 17 sustainability goals have been so difficult to mitigate in this hegemony of sustainability policies?

Ex-post the industrial revolution, in the second half of the 19th century, western societies had realized that their economic and industrial activities had a significant impact

on environment and the social balance. It was then thought to be a de facto reason for the sequential socio-economic and ecological crisis like the American hyperinflation in 1923, debt shocks of 1982 in developing countries or the Mercury crisis of Minamata in 1956 and the 1986 Chernobyl nuclear disaster etc. They apprehended that it is better not to borrow the future from our children rather gift them in appreciation of a sustainable tomorrow. That was the origin of notion about sustainability. However, with changing time and space, sustainability metamorphosed into various archetypes like returns on investments, profit volume ratio, conservation and species richness, built capacities in communities, or simply decarbonizing the economy.

In 1968, ecologist and philosopher Garret Hardin in his essay 'Tragedy of Commons' argued that if individuals act independently and stay focused on pursuing their individual interests, they'd end up going against the common interests of their communities and exhaust the planet's natural resources.

One can be sure of the fact that Garret didn't even know about the commons in global south, who on average uses approximately 60 biological species for his sustenance that he neither grows nor protects, but the resources for him do not end up. This is actually an intricate network of consumer-supplier-producer business linkages that is sustained on a delicate balance of responsible consumption and production. Hardin believed that since man is compelled to procreate unlimitedly the resources of this planet would eventually get overexploited. Knowing this brink and accepting shared responsibility of preventing the fall is in one way - sustainability. However, this has certain predicaments, the first of which is 'education'. Lifestyle education.

To understand, what are the other predicaments and why at all do they exist, one must also understand the genesis of the doctrine of Sustainable Development. Way back in early 1970's, the term 'Sustainable Development' came into use after the Cocoyoc (Declaration on Environment and Development.

But only in the ‘Stockholm Declaration’ 1972, the doctrine of “Sustainable Development” was discussed at large and the World Commission on Environment and Development elaborately documented it in 1987 in its report “Our Common Future”. There it read, “Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and wellbeing and he bears a solemn responsibility to protect and improve the environment for present and future generations.” Probably, this is one reason; sustainability is often aligned with conservation of environment. Even in India as well, the first impression of sustainability was faintly observed in 1976 when in the 42nd amendment to the Constitution, Article 48-A, specifically dealt with Environment Protection and its improvements. Later, Hon. Supreme Court of India interpreted and implemented the doctrine saying that “Sustainable Development means what type or extent of development can take place, which can be sustained by nature or ecology with or without mitigation”. It also recognized that adherence to the principle of Sustainable Development is now a constitutional requirement. It’s imperative that the momentum of the doctrine gradually accentuated it as a new paradigm under the aegis of global

leadership and several honest attempts led to the formulation of the millennium development goals and then the SDGs.

However, let’s take a different look on the doctrine with a scenario modelling approach. Considering that the anthropogenic development processes like urbanization, infrastructural development, population explosion etc and the natural development processes like environmental events, ecosystem services, vegetation dynamic etc to be two hypothetical systems, both of which are highly dynamic and as well interacting regularly at an interface, we find in the given scenario, level of randomness (entropy) in both the systems will get amplified by such interactions. Now, both would try to be resilient to the changes due to raised randomness and the point of equilibrium will, therefore, keep on shifting. While this is seemingly possible, we often keep assuming that the sustainability is nesting on the point of equilibrium and get concerned about it, without making any effort either for regulating the randomness or augmenting the abilities to be resilient to changes. This delays all efforts in accomplishing sustainability, as it is assumed, and therefore it fails to qualify as a paradigm for development.

In real-life scenarios of a consumer economy, as the GDP increases the consumerism too

gets a lift and the demands for cash flow and credits increase consequently. Perusal of case studies from rural areas of eastern Indian states, wherein 75-80% populace is engaged in agrarian economy, reveal that the demand of cash is more than credits and this push marginal communities, especially youth, to temporarily migrate to urban hubs as casual laborers and settles in the peri-urban space. While this increased supply of laborers irks competitions (randomness) for livelihood opportunities in the peri-urban space, migration of farm workers brings a dip in primary productivity in rural areas. The commonness in each situation lies in the fact that both communities start depending more on ecosystem goods and services, ravishing the natural capital.

On the other hand, expansion of credit in urbanites produces consumer ennui because there is a marginal return to consumption and market experts recommend investment in tangible goods. Charles Hugh Smith in ‘Business Insider’ (<https://www.businessinsider.com/the-devolution-of-the-consumer-economy-2011-4>) argues that as demand will eventually have to stagnate in a consumer economy, credit too will one day be denied. This would lead to another market randomness and economic fix triggering reverse migration. Policy regulations therefore, must ensure sustainability, to bridge this divide.

On the contrary, neoliberal policies have arguably aggravated the rural challenge as public investments in rural infrastructure have generally declined and the focus has shifted to the metropolitan urban “economic growth machines”. The metropolitan development authorities are now being compelled to expand over the peri-urban space to increase the land bank and subsequently rural productive land is being lost to peri-urban, diminishing the primary productivity further. Like a cherry on the cake, now let us add to it the randomness of natural systems, especially erratic climate events like storms, floods and droughts due to El Nino Southern Oscillation (ENSO) or Indian Ocean Dipole (IOD) causing frequent disasters and driving the sustainability mark wayward.

There has been a perceptible transformation in regard to global environmental discourse and how developing south have been responding to it. Apparently, the dynamics of both are correlated. The reciprocal interaction between the two signifies a remarkable transformation of issues related to environmental conservation into global agenda of sustainable development. The need for adaptation to Climate Change to build climate resilient societies can be an opportunity for creating sustainable enterprises that can eliminate poverty, as

well as conserve natural resources. Ecosystem-based adaptations (EbA) at community-ecosystem interface, becomes essential to seize such opportunities. Though, it is equally important to ensure that the livelihood of the local communities shouldn't be adversely impacted while seizing such opportunities.

Even if there is a trade-off, the opportunity costs incurred by the members of the community need to be recompensed and that can be done through Payments from Ecosystem Services (PES). That is a much better way to be resilient to change and accomplish sustainable development as a solution set for inclusive growth in the climate milieu.

The potentials of such nature-based solution or ecosystem-based adaptations to provide the intended climate benefits, however, need to be thoroughly evaluated. It's obvious that trade-offs can arise if climate policies encourage EbA with low biodiversity value, leading to maladaptation. In nearing a better sustainability mark, species richness and intensification of ecosystem services in socio-ecological production landscapes are key determinants and compromising with these will only increase climate susceptibility. On the other side, in a dearth of appropriate policy paraphernalia, successful interventions are often getting transformed to

private capitals under the aegis of socially influential allies, ignoring the norms of inclusivity and community governance. Despite such sustainability caveats, well planned nature-based solutions that avoids damaging bio-diverse ecosystems and respects social safeguards as well, can offer good mitigation opportunities with key benefits for locals. Such solutions can prevent internal displacements, temporary migrations, social abuses and gender inequity, all of which can recuperate sustainability in its true perspective for the climate normative policies.

The latest IPCC report demonstrated that big changes will need to happen quickly regarding the reduction of carbon dioxide emissions to keep the global temperature below 2°C and prevent its devastating impacts on both life and livelihood. In such case, no soup of sustainability would be able to pervade through unless it is a consolidated effort. Sustainability alone is no panacea for ‘change management’. There are many actors working with different audiences in different areas of sustainability. They share the same goal – to raise consensus on this topic and create conditions for it to proliferate. One of these are the UN organs, where different teams actively work on multiple campaigns, apart from keeping the dialogues open between global stakeholders. On the business side, the World

Business Council for Sustainable Development (WBCSD) is helping its member companies to accelerate their green businesses to create a sustainable world.

There are also some certifications that reward (mostly through a stamp recognition) the businesses with the best practices for the planet, such as the B-Corp movement, the Rainforest Alliance, the Fair trade Foundation or the Conscious Capitalism Movement. This is furthered with government incentives like Tax Holidays or MSME boosters etc. If sustainability seems to be therefore, a global business, there is nothing wrong in it. It's more important to understand, who benefits? Entities like the Mac Arthur Foundation are opening the way when it comes to the circular economy and how societies and businesses can align how they use natural resources with the way nature does it. Aligning businesses' operations across their supply chains is also allowing different and ecological business models to develop – such as growing mushrooms from coffee leftovers.

Even then, by 2030 when we take stock of the sustainability quotients in global development there will be few grey areas of derelict outcomes like freeing commons from the poverty-vulnerability trap, or the water-energy nexus, or the technology diplomacy, which would set

some more goals. Whether this is deliberate or accidental is surely a point to debate, but there is no iota of doubt that had there been some scope to brew sustainability in the rural agrarian economy, these shady areas would have been fairer.

Ex-president of India, Dr. A. P. J. Abdul Kalam had conceptualized a social rocket too. He named it 'PURA', Provisioning Urban Amenities to Rural Areas. He had proposed that urban infrastructure and services be provided in rural hubs to create economic opportunities outside the cities. Probably to prevent this rural to urban temporary migration of youth, he recommended physical connectivity by providing roads, electronic connectivity by providing communication networks, and knowledge connectivity by establishing professional and technical institutions in an integrated way so that economic connectivity will emanate in spontaneity. PURA had successfully passed the pilot phase but the government, later thought it to be a flop show and unsustainable, may be because of the knowledge economy component. Critics opined that the more ignorant our people are, the more sustainable the businesses will be. That too portrays another perception of sustainability.

However, in this year's budget 2020-21, National Bank

for Agricultural and Rural Development (NABARD) committed a 33% hike in RIDF (Rural Infrastructure Development Fund). This mere 1% share of our budget can still create havoc, if judiciously allocated. This must substantially promote ecosystem-based adaptation, rejuvenate local biodiversity, strengthen local institutions and empower women. Though all of these are quotients of knowledge yet they empower the commons to be resilient. These are the minimal investments in the business of sustainability and the returns thus reaped can only gift the promised tomorrows to our children. This would have been still easier to achieve, if the economic destruction of our civil societies and non-profits at the grassroots levels could be delayed.

The organic connect to the communities at the bottom of the economic pyramid is wealth and any democratic nation failing to recognize that would stand out to be an ineligible heir to sustainable development. It's true that over space and time we all gain knowledge of the external world and inadvertently become conscious intelligences, simply by the perception of our differences. Being blind, we start searching in a dark room for a black hat that is not there. Let that not happen with sustainability.

Textile Waste: The Neglected Environmental Hazard

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India's association with textiles dates back to 4000 BC and is among the oldest in the world (Victoria and Albert Museum 2013). Not only have textiles been integral to every aspect of the Indian identity, be it cultural representation, art, royalty etc., but various trade systems were also formed based on the export of fabrics of Indian origin. Not only are textiles a representation of the cultural diversity of the country in the form of labour-intensive hand-woven textiles, but India is also faring well in the capital-intensive modern mills sector. Apart from being among the oldest sectors, the Textiles sector's contribution to the economy has also been substantial. In fact, it contributed 7 per cent to the industry output (by value), 2 per cent to the GDP, 12 per cent to the export earnings and controlled 5 per cent of the global trade in textiles in 2018–19 while also contributing USD 100 billion to the domestic textiles and apparel market in 2019–20 (India Brand Equity Foundation 2021).

Simultaneously, the sector also provides formal employment to around 4.5 crore workers which includes 35.2 lakh handloom workers.

Textile Waste Generation

With a burgeoning population of estimated 1.39 billion and increased purchasing power, Indians are not only consuming more than ever, but it has also led to generation of more waste than ever.



Daily Resale Market by the Waghri Community in Mumbai

Source: Bombay Recycling Concern

Some estimates suggest that one fourth or 25 per cent of fabric is wasted during the apparel making process and directly contributes to pre-consumer/industrial waste. The linear approach to manufacturing

textiles and increased shift towards fast fashion has resulted in increased textile production and consumption than ever before. Simultaneously, low re-use and recycling of these textiles has also resulted in higher waste generation. Directly and indirectly, this has resulted in increased use of land, water, fossil fuels and amplified air, water and soil pollution. Nearly, 5 per cent of all landfills are consumed by textile waste (which typically takes a century to break down) and about 20 per cent of pollution of fresh water is due to textile treatment such as bleaching, dyeing and finishing (Scott 2015).

With technology becoming an essential part of our lives, the influence of social media has never been more potent. Capitalistic tendencies and the constant desire for the rich to become richer has resulted in most social media portals subscribing to algorithms that show the consumer exactly what he/she/they want, desire or even

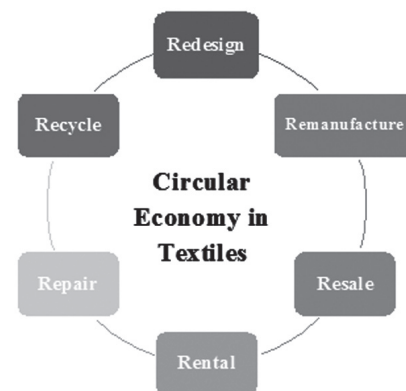
think about. In this day and age of fashion influencers and bloggers, their ability to influence large crowds is not unknown and the impact it has had on consumption patterns is daunting. Making fashion available at the click of a button and the ease of trying and returning products, all from the comfort of our beds has resulted in mass consumption of textiles. This coupled with poor and ineffective labour and environmental laws has allowed conglomerates to employ cheap labour, often under hazardous conditions, with little or no regard for the environment and produce products at throwaway prices, thereby further tempting consumers to consume more. Textile waste is, in fact, the third largest source of solid municipal waste in the country.

Circular Economy

The conversation around textile waste is gaining momentum domestically. While the western world has accelerated its shift to a more circular model in apparels rather than a linear one, India still has some catching up to do. The Ellen MacArthur Foundation defines Circular Economy as one that is “restorative and regenerative by design and provides benefits for business, society, and the environment. In such a system, clothes, textiles, and fibres are kept at their highest value during use and re-enter the economy after use, never ending up as waste.”

Lack of awareness about the environmental and social cost of textile waste has been a constant roadblock in the move towards a circular economy. Moreover, increased purchasing power, economic growth, and expansion of the middle class have resulted in fulfilment of not just needs but also desires. According to McKinsey & Company, the average consumer purchased 60 per cent more clothing in 2014 than in 2000 but retained it for half as long. However, the impacts of environmental degradation, global warming and overall environmental damage have become more pertinent thanks to the power of the internet the need for switching towards a circular economy is getting the attention it needs! The millennial generation is more aware than its predecessors and is acknowledging the need to shift to a circular business model, where not only is the longevity of the garment an important consideration but also the possibility of completely recycling, redesigning or reusing the garment at the end of its life. In 2020 alone, social media platforms like Instagram saw a flood of thrift stores. Similarly, rental and resale models have seen a growth spurt in the last 5 years. However, the end goal still remains blurry since India is currently experiencing a surge in fast fashion, and big brands are using this opportunity to their advantage. Initiatives, if

any, from their end are not large enough to counter the hazards of fast fashion.



The Gender Lens

Despite formally employing 4.5 crore individuals in the textiles sector, waste workers who are the main pillar of textile waste management are neither well-represented nor are they accounted for in the organized labour workforce. As awareness about the impact of our consumption habits looms large, sustainability and circularity in the textiles value chain have become active conversations. However, the marked power asymmetry between suppliers and global buyers and a large number of intermediaries operating on thin margins continues to pose road-blocks for this transition (UNEP 2019). About 80 per cent of all people employed in the garment industry are women, many of whom do not have rights and protections and only about 2 per cent of them earn a living wage (BWSS 2019). For centuries, society has been feeding into the gender gap and capitalist tendencies have done

nothing to bridge it. If anything, it has widened it further. Women and minors continue to be a vulnerable population and have been denied their rights, sometimes even basic human rights, in most garment factories. The switch to sustainable fashion will be good for the environment but may not be equally good for the female work-force in general. Unless laws and regulations are predefined and imposed on big corporations, women workers will continue to be vulnerable. Priority needs to be given to stronger governance to ensure industry-wide change.

The Impact of Covid

Apart from the slow growth of circular fashion in India and gender disparity within the textile industry, COVID 19 has posed an even bigger problem for the industry. Not only has it disrupted the demand and supply chain for apparels, it has also exposed the terrible reality of the supply chains in fashion and the lack of commitment to the workers on behalf of the employers. While the attrition rate in almost all sectors was high, the textile industry saw a particularly high attrition rate due to the reduced sales revenue of the companies. Not only that, the garment workers were not paid their dues which led to the rise of the #PayUp Campaign where big brands like Nike and Amazon among others were called out for shying away from

their legal responsibility of paying the dues of the garment workers. As primary profit makers, it is the moral responsibility of big brands to prevent their workers from having to bear the brunt of the pandemic and being vulnerable. However, what transpired was completely different as many workers were laid off and left penniless in the midst of a pandemic. While the pandemic has opened our eyes to the cost we will have to bear if we continue to be cruel to the environment, it has also opened our eyes to the capitalist tendencies of the big conglomerates and how much they value their profits over the needs and rights of their already under paid labour force.

What Can We Do?

Currently, due to the consequences of lockdown and social distancing measures, many retailers are facing unprecedented challenges in dealing with the dead stock resulting from clothes and accessories they were not able to sell in time for the intended season. This is all happening at a time when over USD 500 billion of value is being lost annually due to clothing under-utilisation and lack of recycling fashion. Two circular investment opportunities for a low-carbon and prosperous recovery 7-8 2 time when the massively environmentally detrimental and wasteful nature of the industry is becoming increasingly more urgent and scrutinised.

• At the Country Level

There is much to be done on the policy side to incentivize circularity at the systems level. There must be a major shift to incentivize or require the use of secondary or recycled materials, for example, by placing taxes on products that use only virgin materials. The UK has taken a step in this direction by introducing a tax on plastic packaging that has less than 30% recycled content.

There must also be a major investment in infrastructure so that recycling can be expanded or even compulsory. To retain the greatest value possible of the material, innovative technologies and processes enabling clothing-to-clothing recycling should be prioritized over those which down-cycle materials. For example, through its chemical recycling process, Aquafil group, Italy, is able to produce recycled nylon at a competitive price compared to virgin nylon. The proposed European Green Deal sets out many similar policies, including a Circular Economy Action Plan.

As more and more governments introduce policies that encourage recycling and reuse, and as consumer awareness around sustainability continue to grow, companies that adopt circular business models will find

themselves at a clear business advantage.

• At the Business Level

For companies, the consumption issue is often the "elephant in the boardroom," as the fundamental principle of most business models is selling more products to more people. Disrupting that mentality will require business innovation, policy support and consumer demand.

We are seeing many new innovative business models shaping up in the textiles and fashion space that address the consumption issue. For example, renting clothes and thrift stores for resale of clothes are becoming popular among the more environmentally-aware younger generations in India. Businesses that are quick to adapt to these new trends are sure to see a positive reflection of it on their cash flow. Many fast fashion brands are quick to realize this and have launched unrealistic environmental targets for marketing gains, commonly referred to as "green washing". For example, H&M's circularity initiative has set an ambitious target considering the fact that, while the recycling facility has collected around 34,000 tons of waste over the last three years, equivalent to the weight of 178 million T-shirts,

H&M as a company currently produces somewhere between 550 and 600 million garments annually. And though in 2015 H&M reportedly produced 1.3 million garments with closed loop material, it has an extremely long way to go before reaching anything close to sustainability. In its "Roadmap towards a fair living wage" H&M promised 850,000 workers a living wage by 2018. H&M happily took the credit for that commitment in 2013, but today not a single worker is actually making a living wage. There are several blind spots in the way H&M works which as consumers we have to be wary of.

• At the Citizen Level

1. Consume Less

Even the greenest garment uses resources for production and transport to your home, creating some environmental impact. The root of our problem lies in our excessive consumerism: we buy a minimum of 10 garments a year, while our grandmothers bought very few. We need to prioritize "need" over "want" to limit our environmental footprint. Frugality and minimalism are at the core of being a conscious consumer.

2. Consume Better

We not only need to consume lesser, but also consume better.

Invest in quality products that are made for longevity and follow an ethical supply chain through its production from fibre to store. Millennial today are catching on to the new trends in textiles and technology. They are choosing garments and materials engineered to last longer. Some of the most sustainable materials are natural fibres (cotton, hemp, linen) and futuristic/innovative fabrics. They are ditching cheap synthetics (polyester, nylon, spandex). These fibres are not grown naturally, and instead come from chemicals and polymers and play a huge role in the pollution from micro plastics.

3. Advocate and push for sustainable and socially conscious supply chains

Every purchase is a vote for the kind of system we want. We must be vocal about our concerns for the environment and for transparency in supply chains. We must push for systems that are not exploitative of people or our planet. We must do our research and pay close attention to how brands use the term "transparency." Do they really mean it and prove it? Does the brand take initiatives with the fabrics used? Are they committed to ethical/sustainable practices?

Role of Tourism in Mitigating Climate Crisis

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Introduction

How many of you agree that tourism can help reduce climate change? Well, even if you don't, you will be convinced enough to agree with me by the end of this article. Tourism is one of the major contributing factors to climate change and both environmentalists and tourism industry have not paid enough attention to this. When one chooses to go on a vacation, he/she takes a flight/train or goes by road. They book a hotel which is primarily a concrete construction. So, most of the beautiful tourist spots covered with mountains, forests and waterfalls are turning to concrete jungles, key examples being Shimla, Manali, Ooty, Munnar and now even the untouched North East. Then, you eat in restaurants which generally serve the food which you get in your city, for which they have to transport several ingredients from the metros and bigger cities. For instance, if you demand a Pizza in Jibhi, (Himachal Pradesh) just imagine from how far the ingredients must be coming from and so much carbon emission is being done. Then, you choose to participate in different activities like Paragliding, Mountain

biking, Boating etc. Many of these activities are not pro-environment and create disturbance to the surroundings. For e.g., playing DJ or loud music in a forest disturbs the wildlife, insects, birds and wild animals.

What should we do?

Now, the big question is what should we do? Should we stop tourism or close down the industry? If this was the possibility, I would be the first person to support it despite running a tourism business myself. The lockdown during Corona has brought back several wildlife species. I live in Delhi NCR where I only used to see Pigeons. But during lockdown, I have seen sparrows in my own balcony, I have seen Nilgai and have heard the calls of Peacock and Cuckoo. All these sounds are not heard here in normal times. While penning down this write up, I read somewhere that Himalayan snow peaks are now visible from Saharanpur, Uttar Pradesh. I could see the stars and the clear sky only and only during the lockdown period. These are some of the positive changes which we personally observed at our home in Delhi NCR, which is one of the most polluted areas in the world. The world witnessed similar

changes everywhere due to less human disturbance. So, if there was an option of closing down travel & tourism, I would fully support it knowing how much pollution, our industry causes worldwide.

Tourism and Carbon footprint

Tourism contributes 8% of the world's carbon emissions. From flights to taxis, hotels to fast food, many things contribute to tourism's carbon footprint. Majority of this footprint is emitted by visitors from US and other high-income group countries.

As travel becomes more affordable and flights become cheaper, carbon footprint is bound to increase. Flights cause the highest carbon emission among all other factors. As per a survey by Nature Climate Change, Transport contributes to 49% of the total carbon emission. Rest is caused by lodging, services, food and other activities.

Resorts and hotels emit greenhouse gases even before they start their operation. In order to construct a new hotel, land is being cleared, forests are being cut. Forests act as carbon absorbers as they absorb the carbon emissions.

But, as more and more trees are being cut for new construction, we are losing our lungs, thus creating an imbalance. Mangroves that are found near coastlines are great carbon absorbers. Studies show that they have the capacity to store up to 4 times more carbon than other forests around the world. Sadly, vast areas of Mangroves are being cleared to build sea facing resorts, beaches & entertainment zones. Construction of a new hotel is also an energy intensive process. Raw materials like cement, bricks and tiles are being transported from far off areas leading to carbon emission. Many hotels especially in India rely on air conditioners (AC's) to keep the room temperature cool and pleasant. And we all know, AC's are huge carbon emitters.

Let's come to food. Most of us, when we travel to even remote areas, we love eating the food we get in our cities. A Pizza restaurant in Nainital would be more occupied than the local ones. In order to cater to the demands of the visitors, hotels and restaurants have to transport the ingredients from far flung areas. Remote locations are mostly dependent on transportation of raw food materials. The farther food travels, the more emission it generates. Another alarming issue is that a substantial amount of the food in the tourism industry ends up at landfills. Tourism industry creates a lot of food waste. When food is wasted, it means all the carbon emissions that was created in production of food

was unnecessary. And, when the food lands in landfills, it creates Methane gas that is 21 times more harmful than Carbon dioxide.

According to projections, the carbon emission by tourism will grow upto 12% of the total carbon emission by 2025.

The Solutions

We got a glimpse of the problem. Now let us focus on the solutions. The above data makes it clear that tourism in the current manner is a matter of great concern and we all need to think of an alternative. But, do not worry! As the alternative already exists. We just need to make a shift in our choices and raise the demand for sustainable tourism so much that it becomes a trendsetter. Yes, you got me right! Sustainable tourism is the alternative and we need to shift to it. Now, it is very important to understand the meaning of Sustainable tourism.

What is Sustainable Tourism?

Sustainable tourism is maintaining a balance between economic growth and environmental health. In the current model of tourism, the industry is extracting as much as possible from the environment and using it for its own greed. Forests, wildlife, rivers, waterfalls, mountains are being indiscriminately exploited to expand tourism and generate wealth.

Sustainable tourism works on creating a balance between economy and environment

and developing a system where there is a long term impact. The dictionary meaning of sustainability is "something that can be continued for a long time". Sustainable tourism aims at conserving resources for our future generations.

Every year, more than 1 billion people travel the world. That is 1 billion opportunities to create an impact. But, the impact will be created only when the travelers are conscious and travel sustainably. And, as we recover from the pandemic and tourism starts afresh, we should be wary about our choices and choose a sustainable journey.

Tips to Travel Sustainably

Choose Eco-hotels

Your place of stay or the hotel is the most important part of your travel plan. There are certain companies in India and across the world that focus only on Sustainable travel. These travel companies aim to create an environmental impact and work on impact tourism. For instance, Ecoplore in India promotes and books only those hotels that are made of mud, wood, bamboo, stone or any local architecture. All their hotels are at least 33% green inside their campus. These eco-hotels also follow other sustainable practices like solar panels, rainwater harvesting, composting, no use of plastic, organic farming and many more.

Impact house in Portugal is a sustainability driven hotel that

aims to reduce their carbon footprint at every step. They have targeted to be carbon neutral by 2030. At present Impact house is focusing on recycling, up-cycling, composting, kitchen garden, use of local products, giving employment to the differently-abled, and, most importantly, making their guests aware about environmental conservation.

Raising awareness among guests about why to choose eco-travel is one of the most important tasks these eco-companies are fulfilling. If you choose an eco-hotel instead of a concrete hotel, you will be contributing to the construction of more such eco-hotels. Thus, the destruction which is happening due to concretisation is going to be reduced.

Also, one has to be conscious about their choices, as there are many hotels and companies that are engaged in green washing. Green washing is basically creating a false impression about a company to make it look sustainable. This phenomena is predominant in India as there are lot of hotels which will paint themselves with green colour, use high power AC's and call themselves environmentally friendly. As a customer, we need to be cautious about these companies and do a little research about their credibility before making the final choice.

Travel by Trains

Indian railways have a very good connectivity across the country.

In some states, special holiday trains are running like Palace on wheels, Maharaja Express, Golden Chariot and special Toy trains on hills.

Travel with minimum baggage so that you can easily board public transport, rather than hiring expensive taxis. I remember taking the local bus in Himachal Pradesh and the experience of listening to their folk music, observing their local dressing and hearing the talks in their local dialect was something I would have never come across in a private taxi. Also, the carbon emission is comparatively very much less when you choose to travel by train or take public transport. Flights emit the maximum carbon, so try to avoid them wherever possible.

Taste Local Cuisine

Local food made using the ingredients grown in the farm of the eco-hotel is most satisfying and yummy. When I ate traditional Himachali cuisine Siddu at a local homestay in Jibhi, I could not resist myself. Siddu was served to me with my favourite dish Chowmein and I chose to eat Siddu over Chowmein. A local cuisine can do magic. The taste of chutney with organically grown Rajma Chawal at a roadside dhaba in Uttarakhand is unforgettable. The chutney was so yummy that I took at least three to four servings. The meal served at an eco-stay in Kodaikanal was completely sourced from their own vegetable garden and organic farm. Even the cheese and butter

was homemade. The freshness and the flavour of that food is still there in my mind. I wish I could eat that food everyday.

Local cuisine can do wonders. It not only enhances your taste but at the same time you get to eat fresh food made with home grown ingredients.

How is this helping in reducing the carbon emission? When food is not transported, when its ingredients are grown locally, it reduces the carbon footprint caused due to transpiration of the food materials. Secondly, when the food is served fresh, you tend to eat more and finish it. The lavish buffets served in mainstream hotels mostly get wasted and land up at landfills. While the food served in eco-hotels or local restaurants does not get wasted. They either give the leftovers to their cattle or consume it in their family. Point to be noted, the local food is not stored in deep freezers. So, it are prepared only as per requirement. It is fresh, organic, tasty and sustainable.

Turn off Lights & Fan

Most of us are careful about switching off lights and fans when we are at home. But, when you are on a vacation at a hotel, you tend to be little less careful. One can save lot of carbon emissions by following simple measures like turning off the lights, specially the AC's when you are going out of your room. Take a shower instead

of wasting thousands of litres of water in a bath tub.

Avoid Single Use Plastic

Every minute, one garbage truck full of plastic, ends up in Oceans. This creates around 8 million metric tons of plastic waste in Oceans every year. How can we stop it especially during our travels? The biggest plastic polluter is single use plastic bottles. Replacing it with reusable water bottles would be our greatest contribution.

Choosing to Dine-in rather than Takeaway while eating at restaurants would be another step. While eating street food, prefer to eat at a place that serves in biodegradable plates. Many people also carry their own cutlery to avoid disposables. A simple act of not using a straw while drinking your mojito or cocktail can help trigger larger changes.

Add to Local Economy

Sustainable travel becomes successful only when the local economy benefits. Now, you would ask, how can we benefit the local economy! First, book an eco-hotel owned by local people instead of international hotel chains. Local home-stays and guesthouses are the best options. Choose to eat local cuisine at eco-hotels or local

restaurants. Prefer not to go for packaged food. Buy locally grown food and local handicraft like handloom sarees, paintings made by locals, homemade pickles, papad etc.

Post pandemic, giving back to the local economy becomes far more important as this would create a source of livelihood for the local community. Kabani community tourism in South India has set an example for community based tourism where 100% of the earnings go back to the local economy. The guests stay in local home-stays, locally grown food is served, visitors are taken on village walks, folk dance and music is part of the activity and there is cultural exchange between the visitors and the villagers.

Slow Travel

When we travel to accomplish our bucket list, we tend to create more stress than relaxation. Let me explain how! A mainstream style of tourism includes lot of sightseeing options which will ask you to travel from here to there. Slow travel requires you to spend lesser time in commutation and more time at one location. Instead of taking multiple shorter trips, which would involve a lot of road transport, we should go for one long vacation.

One long vacation will help reduce carbon emission caused by transportation during shorter trips. Try to choose one destination and preferably go for staycation. This would involve lesser sightseeing and more activities like organic farming, village walks, hiking, bird watching, interacting with the locals and many more. This will not only help reduce carbon emission but contribute to local economy and most importantly give peace and relaxation to the visitors. The experience of slow travel is different and immersive.

Sustainable tourism in India

Sustainable tourism (also known as Eco-tourism} is nature's luxury wrapped in sustainability. In India, you can choose from many options of sustainable tourism in different states. India is a tropical country, hence the climate varies from state to state. In summer, the Himalayan Mountains welcomes you with beautiful flora and fauna whereas winters are comfortable for sand dunes and the heritage hotels of Rajasthan. Wildlife expeditions and National Park safari are worth a visit throughout the year. Lakes, beaches and waterfalls at Western Ghats are waiting to welcome you in Monsoons. Leaving the place with a minimum or no carbon footprint is the only mantra to make your journey sustainable.

Climate Change and Leadership for Sustainable Development

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Introduction

Climate change is arguably one of the greatest challenges in the world. Now days it has become a big challenge because, there are many more serious issues regarding our climate and sustainability which are now rising. Climate change is certainly one of the prime pressures in the world, and depending on the actions of our generation the impact on future generations will either reach some level of sustainability, or more likely the challenges will rapidly increase. The main challenges identified today are the rising temperatures and rising sea-levels, changes in rainfall, frequent cyclones and more frequent extreme weather events. The socioeconomic situation of a country will matter for its capacity to recover from the challenges coming their way. However, in that matter the role of a leader matters here the most.

What is Climate Change and Leadership & how does it go hand in hand?

Climate Change means a change in climate connected directly or indirectly to human activity that alters the composition of the global atmosphere observed over comparable time periods. Leadership is defined by Arild Underdal as an asymmetric relationship of influence in which one actor guides or directs the behaviour of others toward a certain goal over a certain period of time. In order to attract more followers, organizations and other institutions often include

several leadership styles. There is importance of viewing leadership as a relationship between followers and leaders. John Gardner, in an interview shown in his book, describes the essence of leadership as the winning of a loyal constituency when the people, consciously or unconsciously, judge the leader to be capable of solving their problems and meeting their needs, when the leader is seen as symbolizing their norms, and when their image of the leader is congruent with their inner environment of myth and legend. The COP25 Submit put forth the concept of cutting the emissions. According to NRDC, India goes with low carbon emissions. According to them, “by developing a low-carbon pathway—accelerating renewable energy deployment, shifting away from coal, and implementing energy efficiency measures—our analysis shows that India can reduce its emissions by at least 0.6 billion tons per year in 2030. Aided by a suite of ambitious national policies, India is on track to meet, and likely exceed its commitment of cutting its greenhouse gas emissions intensity by 33-35 percent by 2030 from 2005 levels, and its 40 percent non-fossil fuel electricity capacity by 2030 target. Yet, the third goal of creating a carbon sinks of 2.5 to 3 billion tons of carbon dioxide equivalent additional forest and tree cover by 2030 requires more work. In September 2019, India's Prime Minister committed to a target of 450 (GW) of renewable energy installations—equivalent to five times more than India's current installed renewable capacity (82.6 GW)

and bigger than the size of India's electricity grid in 2019 (362 GW). At COP25, the Indian government reiterated its goal to achieve 450GW of RE by 2030. And, to help attract more investments to finance green energy, particularly in the under-served segments, the government also announced at COP25 its plan to develop a ‘green window’ (a green bank like structure) in the Indian Renewable Energy Agency. India also continues to make strides in energy-efficient buildings, appliances, and transportation. But India has further work to combat air pollution and avoid lock-in of carbon-intensive infrastructure, while providing clean energy for its population, creating jobs, and protecting the environment.”

Local to Global leadership for climate change

Firstly, it is important to any country to clearly identify the climate threats they are facing. According to World Bank, there are four climate threats to countries. According to their research India has climate threats of droughts and floods. Indian cities like Mumbai, Chennai, Delhi, Kolkata, Lucknow, Madras and Nagpur could put forward the steps on implementing leadership and encourage followers to join the environment related issues. In their research, UN Habitat mentioned a case study. The study says the following:

Case Study: Chicago, USA
Chicago has become a global leader in the area of climate change action. Mayor Richard M. Daley has led an

urban strategy that combines city-wide climate targets set by his office with community-level activities. Some of the specific climate actions implemented in the city include 5 million square feet of green buildings and 15 million square feet of public buildings retrofitted to improve energy efficiency since 2000, which reduced energy use in the buildings by 30%. As part of the campaign the city has increased the number of urban trees to 3.6 million, installed green roofs to reduce run off and reflective roofs to deflect solar heat. These policies not only help adapt to climate change, but also make the city a greener, more pleasant place to live and work. The mayor also led an extensive expansion of the cycle lane network to promote non-motorised transportation. Dr. Richard L. Sandor, an academic and entrepreneur, is another important local climate action leader. He founded the innovative Chicago Climate Exchange, the first carbon trading scheme in the United States, in 2003.

Communicating with your City on Climate Change

If communities in your city are concerned about climate change they will appreciate their mayor taking action. However, communicating initiatives when benefits may only be visible in the long term or never - as is the case with avoided disasters - is difficult. You may want to emphasize values such as responsibility and vision, highlight that climate action is borne out of new thinking, that new technologies may be applied and that through smart planning a better city will be built for current and future generations.

Source - UN-Habitat

Not having adequate local level leadership, it is more important on having the bigger alliance and

collaborations at the global level. For example according to Accenture Research, "Accenture joined the Belgian Alliance for Climate Action (BACA), a new movement of leading Belgian organizations committing to climate action, initiated by The Shift and WWF. By joining this Alliance, Accenture will be able to share best practices with organizations who are formally committing to the Science Based Targets Initiative and engage in dialogue on carbon reduction with suppliers, employees, clients and ecosystem partners. Aligning operational thinking with a societal cause such as climate action creates more robust and long-lasting relationships. At the same time it can strengthen the supply chain resilience of all organizations, by identifying new operational efficiencies and innovation." Also, Accenture is making an industry-leading commitment to net-zero emissions by 2025, a move to zero waste and a plan to reduce water risk. These environmental commitments will accelerate the journey towards Accenture's science-based targets that have been approved by the Science Based Targets Initiative since December 2018: reduce absolute greenhouse gas emissions by 11% against its 2016 baseline by 2025. Accenture's decision to move its new Brussels office at Gare Maritime in October 2019, was driven by the opportunity to design its office with the latest renewable energy technologies. Features include energy from solar panels, geo-thermal cooling and heating, water recuperation, eradication of single-use plastic, and advanced waste management with other tenants.¹

Role of companies in the leadership

Turning off the lights in the office after the office, to some extent lowering the heating or the air

conditioning or taking devices off the plugs when not needed are some good actions companies can put into practice. Whether it is the industrial waste of a huge company or the paper waste of a SME, all companies produce waste so avoiding disposable cups, stirrers, and capsules for the coffee machine and using kitchen crockery instead, reducing the number of prints, reusing papers as drafts etc. are good practices. There are a lot of possible solutions depending on the facilities. Avoid private transportation that causes pollution. Make employees and other companies aware of the fact of the climate change. Use eco-friendly materials in the company rather than use and throw goods. Also need to use greener infrastructure and equipments.

Conclusion

While the issue of climate change has been raised all over the world, leadership is becoming essential. The government and also NGOs should go forward for the leadership that address the climate change issue. To build a network of good followers every country may participate in becoming one of the global leaders in today's world.

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Why Biodiversity Matters to Sustainable Development

Introduction

For any nation, biodiversity is a fundamental component of long-term economic survival. Covid has taught us that we cannot afford to mess up our relationship with Mother Nature if we are to avoid eliminating ourselves. Economic activities of all kinds rely on genes, species and ecosystem services as critical inputs into their production processes. While short-term economic impacts are dominated by direct effects arising from human activity, long-term impacts are likely to result from cascading effects of the Covid-induced global recession on poverty, green investment, and human behavior. These impacts offer the opportunity for novel socioeconomic insights in today's experimental conditions. We do not have the luxury of time to set things straight, and need to realize that the agricultural sector is a key sentinel for the response of poverty to the pandemic. Over the longer term, historical evidence suggests that a prolonged poverty shock is likely to increase deforestation and biodiversity loss – neither of which can be easily restored. Conversely, efforts to support sustainable development need to be directed towards green transportation and employment that rebuilds public transit, housing

and critical infrastructure in an environmentally sensitive manner.

The business case for biodiversity

As with climate change, the loss and degradation of our fragile biodiversity affects the poorest economies – and within them, the poorest communities – the most. Renewable natural capital, including land assets, such as agricultural soil and forests, and blue assets, such as fisheries and mangroves, account for 23% of the wealth in low-income and 10% in lower-middle income countries.

The need of the hour is generating socioeconomic projects that invest directly in the conservation of species and natural habitats, and those supporting local livelihoods through allied sectors such as forestry, fisheries and agriculture. Global examples of this work include the Amazon Sustainable Landscapes Program and investments in sustainable agriculture and landscape management in Brazil and Ethiopia. Such work may not always yield the highest economic return on investment in the short-run, but it is sure to benefit the local economy the most in the long-run. That is worth remembering.

According to the World Economic Forum, investment in nature could generate up to \$ 10 trillion in additional annual business revenue and create 395 million new jobs by 2030. With this in mind, many large global banks and impact investors have created new biodiversity funds to tap the appropriate markets. India has a long coastline, and policy needs to leverage public-private sector collaboration while at the same time develop the kinds of policies, incentives and regulations to systematically address the complex issue of marine pollution. Many socioeconomically vulnerable people live along the coastline, and this will benefit them the most.

Conclusion

No sustainable development is possible without respecting biodiversity in all its forms and appreciating the need to adapt to it rather than make it adapt to you. If policymakers act boldly now, they could protect biodiversity as well as simultaneously address the climate change issue. We need to recognize that weaving biodiversity and ecosystem considerations into our strategies of sustainable socioeconomic development will not only be positive for our environment, but ultimately benefit our people and businesses too.

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