Policy
WATCH

Environment, Natural Resources and Sustainability

वसुधैव कुटुम्बकम्
ONE EARTH • ONE FAMILY • ONE FUTURE

SUSTAINABLE DEVELOPMENT GOALS

Contents

I Editorial

The Rajiv Gandhi Institute for Contemporary Studies (RGICS) is the knowledge affiliate of the Rajiv Gandhi Foundation. RGICS carries out research and analysis as well as policy advocacy on contemporary challenges facing India. RGICS currently undertakes research studies on the following five themes of general public utility including:

1. Constitutional Values and Democratic Institutions
2. Governance and Development
3. Growth with Employment
4. Environment, Natural Resources and Sustainability
5. India's Place in the World

This issue of Policy Watch is on the theme Environment, Natural Resources and Sustainability. While compiling this issue, we heard the sad news of the demise of father of India's Green Revolution, Prof M.S. Swaminathan on September 28, 2023.

Throughout his life he contributed immensely to increase food production, enhance farmer's income and advocate for sustainable agriculture. He also served as trustee of Rajiv Gandhi Foundation until early 2020. We remember him fondly and will miss his guidance and sage advice.

The first article of the issue is an analysis of the New Delhi Declaration of G20 released during its summit in Delhi in September. The analysis by Mr. Jeet Singh, Head of RGICS Research is focused on discussion and decisions of G20 members on issues pertinent to environment, natural resources and climate change. The article attempts to highlight the gap between G20 declaration and actual progress required to meet temperature targets, SDGs, Net Zero and Biodiversity targets by 2030.

The second article is by Mr. Saurabh Rai, Chief Executive Officer of Arahas Technologies and his colleagues Mr. Devesh Dubey and Mr. Manoj Chauhan on India's land holdings boundary mapping and property tax collection. The article describes problems related to land records in India and provides technological solutions to revolutionize land mapping. The article also highlights major challenges pertaining to use of technologies in the Indian context.

The third article is by Simrin Sirur, published originally by Mongabay India on October 9, 2023 on causes of severe consequences of Sikkim Flood in the month of October 2023. Article concludes that authorities were ignorant about scientific prediction of glacial outburst, there was no early warning system and dam safety is very poor in the state.

This year three hill states one after the other – Himachal, Uttarakhand and now Sikkim have seen the disastrous effects of interfering with fragile ecology of the Himalayas. When will our "growth at any cost" policy makers learn?

The fourth article is a commentary by Dr. Heera Lal and Dr. Kaviraj Singh on the recently notified Carbon Credit Trading Scheme by the Government of India. This article was originally published by CNBC on 10th August 2023. The article argues that the scheme will be instrumental in achieving India's target of net zero by 2070.

We hope you enjoy reading these articles. We look forward to your feedback.

Vijay Mahajan,
Director, Rajiv Gandhi Institute for Contemporary Studies

2 Remembering Prof. M.S. Swaminathan: From Green to Evergreen Revolution

The key architect of India's 'Green Revolution', Prof Mankombu Sambasivan Swaminathan (M.S. Swaminathan) died on September 28, 2023. Prof Swaminathan was the first recipient of the World Food Prize for his leadership role in India's green revolution that helped India become self-reliant in food production in 1960s and 1970s.

Prof. Swaminathan served as the Chairman of the Government of India's National Commission on Farmers, President of the Pugwash Conferences on Science and World Affairs, Chairman of the High-Level Panel of Experts of the World Committee on Food Security, Member of the Rajya Sabha, Director General of Indian Council of Agricultural Research and of the International Rice Research Institute, Philippines, amongst others. He also served as a Trustee of the Rajiv Gandhi Foundation till early 2020.

Prof Swaminathan founded the M.S. Swaminathan Research Foundation (MSSRF) in Chennai in 1990 and has been an ardent advocate of sustainable agriculture. His idea of 'Evergreen Revolution' was to ensure food and nutrition security to all, along with sustainability of the global food system.

3 G20 New Delhi declaration: What is there for the Global Environment and Sustainability?

Jeet Singh, Head, Research, RGF

3.1 Introduction

In the presidency of India, the G20 summit on the theme of 'One Earth, One Family, One Future' was held in New Delhi on 9 and 10 September 2023. The theme of the summit is timely and appropriate in the time of rapidly changing climate, increasing global temperature, increasing climate led disasters and adversely affecting life and livelihoods of each and every one on this earth. After the completion of the summit, it is worth assessing whether the summit and various other G20 ministerial meetings held in 2023 have delivered on the theme 'One Earth, One Family, One Future'?

This assessment can be done based on the 'G20 New Delhi Leaders' Declaration' adopted by members of G20. The sustainability, combating climate and recommitting to achieve sustainable development goals have been given adequate importance in the declaration document. In fact the first declaration addressing concerns related to economic growth has also reflected principles of sustainable, balance and inclusive growth. Following two important developments from the ecological perspective of the G20 summit are

- the pledge by the United Kingdom to contribute 2 billion USD to Green Climate Fund, which is the highest ever commitment made by any country and
- the inclusion of sustainable lifestyle (LiFE) promoted by India. The declaration has adopted nine high level principles on Lifestyle for Sustainable development finalized by the Development Ministerial Meeting held in Varanasi on June 12, 2023.

Overall, the G20 summit as unanimously adopted declaration has re-asserted commitment of this group to proactively contribute in international cooperation for one earth, one family and one future. The Declaration is full of tall promises in order to collectively combat climate change, re-generate natural wealth, ensure inclusive growth and responsible development. The declaration of G20 leaders in New Delhi is important as these leaders represent 63% of the population of this planet. Moreover, they together generate 78% of Green House Gases[1]. Therefore, the declaration has a direct bearing on future climate negotiations including the first global stocktaking to be held in COP 28 in UAE in November 2023.

This article is an attempt to briefly corroborate declarations of G20 with the climate change and action taken by parties of UNFCCC including G20 member states.

3.2 The New Delhi leaders' declaration

The New Delhi Leaders' Declaration adopted by G20 members unanimously during its summit on 9 and 10 September in India has re-committed their collaborative actions for global economic cooperation by adopting the following 10 declarations.

i.) Strong, Sustainable, Balanced, and Inclusive Growth:

G20 members have renewed their commitment to promote MSME as a tool of growth, involve the private sector as key investment partner, combat corruption and pave the way for a fair and equitable trade framework. The focus has been on sustainable and inclusive growth.

ii) Accelerating progress on Sustainable Development Goals (SDGs):

The G20 has admitted that the progress of achieving SDGs is off track and only 12 per cent of the DDG targets are on track. It further commits to use the convening power of the G20 to accelerate the process of achieving SDGs on time. Further, the declaration recognizes the intrinsic value of culture as a transformative driver and an enable for the achievement of SDGs. The G20 has committed to call for the full recognition and protection of culture in the endeavour of sustainable global development.

iii) Green development pact for a sustainable future:

The G20 summit in New Delhi has resolved to "pursue environmentally sustainable and inclusive economic growth and development in an integrated, holistic and balanced manner". The summit has recognized the drastic impact of climate change on most vulnerable countries such as LDCs and SIDS and reaffirms implementation of objectives of UNFCCC's Paris Agreement and its temperature goal. The summit has urged all parties of UNFCCC to align their NDCs to the targets of the Paris Agreement. Moreover the declaration has renewed its collective commitment related to climate finance, sustainable lifestyle, circular economy, clean energy, preserving oceans and restoration of ecosystems.

iv) Multilateral institutions for the 21st Century:

The declaration stresses on the importance of revitalization of multilateralism to adequately address contemporary global challenges of 21st Century. The object behind is to make global governance more representative, effective, transparent and accountable. This is also expected to effectively implement the 2030 agenda of Sustainable Development Goals.

v)Technological transformation and digital public infrastructure:

In order to bridge the existing technological divide and use technology to accelerate transformation, the declaration has adopted the proposed G20 framework for System of Digital Public Infrastructure. The declaration has also accepted India's suggestion to build 'One Future Alliance' a voluntary initiative aimed to build capacity, and provide technical assistance and adequate funding support for implementing Digital Public Infrastructure.

vi) International taxation:

The declaration has reiterated its commitment as G20 to cooperate in the process of building a globally fair, sustainable and modern international tax system appropriate to the needs of the 21st Century.

vii) Gender equality and empowering all women and girls:

G20 New Delhi declaration has expressed its commitment to build a gender just world order by enhancing investment in women's development, reducing gap in workforce participation, ensuring equal opportunity in education and eliminating gender based violence including sexual violence.

viii) Financial sector issues:

The leader's declaration in 2023 has reaffirmed the commitment of G20 to effectively implement the next phase of G20 roadmap for enhancing cross-border payment to achieve global targets for faster, cheaper, more transparent and inclusive cross-border payments by 2027.

ix) Countering terrorism and money laundering:

Apart from condemning all forms of terrorism, the leader's declaration has also expressed concern about illicit trafficking and diversion of small arms and light weapons. The group has felt that global cooperation is highly required to combat it.

x) Creating a more inclusive world:

The leader's declaration in New Delhi has reaffirmed their commitment to support vulnerable groups such as migrants and refugees and promote respect for religious and cultural diversity. Moreover, the declaration has also expressed that it will continue to incorporate perspectives of developing countries in the agenda of G20.

Source: https://www.g20.org/content/dam/gtwenty/gtwenty_new/document/G20-New-Delhi-Leaders-Declaration.pdf

3.3 Environment and sustainability related commitments of Delhi declaration

The second and third declaration of the New Delhi Leaders' Declaration specify its commitment, vision, approach and action to address global challenges related to climate change, environment degradation, pollution and biodiversity loss. Major commitments and action of G20 in this regards are as follows:

i.) Accelerate progress on SDGs with following strategies:

a.) Recognising the role of digital transformation and endorsing G20 principles on harnessing data for development to impart digital divide.

b.) Reaffirm commitment towards the mobilisation of affordable, adequate and accessible financing from all sources to support developing countries in their efforts towards Agenda 2030. Also reiterate commitment to take action to scale up sustainable finance in line with the G20 Sustainable Finance Roadmap.

c.) Recognising the role of tourism and culture as means for sustainable socio-economic development

d.) Cooperation and partnership to address challenges being faced in the implementation of SDGs.

ii.) Elimination of hunger and malnutrition:

a.) Encourage efforts to strengthen research cooperation on climate-resilient and nutritious grains such as millets.

b.) Increasing access to, availability and efficient use of fertilizer and agriculture inputs

c.) Accelerating innovation and investment focussed on increasing agricultural productivity.

d.) Support developing countries in their effort to address their food security challenges.

e.) Efforts to avoid food price volatility.

Source: https://imgnew.outlookindia.com/public/uploads/articles/2020/12/11/Global_Hunger_Index_(1).jpg

iii.) One Health approach:

a.) Strengthening primary health care in next 2-3 years

b.) Promote the One Health based approach driven by the Quadripartite's One Health Joint Plan of Action (2022-26)

c.) Support development of climate resilient and low-carbon health systems.

d.) Implement and prioritise tackling Antimicrobial Resistance (AMR) following the One Health Approach.

iv.) Quality education:

a.) Harness digital technologies to overcome the digital divides for all learners

b.) Expanding access to high-quality technical and vocational education and training.

c.) Promote open, equitable and secure scientific collaboration and encourage mobility of students.

d.) Promoting culture as transformative driver of SDGs

v.) Green development pact for a sustainable future:

a.) Accelerate actions to address environmental crises and challenges related to climate change.

b.) Full and effective implementation of the Paris Agreement and its temperature goal.

c.) Call for aligning of NDC with the temperature goal of the Paris Agreement by the end of 2023.

d.) Commitment to robust collective actions that will enable the world to embrace sustainable production and consumption pattern and mainstream Lifestyle for Sustainable Development (LiFE)

e.) Promote a global circular economy by decoupling economic growth from environmental degradation and enhance sustainable consumption and production.

Source: https://etimg.etb2bimg.com/photo/103564148.cms

vi.) Clean, sustainable, just, affordable and inclusive energy transitions:

a.) Maintaining uninterrupted flows of energy from various sources.

b.) Facilitating low-cost financing to developing countries in their endeavour of transition to low carbon/ emission.

c.) Support and accelerate development of transparent and resilient global markets for hydrogen produced from zero and low emission technologies.

d.) Pursue efforts to triple renewable energy capacity globally by 2030.

e.) Setting up of a Global Biofuels Alliance

f.) Support reliable, diversified, sustainable and responsible supply chains for energy transitions.

g.) Phase-out and rationalise inefficient fossil fuel subsidies.

vii.) Climate and Sustainable Finance:

a.) Scaling up blended finance (public and private) and risk sharing facilities.

b.) Call for a second replenishment process of the Green Climate Fund for its upcoming 2024-27 programming period.

c.) Call for reporting on progress made in the implementation of the G20 Sustainable Finance Roadmap.

d.) Commit to work towards implementation of the decision at COP27 on funding arrangement for responding to loss and damage.

e.) Call on Parties to set an ambitious, transparent and trackable New Collective Quantified Goal of climate finance in 2024.

Source: https://www.fairobserver.com/wp-content/uploads/2021/07/Sustainability-news.jpg

viii.) Conservation, protection, restoration and sustainable use of ecosystems:

a.) Commit to the swift, full and effective implementation of the Kunming-Montreal Global Biodiversity Framework (GBF).

b.) Work towards reducing land degradation by 50 percent by 2040.

c.) Mobilization new and additional finance for forests from all sources including concessional and innovative financing.

ix.) Commit to conserve, protect, restore and sustainable use of the world's ocean, marine ecosystems.

x.) Promoting mobilisation of finances and efficient use of existing resources in efforts to make the cities of tomorrow inclusive, resilient and sustainable.

xi.) Commitment to abide with the Sendai Framework for Disaster Risk Reduction to reduce disaster risk and building resilient infrastructure.

3.4 How is the New Delhi declaration different?

Leaders' Declaration of the G20 Summit expresses the vision of G20 members for international economic cooperation. It also lays out a shared perspective, methodology, approach and mission to achieve its objectives. Every G20 summit brings out a declaration and from 2009 till now the G20 has held 15 summits and also released 15 leaders' declarations. Green and sustainable growth has been an integral part of G20 since its inception. The London Summit of G20 in 2009 recognized the economic crises and pledged for fair and sustainable and green recovery for all.[2] These declarations evolved over a period of time by integrating leaders' declarations with other major international commitments, cooperation and alliances such as UNO, UNFCCC, Millennium Development Goals, Sustainable Development Goals, WTO to name a few.

A quick look at the last five declarations of G20 reveals that in every summit, members of G20 reaffirmed their commitments to the various other international alliances such as reviving of biodiversity, climate change, clean energy, disasters, climate financing, pollution, sustainable development goals and national determined commitments (NDCs). Leaders' declarations have also observed a shift from pure economic discussion in the beginning to deliberation on a number of contemporary social, ecological, political and economic issues faced by the world. Discussions and decisions in other multilateral forums such as UNFCCC, CBD, UNCCD and WTO have gradually influenced the G20 declarations, where the G20 have supported and reaffirmed their commitment to such important multilateral decisions and deliberations.

The Delhi Declaration of 2023 has also deliberated on all issues deliberated by previous G20 summits. From the environment and sustainability perspective the Delhi, Bali and Rome declarations in 2023, 2022 and 2021 are more elaborated. The Delhi declaration has comprehensively touched issues such as sustainable and resilient global value chain, accelerating the process of SDGs, sustainable climate finance, one health, NDCs, global temperature targets, lifestyle for sustainable development, clean energy, technological transformation, biodiversity restoration, ocean biodiversity, plastic pollution and disasters.

Most environmental and sustainability related issues deliberated and expressed through the Delhi Declaration were also discussed in Bali and Rome declaration. However, the Delhi declaration has been important in terms of recognition of some initiatives taken by India as G20 president. These initiatives include Global Bio Fuels Alliance and Resource Efficiency and Circular Economy Industry Coalition (RECEIC).

Source: https://us.123rf.com/450wm/barks/barks2303/barks230300082/200520922-green-eco-city-vector-banner-illustration-sdgs-ecology-concept-nature-conservation.jpg?ver=6

Furthermore the Delhi declaration has taken the discussion on the potential of culture as a transformation driver of SDG discussed in Bali[3] and Rome[4] as well to a step upwards. The Declaration has called for inclusion of culture as a separate goal in possible discussions post Agenda 2030.

The development of the concept 'Lifestyle for Sustainable Development' used in the Bali Summit of G20 in 2022 has been expanded and defined adequately in the Delhi Declaration document. The declaration has adopted 9 high level principles finalized by the Development Ministerial Meetings held in Varanasi on June 12, 2023.[5] The declaration has also recognized the ability of 'Lifestyle for Sustainable Development' (LiFE) in significant reduction in emissions.

Another significant outcome of the Delhi summit is to triple the global renewable energy capacity by 2030. The declaration has not provided any clear action plan to do it, but it has shown an interest in pursuing and encouraging the effort to achieve it. According to an estimate the current total installed renewable energy capacity of the world is 3400 GW. The G20 declaration has an ambitious goal to increase it by 10,200 GW in the next seven years.[6]

Overall, G20 declarations have evolved over a period of time and they diversified their discussions from mere core economic issues to other contemporary social, environmental, climate, political and cultural issues. Often these declarations are repetitive in nature but are well embedded in other progressive multilateral discussions, conventions and commitments.

3.5 How ecologically responsible is G20?

Successive Leaders' Declarations including the Delhi Declaration of G20 have reaffirmed commitments of member nations to meet SDG targets, biodiversity goals, UNFCCC temperature targets, Nationally Determined Contributions (NDCs) and contributing adequately in climate finance along with a number of other environmental conventions and pledges. The latest declaration has also expressed each of these commitments in detail and pledged to support and proactively contribute in achieving these global targets. A repetitive reaffirmation by G20 through Leaders' Declaration is important and can substantially help in achieving these goals. G20 nations account for more than 80 per cent of global GDP and 75 per cent of global trade. With such concentration of wealth and production in these countries they generate around 78 percent of global Green House Gases (GHG).[7]

Often the Leaders' Declaration is unanimously adopted in G20 summits. Therefore, an honest effort towards global climate change and environment commitments by G20 can significantly help in on time realization of these targets. This will directly help 63% of the global population residing in these countries and also benefit all other remaining populations.

The lifestyle for sustainable development is an important area that has been highlighted in the last two declarations. Over consumption in developed countries leads to a serious problem that affects our climate and ecology. A study conducted by ORF in February 2023 found that the per capita energy consumption of all developed countries in G20 is high compared to threshold level.

Another assessment released by Oxfam International in September 2023 reveals that "G20's emission reduction targets in the NDCs shows that collectively the G20 are failing to achieve their fair share of ambitious global mitigation targets." The shortfall calculated using three different methods observed that G20's collective NDCs range from 2.8 tCO2 eq to 3.9tCO2 eq per capita.

According to the report using the CAT assessment tool the collective NDC target of high income G20 countries is 7.8 t CO2 eq per capita and likewise NDC target of low income G20 countries is 6.3t CO2 eq per capita. The report suggests that the high income countries will achieve only 3.1 t CO2 eq per capita and low income group countries will achieve 4.0 t CO2 eq per capita by 2030. The net shortfall for high and low income group G20 countries is 4.7 and 2.3 t CO2 eq per capita respectively. [8]

The promises reiterated by G20 through its successive declaration require financial resources. The Paris agreement in 2009 had set a target of mobilizing 100 billion USD per year by 2020. However, the actual cost of achieving NDC varies from country to country. An assessment by the Asian Development Bank Institute in 2022 reveals that six G20 developing countries including India, China, Indonesia, Brazil, Mexico and Turkey have an estimated requirement of 16.71 trillion USD to achieve their respective NDCs between 2015 and 2030.[9]

India has an estimated requirement of 7.24 trillion USD and China had estimated 8.42 trillion USD from 2015 to 2030. The international climate finance is insignificant in comparison to the actual requirement of various countries. The same study of the ABDI reveals that till 2022 only 4.94 trillion USD could be mobilized by these developing G20 countries for climate change mitigation and adaptation projects from international financial mechanisms.

The promise to triple the global renewable energy capacity in the next seven year is an ambitious target but achievable. The G20 countries account for nearly 86% of the global installed renewable energy capacity. In the last eight years from 2014 to 2022 the installed capacity of renewable energy in G20 countries has increased from 1385 GW to 2890 GW. An exceptional jump of more than 6 fold growth was observed in installation of solar energy. It grew from 176GW in 2014 to 1047 GW in 2022.[10] Overall, the total installed capacity of all forms of renewable energy in G20 countries has increased slightly more than 2 times in these eight years. Favourable policy level push, sharing of technology and mobilizing finance in cooperative manner as committed by G20 countries can help in tripling the renewable energy capacity by 2030.

Source: https://www.ren21.net/gsr-2022/assets/img/cover-medium.jpg

3.6 What experts have to say

The G20 summit and its New Delhi Leaders' declaration have been appreciated as a diplomatic win by a number of institutions, media and leaders. Moreover, many institutions across the globe have also appreciated the selected steps taken by the G20 in New Delhi. The UN Secretary General Antonio Guterres welcomed the declaration's language about accelerating progress towards the sustainable development goals (SDGs).[11] The Green Climate Fund has welcomed the announcement made by the UK Prime Minister Mr. Rishi Sunak in the G20 summit to pledge 2 billion USD for second replenishment of the Green Climate Fund.[12]

The International Renewable Energy Agency (IREA) has also expressed appreciation for accepting and accommodating their recommendation of increasing global installed capacity of renewable energy by 2030 in the Leaders' Declaration.[13] These segmented and issue specific successes acclaimed by G20 member countries and other stakeholders have been further analyzed by many subject experts and global policy think tanks to understand their cumulative impact on accelerating global effort to address challenges related to climate change, SDGs, carbon footprints and temperature target. Some of these critical analyses of the New Delhi Leaders' Declaration are briefly described in following paragraphs.

In an article published by the Wire, economist and academician Prof. Arun Kumar argues that G20 nations are landlords of the world and they represent the economic and political interest of their elites. He further pointed out that the consensus on the New Delhi Leaders' Declaration is good diplomatic success but in terms of substance the declaration document is highly ambiguous.

The document has not stated any concrete action on major global issues such as climate change, SDGs and poverty alleviations. He concludes that the declaration is full of lofty slogans with no route map. He observed that the declaration is nicely presented in progressive language to hide the real intent of the landlords. For example the commitments related to climate change and SDGs are high sounding but despite ever increasing extreme weather events, rapid aggravation of poverty and distress of marginalization no concrete step has been taken by the group.[14]

Down to Earth in its report compared the text of Delhi Declaration and Global Stock Take (GST) report released just before the summit in Delhi. The report observes that the GST report has clearly reported that we need to reduce emission by 43 per cent by 2030 to keep temperature rise within 1.5 degree Celsius. It further observed that countries are falling well short of meeting climate goals to meet the target by 2030.

The declaration has reiterated the concern but failed to adequately reflect it in the declaration. For example, the report of Down to Earth observed that the announcement for strong global support for renewable energy is further diluted by weak language in the outcome section, which raises concern, if it can be achieved at all. The report further argues that there are good signals but more concrete actions are needed. The lack of climate finance is discussed, but it failed to give concrete action plans to provide adequate and accessible climate finance to developing countries. [15]

The Economic and Political Weekly in its editorial of 16th September 2023 observed that the ability of G20 to deliver substantially on major global issues has been declining. The Delhi declaration reflects this trend. The article observed that all steps taken by G20 in Delhi on the issues of poverty, climate change, fiscal policy coordination, digital infrastructure and inclusive growth are significant but incremental. These incremental steps fell far below expectations and actual requirements. The article further highlights the issues of diverging interests of countries from global south and global north in the group, which affected full integration of issues with the overall vision.[16]

The World Resource Institute (WRI, India) has also appreciated the diplomatic success of building consensus on declaration documents. It has also appreciated the right direction of decisions and significant steps taken on issues pertinent to environment and climate change. However, it has also observed that these steps taken by the G20 are insufficient given the sheer scale of the climate and development challenges. The WRI has called for large scale, concrete and dramatic actions on climate change.[17]

Creon Butler of Chatham House (a global policy think tank) appreciated some positive outcomes of the Delhi declaration such as leveraging more finances from international banks and extending strong support to WTO. He further observed that the outcome of the G20 summit fell short on issues related to climate change. For example the New Delhi declaration calls for accelerating efforts towards phase down of unabated coal, but it makes no mention of action to reduce use of fossil fuel. Butler further calls for more trust between countries to plan and execute sustainable growth.[18]

The New Delhi Leaders' Declaration has certainly added some new crucial action points in the agenda of the G20. Further it has also touched all important issues on global climate change and environment and reiterated their commitments to accelerate their actions. However, experts have observed that these actions and commitments are insufficient to effectively achieve global commitments related to SDGs, temperature target, emission target and biodiversity on time.

Source: https://images.ctfassets.net/tl4x668xzide/12o2AnA74BTH4lS2Nu2rIE/3910295cf9b594a6e746adf2222ab77c/sdg-goals.jpg?fit=pad&w=800&h=400&f=center

3.7 Conclusion

The G20 theme of the year 2023- 'One Earth, One Family, One Future' truly summarizes the symbiotic pattern of life on earth. It further stresses on the fact that fragmented oneness has resulted into all social, political, economic and ecological challenges that we are facing today. The G20 had a great opportunity to effectively deliver on this theme and lead the global community to a more just, equitable, inclusive and sustainable world. The collective action of G20 can significantly transform the world order as they control more than two third of global GDP and trade. Moreover, they also produce more than two thirds of global emission.

The New Delhi declaration has taken few new and ambitious decisions as a group and showed its commitment to pursue and support them at the global level. The formation of biofuel alliance, industry coalition for circular economy, tripling the renewable energy capacity in next seven years and defining principles for Lifestyle for Sustainable Development (LiFE) are few new decisions adopted by the group.

Apart from these new decisions, the declaration has a long list of climate friendly commitments and endorsement to major international conventions on environment, water, forest, climate change, climate finance, pollution and biological diversity. This long list reaffirms international commitments of G20 member countries. On the other hand various reports suggest that most parties to climate change negotiations including G20 members are far behind from achieving set targets. There is an urgent need to identify major bottlenecks and address them collectively so that major goals such as the temperature target of the Paris Agreement, NDCs and SDGs can be achieved on time. The theme of the G20 summit in 2023 was appealing and promising but the G20 New Delhi Leaders' Declaration is no different from previous declarations. All declarations of G20 are rhetoric in nature and the New Delhi declaration follows it.

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4 Progress in India's land boundary mapping

Saurabh Rai, Devesh Dubey and Manoj Chauhan

4.1 Introduction

India's intricate tapestry of land revenue and property tax has evolved over centuries, underpinned by myriad historical legacies, vast geographical nuances, and rapid urbanization. Reimagining this system calls for an amalgamation of state-of-the-art technology, systemic reforms, and dedication to transparency. By learning from global counterparts, magnifying state-specific triumphs, and embracing modern technological advances, India can herald a new era in land revenue.

4.2 Historical context

India's revenue system, heavily influenced by the British, was a product of its times. The British left behind a legacy of paper maps and records, meticulously maintained. Yet, as cities burgeon and rural landscapes metamorphose, the legacy systems require modern interventions. India's land revenue system has undergone several changes since the colonial era. The British introduced the zamindari system, which gave zamindars or landlords the authority to collect taxes from the farmers. This system often resulted in unfair and oppressive practices, as the zamindars exploited the farmers and kept most of the revenue for themselves.

The British also conducted land surveys using rudimentary methods, which created inaccurate and outdated maps and records for today's requirements. After independence, India faced the challenge of reforming the land revenue system and ensuring equitable distribution of land among its citizens.

However, the partition of India and Pakistan created further problems, as millions of people were displaced, and their land rights were disputed. Today, India needs to modernize its land revenue system by using advanced technologies and updating its records to reflect the changing realities of urbanization and rural development.

4.3 Global inspirations

Sweden's Centralization Model: Lantmäteriet: The agency's success underscores centralization's potential. Beyond simply offering a unified repository, it has been a model of efficiency, accuracy, and transparency. Integration and Benefits: A singular national database eradicates data discrepancies, propelling both economic growth and real estate development.

Kenya's Digital Revolution: Shift to Digital: Kenya's swift transition to a digitized land registry is a testament to the transformative power of technology. Impact: Significant reduction in transfer times and an appreciable decline in bureaucratic corruption and red tape.

U.S.'s Transparent Platforms: Rise of Online Real Estate: Platforms like Zillow have revolutionized property dealings. Offering detailed insights, they've made the market more transparent, leading to empowered and informed decision-making by consumers.

4.4 Indian innovations and state pioneers

Karnataka's Bhoomi Initiative: Vision and Execution: The initiative's ambition to digitize over 20 million land ownership records was no mean feat. By streamlining access, Bhoomi has made land records more accessible. Impact and Successes: Reduced land disputes, increased transparency, and prompted many states to consider similar digital initiatives.

Maharashtra's Urban Solutions: Digital Property Card Initiative: A testament to the effectiveness of urban-centric solutions. By offering clarity on land titles, these cards serve as a definitive reference point, aiding quick dispute resolution. Pioneering Urban Development: Maharashtra's approach provides a pathway for other rapidly urbanizing states in India.

Source: https://www.ghar.tv/blog/pics/813.jpg?1696756109
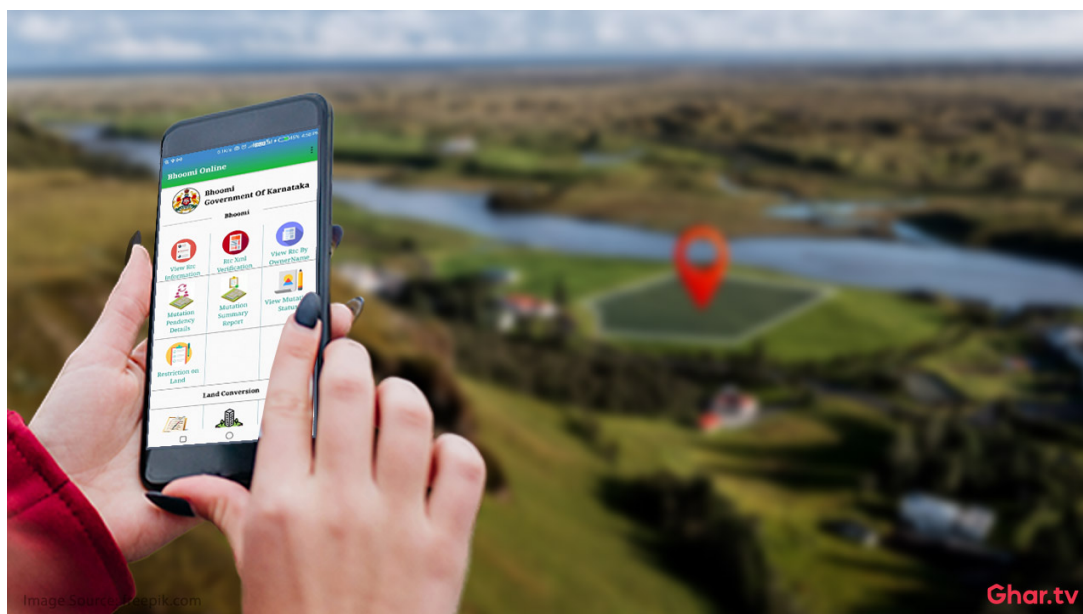
4.5 Challenges in land mapping in India

India is a unique case wherein undertaking land survey and updating land records was not so easy because of following factors:

1. Huge land mass: India is geographically an enormous country wherein undertaking land survey and updating record is a huge, tedious and time and resource intensive activity. It is comparatively easy and convenient to undertake the survey and records updation for a smaller country.

2. High density and diversity country: India is diverse with high population density, wherein majority of population is involved in agriculture-based industry wherein any activity involving land is of great importance and hence activities related to change or records updation are usually not welcome.

3. Small parcel size: The average parcel size in India is small, leading to lot of iterations and features for data collection. Large average parcel size would be any day easy to survey and convenient to update data.

4. Varied Region wise approach: Historically various regions of India have been practicing different methods of land measurement, record keeping and distribution pattern. In contemporary times aligning the entire country with a common approach is a real time challenge.

5. Limited access to technology: Distribution of technology and resources is varied and skewed wherein rural part of the country is lagging behind as compared to urban areas. This distribution is also varied depending upon region, state, local Governance etc. Therefore, implementing common process across the entire country is complicated and not feasible.

6. Education Low literacy level is a barrier and citizens are not receptive for adopting any new activity related to land which is their prime base of living for major part of population.

7. Poverty and low income A major part of the population is in low income strata and experience poverty, therefore any prospective change related to their source of income wrt land is usually not acceptance and more likely to generate resistance.

Considering the above challenges, it was imperative on the part of Centre Government to drive this initiative. Also, this was important for establishing a common understanding and approach. However, for implementing it was prudent to involve respective states, local bodies and private sector organizations.

4.6 Technological disruptions in land record mapping

Land records are essential for ensuring the security of property rights, facilitating land transactions, and supporting urban and rural development. However, in many parts of India, land records are outdated, inaccurate, or incomplete. This poses challenges for land administration, governance, and planning. To address these issues, technological innovations such as Geographic Information Systems (GIS) and drones have emerged as powerful tools for land record mapping and modernisation.

Source: https://www.ghar.tv/blog/pics/813.jpg?1696756109

Precision with Geographical Information System

GIS is a system that captures, stores, analyses, and displays geospatial data. It enables the integration of various types of data, such as satellite imagery, aerial photographs, topographic maps, cadastral surveys, and socio-economic indicators. By using GIS, land record mapping can achieve a high level of precision, accuracy, and reliability. GIS can also help in identifying and resolving land disputes, detecting encroachments, and updating land records.

GIS in Action: A detailed look into how GIS systems, with their multi-faceted capabilities, have brought about game-changing precision to land mapping. One of the examples of how GIS has been used for land record mapping and modernisation in India is the Bhoomi project in Karnataka. The project aimed to computerise land records and provide online access to landowners. It involved digitising over 20 million records of rights, tenancy, and crops (RTC) for more than 6.7 million land parcels.

The project also used GIS to create spatial databases of land parcels, village boundaries, roads, water bodies, and other features. The project improved the transparency, efficiency, and accountability of land administration in the state. Urban Planning: Leveraging GIS, urban planners can make informed decisions on city expansion, infrastructure development, and more.

Another example of how GIS has been used for land record mapping and modernisation in India is the Delhi Geospatial Delhi Limited (GSDL) project. The project aimed to create a comprehensive geospatial database of the national capital territory of Delhi. It involved capturing high-resolution satellite imagery, conducting ground surveys, and integrating various layers of data such as land use, property tax, utilities, transport, environment, and heritage. The project enabled urban planners to visualise the current and future scenarios of the city and plan accordingly.

4.7 Aerial insights with aerial flying, High Resolution Satellite Imagery (HRSI) and drones

Imageries from Aerial flying are obtained by flying the specially designed aircrafts with high resolution sensors at low altitudes. For this, permissions are obtained as per the Government guidelines which is usually finance intensive, lengthy and cumbersome process. The output thus obtained is of high resolution with good quality and the process of obtaining images is fast.

Aerial Photography

High resolution satellite imagery

With the technological advancement, nowadays satellites imageries are available with various resolutions and sensors which may be used as inputs for updating land records.

High resolution satellite imageries are readily available and in case these are not available for target area then target based fresh tasking may be undertaken. These satellites are of both Indian and foreign origin and ownership may be Government of private. At times Aerial Photography Aerial Data after Security Vetting (Masking of restricted areas)

Drones

Drones are unmanned aerial vehicles that can fly autonomously or remotely controlled. They can carry cameras or sensors that capture images or data from the air. They offer several advantages over traditional methods of land surveying, such as speed, cost-effectiveness, safety, and flexibility. Drones can also access remote or difficult terrains that might otherwise be inaccessible or hazardous. The Drone Revolution: The advent of drones has fundamentally transformed land surveying. With high-resolution imagery, drones offer a bird's eye view, capturing nuances that traditional methods might miss.

One of the examples of how drones have been used for land record mapping and modernisation in India is the Maharashtra Land Records Modernisation Programme (MLRMP). The programme aimed to update and digitise land records in the state using drones. It involved flying drones over more than 40,000 villages and capturing orthophotos (geometrically corrected aerial photographs) of the land parcels. The programme also used artificial intelligence (AI) to automate the process of extracting cadastral information from the orthophotos. The programme enhanced the quality and accuracy of land records in the state.
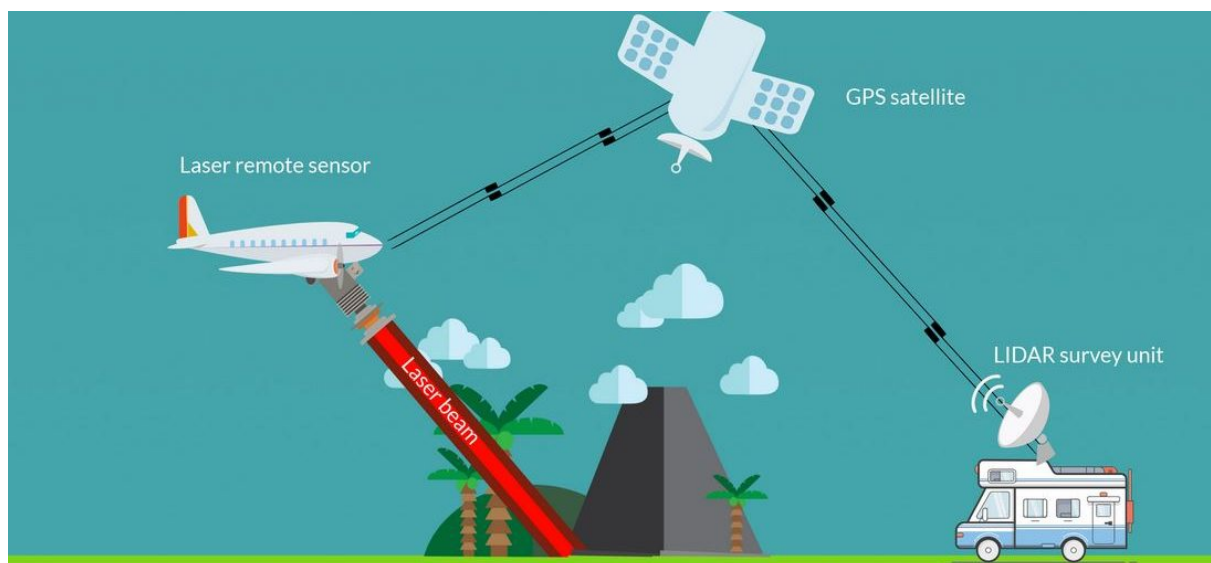

Mosaic of Cadastral Maps

Mosaic of cadastral maps unlocking remote terrains

Often, terrains that are challenging or impossible to access traditionally can easily be surveyed with drones. Another example of how drones have been used for land record mapping and modernisation in India is the Survey of India (SoI) project in Uttarakhand. The project aimed to map the hilly and forested areas of the state using drones. It involved flying drones over more than 6,000 square kilometres and capturing high-resolution images of the terrain. The project also used photogrammetry (the science of making measurements from photographs) to create digital elevation models (DEMs) and contour maps of the terrain. The project facilitated the planning and development of infrastructure, tourism, agriculture, and disaster management in the state.

LiDAR (Laser imaging, Detection, and Ranging)and 3D Mapping

An exploration of how advanced drones, when combined with LiDAR technology, create detailed three-dimensional representations. This is paramount in urban planning, environmental studies, and infrastructure development. LiDAR is a remote sensing technology that uses laser pulses to measure distances. It can penetrate vegetation and clouds and create accurate 3D models of the surface. When mounted on drones, LiDAR can capture high-density point clouds (collections of points that represent a 3D shape) of large areas in a short time.

One of the examples of how drones and LiDAR have been used for land record mapping and modernisation in India is the National Hydrology Project (NHP). The project aimed to improve water resources management in the country using drones and LiDAR. It involved flying drones over more than 100 river basins and capturing LiDAR data of the terrain. The project also used hydrological modelling to estimate the water availability, demand, and quality in the basins. The project supported the decision-making and policymaking for water resources management in the country.

Source: https://www.theengineeringcommunity.org/wp-content/uploads/2019/12/The-LIDAR-Terms-you-must-know-1100x641.jpg

4.8 Enhancing revenue records through data integration

Incorporating utility and urban data

• Multi-layered Data Approach: Combining utility data provides a holistic perspective on land value. Understanding a property's water, electricity, and sewage connections can significantly affect its valuation.

• Role in Urban Metrics: By integrating data related to amenities, connectivity, and infrastructural developments, revenue record management becomes more comprehensive.

Dynamic data updates

• Evolving Landscapes: Regularly updating records ensures they mirror the dynamic shifts in urban and rural landscapes.

• Real-time Accuracy: A continuous data update approach aids in precise revenue calculations, reflecting the true value of properties.

4.9 Challenges faced in land record updation in India from a real-life case study

- Delays in obtaining input imageries: Obtaining aerial flying permission is time consuming and problematic process which often results in delaying these projects.

- Technological constraints among stakeholders Government being the important stakeholder is short of technically compatible and capable resources. In most of the instances they are still evaluating technologies and establishing the processes.

- Lack of storage and data handling capabilities Land records updation projects involve data handling of huge data size and require technical capabilities including large data centres. At most of the places, there are limited data handling capabilities and storage facilities thus constraining successful implementation of such projects.

- Feasibility Aerial photography in bordering areas India is surrounded by certain countries with which we have security sensitive relationships and obtaining aerial/ drone flying permissions are literally not possible.

- Slow progress Government is one of the main stakeholders in land related projects. Considering the process transition, financial availability and disbursement and other priorities, land related projects are unlikely to be driven with high turnaround time.

Ground Truthing

Superimposition of CS Maps on the finalized Orthophoto

4.10 Recommendations and the path ahead

- Centralized Database: Building a Unified Repository: Delving into the intricate steps and benefits of creating a centralized database that ensures data uniformity and ease of access.

- Implementation Challenges: Discussing the potential roadblocks and strategies to overcome them.

- Transparent Online Platforms: The Digital Future: Detailing how transparent online platforms can redefine India's real estate landscape, making it more user-friendly and reducing discrepancies.

- Regular Training Modules: Need for Continuous Learning: Emphasizing the significance of continuous training to stay updated with global best practices.

- Community Engagement: Ground-level Reality: How community participation can ensure that land records reflect actual ground realities, leading to more accurate and fair revenue generation.

- Overcoming Challenges and Prospects: Privacy Concerns: Navigating the Digital Age: As land records go digital, data security and privacy emerge as primary concerns. How can India ensure stringent data protection while promoting transparency?

- Skill Development and Capacity Building: Training the Workforce: The importance of equipping the workforce with the skills necessary to navigate the evolving technological landscape.

4.11 Conclusion

India stands at a pivotal juncture, with the potential to redefine its land revenue mapping and property tax collection system. The challenges, while substantial, are surmountable with a dedicated, holistic approach. The journey might be long and arduous, but the destination promises a transparent, efficient, and modern revenue system that could serve as a beacon for countries worldwide.

Source: https://bhattandjoshiassociates.com/wp-content/uploads/2023/09/ezgif.com-gif-maker-6.jpg

5 No early warning system and insufficient dam safety turned the Sikkim flood deadly

Simrin Sirur[1]

Every year, September 18 is observed as a day of disaster risk reduction in Sikkim, in remembrance of the 6.9 magnitude earthquake that shook the state in 2011. This year was no different, with a focus on preparedness should a flood come cascading down the mighty Teesta river. And yet, when a few weeks later it did, the state and dam authorities did not anticipate the scale of the disaster – among the worst flood events to have ever taken place since 1968 – proving its preparedness efforts to be too incremental.

On the night of October 4, the glacier-fed South Lhonak Lake in North Sikkim breached, causing a Glacial Lake Outburst Flood (GLOF) that destroyed the state's largest hydropower plant and left at least 35 people dead and around 104 missing as on October 9. "Even though we've studied the possibility of this occurring, I was numb with shock when I first heard the news," said Ashim Sattar, a researcher with the Divecha Centre for Climate Change at the Indian Institute of Science, Bengaluru, who projected a GLOF would occur at the lake in a 2021 modeling study.

Scientists and citizens affected by the damming of the Teesta river have warned about the dangers of a GLOF event since 2005. The state and central governments have been aware of the risks and made piecemeal attempts to mitigate the threat of a flood in the past. But authorities were not immediately alerted that the lake had breached on October 4 because there was no Early Warning System (EWS) installed at the lake.

The Indo Tibetan Border Police, which has a presence along the river's course, sounded the alarm first which initiated evacuation efforts downstream, where the 1200 megawatt Teesta III Hydroelectric Project was located.

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[1] *https://www.unwater.org/app/uploads/2019/05/UN-Water-Inventory-2019.pdf*

The Teesta III HEP's reservoir was reportedly full when the flood hit, magnifying impacts as the water from the lake came gushing down. Questions are now being raised about the neglect by dam authorities and the state and central governments to ensure adequate dam safety measures were in place, which would have cushioned the blow of the floods's impacts. Damages were recorded in four districts, sweeping away 13 bridges and affecting over 60,000 people in total.

The Affected Citizens of Teesta (ACT), an organisation of indigenous peoples advocating for environmental protection in the state, said the destruction of the Rs. 14,000 crore dam would further push Sikkim into indebtedness. "ACT condemns the project authority, the Teesta Urja Limited and the private financiers seeking profits for ignoring the environment, social concerns and disaster risks potential raised by affected communities and environmentalists," they said in a statement on October 7.
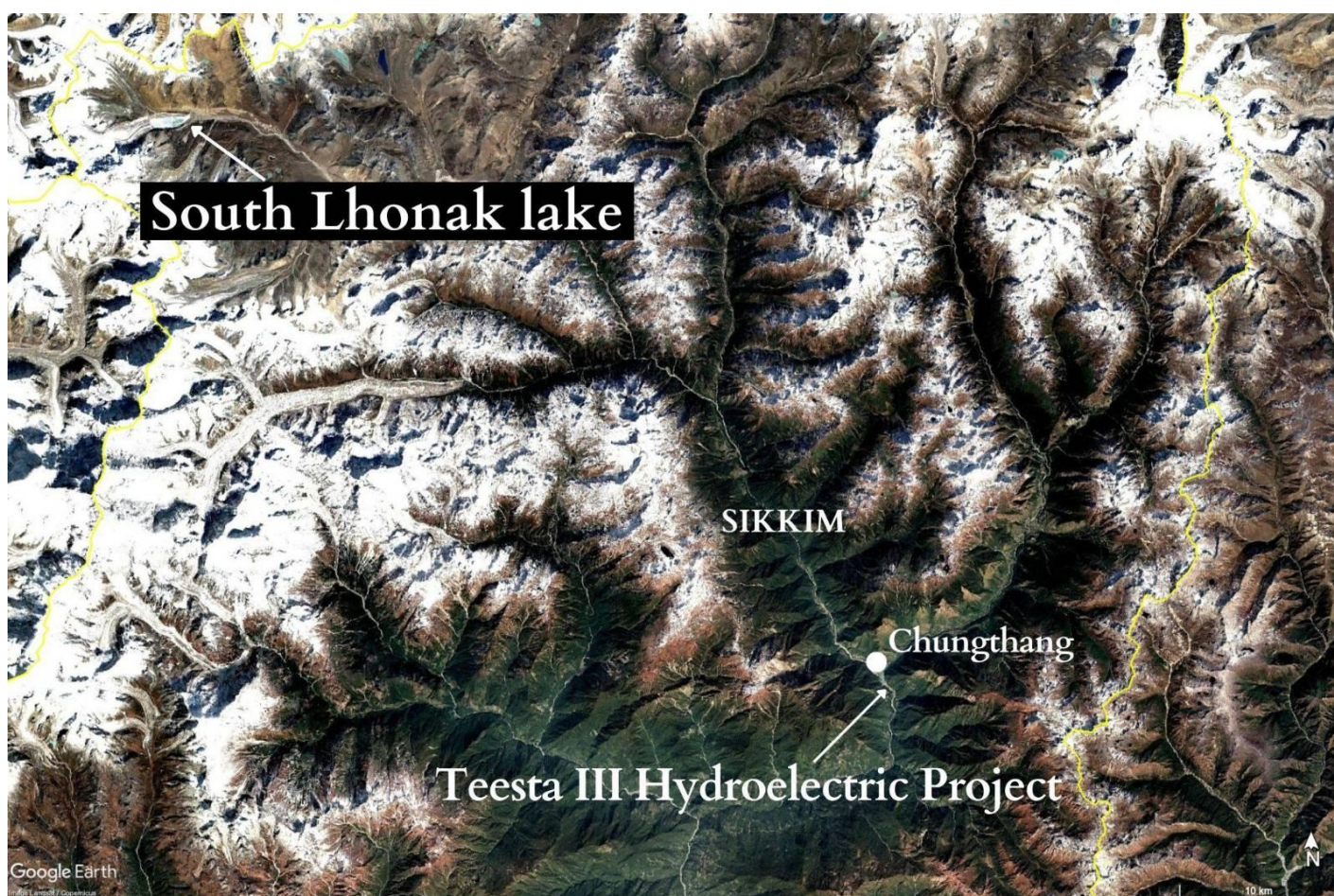
After South Lhonak lake breached, it destroyed Sikkim's largest hydropower plant, the Teesta III Hydroelectric Project, located downstream. Map from Google Earth Pro.

GLOF events are set to become more common, particularly in Himalayan states like Sikkim that are vulnerable to the effects of global warming. A second glacial lake, Shako Cho in northern Sikkim, was on high alert and nearby villages evacuated just a day after the flood, due to fears that it, too, would breach.

The Sikkim government has nurtured large-scale hydroelectric generation since the 1990s, and it has grown to become a steady revenue stream for the state. The Central Water Commission estimates the state's hydro power potential to be around 8000 MW, of which over 5,284 MW had awarded to developers as of 2018. But experts that Mongabay India spoke to state the state's hydroelectric ambitions need to be tempered in light of its fragile ecology, which hosts 644 glacial lakes.

5.1 Flood preceded installation of early warning

On September 8, almost a month before the flash floods, the Sikkim State Disaster Management Authority (SSDMA) organised a "pre-expedition" workshop, where scientists with the Swiss Agency for Development and Cooperation (SDC) handed over two monitoring stations to the government in order to "establish the monitoring stations, develop a prototype Early Warning System, assess the hazards and dangers related to GLOFs, and make decisions regarding appropriate mitigating measures."

The expedition was a 10-day trip to South Lhonak and Shako Cho lakes with around 30 experts from Indian and Swiss agencies, intended to install the devices. But the EWS systems were not fully installed. "We were in discussions with the SDC about how to set up a sustainable monitoring system, given the terrain and past attempts. The plan was to stabilise the system in one lake before installing it in the other," said Vinod Sharma, vice chairman of the Sikkim State Disaster Management Authority. But the deluge arrived before the EWS system started functioning.

Glaciologist Anil Kulkarni said it was "deeply disappointing" that efforts to install EWS had not been consistent. In 2015, Kulkarni chaired a committee investigating the possibility of a GLOF at South Lhonak lake. The committee recommended setting up EWS and preparing a map with vulnerable locations "that may get inundated due to extreme GLOF event" in order to plan evacuation and mitigation efforts.

A second suggestion, made by the committee, was to use engineering techniques to reduce the load of the lake. In 2016, the Sikkim government teamed up with the Students' Educational and Cultural Movement of Ladakh (SECMOL), led by scientist and inventor Sonam Wangchuk, to "siphon" water away from the lake in 201.

Reducing the height of the lake by siphoning water away reduces its volume and can act as a mitigative measure because there's less pressure in the event of a breach. Water was drawn from pipes and a sensor to monitor the lake's water levels installed, but the system did not last. "We had only set up a prototype sample, which we proposed to be scaled up to roughly eight systems. We couldn't do all eight because it was very difficult physically," Wangchuk told Mongabay India.

Rescue efforts underway in Sikkim. Photo by Press Information Bureau, Government of India.

According to Sharma of the SSDMA, two more siphoning efforts were made to lower the height of the lake but did not endure on account of the harsh terrain. "Wind velocity is so high, sensors were destabilised, other times the pipes were washed away. It's a difficult task at 18,000 feet. Expeditions like this are also extremely expensive, costing crores of rupees, which is expensive for a state like ours where funding is a constraint," he said.

The National Disaster Management Authority, in a statement on October 4, said it would "expedite" the deployment of EWS at at-risk glacial lakes across India in light of the Sikkim disaster.

5.2 Spillways and dam construction added to hazard

Two years before it became commercially operational, a 2015 study by the Central Water Commission said that dams along the Teesta – including the 1200 MW Teesta III HEP – were vulnerable to GLOF events. Activists say aspects of the dam's vulnerability have been known much before – since 2005 – and systematically ignored or overlooked by the government and the erstwhile Teesta Urja Limited (now Sikkim Urja Limited), the company that owns the dam.

The Affected Citizens of Teesta wrote in their recent statement that WAPCOS, the infrastructure company that built the hydropower plant, had acknowledged the risk of GLOFs on the dam in a meeting in 2005, but that it "deliberately or otherwise, chose not to assess the risk of GLOFs at all in the Environmental Impact Assessment it was parallelly working on specifically for the 1200 MW Teesta III project. Nor did the Ministry of Environment, Forests, and Climate Change insist on such a study being done."

The ACT had also approached the then National Environmental Appellate Authority about their concerns, but their petition was ultimately dismissed. "In the counter-affidavits by MoEFCC and the company, not a single line was written about the threat of GLOFs we had raised. The Appellate Authority dismissed our appeal. Not a single line was written about the threat of GLOFs…in the Appellate Authority order of July 2007," they said in their statement.

Experts also say the dam was not designed to withstand a GLOF-like event – evidenced by the fact that it was reportedly swept away within 10 minutes of the flood hitting. "The Teesta III project is a rock filled concrete dam, which is structurally more vulnerable to flooding compared to a concrete dam," said Himanshu Thakkar, convener of the South Asia Network on Dams, Rivers and People (SANDRP). "The Teesta V dam, which is further downstream, was able to survive the deluge partly because it's a concrete dam and sturdier."

Source: Image

Public records show that in 2008, Teesta Urja Limited made changes to the design of the Teesta III dam without seeking prior permission. The Central Electricity Authority (CEA), after a field visit, cautioned that some of those changes had the potential to endanger the safety of the dam. The CEA's observations are noted in the minutes of a meeting by the Expert Appraisal Committee of the River Valley and Hydroelectric Projects in Sikkim in 2009.

"The CEA found that the company planned to reduce the dam's spillway capacity from 7000 cumecs to 3000 cumecs. A spillway capacity of 7000 cumecs is itself a conservative figure, based on a probable maximum flood due to rainfall and not accounting for a GLOF event, even though the risk of one occurring was well known," said Neeraj Vagholikar, member of environmental NGO Kalpavriksh who brought the CEA's observations to the notice of the Expert Appraisal Committee on river valley and hydroelectric projects of the Environment Ministry. "The government accepted some of the design changes, but rejected the proposal to reduce the spillway capacity further."

The spillway is one of the most important safety features of a dam, because it controls the release of water from the reservoir.

Teesta running through Mangan district in Sikkim, which bore the brunt of the destruction. [Photo](#) by Pratap Chakma/Wikimedia Commons.

Both Thakkar and Vagholikar say that the spillway capacity was too insufficient to withstand the force of the October 4 flood. "But had an EWS been in place, dam authorities would have had sufficient time to drain the water from the reservoir, which would have reduced impacts downstream," said Thakkar.

In a recent interview with the publication, Hindustan Times, Teesta Urja Limited's CEO said the spillway gates could not be opened in time. An investigation is on to determine why the spillway gates could not be opened in time.

Kulkarni is of the view that large infrastructural projects located in fragile ecosystems like the Himalayas must undertake a separate climate impact assessment, apart from the already mandatory environmental impact assessment. "The problem is that the Environmental Impact Assessment process doesn't always factor in impacts in a changing environment. Governments should insist on climate impact assessments which include modeling studies, so tragedies like this can be avoided," he said.

6 Carbon Credit Trading Scheme — India's bold step towards Net Zero

Dr Heera Lal and Dr Kaviraj Singh (with additions by Editors) [2]

In the pursuit of a greener and sustainable future, India has taken a momentous step by introducing the Carbon Credit Trading Scheme (CCTS). This pioneering scheme, brought into effect through the Energy Conservation (Amendment) Act, 2022, empowers the central government to establish a carbon trading framework.

Source: https://www.cnbctv18.com/views/carbon-credit-trading-scheme-17473261.htm

6.1 Highlights of the Act [3]

- The Act amends the Energy Conservation Act, 2001 to empower the central government to specify a carbon credit trading scheme.

- Designated consumers may be required to meet a proportion of their energy needs from non-fossil sources.

- The Energy Conservation Code for buildings will also apply to office and residential buildings with a connected load of 100 kilowatt or above.

- Energy consumption standards may be specified for vehicles and ships. [This has been notified as follows: Failure to comply with laid down standards will be punishable with a penalty of up to Rs 10 lakh. Vehicle manufacturers in violation of fuel consumption norms will be liable to pay a penalty of up to Rs 50,000 per vehicle sold. It is likely that the Act will drive both the use of greener fuels and additional measures to improve vehicle fuel consumption] [4]

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[2] *Courtesy: https://www.cnbctv18.com/views/carbon-credit-trading-scheme-17473261.htm*

[3] *https://prsindia.org/Acttrack/the-energy-conservation-amendment-Act-2022*

[4] *https://www.infineuminsight.com/en-gb/articles/new-legislation-for-carbon-reduction-in-india/#~:text=Under%20the%202022%20Act%2C%20the,up%20to%20Rs%2010%20lakh.*

- Carbon credit trading aims to reduce carbon emissions, and hence, address climate change. The question is whether the Ministry of Power is the appropriate Ministry to regulate this scheme. A further question is whether the market regulator for carbon credit trading should be specified in the Act.

- The same activity may be eligible for renewable energy, energy savings, and carbon credit certificates. The Act does not specify whether these certificates will be interchangeable.

- Designated consumers must meet certain non-fossil energy use obligation. Given the limited competition among discoms in any area, consumers may not have a choice in the energy mix.

With the CCTS, India aims to create a thriving domestic carbon market, encouraging industries and entities to reduce their carbon emissions through a market-based approach. As India endeavours to combat climate change and achieve its emission reduction goals, a comprehensive analysis of the potential, challenges, and the road ahead for this innovative carbon credit trading scheme is imperative.

6.2 The genesis of India's carbon market

The concept of emissions trading revolves around the notion of countries trading excess emission units to aid others in meeting their emission targets. India's carbon market has been gradually evolving, gaining substantial impetus from the Ministry of Power through the introduction of the CCTS. This visionary scheme lays out the organisational architecture required to establish and operationalise the domestic carbon market in India.

Key constituents of the scheme include the India Carbon Market Governing Board, the administrator, the registry, the trading administrator, and more. The proposed governing board will play a pivotal role in suggesting policies and regulations for the market, devising the framework for voluntary carbon credit trading, and establishing criteria for selling carbon credits to foreign buyers.

Source: https://etimg.etb2bimg.com/thumb/msid-99064759,width-1200,height-900,resizemode-4/.jpg

6.3 The role of industries in emission reduction

At the heart of the CCTS lies the active participation of industries, which are strategically positioned to contribute significantly to India's ambitious emission reduction goals. The Ministry of Power has been entrusted with the crucial task of identifying designated consumers, including energy-intensive industries, and assigning them specific carbon emissions targets.

Unlike the previous energy efficiency goals, the CCTS incentivises entities to embrace clean technologies and transition to low-carbon practices by assigning a value, known as a carbon credit, to each ton of carbon dioxide equivalent (tCO2e) reduced or avoided. Companies surpassing their targets will be rewarded with carbon credit certificates, while those falling short will be required to purchase certificates to offset their deficit or face penalties.

Globally, the value of tradable carbon allowances or permits witnessed an astounding 164 percent growth to reach a record 760 Action euros (USD 851 Action) in 2021. The EU's ETS (Emissions Trading System) contributed significantly to this surge, accounting for 90 percent of the global value.

Voluntary carbon markets, while comparably smaller, are gaining traction with a current global value of USD 2 Action. The World Bank anticipates that carbon credit trading could slash the cost of implementing NDCs (Nationally Determined Contributions) by as much as USD 250 Action by 2030.

Source: https://kunakair.com/wp-content/uploads/2022/07/control-de-emisiones-industriales.jpg
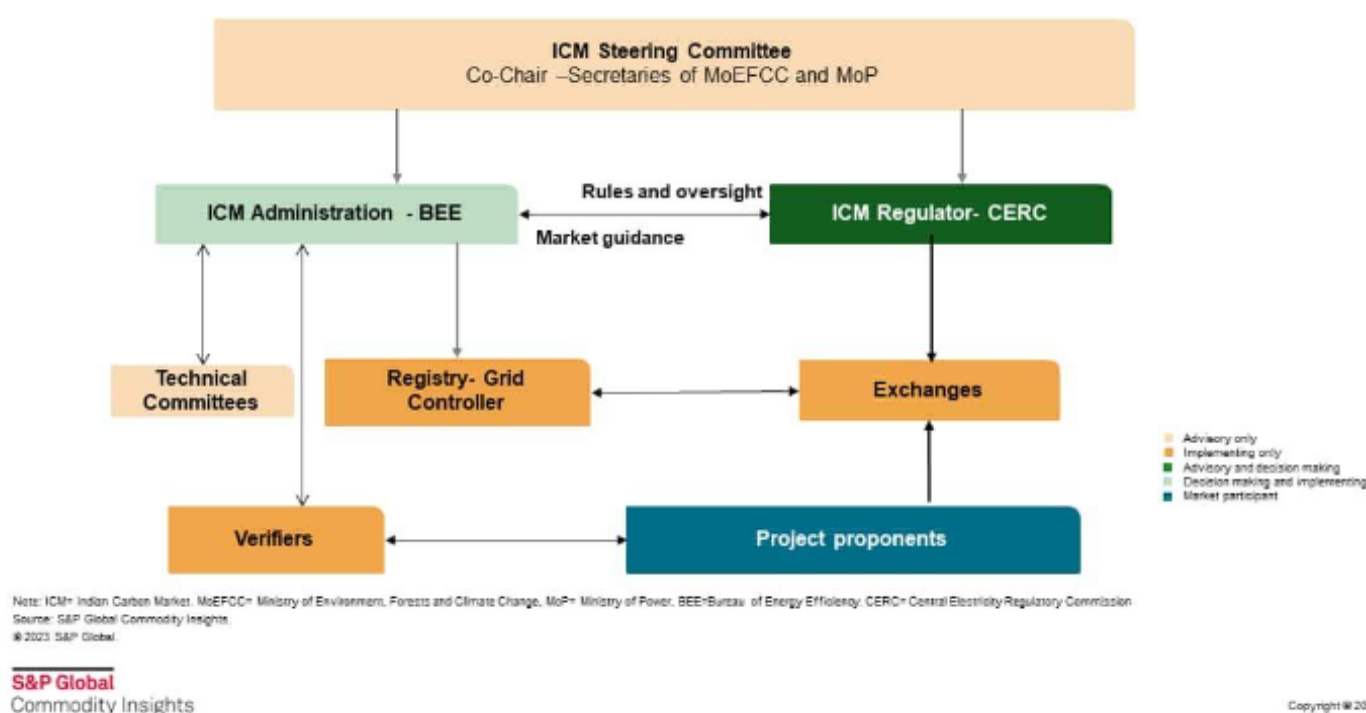
To maintain global warming within the desired thresholds of 2°C, ideally, no more than 1.5°C, worldwide greenhouse gas (GHG) emissions must decrease by 25 to 50 percent over the current decade. The Paris Agreement has witnessed nearly 170 countries submitting their NDCs, committing to update them every five years.

Success in carbon markets is contingent on real emission reductions and removals that align with a country's NDCs, demanding transparency in institutional and financial infrastructure for carbon market transactions.

6.4 Embracing Energy System Models (ESMs)

To inform the design of India's carbon emission trading scheme, energy system models (ESMs) play a crucial role. ESMs simulate and analyse the behaviour of energy systems and their interaction with global land, water, and climate systems. By considering energy demand and supply, technology costs, and environmental constraints, ESMs help policymakers understand different energy sources, technologies, and policies. These models are vital for long-term energy planning, optimising energy systems, and transitioning to renewable energy sources.

Notified framework for India's domestic carbon market

Note: ICM= Indian Carbon Market. MoEFCC= Ministry of Environment, Forests and Climate Change. MoP= Ministry of Power. BEE=Bureau of Energy Efficiency. CERC= Central Electricity Regulatory Commission
Source: S&P Global Commodity Insights.
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S&P Global
Commodity Insights

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6.5 Introducing the Green Credits Programme

Alongside the CCTS, the Indian government has also introduced the 'Draft Green Credit Programme Implementation Rules, 2023'. The Green Credits Programme extends its focus beyond greenhouse gas emissions reduction or removal, encompassing activities such as tree plantation, water conservation, sustainable agriculture, and more. This voluntary market complements the obligatory framework of the CCTS, offering an additional avenue for climate action.

6.6 Challenges and the path forward

While India's carbon market is a crucial step towards achieving net-zero carbon emissions, it faces several challenges. Ensuring transparency, market integrity, and standardisation are vital for its success. Properly aligning the CCTS with India's NDC goals and global climate standards is necessary to gain international recognition.

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[5]
https://www.spglobal.com/commodityinsights/en/ci/research-analysis/indias-carbon-credit-trading-scheme-notification-reflects-.html

6.7 Conclusion

The Carbon Credit Trading Scheme in India marks a momentous step in the battle against climate change. By motivating industries to adopt eco-friendly practices through market incentives, the scheme facilitates a shift towards cleaner and sustainable operations. Although challenges and concerns persist, proactive measures, transparency, and collaboration among ministries and stakeholders promise a greener and climate-resilient future.

As India sets out on this remarkable journey, the scheme stands as a beacon of hope, guiding the nation towards a sustainable and verdant tomorrow. With combined efforts from industries, policymakers, and citizens, India's commitment to achieving net zero carbon emissions by 2070 will leave an indelible mark in history. As we embark on this transformative path, let P.A.T.H.S — Paving a Sustainable Tomorrow through Harmonious Synergy — lead us towards an equitable and resilient future for generations to come.

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