

Action for Climate & Environment

Strategy Paper

Summary

Climate change has in recent times emerged as one of the most complex challenge of our times. To address this DRF has included climate action as a part of the organization's mandate through its Action for Climate and Environment (ACE) program. This document details our strategy for our climate action program for the next five years.

The first section, is an overview of the current climate action scenario in India, including the challenges and opportunities to combat climate change, to help set the context in which ACE will be working, while the second section details the strategic principles, priorities and key components or thrust areas that ACE will focus on as a part of its climate action strategy.

For India to successfully respond to climate change, it calls for navigating multiple interconnected and complex challenges like reducing dependency on non-renewable sources, addressing agricultural emissions and increasing water insecurity. It also includes safeguarding the ecosystem against pre-existing hazards and new emerging climate risks and combating the increasing unsustainable urbanization trends. In addition, there is a need to focus on balancing growth with the environment while reducing socio economic disparities, gender barriers and including neglected perspectives of local communities, and non-state actors in policy making and program implementation. While these challenges pose a mammoth task for successful climate action there are also multiple opportunities, both in terms of mitigation and adaptation, which can bring about transformative change in the system. Apart from India's robust commitment to uphold the global climate pledge, other opportunities that will aid the country to address climate challenges are the country's domestic climate policy, its rich traditional indigenous knowledge and environmental ethics, already successful sustainable agriculture models like the organic model of Sikkim, and large potential of both energy efficiency and renewable

sector and water sector in India. These opportunities are further supported by a very active climate action stakeholder network - including the private and corporate business sector – and the role of such actors has been explained in this paper.

The second section focuses on ACE's climate action strategy. ACE is guided by eight strategic principles. These principles form the core philosophy of our intervention and underlines that any action taken under ACE must be sustainable; scalable; inclusive and participatory; relevant to local context and aligned with climate policies and developmental priorities. It also needs to be backed by evidence-based research while keeping the focus on fair and equitable solutions and integrating both mitigation and adaptation strategies in order to ensure that all outcomes are measurable, verifiable and reportable.

The action plan also outlines six strategic priorities which will be used for streamlining our work. These include to (1) Facilitate climate protection among vulnerable groups; (2) Focus on Mitigation and Adaptation; (3) Use co-benefits approach; (4) Prioritize technology as a solution; (5) Focus on awareness generation, communication and capacity building; and (6) Partnership and network development. Lastly, the five strategic components (SC) that will be the major thrust areas and form the base line of ACE's future implementation plan (for the next five years) include Agriculture and Water; Smart Energy Management (SEM); Coastal Ecosystems; Solid Waste Management (SWM); and Afforestation & Biodiversity.

The work on these thrust areas will be carried out in a phased manner with the initial focus on climate action on agriculture and water, and later, expand to include other segments like SEM and Coastal Ecosystems.

Introduction

Dr. Reddy's Foundation (DRF) is a not-for-profit organization, focused on enhancing the dignity and well-being of socially and economically vulnerable people through innovative solutions and by leveraging the power of partnerships. Over the past two decades, DRF has positively impacted the lives of thousands of people across the country by addressing complex social problems, primarily, in the areas of education, health and livelihoods. In 2020, DRF decided to broaden the spectrum of work to make the communities climate resilient and mitigate the climate risks.



The Onus to include Climate Action

Climate change has emerged as one of the most complex challenges of our times threatening global development and its widespread, unprecedented impacts are disproportionately burdening the world's poorest and the most vulnerable. From shifting weather patterns that threaten food, water and energy security to rising sea levels that increase the risk of inundating coastal cities, the impacts of climate change are global and unprecedented in scope and scale. Further, climate change is predicted to increase the frequency of extreme events like droughts, floods, cyclones that would endanger millions of lives, especially those surviving on bare minimums (IPCC 2007).

This 'super wicked problem' (Levin et al. 2012) is scientifically complex, multi-causal, triggering deep uncertainties and offering no single silver bullet to solve the problem; thereby underlining the need for an urgent, strong and coordinated action to address climate change. Moreover, climate action, poverty reduction and sustainable development are also inseparable, as climate change exacerbates already existing social, economic, and environmental challenges. Strong action on climate change has been recognized as one of the most critical Sustainable Development Goals (SDG 13) without which the successful implementation of the other SDGs will be impeded (UN General Assembly 2015).

Given this context, DRF recognizes the urgency to address climate change through concerted efforts and hence included climate action as a part of the organization's mandate. DRF's climate action program, Action for Climate and Environment (ACE), recognizes in order to limit global warming and protect livelihoods we need to explore and implement a mix of mitigation and adaptation strategies to reduce the impacts of climate change, in a participatory and integrated manner. This document details our strategy for climate action over the next five years. It covers the current climate action context in India, -including the challenges and opportunities that can be leveraged - to combat climate change. It also details the strategic principles, priorities and key components or thrust areas that ACE will focus on as a part of its climate action strategy.

Climate action, poverty reduction and sustainable development are inseparable, as climate change exacerbates already existing social, economic, and environmental challenges.



Current Context

India is both a major greenhouse gas emitter (third in the world after China and the US) and one of the most vulnerable countries in the world to the projected impacts of climate change. The country is already experiencing changes in climate patterns and the impacts of climate change, including water stress, glacier melts, severe cyclones and flooding, heat waves and drought along with the accompanying damaging consequences on livelihoods and health. With a 1.3 billion and a rising population, problems of socio-economic inequity and high dependence on climate-sensitive primary sectors like agriculture for livelihood, India probably will be severely impacted by on-going climate change. This section explores the different challenges, barriers and opportunities for climate change action in India.

Issues and Challenges

Dependency on Non-renewables and GHG emissions

India is the third largest emitter of Greenhouse gases in absolute terms, out of which 68.7% of total emissions come from energy production, which remains preponderantly dependent on coal power plants (WRI CAIT 4.0 2017). Within the energy sector, 49% of emissions were due to electricity and heat generation, of which the lion share of 74% of electricity was generated by coal followed by hydro (11%), natural gas (5%), nuclear (3%), wind (3%), fuel oil (2%), and biofuels (2%). This high dependency on coal in India can be attributed to the historical lower cost and high availability of domestic coal resources, with coal making up almost 3-10% of local revenues in some states in India (Spencer et al. 2018).

The government is trying to transition from coal to other fossil free energy sources by investing significantly in renewable energy, expanding capacity, improving efficiency of thermal power generation by introducing new technologies, doubling the coal tax and incentivizing private sector investment. However, coal still may continue to dominate the electricity generation mix due to developmental aspirations, increased electricity demand trends, and economic development policies. Further, rapid industrialization also leads to increased dependency on fossil fuels by energy-intensive industries, including thermal power plants, iron and steel, and cement. Industries also consume around 42% of the electricity generated (USAID 2018). Given coal's central position in India's power generation, displacing coal-based systems will be tough, especially since grid integration costs of renewables can be expensive.

Duality of Agriculture Sector

Agriculture and Climate Change have a twofold link - it is affected by climate change and it also contributes to climate change. And while the share of agriculture in Gross Domestic Product has declined over the years, its role in the country's overall economic and social wellbeing cannot be ignored as there is still a large dependency on agriculture for income, employment and for national food security, with around 59% of the country's total workforce employed in the sector (FAOa 2020). Rural households comprise almost 70 percent of this total workforce, with 82 percent of farmers being small and marginal (GOI 2020). But agriculture as a sector is highly vulnerable to climate change, as aspects such as crop growth; irrigation and yield are largely determined by climate parameters like average temperature and rainfall. This jeopardizes the livelihoods of a large section of the vulnerable population as well as negatively impacts food security in the region.

Climate change impact on agriculture can lead to up to 1.5 percent loss in India's GDP (Goswami 2017). However, agriculture is not just a casualty of climate change but also, a key driver of climate change. In India, agriculture is the second highest contributor to GHG emissions, 19.6% of total emissions (WRI CAIT 4.0 2017), with enteric fermentation of livestock contributing 45% of agriculture emissions (FAOb 2020). Agriculture in India is also water intensive. India has 4% of the world's freshwater, out of which 80% is consumed by agriculture, with more than 60% being used for the cultivation of two water-intensive crops i.e. sugarcane and paddy, adds to the distress (Dhawan 2017). Further, though a significant proportion of India's financial resources are directed towards improving farmer livelihoods, some obsolete agriculture policies generate negative consequences. For example, the minimum support price combined with high electricity, power and fertilizer subsidies; encourages farmers to grow water-guzzling crops, such as paddy, even if their land is water stressed leading to widespread water shortages, problems of declining soil fertility and increase in GHG emissions. Given this context, there is an urgent need to revise our agriculture policy and promote climate smart agriculture practices that mitigate GHG emissions, increase community resilience and improve food production.

Environment and Climate Risks

India is highly vulnerable to a wide range of natural hazards and climate risks, particularly flooding, cyclones, drought, sea level rise, extreme heat waves, landslides, wildfire, and earthquakes. Studies such as the 2020 MOES report, 'Assessment of climate change over the Indian Region' shows that the intensity, duration and frequency of weather-related shocks are likely to increase in India. Intergovernmental Panel on Climate Change (IPCC) statistics also revealed that most South Asian countries including India have experienced higher incidences of extreme temperature and heat waves in this decade more than other previous decades. Furthermore, between 2000 and 2008, Asia witnessed the most weather and climate-related disasters in the world, like the devastating 2013 flash floods in Uttarakhand, and suffered the second highest proportion (almost 30%) of total global economic losses (IPCC 2014). India - ranked 5th in Global Climate Risk Index 2020 - has recorded the highest number of fatalities and second highest monetary loss due to climate risks in the year 2018 (Eckstein et al. 2020). This is further exacerbated by our high population density and a plethora of natural hazard prone geographies like mountains and long coastlines that are hotspots for climate risks.

Water Insecurity

India is not a water rich country and climatic changes are likely to severely impact freshwater availability in the country. Demand for water has already increased drastically over the years due to agriculture expansion and irrigation, urbanization, increasing population, rapid industrialization and economic development; often leading to water stressed conditions. Nearly 90% of the Indian population lives in areas afflicted with some degree of water stress (Dhawan 2017). Conditions of poor water quality, inequitable access and distribution of water and physical water scarcity are serious issues that impede the achievement of water security in India and threaten economic activities. Groundwater which is the mainstay of both domestic water needs and irrigation has also been severely exploited in large parts of India. With changing climate, the situation will likely worsen and water availability in India will become less predictable in many places.

Additionally, an increased variability of monsoon rainfall is expected to increase water shortages in some areas (World Bank 2013), while higher temperatures may lead to melting glaciers and loss of snow cover in the Himalayan region, the water tower of Asia, threatening the stability and reliability of glacier-fed rivers which will affect more than two billion people (Scott et al. 2019). Further, climate-linked water security risks like increased incidences of flooding, droughts and sea level rise will also threaten human lives, infrastructure, and contaminate water sources thereby negatively impacting people's health and productivity. Hence, sustainable water management is a key focus area for successful climate action.

Socio-economic Disparities

Poverty and social inequality have been persistent challenges in the climate change discussion and this stands true for India as well. Climate change tends to be regressive, impacting the socially, geographically and economically disadvantaged and marginalized people more severely than the rich (IPCC 2014). Studies indicate that the effects of climate change in India exhibits a significant variation, with economically poor regions and large marginalized populations (for example mountain communities, urban poor or marginal farmers) being more vulnerable to climate hazards than prosperous regions.



Apart from disadvantaged groups forced to live or work on peripheral land that is more prone to climate risks; poverty and socio-economic discrimination often restrict access to physical, social and financial assets, information and services like health care, emergency response or agricultural extension services to these marginalized communities. This in turn, further aggravates the impact of climate change by limiting communities from making informed choices to adapt to climate change. Hence, focusing on vulnerable groups and facilitating pro-poor climate mitigation and adaptation approach like mainstreaming poverty alleviation and social welfare within existing and new climate mitigation and adaptation policies and plans, is the need of the hour for India (FAO 2019).

Communities and Non-state Actors

Another major challenge to climate action is the lack of community participation and local non-state actors in the development of climate action policies and projects. Often in the policy making cycle in India, local communities and non-state actors are excluded during the agenda setting and project formulation stages and engaged only during project implementation stage as these actors often lack the power to influence climate change governance at different levels (Sen et al. 2019).

However, active community participation from the initial stages of climate adaptation planning has the potential to generate commitment for implementation of any strategy or policy (Cole 2007), increase legitimacy and support for projects and ensures the equitable distribution of benefits among different groups (Munaeretto et al. 2014) for the willingness of local stakeholders like farmers or water user groups to support different interventions often depends on their perceived costs in terms of economics, time spent, social acceptability or effort required (Ertör-Akyazı et al. 2012, Bagdi et al. 2015).

To ensure successful implementation of any climate action work, it is essential to devise an approach that keeps the community and non-state actors at the center of problem solving.

Gender Barrier

Climate change is not gender neutral. Climate change and disaster have differential impact on women and men across all socio-economic strata including caste, ethnicity, economic status etc. The pre-existing patriarchal social structures and cultural norms produce greater stress on women thus aggravating their vulnerability. While both men and women have valuable knowledge, skillsets, and experiences, often women's participation is ignored in formal policy making and agenda setting related to development and natural resources management. This lack of foresight often causes poor women to be more vulnerable to the brunt of climate change despite their minimal contribution to GHG emissions. Gender differences are also manifested through the disproportionately lower levels of access to education and health services, poor nutritional status, lower mobility, higher mortality rates and displacement during disasters, higher levels of poverty, as well as extremely low rates of resource ownership, legal rights, decision making, and representation in governance institutions (Leduc 2011). Sectors including agriculture, forestry and water are highly gendered spaces. For example, globally women are responsible for over 70% of water-related chores and in India, women compose over 65% of the climate sensitive agricultural workforce (UN women 2017). In such sectors, women are often disproportionately impacted by climate and socioeconomic changes.

India is also witnessing an increased trend of 'feminization' of agriculture due to rising rural-urban migration by men leading to an upsurge of women-headed households (FAOa 2020). Women have to perform both on farm activities in addition to their domestic household chores and other reproductive work like maintaining kinship, leading to added drudgery. Even though 97.5 million rural women are in agriculture in India (Chanana-Nag and Aggarwal 2018), they still face significant inequalities in access to and control over critical productive resources like land and production technologies, exclusion from traditional and modern knowledge systems, participation in extension programs, difference in wage rates and decision-making power, which are further magnified in the wake of climate change. To respond effectively to the adverse impacts of climate change, a gender-inclusive and gender sensitive climate approach is required that explicitly recognizes both the vulnerabilities of women and their contributions to the economy at large. Such an approach pushes towards enhancing women's resilience through capacity building initiatives and actively including them in decision making process related to climate action.

The Urban Dimension

Rapid urbanization is another major challenge in India for climate action. Although cities occupy just two percent of land area they disproportionately contribute to as much as 60 percent of the world’s greenhouse gas emissions and consume 78 percent of the world’s energy (UN Habitat 2020). India’s urban population is projected to double to more than 800 million between 2014 and 2050 (UNDESA 2014). Such increase in population density directly translates to substantial rise in ecological carbon and water footprint with increased demands on water, food, energy, electricity and other resources as well as more pressure on basic urban infrastructure and services like housing, transportation, waste management and water recycling. For example, the problem of managing solid waste remains one of the most poorly addressed in India with 62 million tons of municipal solid waste generated per annum by 7,935 towns and cities. Out of this only a fraction i.e. 11.9 MT is treated while 31 MT is dumped in landfill sites (Lahiry 2019). Growing population pressure also leads to increased environmental stresses such as air pollution, urban heat islands, degradation of greenery and water scarcity. Urbanization in India is also often characterized by increased land use change and industrialization, which are major sources of GHG emissions (Khosla and Bhardwai 2018). Many of the world’s largest cities and towns including Indian metropolitans like Mumbai, Kolkata, Chennai, are located along coastlines, rivers, and floodplains which make them even more vulnerable to natural disaster and climate extremes. Also, though cities are economic growth centers; welfare conditions remain dire in India with high rates of urban poverty and poorly serviced and low-quality access to housing, water, toilets, drainage, health and emergency response systems, making them even more susceptible to climate risks like urban flooding.

Efforts by policy makers and administrators to address climate change and urbanization will need to address multiple intersecting challenges including those of population growth, access, inclusivity, livelihoods and well-being.

Opportunities

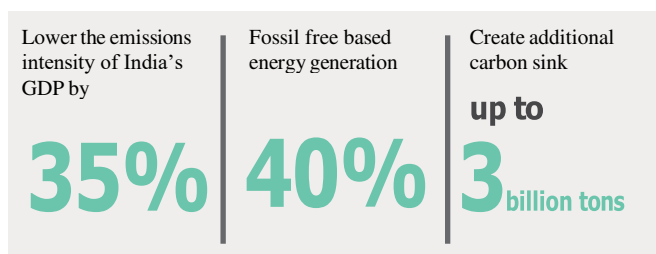
India’s Global and Domestic Policy

India is a major active player in the global climate change negotiations and shows strong policy commitments to lowering carbon emissions through concerted climate action. India ratified the Paris Climate Agreement, which aims to limit global temperature rise to well below 2 degrees Celsius, on 2nd October 2016. Despite the country’s low per capita emissions, India has made a significant pledge in its Intended Nationally Determined Contribution (INDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 as part of the Paris Agreement. The pledge lays out a holistic plan to limit climate impacts while fostering economic growth, generating livelihoods, increasing energy access, improving water security, conserving biodiversity and building vulnerable communities’ resilience to climate impacts. The Nationally Determined Contribution (NDC) focuses on both climate change mitigation and adaptation, with three main quantified targets namely (1) to lower the emissions intensity of India’s gross domestic product (GDP) by 33 to 35% compared to 2005 levels by 2030; (2) to increase total cumulative electricity generation from fossil free energy sources to 40% by 2030; and (3) to create additional carbon sink of 2.5 to 3 billion tons through an increased forest and tree cover (Government of India 2015). India is one of the few countries whose NDC is rated highly in the international arena for being compatible with limiting temperature rise to below 2 degrees Celsius (TERI 2018) and providing a major thrust for climate action.

The Government of India also has a strong domestic climate policy that can be leveraged for climate action. India’s National Action Plan on Climate Change (NAPCC) launched in 2008 is a cornerstone policy document detailing India’s commitment to reducing GHG emissions and addressing climate change. NAPCC is implemented through eight National Missions -National Mission on Solar Energy, Enhanced Energy Efficiency, Conserving Water, Sustainable Habitat, Sustaining the Himalayan Ecosystem to create a ‘Green India’ through afforestation, Sustainable Agriculture and finally, a mission on Strategic Knowledge for Climate Change for building a dynamic knowledge system that informs and supports national policy and action for climate issues.



The Nationally Determined Contribution



Additionally, many other national programs, strategies and policies complement the above missions. For example, The National Policy for Farmers focuses on sustainable agriculture, Swachh Bharat Mission underscores the need to focus on sanitation, National Electricity Policy (NEP) pushes for universalizing access to electricity and promoting renewables, Disaster Management Act 2005, strengthens disaster and climate resilience, the Municipal Solid Waste (Management & Handling) Rules of 2016 concentrates on the problem of urban waste management and Green Skill Development Program (GSDP) focuses on skilling youth for the 'green' job market.

State-level action and government policies are another key to achieving climate and development goals in India. Currently, most state governments in India support the broad policy initiatives of the national government through the implementation of their State Action Plan on Climate Change (SAPCC). SAPCC serves as the primary policy document at the sub-national level to understand the climate risks, address climate change vulnerabilities and increase resilience. Thirty-two states and union territories have formulated SAPCCs, to mainstream climate change concerns unique to each state, into their various sectoral programs and policy planning process. In addition, several pilots and demonstration projects have been conducted with funds from the national government under the National Adaptation Fund on Climate Change. These plans and projects serve as a rich knowledge base and learning platform for developing, upscaling and replicating individual success stories.

Some Indian states are also spearheading other schemes to take climate action beyond their SAPCC. Initiatives like Sikkim's performance in sustainable organic farming or Gujarat's success in implementing energy efficiency and renewable energy are examples of how State governments are proactively working to support India's climate ambitions.

Indigenous Knowledge and Environment

India has a rich collection of traditional indigenous knowledge. Traditional indigenous knowledge refers to contextualized local knowledge, belief, and customary traditions that resource users have accumulated, developed and preserved over time about their immediate environment and landscape, and which guide their actions in response to environmental change (Kerneck et al. 2017). Traditional indigenous knowledge is unique and complementary in providing additional information and insights about changes in the natural world (example phenology) that are not as readily accessible through conventional science and environmental observations. In India, there are numerous examples of practices from water management, irrigation and agriculture that stem from local knowledge and help communities adapt to changing climate. For example, development and protection of traditional water structures like Johad, Nadi etc. for replenishing the water table and providing water in north-western region of India. In addition, a strong environmental ethic and a sense of community are embedded in Indian culture; for example, India has a long tradition of recycling municipal waste with a well-established informal ecosystem of urban waste collectors and recyclers. Such knowledge and informal systems, if melded with modern scientific knowledge, skills and technology, can be leveraged in combating climate change.

Sustainable Agriculture Systems

Agriculture and its allied sectors are crucial for India's development as it is the largest source of livelihood. The sector plays a major role in creating employment, rural livelihoods and providing national food security to all. In recent years, India has started seeing evidence and success stories of farmers who have shifted from 'resource and input-intensive green revolution' led productivity to 'green methods' led sustainability in agricultural systems. These sustainable systems include completely chemical-free systems like zero budget natural farming and organic farming to systems that allow efficient resource and input utilization like conservation agriculture practices. Some efforts in sustainable agriculture have even been lauded in the global arena. For example, the state of Sikkim which is India's first 'fully organic' state won the prestigious FAO's Future Policy Gold Award. Sikkim adopted a policy of organic farming in 2003 and was declared a fully organically farmed state in 2015. Further, India's policy focus has also shifted to sustainable agriculture with multiple agricultural universities and institutions concentrating a large number of resources both technical and financial on developing sustainable agricultural strategies and interventions.

Water the Critical Connector

Water management plays a central role in how the world mitigates and adapts to the impacts of climate change. Embracing adaptation and mitigation measures through water is a triple-win solution because (1) by coordinating across sectors we can adapt to the harmful impacts of climate change including extreme weather events like floods and droughts, ensure communities and industries have the water they need to thrive, and also reduce harmful emissions by making water supply more efficient and sustainable; (2) meet the fundamental human right of safe drinking water and sanitation; and lastly (3) directly or indirectly, address the different outcomes of several interlinked SDGs besides SDG 6 on water (UN Water 2019). Further, UNESCO and the UN Water Report clearly highlights that there is a need and wide scope for concrete action on climate-resilient water management as water is a critical connector and key to attaining the goals and targets of three major global frameworks namely; Climate Change (2015 Paris Agreement), Sustainable Development (2030 Agenda and its SDGs), and Disaster Risk Reduction (Sendai Framework for Disaster Risk Reduction). Hence, climate resilient water management is a major opportunity to decelerate climate change, protect us from extreme events and adapt to the unavoidable impacts at the same time.

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Energy Efficiency and Renewables

Energy is the key driver of economic growth and it is vital for the maintenance of the Indian economy. In India, there is significant untapped potential for energy efficiency. Already India has made initial progress towards a more sustainable energy future through ambitious cross-sector policies on promoting energy efficiency in large industries, energy saving trading schemes, coal taxes, and expanded renewable energy capacity (Joshi and Khosla 2016). India has also been an active player in bilateral, regional and international energy engagements and was instrumental in spearheading the establishment of the International Solar Alliance (ISA) at COP 21. Further, India has also been fairly successful in promoting and mainstreaming energy efficiency

through schemes based on strategies of mass awareness, demand aggregation and bulk procurement, like Unnat Jeevan by affordable LEDs and Appliances for All (UJALA), street lighting programs, energy efficient agriculture pumps (ESS GOI 2020). Therefore, strong policy support from the government and increasing citizen awareness towards improving energy efficiency and using renewables makes this sector extremely favorable for climate action.

Private Sector Engagement

The Indian corporate and private sector is a key player for climate action in India and is increasingly taking heed of the Indian climate agenda. Industries are major contributors of GHGs and perpetrators of environmental degradation and pollution. They need to become more resource-efficient, reduce their ecological footprint, and manage their impacts better to proactively support the implementation of climate adaptation and mitigation plans. Their engagement in climate change mitigation and adaptation is a major opportunity that needs to be explored as well as leveraged particularly in the field of greening of key sectors of the Indian economy like agriculture, water, buildings, energy, transport and waste. The Corporate sector can play a key role in mobilizing the desired technological, financial and capacity building support towards climate action and also collaborate with the development and research sectors to strengthen the existing responses to climate change. This not only helps industries achieve the climate goals and mitigate the adverse impact of climate, but also safeguards their long term resource base that is required for business and meets their ‘Corporate Social Responsibility’ and sustainability goals. Already, a large number of major corporate houses and industries in India have actively engaged in climate change initiatives across multiple sectors. The philanthropy wings of top corporates in India have even collaborated and established the India Climate Collaborative that works on seeking direct funding and visibility towards climate action in India.

Leveraging technology cooperation and the transfer of already existing and established technologies is a key opportunity that can be utilized to further the efforts of any organization in undertaking climate action

Existing Technologies

Technology plays an important role in addressing the complex and interconnected challenges of climate change and sustainable development. A broad spectrum of climate-friendly and environmentally sound technologies already exists in different countries for mitigation of greenhouse gas emissions and adaptation to climate change impacts. These technologies include know-how, goods and services, equipment, experiences as well as organizational and managerial procedures and good practices (UNDESA 2008). Even within India, there are a large number of such technologies that can be used for combating climate change. If the cost of adoption can be overcome, the transfer of such technologies is widely recognized as key for global environmental action, including combating anthropogenic climate change. Leveraging technology cooperation and the transfer of already existing and established technologies is a key opportunity that can be utilized to further the efforts of any organization in undertaking climate action given that (UNCTAD 2004).

Existing Stakeholders and Networks

A wide network of international, national and local grassroots level organizations and institutions are currently working in India on climate research and action to solve the challenges faced by different sectors (e.g. water, agriculture, energy) and different strategic ecosystems and areas (e.g. mountains, urban, coastal system) along with climate action. These organizations include government departments (e.g. MoEFCC at the Center, and State government departments or cells); action research, policy and advocacy-based organizations (e.g. TERI, CSTEP etc.); academic & research institutes and universities (IISc, TSAS, ICRISAT, state universities etc.); consultancy and carbon regulators like Verra, Gold Standards and other organizations intending the implementation of climate-smart practices.

This extensive network of organizations and institutions, have been working individually and collaboratively on climate research and action for a long time and have created an extensive and in-depth body of work and expertise. New and innovative research and development activities conducted by such institutes in the different sectors of climate action also serve as a potential database of knowledge and ideas that can be leveraged and used to build any climate program. Further, annual flagship conferences and events like TERI's 'The World Sustainable Development Summit (WSDS)', CII's 'Sustainability Summit' or CRB's 'India and Sustainability Standards', FICCI's sustainable agriculture summit also provides knowledge sharing and networking opportunities for developing collaborative partnerships for climate action.

Strategy for Climate Action for a Resilient Future

Climate action for a resilient future will be guided by eight strategic principles, which will form the core philosophy of any climate intervention or action taken up by ACE. Given that climate action has multiple priorities to address, the strategic priorities will help prioritize and streamline ACE's work in climate action and these will be in line with the global and national climate agenda. The operationalization of these principles and priorities will be done through the interventions taken under the strategic components which will be the major thrust areas and will form the backbone of a future implementation plan. Figure 1 is the graphical summarization of ACE's climate action strategy.



ACE Climate Action Strategy

India's Climate Action context

Challenges

- Coal dependency
- Agriculture sector
- Multi-hazard environment
- Water insecurity
- Socio-economic disparities
- Neglected perspectives
- Gender Barrier
- Urban issues

Opportunities

- India's climate policy
- State-level leadership
- Indigenous knowledge
- Sustainable agriculture
- Water as connector
- Energy efficiency & renewables
- Corporate sector
- Existing technologies
- Existing stakeholder networks

Strategic Principles

Sustainable

Scalable

Inclusive & Participatory

Relevant & Aligned

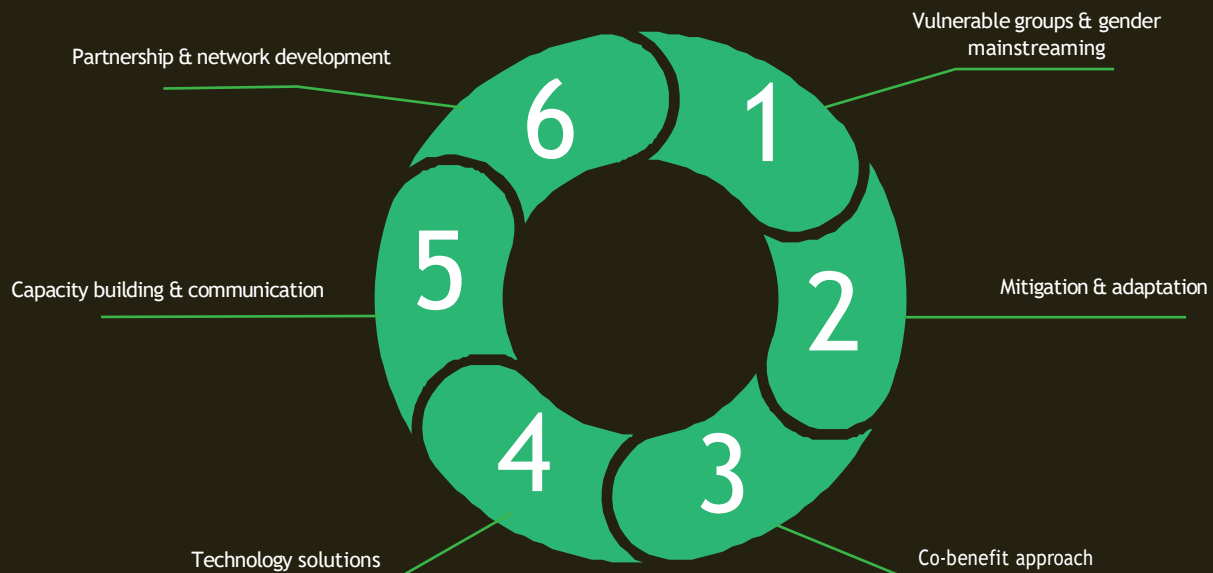
Evidence based research

Fair & Equitable

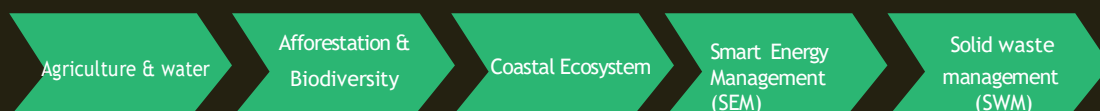
Integrated

Measurable

Strategic priorities



Strategic components



Strategic Principles

The eight strategic principles that will guide climate action are:

- 
- Sustainable**
Any action taken must be sustainable. This means that our strategies need to balance the three pillars of sustainability i.e. be environmentally friendly, economically sound and societally acceptable across time. The action must aim to increase system resilience and avoid any detrimental impacts on the society, the economy or the natural environment
 - Scalable**
Any action selected must be scalable that is they must be realistically feasible for implementation by the actors involved at a larger scale given the local conditions, finances, and capacities. Solutions must also be transferable to other areas.
 - Inclusive & Participatory**
Any action undertaken must be inclusive and participatory which means that the diverse perspectives and knowledge of multiple stakeholders will be utilized for the planning and implementation of the solutions.
 - Relevant & Aligned**
Relevance to local context and alignment with climate policies and developmental priorities must be considered before selecting any action
 - Evidence based research**
Any action taken must be backed by evidence-based research that reflects current scientific knowledge and local understanding
 - Fair & Equitable**
Actions must focus on fair and equitable solutions to address climate risks and impacts, with focus on the most vulnerable socio-economic groups like marginalized farmers and women.
 - Integrated**
A mix of both mitigation and adaptation strategies need to be integrated as a part of climate action to reduce carbon emissions and strengthen resilience for future climate conditions.
 - Measurable**
The outcome of any climate action program must be measurable, verifiable and reportable.

Strategic Priorities

Vulnerable Groups and Mainstreaming Gender

ACE will prioritize climate action especially for socio-economically vulnerable individuals and groups including indigenous communities and women as they are the most impacted by climate change. For example in agricultural program, wellbeing of economically weak small and marginal farmers with limited access to resources and services will be prioritized. Gender will be a key component that will be integrated into our climate action strategies. Gender equality and women's empowerment are recognized as fundamental to socioeconomic development and successful climate action. Effort will be made to prioritize and mainstream gender in all of ACE's climate change actions and strategies, wherever possible.

Mitigation and Adaptation

ACE will focus on undertaking a mix of mitigation and adaptation actions across sectors, which will not only limit GHG emissions, but which will help in improving communities' resilience to climate change impacts. According to IPCC 2018, if mitigation and adaptation synergies are maximized while trade-offs are minimized, the avoided climate change impacts on sustainable development, poverty alleviation and reducing inequalities would be greater.

Co-benefits Approach

ACE will focus on identifying strategies with co-benefits i.e. prioritize win-win solutions aimed at capturing not only climate benefits but also secondary economic, social or environmental benefits in a single measure or policy. Co-benefits are the additional indirect benefits that can be derived as a result of a climate action that was aimed at reducing emissions or adapting to climate risk. For example, soil carbon sequestration could provide co-benefits such as improved biodiversity, soil quality, management of agricultural residues and local food security.

Technology as a Solution

Technology is a vital contributor to sustainable livelihoods and climate action. According to UNEP (2011) technology includes (i) hard technologies which cover tangible assets like physical infrastructure, machinery and equipment (e.g. sprinklers, drum seeders); (ii) soft technology i.e. knowledge and skills, and encompass elements of awareness-generation, including education, training programs and capacity building; and lastly (iii) organizational technologies which refers to the institutional framework, or organization, involved in the adoption and diffusion process of a new technology (e.g. lead farmers platform or water users association). Digital innovation will also be considered a part of the package of practices. Efforts will be focused on blending appropriate technologies for better climate action.

Awareness, Communication and Capacity Building

Climate science is often filled with technical jargon and statistics that can seem abstract and intangible to non-scientists. Awareness generation and effective communication about the different facets of climate change including the science, impacts and interventions, becomes paramount for successful climate action and stakeholder engagement. There is a need for effectively communicating knowledge generated as part of the climate action program and building capacity of different stakeholders. Effective communication and capacity building activities will also focus on tailoring the packaging of information into the right format based on the target audience. For example, conference proceeding, policy brief or journal publications might be appropriate for research groups and policymakers, but direct engagement using participatory visual tools will be more effective for local communities.

Partnership and Network Development

ACE will leverage the power of multi-stakeholder partnerships and knowledge of existing climate networks for effective and efficient implementation of our programs, and this will be a major priority area of our strategic vision. ACE will engage all relevant stakeholders ranging from the government, non-governmental organizations, research institutes, civil society, communities and private sector organization at different spatial scales.

The five SCs, key beneficiaries targeted and potential impact base

01



Agriculture & water

Farmers

70% rural household in India
145 million farmer families

02



Afforestation & Biodiversity

Endangered Pollinators

40% of insect species which are pollinators
for ¾ world food crops are endangered

03



Costal Ecosystem

Coastal Communities

40% Indian population living within 100km of
coastline. 340 million people affected by
cyclonic events annually.

04



Smart Energy Management

Buildings and Agri-food value chains

Residential sector consumes 24% of total
electricity & 10 GtCO₂-eq GHG emitted by the
global agri-food sector; 20-50% of the
potential energy stored in biomass is lost
during open burning.

05



Solid waste Management

Waste managers & waste producers

About 377 million people (urban) generating 62
MT MSW each year

Beyond our Scope of Action

Climate Action is a wide field of work and given DRF's focus on implementing scalable solutions, we recognize there are areas that will be beyond our bandwidth. Therefore, as part of our strategic focus ACE chooses not to include the following:

- Design programs for climate action in infrastructure, transport, industries, power plants, as they are complex systems and beyond our capacity
- Programs that require heavy infrastructure investments with potential viability threats
- Programs which are purely research-based or does only advocacy and does not have implementation component.
- Programs that only focus on a single aspect like only increasing economic gains, without looking at co-benefits and vice-versa.
- Programs that offer only economic grants to beneficiaries. Grants will be limited for targeted demonstrations of different technologies.

Strategic Component (SC)

ACE aims to develop a climate-resilient future by focusing on five main thematic areas Agriculture and Water; Smart Energy Management (SEM); Coastal Ecosystems; Solid Waste Management (SWM); Afforestation and Biodiversity initiatives in the first five years as strategic components. A wide range of potential activities have been listed under each strategic component based on current literature and discussion with subject experts. Evidence based research including baseline studies and local stakeholder inputs will help in finalizing the activities and their on-ground implementation. The work on these thrust areas will be carried out in a phased manner with the initial focus on climate action on agriculture and water, which will be expanded over time to other segments like Coastal Ecosystems. By 2024, it is expected that we will have initiated on-ground implementation of some key activities from each Strategic component.

The reason for selecting agriculture and water as our first area of climate action is because DRF already has a proven track record on working with improving livelihoods of small & marginal farmers. Over the last 10 years, DRF has built and nurtured a strong relationship of trust amongst the farming communities and

also created a strong network of supporting stakeholders/partners through their lead farmer platforms and other past agriculture initiatives. DRF's farmer-to-farmer extension program already works with 2000 lead farmers who are helping over fifty thousand farmers adopt scientific agricultural practices and increase their incomes by over 10,000 per acre per year. Further, a number of current agricultural and water solutions promoted by DRF's MITRA program are already climate-friendly which provides the perfect foundation to build and expand our agriculture and water-based climate action. This makes agriculture and water a perfect platform for the first phase of climate action as we can leverage and build on the already existing resources and solutions from DRF's agricultural program. Currently, DRF's farmer extension program is working in four states Andhra Pradesh, Bihar, Telangana and Uttar Pradesh. All the strategic components will also serve to provide inputs to local and regional policy planning and decision making. The main target groups will be socio-economically vulnerable individuals and groups including indigenous communities and women, identified during SC initiation. For example in agriculture and water, marginal and small land holding farmers will be identified and selected as target groups.

SC1: Agriculture and Water

The climate action for food and water security component's main objective is to reform the climate-insensitive agriculture sector by promoting climate-smart practices that (1) sustainably increase agricultural productivity and incomes; (2) adapt and build resilience of the communities to climate change; (3) sequester carbon in soils; (4) improve soil microbial diversity; and (5) lower and/or remove greenhouse gas emissions; (6) rejuvenate the water bodies; (7) promote groundwater recharge; (8) reduce water use with efficient and smart irrigation techniques, where possible. Indicators like enrichment in soil organic carbon, microbial biomass carbon, improvement in soil microbial biomass nitrogen, reduction in potential GHG emissions, and water saving along with yield and economic returns will be measured for understanding the effectiveness of activities introduced in the project areas. Scientific hypothesis that beneficial microorganisms when added to the existing microbial community in soil can maximize plant nutrient uptake thereby increasing plant growth and yield (Kirankumar et al. 2008; Cummings 2009; Guñazú et al. 2009), confer resistance to abiotic stress, suppress disease (De Vleeschauwer and Höfte 2009; Selvakumar et al. 2012) and improve water infiltration into the ground would be tested. Furthermore, due to their dynamic nature and potential for self-sufficiency, such microorganisms can potentially eliminate the need for recurrent fertilizer applications, which is beneficial for farmers (Lucas 2011). It has been shown that plant growth promotor bacteria colonize effectively in soils even with low microbial biomass (Fliessbach et al. 2009) so inoculations are more likely to be successful in creating a carbon sink in soil as well as improving the water infiltration capacity. A package of practices that focus on improving soil microbial diversity, saving water and fertilizers, and climate security nexus will be targeted and promoted. Innovative ICT applications like monitoring of soil moisture or soil fertility that can establish research-extension-market linkages will be undertaken. Additionally, there are three direct biophysical and technical responses with overlapping benefits commonly used for restoration namely (1) Sustainable land management practices, (2) Sustainable soil management techniques, and (3) Water conservation techniques (Pandit et al. 2018). These techniques will be promoted as under—

- (1) Sustainable land management – Practices like crop rotation, cover crops, crop rotation with legumes,

intercropping, planting of less water-intensive crops, zero tillage, and precision farming for efficient use of fertilizer along with the inclusion of biofertilizer will be promoted to improve soil fertility, increase yield and reduce carbon emissions. Further, practices like biological control of pests will be actively pursued to reduce pestilence without dependence on chemical inputs.

- (2) Sustainable soil management - practices that reduce greenhouse gas emissions like biochar, introducing gel-encapsulated N-fixing bacteria, P-solubilizing bacteria, etc., and adding soil messengers in the root zone will be explored. The effect of such initiatives will be gauged with a comprehensive soil analysis report covering the physical, chemical, and biological properties of soil. Soil analysis report will be used to provide further insights on soil organic matter creation, carbon sinks, site-specific nutrient plans for different crops, and a sustainable cropping system design for locations. Soil biotics; living organisms and their byproducts that improve soil health and promote plant growth would be promoted as these tiny creatures, while often unseen, play a crucial role in maintaining the delicate balance of life within the soil ecosystem.
- (3) Water management – A mix of practices ranging from those that increase water and energy efficiency (more crop per drop) like sprinklers, rain hoses, and drip systems; improve water-saving such as direct seeding; reduce methane emission like rice-water management through controlled flooding; and planting less water-intensive crops where possible will be implemented. Practices that promote soil moisture conservation like earthen bunds or planting of grasses will be explored. Water conservation techniques like alternate wetting and drying in paddy will be promoted. The recharge of borewells through rain-water harvesting will be explored. The rejuvenation of water bodies like ponds, and natural water bodies will be done to promote the diverse flora and fauna in the region. Capacity and awareness building of local communities on different aspects of climate change and therefore strengthening institutional networks through volunteer community farmer platforms like Lead farmer platform (LFP) would be promoted. We will be using the Lead Farmer platform to ensure F-2-F communication in disseminating the benefits of the interventions. The farmers will be provided full initial support in terms of resources, technical guidance, pieces of advice, and mitigation plans regarding the interventions being promoted. Initially, SC1 activities were mainly focused in states with already existing Lead farmer Platforms like AP and Telangana, but now it is expanding to other regions like MP, UP, and Bihar.

SC 2: Afforestation and Biodiversity

The strategic component of Afforestation and biodiversity is a holistic approach to protect the environment which is implemented in Regenerative Agriculture (RA), Coastal Ecosystem, Water management practices and Forestry. This component includes various interventions centered focusing implementation at scale.

The main objectives of this strategic component are to (1) establish a more fertile and stable soil base (2) enhance above ground & below ground biodiversity (3) increase the green cover (4) sustainable use of land & Carbon offsetting and making the communities climate resilient.

Our approach towards the afforestation interventions not only augment the Green Cover but also enhance biodiversity through a science based approach. Under the biodiversity component, all the four ecosystem services – Provisioning & Regulating services, Cultural & Supporting functions will be addressed holistically. Biodiversity is typically a measure of variation at the genetic, species, and ecosystem level. Implementation of various interventions contributing to these services will not only aid in climate change mitigation but also enhance the biodiversity by improving food and nutrition security.

- In RA practices these interventions are implemented within the farm lands which would not only benefit the environment but also ensure no effect to the farmer's yield.

- Under coastal ecosystem these interventions would provide habitat for various aquatic fauna along with supporting the communities to address the natural calamities.

- The initiative of lake rejuvenation or rehabilitation of open water bodies is to convert these spaces as a hub for various aquatic flora and fauna.

- Agroforestry not only offsets the Carbon but also brings economic benefits to the farmers and improves the health of the ecosystem.

Our climate action strategies will focus on implementation of afforestation and biodiversity interventions which are highly research based, requires minimum resources, ease of scalability and execution at low cost. These interventions are:

- 1)Agroforestry: Focuses on decarbonisation as well as on other social, economic and environmental benefits. The intervention is centered around communities focussing on implementation at scale. The fruit bearing plant species have been intercropped in coconut orchards and planted in fallow lands to improve the soil health, attract various faunal forms and help in carbon offsetting.

Afforestation: Avenue plantation is another major intervention of afforestation practices to reduce the heat island effect, improve the potential to sequester carbon and enhance the biodiversity. These plants are planted along the road side towards the farm lands in Telangana. The activity will be further scaled up in other regions to reap the proposed benefits.

- 2)Implementation of pollinator gardens: Pollinators, mostly insects, are important for the reproductive success of plants. A crucial way to supplement these needs is by creating pollinator gardens. These gardens are developed amidst agricultural fields to attract honeybees, moths, beetles and wasps.

- 3)Development of Butterfly Gardens: A butterfly garden is called complete when it has both nectar plants and host plants. The nectar plants provide food whereas the host plants help in completing their life cycle. These species are planted as a fence around the farm fields which represents a miniature forest in the fields.

- 4)Bee keeping: One-third of the human food supply depends on bee pollination. DRF objective for setting-up of bee hives in farmer fields is to encourage more of bee population by aiding in pollination and thereby increasing the food production

- 5)Bio control units: Over reliance on the use of chemical pesticides has resulted in contamination of environment, pest resurgence and pest resistance. Bio pesticide production is currently dominating to contain the insect pests. DRF has established a pilot unit to culture Isaria & Encarsia species to control the pest infestation in coconut farms. Having seen the success of this unit, the activity will be further expanded to culture various natural predators & parasitoids. These natural predators & parasitoids are highly effective in suppressing the insect pests and play a key role as bio indicators in protecting the environment.

Afforestation and biodiversity are indicators of ecological health which ensures physical and psychological well-being of the entire ecosystem.

SC 3: Coastal Ecosystem

Strategic component 3 focuses on strengthening coastal ecosystems and boosting climate resilience of India's vulnerable coastal communities. Our existing field location in Andhra Pradesh which has coastal villages under its ambit will serve as our pilot location for coastal ecosystem activities. However, we see an opportunity to work in the entire east coast of Tamil Nadu and Andhra Pradesh as potential locations. This would be scaled up across multiple geographies of the country. The main objectives of SC 3 are (1) protecting and conserving the shoreline and assisting in carbon mitigation (2) enhancing the habitat of aquatic flora and fauna (3) improving the livelihoods of coastal communities through additional income and livelihood opportunities related to their occupation of fishing and aquaculture sector (4) increasing the resilience of coastal communities to climate change risks like cyclones, storm surges and sea-level rise, where possible. Hence, this component will focus and promote strategies that will aim at –

- Rehabilitation of Mangroves as soft barriers against rise in sea level to maintain ecological balance and sustainability of socio-economic activities' to conserve and restore mangrove ecosystems through a science based approach.
- Casuarina and Palmyrah plantations along the coastline as shelterbelts and coastal plantations.
- Exploring the cultivation of fish & shrimp farms and sea weed that will be implemented by community voluntary groups through trained fishermen.
- Reducing coastal salinity by preventing salt water intrusion into ground water channels.

We will work very closely with the research institutions like ICFRE, CMFRI, CMCRI, NIO and ICRAF to create an evidence based action research and implementation. Majorly two delivery platforms will be used for achieving the different strategies (1) community volunteer groups and (2) through a local implementing partner with support from local administration as shoreline protection often comes under the ambit of the government agencies.

SC 4: Smart Energy Management (SEM)

The main objective for SEM's strategic component is increasing the energy efficiency of different systems including buildings and agricultural value chains by making them adopt more efficient, green, and smart technologies. The key reason behind the selection of SC 4 is that over 40% of India's energy consumption comes from buildings and this is set to rise to nearly 60% (Chedwal et al. 2015).

Additionally, energy efficiency in rural households and agricultural value chains are also need of the hour. The dependence of agri-food systems on fossil fuels represents a major threat to food security and contributes significantly to climate change. SEM in both buildings and agri-food systems can improve energy efficiency, mitigate GHG emissions to some extent, increase the use of renewable energy, and broaden access to modern energy services. The strategies that will be promoted for smart energy management will fall under 3 categories –

1. Promoting renewables like solar or sustainable materials in households and agri- food systems - e.g. solar technologies for heating, water pumping or electricity, solar lighting, improved cookstoves; or solar dryers and coolers for post-harvest activities would be promoted.
2. Optimization of energy demand response through activities like fixing timings for pump sets or lighting in the common areas of buildings will also be explored; Integrating low-cost, energy efficient, context-specific, and locally manufactured/fabricated machinery systems and technologies for small farms. Such technologies, e.g. seed drills, shredders, harvesters, machine transplanters for nurseries, and drip irrigation systems, will help in optimizing energy consumption and improving resource use efficiency of existing agricultural value chain practices. It will also help address the agricultural labor shortage.
3. With the increasing concern for environmental sustainability and renewable energy sources, the utilization of surplus crop residues and biomass has gained significant attention. These abundant resources offer a promising alternative to conventional fossil fuels and can be converted into valuable products such as synthesis gas (syngas) through gasification, bio-ethanol through fermentation, and briquettes for fuel. Exploring the scope of these technologies can contribute to a more sustainable and circular economy. Therefore, the scope of gasification, biochar, bio- ethanol production, and briquette formation will be explored with surplus crop residues/biomass.

Additionally, capacity and awareness programs for residents, farmers groups, and local community groups on the multiple benefits of SEM systems will be conducted. The main delivery channel for integrated SEM technologies in residential complexes will be through already established community groups like Residents Welfare Associations (RWA) or building owners associations, and for agricultural technologies will be through partnerships with innovative private enterprises or agri-businesses.

By monitoring and analyzing energy usage patterns, smart systems would be promoted that can identify areas for improvement and implement changes to reduce consumption. This can lead to significant cost savings and reduced environmental impact.

Integrating renewable energy sources and smart systems can improve the reliability and resilience of the energy grid. Farm mechanization activities for an efficient agri-food value chain will be initiated at all existing program locations before out-scaling to newer locations. SEM in building activities will first primarily focus on the towns and rural establishments surrounding our existing field locations before expanding to other areas. Furthermore, under the SEM program conversion of production units/factories to smart factories by employing sensors and automation to optimize energy use in production processes and equipment will be encouraged. Integration of renewable energy sources such as solar and wind power into the grid will be prioritized. We are planning to integrate AI and machine learning techniques to predict energy consumption patterns and optimize energy management strategies. Similarly, the production system of syngas from biomass will also be digitalized through an app-based tracking system to make them more energy-efficient and productive.

SC 5: Solid Waste Management (SWM)

Solid waste management (SWM) is the fourth strategic component in this climate strategy. In India, the main constituent of municipal solid waste generated is organic matter around 35%–40%, followed by recyclables like glass, plastic, metals (MoUD 2013, 2016). Such waste can be easily segregated at source and safely recycled through decentralized community based solid waste management projects. Thus, the main objectives of SC 4 are (1) to reduce the volume of solid waste stream through proper onsite waste segregation, reuse and recycling program, (2) to generate income from proper utilization of recyclables and other useful byproducts like compost and lastly (3) to reduce environmental pollution and GHG emissions generated from wastes. The SWM activities will first primarily focus on the towns surrounding our existing field locations before expanding to other areas. Hence, our climate action strategies will focus on:

1. Establishing effective systems and

technologies that will focus on the 5 Rs (Refuse, Reduce, Reuse, Recycle, Rot) of waste management and ensure proper waste segregation at source and resource recovery. For example, waste management practices like wet and dry waste segregation at household level followed by composting of residential waste in a small scale organic waste composter will be promoted. Decentralized bio-composters and home composting techniques which are well suited to the local waste stream, socio-economic conditions and local needs will be promoted.

2. Promoting “waste-to-wealth” practices and technologies. For example, technologies that can maximize re-use of dry recyclables like plastic, paper or glass will also be explored as possible solutions for the urban solid waste problems.
3. Attention will also be paid to leveraging and strengthening the already existing informal institutional set up engaged in waste management in India like rag pickers and waste collectors.

The delivery mechanism for implementation of SWM interventions will require a joint multi-stakeholder platform that will include municipal administration, RWAs, waste collectors and rag pickers for efficient waste management. Further, to find innovative solutions to maximize reuse of dry recyclables will need the support of private actors like waste-to-wealth business startups or enterprises. An effort will also be made to establish linkages between the SCs. For example, compost generated from waste to wealth practices under SC4 can be a potential input for activities to improve soil fertility in SC1.

Partnership

Partnerships and multi-stakeholder networks are at the core of any successful climate action program. ACE recognizes that the execution of this strategy will only be possible with the support of multiple partners. Climate actions will require collaborative efforts and the support of a strong network of multi-stakeholder partners ranging from Government, Corporate CSRs, think tanks, NGOs, research organizations and universities. Local communities and civil society organizations at large will also play a critical role in shaping and providing legitimacy to our climate action work thus creating positive impacts at multiple spatial scales ranging from individual, community to system levels. ACE also strongly believes that this climate action strategy will not only help us in developing new partnerships but will also strengthen our collaboration with our existing network of current partners.

Conclusion

ACE envisions that our climate action strategy will guide our work in contributing to positive outcomes for climate mitigation, adaptation and policy. To ensure greater effectiveness in implementation, ACE will monitor and revisit our strategy in 2024, to review the progress and impacts of our selected strategic components for mid- course correction if needed. This work will be driven by evidence-based research, strong partnership and networks, knowledge sharing and on-field implementation.

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