



Centre for Science and Environment

# STRATEGIC PLAN

2025-2030





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## CO-BENEFIT AGENDA FOR INCLUSIVE GROWTH AND CLIMATE CHANGE

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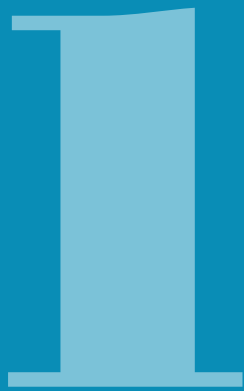
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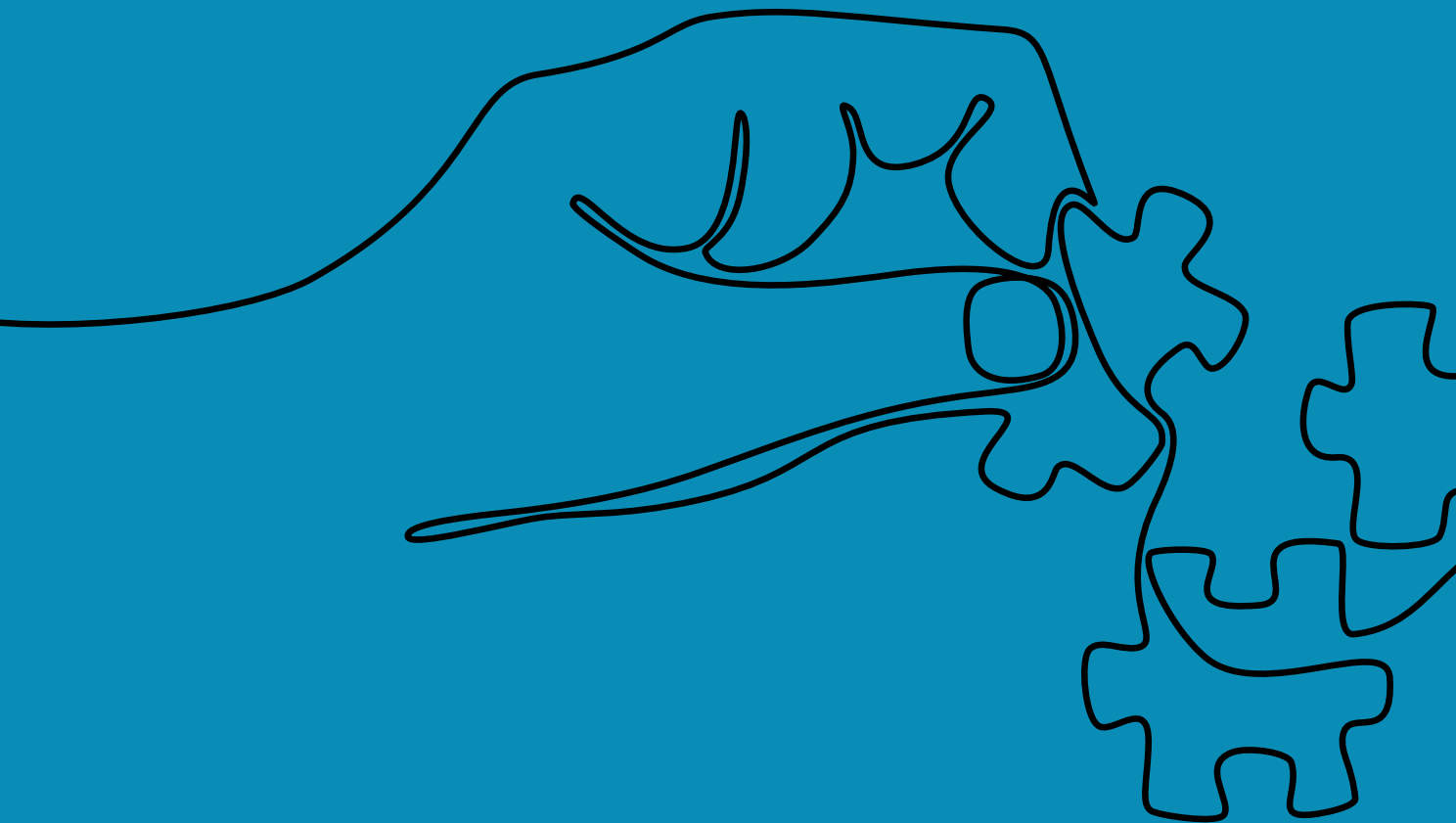
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# AN INTRODUCTION TO OUR STRATEGY AND THE WORLD AROUND US



**T**he last five years of the decade is going to be a make-or-break time for meaningful action against climate change. Our strategic plan considers the need for urgent and scaled up action, as well as for reworking the narrative on climate change so that it becomes a part of the development future of our countries.

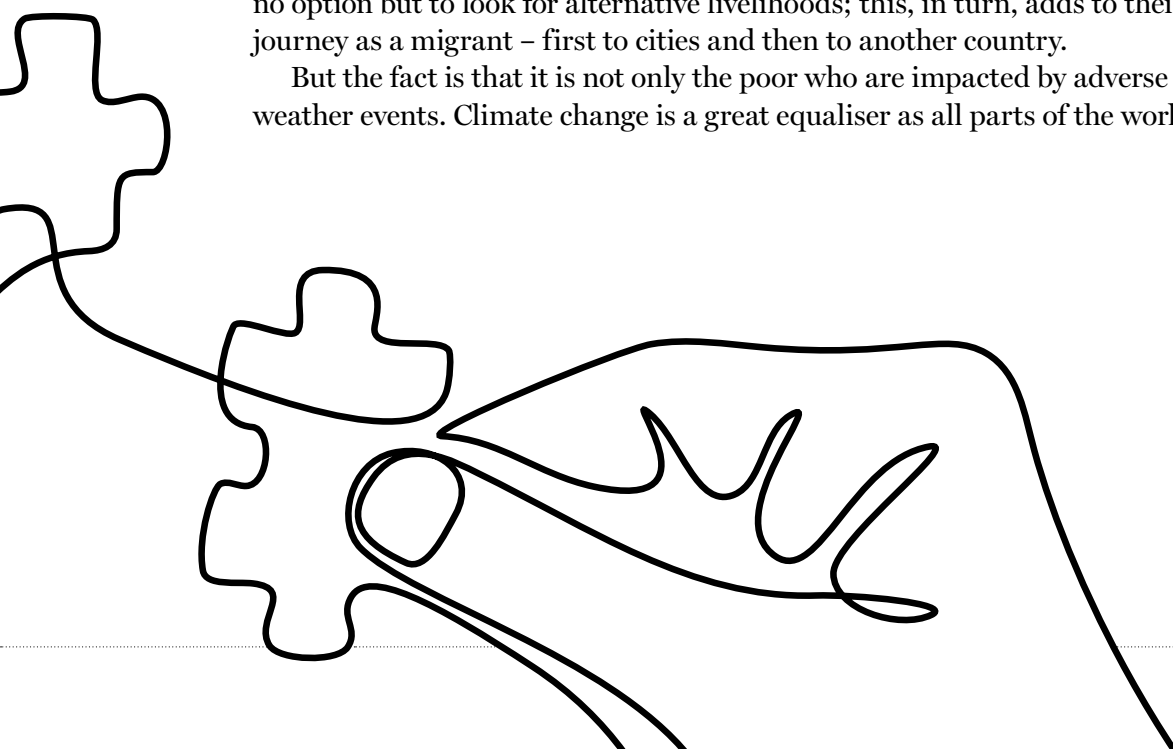
We have reviewed our current strategy; based on the developments in our world, we have revised and reworked it, considering the need to focus both on the urgency and on outcomes, keeping in mind the demand in our world. We find that today, countries of the Global South are not resistant to incorporating environmental sustainability. What is needed is pathways of policy and practice that will be more applicable for development and sustainability. This is what CSE will focus on in its strategic plan for this decade.

In this period, we will work increasingly at the regional and local levels to catalyse action and drive change. Also, in this plan, our focus is to ensure that our countries – countries of the Global South – own the actions to combat climate change through policies of co-benefit: what works for development will also work for climate change.

This is our strategy paper for the current decade. As we wrote it, we saw a world that is on the precipice of many disasters; there are wars among humans that are bringing devastation and grief to millions, and adding to the growing polarisation in our world. Then there is the war with nature – a war that we are close to losing as climate change impacts hit and destroy large parts of our world.

The poor, who have not contributed to the stock of greenhouse gases in the atmosphere, are the worst hit; they are already challenged because of the growing poverty and marginalisation in our world, and now, extreme weather events are making their world unlivable, quite literally. This leaves them with no option but to look for alternative livelihoods; this, in turn, adds to their journey as a migrant – first to cities and then to another country.

But the fact is that it is not only the poor who are impacted by adverse weather events. Climate change is a great equaliser as all parts of the world



are being brought to their knees because of extreme weather, fires, floods and landslides. But what is of concern is that even at the edge of catastrophic planetary disruption, many parts of the world are reversing their actions to stop climate change.

This is why our strategy for 2025-2030 is to build on the narrative on why our countries must rework pathways for inclusive development, which is also sustainable. We know that for countries of the Global South, development is critical. But we also know that this economic growth must also be inclusive and sustainable. This means providing millions with employment, healthcare, education and housing, and increasing energy supply. This has to be our development priority.

But development will require taking action that meets the needs of all – hence, this calls for a change in strategy. We cannot afford a capital- and resource-intensive pathway that adds to environmental degradation and inequity in society. We have learnt over the past decades that we cannot adopt the approach to first pollute and then clean up. We just do not have the financial wherewithal to keep repairing the damage. We have to reinvent



growth and this is what many policies in India have done: they have built inclusive sustainability as an outcome of development policy. This is the unique opportunity for countries like India -- not to pit development against climate action but to subsume it within policies designed for growth. And if we achieve this, we hit a sweet spot: our actions to reduce local pollution and to drive green livelihoods will also reduce greenhouse gas emissions. In this way, our Nationally Determined Contributions (NDCs) -- which puts together the package of actions to reduce emissions -- would be based on co-benefits; development, if done right, will also address the urgent crisis of climate change.

We know that it is in our interest to achieve this twin goal. We are vulnerable to climate change impacts. But if we do development differently, it would help us avoid the pitfalls of marginalising actions designed solely for climate change. It would help us deepen the public acceptability for taking steps that may not be easy or convenient. For instance, we know we cannot “fix” air pollution without redesigning mobility because personal vehicles, however clean, take up road space and add to pollution and congestion. The already industrialised world has taken the path to subsidise and electrify personal vehicles, which is leading to disruption in industries as they strive to rework supply chains and re-deploy labour for electric cars. We have the opportunity to think of another route— one that reinvents mobility so that we can move people and not cars. This means investing in electric buses and affordable transport like paratransit. In our countries, the action to combat climate change must be about upscaling and integrating low-carbon public transport and not just about counting how many electric cars we have. The policy is driven by cleaning up local air, but has the added benefit of combating climate change.

It is the same with hard-to-abate industries like cement or iron and steel. We know from experience that our industry will invest in technology that saves cost and increases competitiveness. The cement industry, for instance, switched to using fly ash, not to decarbonise but to use waste as raw material, substitute limestone and reduce its cost of energy. The future of low-carbon industrialisation lies in similar win-win solutions such as the reuse of waste materials -- from iron ore slag to biomass to refuse-derived fuel from municipal garbage, all designed to reduce the use of coal and other fossil fuels and to improve efficiency. This circular economy in our countries is not a luxury, but an imperative as it saves resources; by making waste into wealth, it abates pollution and the need for environmental inspection systems that we cannot afford.

Most importantly, we must re-engineer the idea and design of a green economy. We cannot afford mouthing platitudes of green employment, knowing fully well that the renewable energy or electric vehicle transition, per se, does not mean more livelihoods. This is why we see a pushback in many countries

where much has been said without substance: this has prompted people, worried as they are about climate change, to care more about livelihoods.

Our opportunity lies in the reworking of the economics so that local resources can be used for local livelihoods. If we do this, we can sequester carbon in trees and in soil, build resilience in society, withstand extreme weather shocks and also stem migration. We cannot afford an economy that is driven only by the Gross Domestic Product (GDP) which extracts and exports produce, and not by Gross Nature Product (GNP) that invests locally in natural resources for livelihoods. Our plan for climate change has to be one that will work for the people as well as for the Planet.

CSE's strategy for the coming year will focus on the need to build knowledge and capacity and implementation of these practices so that change is possible. This is the space we want to use to drive home the need for change and the possibilities of making a difference in our world. The drivers for our work, indeed the imperative that exists, are as follows:

First, there is the fact that climate change is a reality, and this provides the opportunity to push for solutions at scale and that will make a difference. In the years that will come, we will rework our programmes to be framed more deliberately to align climate change solutions that provide co-benefits for sustainable growth in the countries of the South.

Second, as development challenges are also key for countries of the South, the objective will be to advocate for solutions that will be affordable, inclusive and sustainable. This is our purpose as it brings to light the options for co-benefits; to grow without pollution and in ways that are inclusive. In our work, we have underlined the belief that sustainability is not possible without growth that is affordable and equitable. This understanding will underpin our work going forward. It will define the drivers for action in our world: taking stock of our impacts and what we need to do.

Over the past decades, there has been some news to cheer: environment has now become mainstream; we are all outraged at how pollution is affecting our health; how climate change is impacting the poor; how deforestation will lead to more poverty and desertification. This is also leading to change; things are getting better in some cases.

But the bad news is that we are not acting at a scale commensurate with the devastation that we see around us. Unless we take deliberate steps to reverse the damage, we are losing the battle.

The really bad news, of course, is that climate change impacts are now visible and are devastating lives, particularly of the poorest who, in many cases, have no option but to migrate to cope with the relentless attacks on crops and livelihoods. We know from our work that displacement arising from extreme weather events has now outpaced migration caused by war and conflict. In this last year, we have researched and communicated on many trends that should concern us -- from the rising fodder shortages that will



impinge on people's economies to the question of extinction, as the world loses more and more species to the so-called development race.

But in the last few years, we have also found that there is a reason to celebrate; our work to stress on the need for reinvention in the method of management of our environment is finding takers. For instance, cities are learning the art of becoming waste-wise; learning to segregate at source; to minimise the use of plastics; and to reuse and reprocess waste into wealth. We are even taking household waste to manufacture fuel, which then runs buses in cities. More and more cities are moving towards off-site non-sewered solutions for excreta management, taking sewage from households to treatment plants that can then recycle and reuse waste. There is evidence that traditional and regenerative farming methods work. These systems are good for soil, water, productivity and farmers. Now we need to ensure that farmers



benefit from them, so that good food is not a luxury of the rich, but affordable to all. Then there is a greater demand for community forest rights across different countries; women are showing how they can manage forests for livelihoods, so that the country can build a wood-based economy. The opportunity here is to ensure that nature-based solutions that can provide carbon sequestration can work for these communities.

What is important to realise is that change is visible, and that this is because the approach has been reworked. The very method of managing the environment has been re-engineered, so that there is an alternative pathway to growth or to minimise the adverse impacts of growth. We have learnt that strategies for new energy systems, like renewables or introduction of electric vehicles (e-vehicles) -- critical for low-carbon growth -- will only work when these are situated within the national circumstances of the countries of the Global South.

Currently, for instance, e-vehicles still constitute a mere three per cent of the new vehicles registered in India and even less in other regions of the South. Though solar and wind installations are growing, energy poverty is still real and hurtful. Energy transformation will need to be just and equitable to be affordable for the poorest. This is why we have advocated for e-vehicles for mass transit; and we have worked on strategies for para-transit – systems of mobility in our cities that have been ignored or discounted in car-centric approaches. We have also worked to link the issue of clean energy transition to that of concessional finance and put access at the centre of the energy policy.

The bottom line is that environmentalism and our work at CSE will need to keep pushing the envelope of change, even harder. It will need to track and report to bring to light what is happening, particularly at the grassroots. At the same time, our work must have the courage to stand behind solutions. Environmentalism is about deepening of democracy – it is not a techno-fix.

We also believe the quality of our work determines the funds and the character of funding we seek and get. Our funding policy is that we will raise funds for priorities that we set for ourselves; our annual plan is our strategy for action, based on the priorities and learnings of programmes. This allows us to propel programmes towards outcomes; it also allows CSE to stay credible and independent.



2

**OUR THEORY  
OF CHANGE:  
THE WORLD  
NEEDS ACTION  
AND ACTION  
NEEDS HOPE**

**T**oday, the world is speeding towards a human-induced climate change disaster. We must work to stop this, or at least mitigate it and build coping abilities of the poorest to withstand the worst. But it is equally important to believe that despite the scale of the environmental challenge, we are not helpless to make change; we must not get despondent.

In this moment, therefore, it is important for us not to lose sight of the challenge ahead. We know societies will act only when there is direction and there is optimism of the possibility of change. Therefore, we must remain fixated on the idea of what must be done: measure the difference and continue pushing for more action.

This is where the core of our work will be: to build an understanding of the need to change the business of growth so that it is inclusive and equitable – so that it can meet the needs of all. We will continue to use our research and communication to build an informed and much-multiplied public opinion. We believe that we must stay relevant, purposeful and drive the change deliberately, with passion and commitment.

The fact is, we know the ‘nature’ of the problem. The question is, what will we do that will make the difference, and how will we do it?

To understand this, we have revisited our work over the past 30 years to see if we are on track. We have reviewed CSE’s theory of change, whether it is working, and what more should we be doing or what we should not.

CSE was set up in 1980, with a specific objective: to do timely research on current issues and to disseminate this as widely as possible so that it would build an informed public opinion. Therefore, from its inception, CSE has worked to communicate its research. We



started in 1980 with a feature service – researched articles that would be syndicated to news agencies so that knowledge was disseminated.

Then in 1982, CSE started working on putting together the State of India's Environment reports – publications that reported on developments on the



ground; captured people's voices and combined this with perspectives and knowledge from academic research. These reports provided the country with the viewpoint and indeed, the imperative on why a still developing country like India should be concerned about its environment. The reports showed why environment was not a matter of luxury that would concern developing countries after they had got their chimneys and factories and pollution – but was a matter of survival. The reason was that the poor were most dependent on natural resources for their livelihoods. The protection and regeneration of these resources would build wealth and wellbeing. The Gross Nature Product was more important than the Gross National Product, argued these reports.

This was the genesis of CSE's work in synthesis research – we brought information from disparate sources and put it together so that countries could get a macro-view of what was happening and what needed to be done.

Then in the late 1980s, CSE pushed its research into new frontiers: searching for solutions to propel policy change. But again, its approach was to understand the nature of the problem from the ground – learn from the knowledge and the practice of the poor – so that new answers could be found and worked upon. Our publication, *Towards Green Villages*, was based on research on what people were doing in villages

to regenerate their environment and plant trees; what made these efforts stand out; what were the weaknesses in policy that would not allow this practice to multiply; and therefore, what needed to be done. This combined investigative reporting and synthesis research with analysis of the solutions – it suggested that planting trees was about deepening democracy and put forward an agenda for community and people-centric resource management.

In the decade of the 1990s, CSE decided to take on another extension to its work: we decided to undertake direct advocacy so that the research and the solutions we proposed were implemented. In 1996, when we published *Slow Murder* and launched the campaign on the Right to Clean Air. In 1997, when we published *Dying Wisdom*, we started work on changing the paradigm of water management – from centralised to decentralised systems and from state to community management.

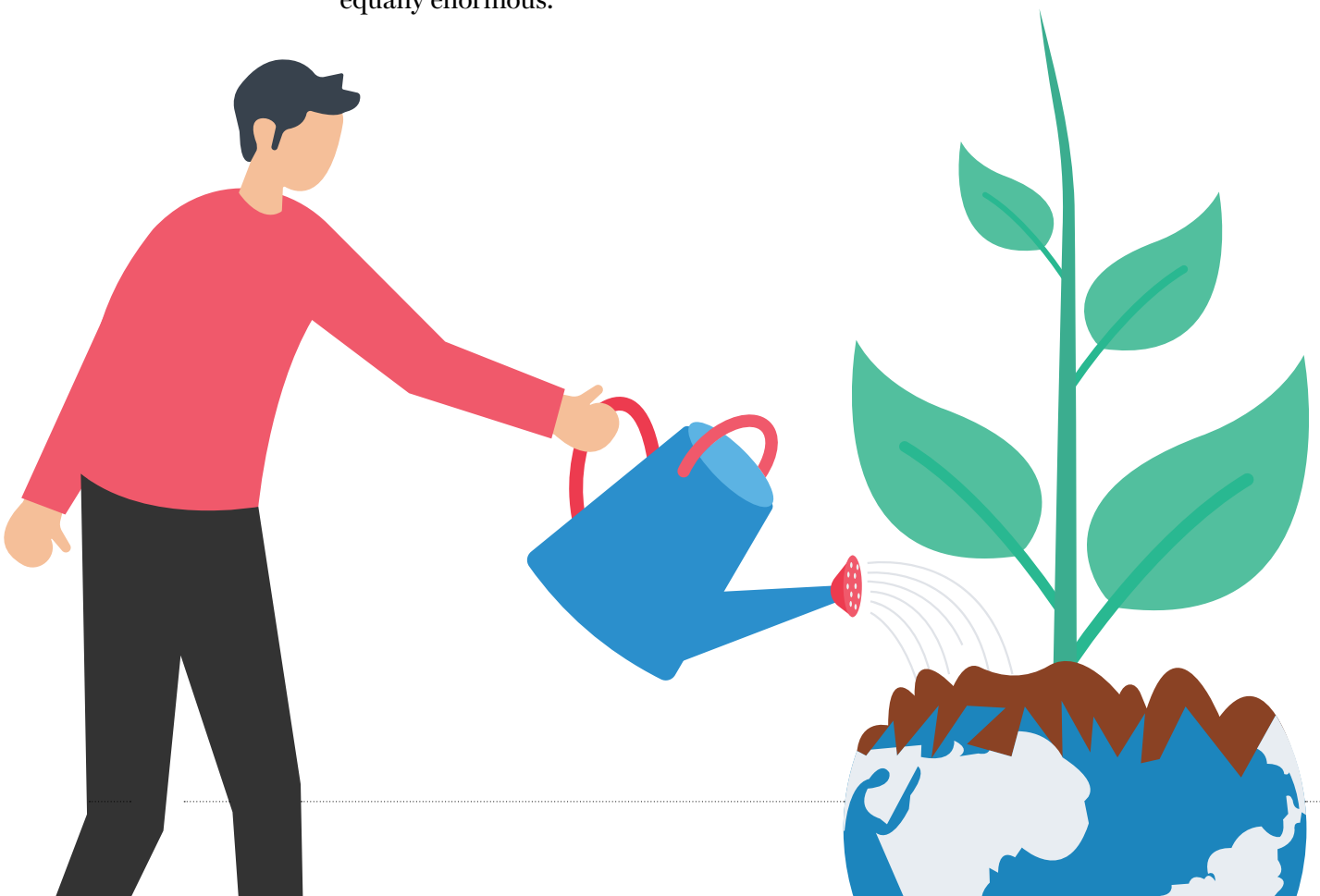
It was in the decade of 2010 that CSE's strategy for work evolved to incorporate programmes for capacity building. We did this because we

realised that increasing the idea of the need for change and environmental management was accepted, but the practice was not changing as expected. We realised that practice was difficult, partly because the practices and methods for environmental improvement had evolved in the rich world, and were unaffordable or unworkable in the poorer world. Another reason was current solutions did not push the envelope, so that practice could be done differently and appropriately to ensure that it was inclusive and sustainable.

So, we needed to build change makers; we needed to deliberately work to build capacity of professionals so that they could do things differently. Practice would then be multiplied. And we have seen this happen – from innovative waste management, to mobility planning, to incorporating risks of climate change in water plans.

The opportunity to expand our work globally has been built on the following premises:

- There is a need to build a Southern perspective on issues of environment to influence global discussions and to provide solutions that will work for our countries. We do this by providing information and analysis and through outreach using platforms like Down To Earth.
- There is a need to share knowledge, particularly of solutions that will be workable in our countries which have challenges of providing basic needs to the people; our challenges of resources and governance are equally enormous.



## OUR THEORY OF CHANGE

In all this, we have identified what we will do and what we will not do in terms of our work. We believe that staying focussed will give us the leverage to remain impactful.

- We do research that is credible and independent and in the public interest. Our research must be rigorous, factual but also provide a way ahead.
- We look for solutions that will work in the countries of the South. In all cases, we look for answers that are inclusive, affordable and hence, sustainable. Our work is to push the envelope of ideas that have not been fructified. We are not afraid to stay behind the ideas and work that is happening, however messy they be.
- We can bring different aspects and disciplines to join the dots; synthesise to provide the big picture; and do this with skills of communication so that they are understood and used.
- We believe that today, for us, it is more important than ever to focus on the need for solutions so that we do not only look at the problem, but analyse it so that we can find the way ahead. We then stand behind the solutions through our technical work and more research, and by communicating the need for change and difference in paradigm. We believe very strongly that if growth is not inclusive and affordable, it cannot be sustainable. That is the mission that drives us.

### CSE SWOT ANALYSIS AS DISCUSSED IN INTERNAL STAFF MEETING

#### Strengths

- Rich legacy – cutting edge policy narratives, front runners in thematic areas.
- Independent, non-partisan civic society organisation
- We have strong convening power — global and national
- Values-led research with a clear vision
- Strong theory of change, with a politics on environment.
- Strong rung of mid-level managers

#### Weaknesses

- We do not implement projects on ground
- Must increase cross-team collaboration
- Quality-time-capacity conundrum
- We have a bias towards urban issues; less attention on rural issues

#### Opportunities

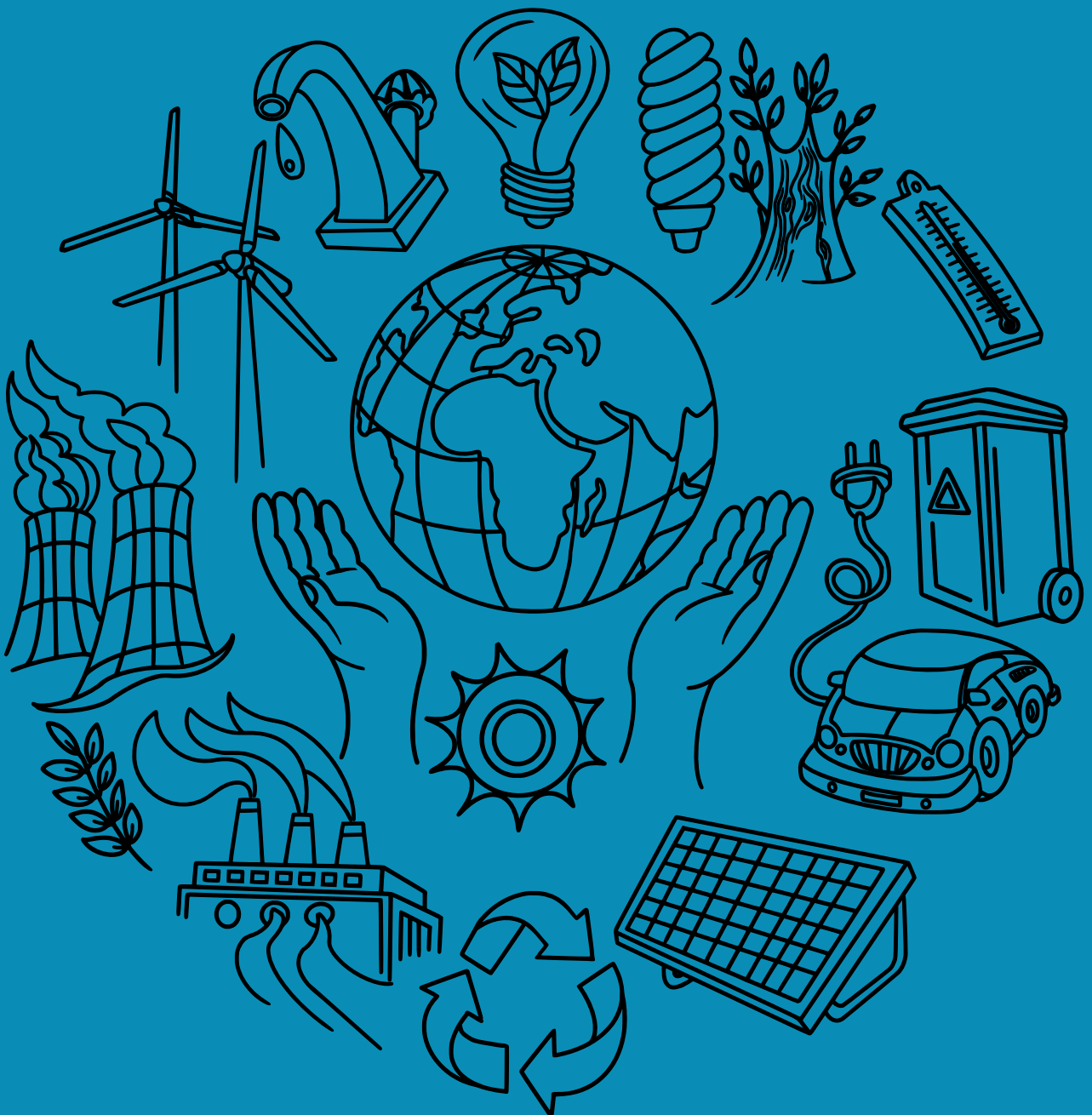
- Increased collaboration and focus on implementation on ground through partnerships
- Increase visibility and need to influence processes

#### Threats

- Changing geopolitics and reversal of strategies for sustainability



# STRATEGY FOR 2025-2030





**T**he strategy for 2025-2030 is a continuation of our past strategy, but with increased emphasis on the need to deepen engagements at the regional and local levels and to focus on the connections between climate change action and development.

We had said in our previous strategy document that our objective is to be involved in the business of making and bringing change.

We have ensured that every programme that we are involved in has clear outcomes -- we must know what we are doing and why. We must review our work regularly so that we can map what is the current state of affairs and identify the gaps for our policy interventions.

## **OUR THEORY/PRACTICE OF CHANGE WILL CONTINUE TO BE:**

**RESEARCH:** Ensure it is independent, credible and hard-hitting so that it provokes change. But also ensure that it is rigorous (forensic) and accurate so that our credibility is maintained.

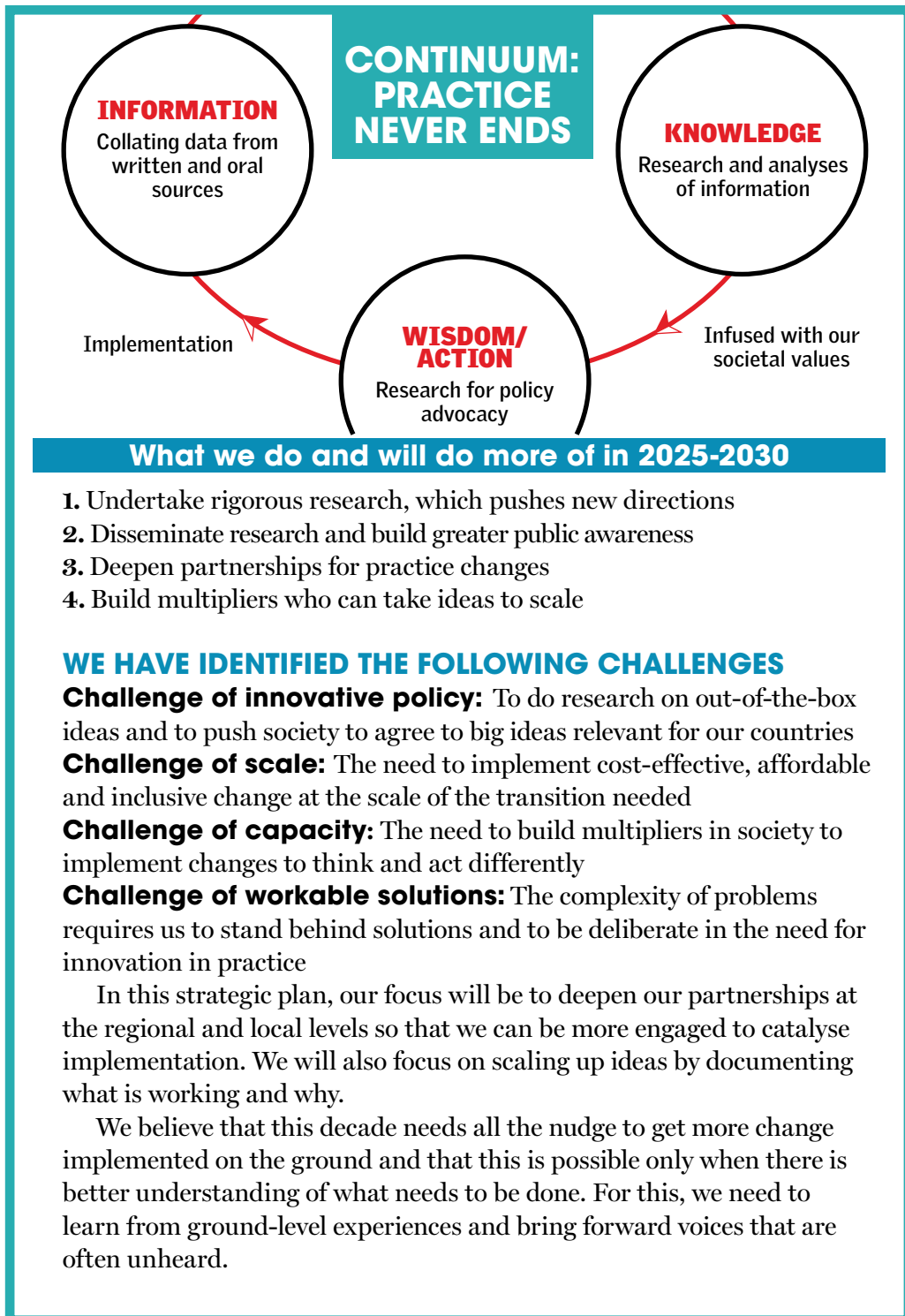
**PUBLISH SYNTHESIS REPORTS** that provide the big picture and suggest directions for future. Make sure these are analytical in terms of policy directions so that they can be used for further work.

**DISSEMINATE RESEARCH** deliberately for advocacy – use it to pursue issues and concerns with agencies and push for change.

**BUILD AN INFORMED PUBLIC CONCERN** about environment through widely disseminated knowledge, which in turn will create the pressure to accept the change that we seek. Work to reach information to groups and communities that do not get access to mediums designed for English-speaking audiences.

**BUILD MULTIPLIERS** – media, educators, regulators – to accelerate the pace of change we seek.

**WORK DELIBERATELY AT THE COUNTRY/STATE LEVEL** with government agencies to frame policies and to catalyse and assist them to take forward the change we seek.



# STRATEGY 1

**We will put climate change at the centre of our work. The strategy will focus on leveraging action through co-benefits and affordable and inclusive policies for sustainability**

Given the urgency of action and the need for transformative solutions, our work on climate change has been placed at the centre of our strategy for programmatic work. We recognise that in African countries and in countries like India, climate change mitigation is not a driver for change. However, there are big co-benefits in the way we manage our environment – this system of management is good for the local environment and can also mitigate emissions globally. This is the strategy we will adopt, so that there is a buy-in for change at the national level; this will leverage the opportunity to address the urgency of climate action as well.

**Here is our strategic framework for placing climate change at the centre of programmatic work**

<b>Climate change focus/sector</b>	<b>The opportunity</b>	<b>CSE's strategic plan -- areas of intervention</b>
<p><b>ENERGY: Contributor of greenhouse gas (GHG) emissions, as also an enabler of livelihoods and development</b></p>	<p>The use of energy, crucial for development, is a contributor to GHG emissions. Countries like India are dependent on coal for power, which adds to our domestic health burden because of air pollution. Thus, reducing emissions from coal can lead to huge co-benefits for local air quality.</p> <p>There is also a need for energy access for the poorest in the world, in regions where households have crippling energy poverty and women still use dirty biomass for cooking, adding to their health burden.</p>	<p>Research transition from fossil fuels to renewable power for local pollution abatement and increased access to energy for the poorest in our world.</p> <p>Research on and advocate for circular economy in the power sector so that coal usage is reduced/replaced.</p> <p>Work on renewable energy for energy access by focusing on decentralised sources of clean energy/mini-grids and see how these can be scaled up; what is the financial mechanism for support so that these systems can be accessed by the poorest in our world.</p> <p>Focus on best practices of rooftop and community-owned energy systems, including farm irrigation systems using solar power, so that energy enables livelihood and resilience.</p>

<p><b>INDUSTRY:</b> Sustainability pathways for hard-to-abate sectors and small and medium industry for employment</p>	<p>Hard-to-abate sectors such as iron and steel, cement, aluminum and fertilizer are contributors to GHG emissions, but are also critical for economic growth.</p> <p>Decarbonising strategies for these sectors require co-benefits of circular economy so that clean technologies can be deployed for cost-effective benefits.</p> <p>In countries of the Global South, small and medium scale industries are crucial for employment generation, but are also major polluters of air and water. The challenge is to find affordable technologies for pollution abatement and for inspection and monitoring of their environmental performance.</p>	<p>CSE’s work on the hard-to-abate sectors of iron and steel and cement has recommended pathways that are based on circular economy – they advocate resource efficiency and pollution abatement.</p> <p>Our work with environmental regulators has shown that it is crucial to recommend options that will be feasible as there is a dire lack of capacity and resources for them to operate. In most cases, either funds for pollution monitoring are inadequate, or there are serious problems with operations.</p> <p>CSE has worked to find strategies in India and Africa on the use of waste material for resource recovery with pollution control. This mapping will be the basis of our future work so that medium and small industries can deploy these options for pollution abatement.</p>
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<p><b>TRANSPORT: Contributor to climate change and economic growth.</b></p>	<p>Transport by roads adds to pollution and GHG emissions.</p> <p>In cities, vehicles consume large amounts of fuel and add to local pollution. The opportunity is to reinvent mobility systems for efficiency and affordability.</p>	<p>CSE’s work on mobility will focus on low-carbon growth opportunities for upscaling mobility transformation in cities. We will also look at opportunities to address challenges of black carbon, super pollutants and toxins that impact human health.</p> <p>Our work indicates that there is an opportunity for investment in electric mobility in the cities of the Global South. This requires integrated solutions that can connect mass transit with para-transit, and an infrastructure for walking and cycling. The city co-benefit strategy is to move people, not vehicles. Access to mobility is key to inclusive and equitable growth – the right to walk and cycle, to take a bus or a metro train can be the pathway to economic growth. But this mobility infrastructure needs to be affordable and inclusive, and thus, sustainable and climate-friendly.</p>
<p><b>BUILDING SECTOR: Designing for affordability and thermal comfort</b></p>	<p>Energy use in the residential building sector increases with temperature rise. In this way, buildings are big energy guzzlers as well as a source of GHG emissions.</p>	<p>Given the increased health burden because of growing heat, it is important for buildings to be designed for thermal comfort.</p> <p>CSE’s work has been to research and advocate for the incorporation of traditional architecture and passive building design for affordable housing – which will bring the benefits of heat management and reduced need for air conditioning. Simultaneously, at the city level, there is a need to increase resilience.</p>

<p><b>SOLID WASTE MANAGEMENT:</b> <b>Adding to plastic pollution and increased health burden</b></p>	<p>Landfills and the methane they produce and plastic pollution are big challenges for our environment and human health. There exists, therefore, a huge co-benefit if we clean up our cities and turn them into healthier urban centres.</p>	<p>CSE’s work has shown governments of the Global South that we cannot ‘waste land for waste’ – waste is a resource and its management requires strategies for processing and recycling.</p> <p>For cities, the best practice should incorporate household-level segregation and reuse of materials, both wet and dry (including plastics), and ensuring that these are designed for recycling and upcycling.</p> <p>This strategy can improve local environment, build livelihood security, and minimise plastic pollution in our oceans and waterways.</p>
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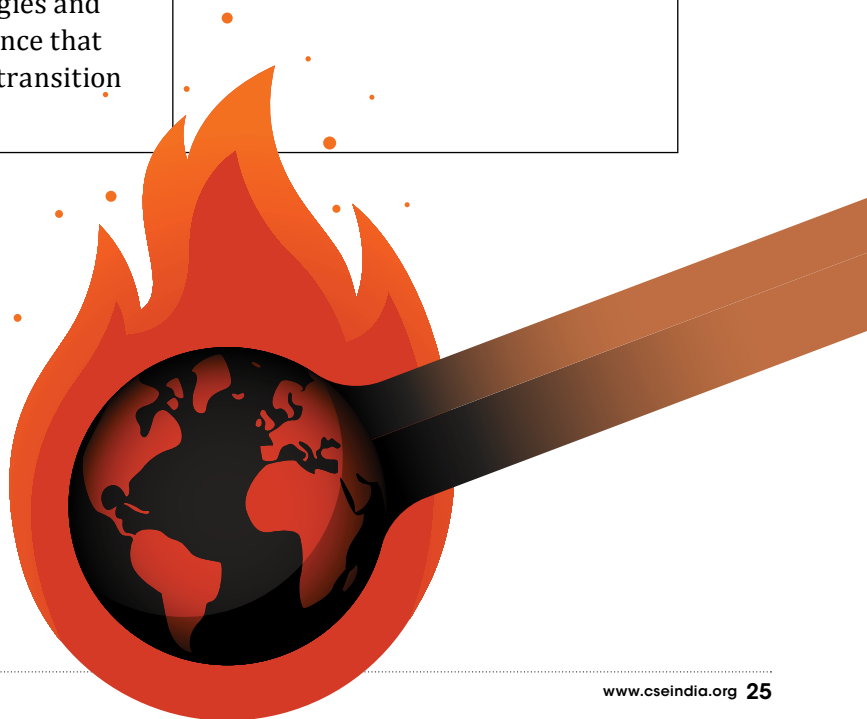


<p><b>AGRICULTURE: Livelihoods for millions and the need to improve resilient and regenerative farming</b></p>	<p>Current food systems need to be reworked for increased livelihood security; resilience against climate change impacts; and improved human nutrition.</p> <p>Agriculture is also a key contributor to GHG emissions -- re-engineering towards regenerative agriculture with a focus on nutrition and livelihoods will bring huge co-benefits.</p> <p>Biodiversity conservation is key to food systems as food must be diverse and nutritious. Biodiversity in the fields is also important for reducing risks faced by farmers and for ensuring improved soil health.</p> <p>Nature-based solutions for climate change, but these will require community participation so that there is no risk to livelihoods or biodiversity.</p>	<p>CSE will continue to advocate the practices of climate-resilient agriculture and agroecology, building on experiences in India on natural/ regenerative farming practices, including reduction of antibiotic use in food-production.</p> <p>Focus on farmer livelihood improvement through insurance, cooperatives and procurement policies.</p> <p>Communicating the food-nutrition connections for biodiversity conservation and documenting best cases of community-managed natural resources.</p>
<p><b>FORESTRY (nature-based solutions)</b></p>	<p>The opportunity is in using forestry and nature-based solutions for ensuring livelihoods for the very poor and for regeneration of lands. Forests are both sources and sinks and the effort should be to reduce deforestation (source) and increase re-forestation (sinks).</p>	<p>Forest lands are habitats of poor communities – so, while we must work on nature-based solutions, these must not be used to dispossess them further or destroy biodiversity.</p>

<p><b>WATER AND WASTEWATER MANAGEMENT</b></p>	<p>Climate change impacts will devastate the hydrological cycles of nations. Extreme rain leads to floods, followed by droughts; more heat adds to water stress. This will take away the development dividend as natural disasters increase and the existing infrastructure of water-sanitation, health and education is crippled.</p> <p>The adaptation agenda is to secure water futures: through increased efforts for decentralised water harvesting; and groundwater recharge through conservation of lakes and waterbodies. But this is not possible without pollution control so that the available water is not contaminated and degraded, adding to our health burden. For this, the approach of reinvented non-sewered sanitation is critical for urban areas – it will provide affordable and inclusive solutions as well as grey water and sanitation solutions in rural areas.</p>	<p>City-wide plans for affordable water/ sewage and climate resilience will provide a framework for adaptation to climate change.</p> <p>Focus on non-sewered sanitation solutions for urban areas will result in inclusive sanitation and pollution control.</p> <p>Water harvesting and groundwater recharge plans for rural areas, combined with toilets with faecal sludge management and reuse.</p>
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<p><b>CLIMATE CHANGE: Global negotiations to push for equity and ambition</b></p>	<p>Climate ambition requires countries of the Global South to decarbonize. This requires concessional finance and market-trade rules that will benefit communities and have the integrity for carbon reduction.</p> <p>Hard-to-abate industrial sectors are critical for economic growth but also have the urgent imperative to decarbonise. The approach is to find pathways that will be affordable and sustainable.</p> <p>Renewable energy is key for energy transition, but in countries of the South, in spite of decreased prices of solar/wind, it remains unaffordable, particularly for the poorest households. The challenge is to find leapfrog strategies and innovative finance that will make this transition possible.</p>	<p>Research on and initiate outreach of the obstacles for ambitious climate transformation in countries of the Global South, including on finance, markets for carbon credits, and trade rules and laws.</p> <p>Develop pathways for hard-to-abate sector decarbonisation that are affordable and can work with innovative finance.</p> <p>Focus on renewable energy for access and on removing barriers for scaling up clean energy transition in countries of the South.</p>
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## STRATEGY 2

### Deepen engagement at the regional and local levels to promote implementation through partnerships

CSE, in its 2014-2019 and then again in the 2029-2034 strategic plans, had set out the objective to expand its operations to global forums and to countries beyond India. We did this, arguing that global cooperation requires participation and engagement from the South. The approaches and solutions emerging from countries of the South will influence action across the world – global agenda requires learning from local action, and in turn, local action needs global support. It is a global-local world. Our strategy was to take the work in which we hold the knowledge, expertise and ability, to where there was demand, so that we could drive change.

In the past decade, this strategy to work at the regional and local levels has been extremely impactful and has shown us the advantage of working with partners – government and other stakeholders – to increase the uptake of ideas and to catalyse implementation.

In the 2025-2030 strategy, we will increase our focus and work at the regional and local levels. We are aware that we cannot implement change at the scale that is needed. But if we work deliberately with agencies that are responsible for making this happen, the impact can be very meaningful.

We have learnt that our ability to reach and influence governments is based on our credibility as an institution that has ideas and solutions; most importantly, these ideas and solutions are being practised in many places. The South-South sharing has been built on the fact that these are feasible ideas that can be upscaled, replicated and implemented. Governments need assurance that there is similar work happening or has succeeded in other countries. The relevance of this experience is what has made partnerships work.

#### Partnerships: existing and future- for deeper engagements at the local, regional and global levels

Area of work	Country, region and forums where CSE will intervene (2025-2030)
<b>Sustainable urban habitats for climate resilience and for affordable, inclusive growth</b>	
<b>Cities and regions for clean air, health and climate co-benefits</b>	<p>Strengthen implementation and compliance strategies of India’s multi-sectoral national clean air programme with special focus on sectoral actions on transportation, fleet renewal and e-vehicle strategies, and build convergence with state climate action plans. Regional focus on the Indo-Gangetic Plains -- work with sectoral agencies, regulators and state governments of Delhi-NCR, West Bengal, Odisha and Rajasthan.</p> <p>Venues of intervention in the Global South include Nigeria, Ethiopia and Kenya. Pan Africa-Asia forums (CAI, ECOWAS), global platforms such as UNFCCC COP meetings, the Clean Air Asia network and UNEP and regulator’s forum for electric vehicles and clean fuel introduction.</p>

<p><b>Thermal comfort and resource efficiency in the built environment for climate-resilient cities in the Global South</b></p>	<p>Advocate for Global South countries to adopt a habitat framework as part of their city-level climate action plans, including planning and designing standards and practices to make cities resilient to rising heat.</p> <p>In India, the programme engages with construction companies, national town and country planners, schools of planning and architecture, power distribution companies, city authorities and urban local bodies and renewable energy power developers, among others.</p> <p>Engagements with global, pan-Africa and Asia forums, including UNEP, UN-Habitat, Kigali Cooling Efficiency Program etc.</p>
<p><b>Equity, sustainability and resilience in water and sanitation for climate-risked times</b></p>	
<p><b>Building resilience in water, septage, wastewater and reuse in cities of the Global South</b></p>	<p>Work with key ministries and national-level missions, including the National Mission on Clean Ganga, Jal Jeevan Mission etc on faecal sludge management, non-sewered sanitation systems, sustainable water supply, circular economy of reuse of treated wastewater and bio-solids. At the sub-national level, work with the Uttar Pradesh state agencies on providing proof of concept on affordable safe sanitation and city water and sanitation planning.</p> <p>Engage and partner with key ministries in Ethiopia (ministry of water and energy), South Africa (ministry of water and sanitation) to advocate for policies, implementation action plans to strengthen climate resilience in water and waste-sensitive cities in the Global South.</p> <p>Visibility on pan-Africa and pan-Asia platforms such as Africa Water and Sanitation Alliance (AfWaSa), Global Forum for Climate Change Cities (GFCCE) and development banks for meaningful scale-up, learnings and impact.</p>
<p><b>Strengthening rural water and sanitation for health and access</b></p>	<p>Provide technical, implementation strategy and policy design assistance to Tanzania (ministry of health), Uganda (ministry of water and environment) and Nigeria (federal ministry of environment) on safe groundwater management, source water sustainability and safe sanitation.</p>

<b>Promoting circularity in industry and solid waste management for resource efficiency</b>	
<b>Strengthening environmental governance and sustainable industrialisation</b>	<p>Engages with central and sub-national pollution and industry regulators in India on environmental governance, waste circularity and to strengthen environmental regulations, with focus on EIA, monitoring and compliance assurance.</p> <p>As part of its deep dive engagement in Africa, the programme focuses on Nigeria and Ghana to develop EIA and audit-related rules and guidelines for a host of sectors. In Tanzania, as part of its collaboration with the National Environmental Management Council (NEMC), the programme has developed a roadmap on pollution abatement measures for Lake Victoria. Global platforms and venues include (UNDP and the United Nations Environment Programme (UNEP), International Waste Working Group, UN Centre for Regional Development, UNFCCC and the African Circular Economy Alliance, among others.</p>
<b>Effective and affordable municipal and plastic waste management</b>	<p>Across the Global South and in particular in Africa, the programme convenes the Global Forum of Cities for Circular Economy, comprising of active partnerships with key ministries and environmental regulators from 19 member countries, to strengthen policies and practices to improve the management of municipal solid waste and plastics with circularity principles.</p> <p>The programme is part of the India-Norway Marine Pollution Initiative to find affordable solutions for land-to-sea pathways of waste. CSE provides proof of concept to city authorities of Gurugram (in Haryana) and Agra (in Uttar Pradesh) on handling special categories of waste and strengthening the entire MSW value chain. It engages with the Union ministries of environment, and housing and urban affairs, as well as with state government agencies, city authorities and pollution regulators on policy, regulations and guidelines on the management of MSW and plastics.</p> <p>The programme is active in the Intergovernmental Negotiating Committee (INC) global negotiations, constituted by the United Nations Environment Assembly (UNEA) to develop a legally binding instrument to end plastic pollution.</p> <p>Country-specific partnerships with Tanzania, Eswatini and Ghana span capacity building and technical support on MSW management.</p>

<b>Food systems and biodiversity for climate, health and nature co-benefits</b>	
<b>Food systems for resilience, health and livelihoods</b>	<p>This programme works at the intersection of food, nature (biodiversity) and nutrition, with focus on climate-resilient agriculture and prudent management of antibiotics in food and food animal systems.</p> <p>Key global forums include the FAO and Global Leaders Group on AMR, among others.</p>
<b>Promoting biodiversity for nutrition and livelihoods</b>	<p>The programme actively engages with several global forums to represent Global South views in ongoing international discussions – including with the Conference on Biodiversity, the International Treaty on Plant Genetic Resources for Food and Agriculture, WFP, WIPO Copyright Treaty and other related multilateral meetings.</p>
<b>Promoting an ambitious and equitable climate agreement and decarbonisation pathways</b>	
<b>Building blocks for finance, trade and markets for an ambitious and equitable climate agreement</b>	<p>The programme has knowledge and learning exchanges with global bodies beyond the UNFCCC – including the WTO, IMF, World Bank, G20 and the development finance landscape -- to push for equity and finance flows to developing countries for driving the transition away from fossil fuels. It also engages with civil society groupings such as the Climate Action Network (CAN). The programme’s research has policy engagements with the Bureau of Energy Efficiency and the Union ministry of environment and climate change, among other government bodies.</p>
<b>Pathways for decarbonisation for hard-to-abate and other sectors</b>	<p>As part of its research on decarbonisation of hard-to-abate sectors and energy, and the role of carbon markets/ emissions trading schemes in India, the programme has linkages with the Indian ministries of steel, of heavy industries and of power, as well as with pollution regulators and the Bureau of Energy Efficiency, among others.</p> <p>The programme is also designed to contribute to the development of decarbonisation roadmaps of hard-to-abate sectors in select geographies in Africa and Southeast Asia.</p>

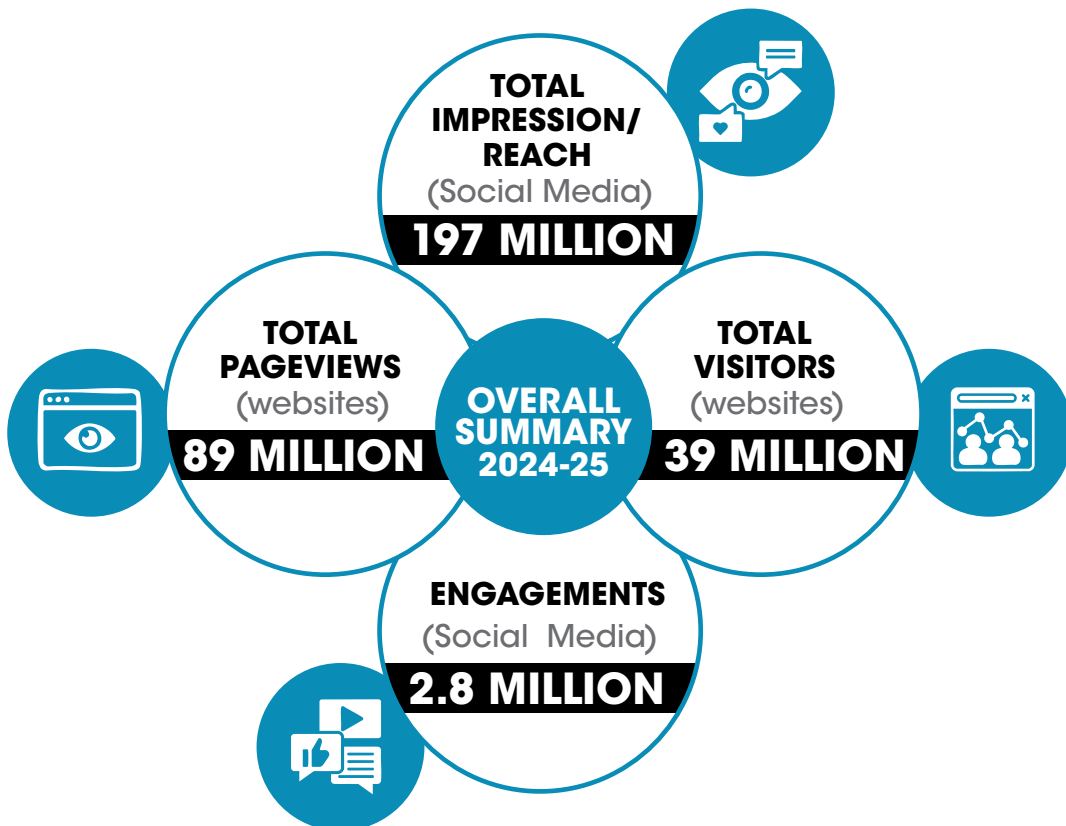


## STRATEGY 3

Continue to communicate the message as widely as possible to build the virtual circles of change

CSE has always focussed on the need to communicate our research to build public awareness. We believe strongly that this approach is critical as too often, research is not widely disseminated -- as a result, ideas do not take root or influence policy. As part of our theory of change, we believe we must communicate our knowledge so that it unleashes the power of millions to see the change and to practice it. Amplification of our message is absolutely critical today.

We believe communication – visible, high-quality, catchy and yet in-depth and relevant – is crucial to bring change in society. In our 2019-2024 strategic plan, we had taken on the following objectives:

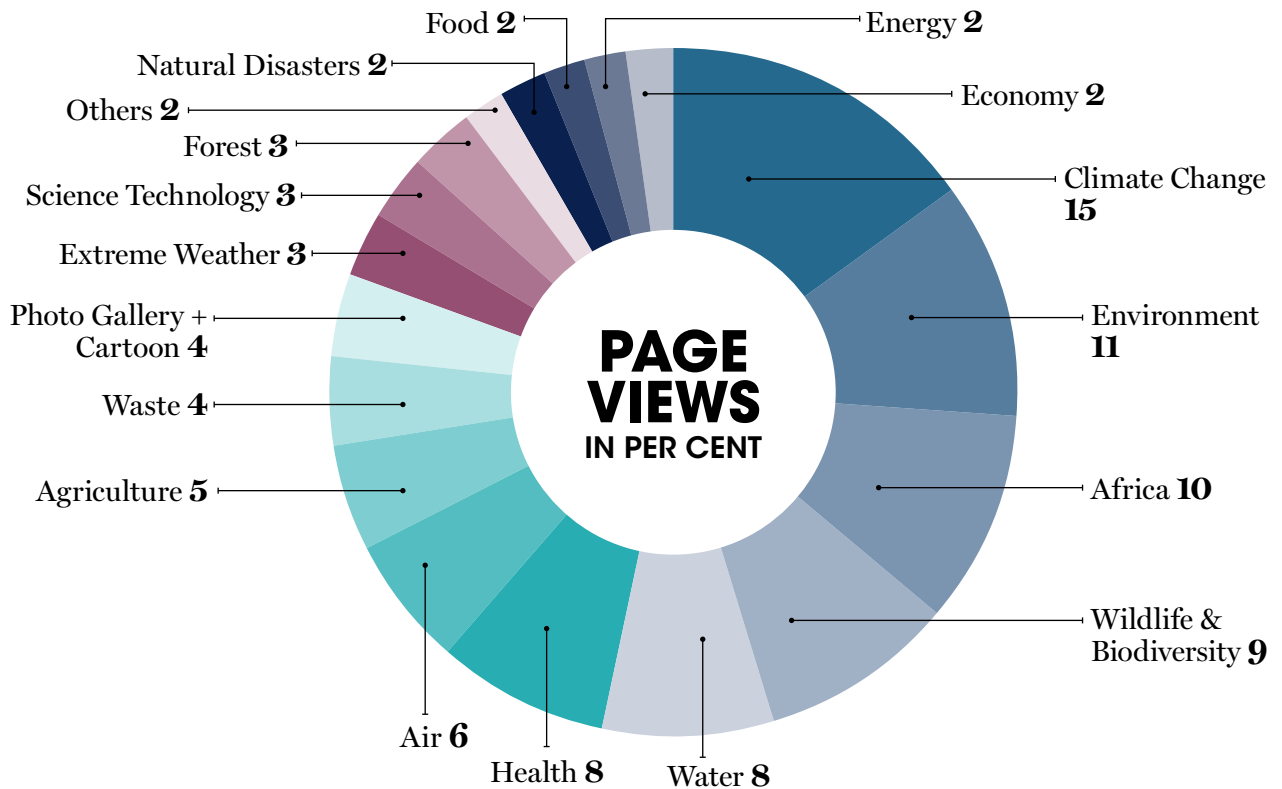


**In addition, our knowledge and perspectives on climate change have been widely read – over 13 million pageviews in 2024-25. This work will continue.**

Categories	Pageviews	Pageviews in %
Climate Change	13113766	14.74%
Environment	10124468	11.38%
Africa	9021275	10.14%
Wildlife & Biodiversity	8398504	9.44%
Water	6912752	7.77%
Health	6841578	7.69%
Air	5142305	5.78%
Agriculture	4430567	4.98%
Waste	3434134	3.86%
Photo Gallery + Cartoon	3122749	3.51%
Extreme Weather	3024885	3.40%
Science Technology	2882538	3.24%
Forest	2873641	3.23%
Others	2072936	2.33%
Natural Disasters	1992865	2.24%
Food	1948382	2.19%
Energy	1850518	2.08%
Economy	1779344	2%
<b>Total</b>	<b>88967208</b>	

**Re-position Down To Earth as a popular and powerful voice from the Global South:** In the last five years, we have worked in a focussed manner on this strategic objective – as a result of which, in 2024-2025, Down To Earth and CSE websites received about 39 million visitors and 85 million pageviews.

We have also increased our use of multimedia and social media to be able to reach across social media platforms. From Instagram, FaceBook and LinkedIn, we have had close to 200 million impressions in this past year, with 2.8 million engagements.



**Reach more readers in the Global South and in particular in Africa:** In order to track our readership in Africa, we have created a sub-site, which shows now that in 2024-25, we have had nine million pageviews, accounting for over 10 per cent of our total traffic. This information is powerful as it indicates that an informed public opinion is being built about the challenges and opportunities in the African continent.

In addition, our knowledge and perspectives on climate change have been widely read – we have had over 13 million pageviews in 2024-25. This work will continue.





## AFRICA: KEY PUBLICATIONS

	Report	Downloads
1	<a href="#">State of Africa's Environment 2024</a>	<b>40396</b>
2	<a href="#">Procurement and Financing of Electric Buses in India: Lessons for Africa</a>	<b>8253</b>
3	<a href="#">Making of Electric Vehicle Policies and Programmes in Africa: Takeaways from India</a>	<b>5137</b>
4	<a href="#">Towards Circularity: Good Practices in Solid Waste Management in Africa - A Compendium Report</a>	<b>7575</b>
5	<a href="#">Africa's Wasted Potential: Unlocking Industrial Waste in Circularity</a>	<b>6972</b>
6	<a href="#">Carbon Markets in Africa: An Overview</a>	<b>7167</b>
7	<a href="#">E-Volution: Why electric mobility is an opportunity in Africa</a>	<b>8173</b>
	<b>Total</b>	<b>83673</b>

### Disseminate research of CSE widely so that it can be used to influence policy:

In this past year, we have worked hard to ensure that each research report is disseminated using multiple tools -- from social media posts on key findings to multimedia shorts and press releases. In this past year, we have seen an increase in the number of downloads, reaching close to 900,000. We will continue to work on these tools to amplify our messages.

YEAR 2024	YEAR 2025
Total Reports: <b>84</b>	Total Reports: <b>113</b>
Report Downloads: <b>78,382</b>	Report Downloads: <b>875,539</b>

**Build a network of environment and climate change media across countries of the Global South:** This work has grown and in the past year, we have worked with media professionals across the countries to brief them on key issues and to build skills in outreach and data management. This work with development communicators will continue as we see them as critical multipliers of knowledge.

## STRATEGY 4

**Build capacity so that pathways for low-carbon growth and co-benefits can be upscaled through government agencies and other stakeholders**

Our work is to build capacity and nurture multipliers in society who have the skills to be able to implement the change. It is for this reason that we do trainings both in our campus at the Anil Agarwal Environment Training Institute (AAETI) as well as online. In 2024-2025, we did over 140 trainings, of which, 98 were on-site trainings and we reached roughly 7,800 people with our trainings, as many as 2,618 people visited our campus for the onsite trainings. These trainings covered subjects ranging from waste management and rainwater harvesting to faecal sludge management and environment impact assessment; they catered to all the communities that we are working with, from school teachers and university professors to pollution control regulators. These are all multipliers in society who, armed with knowledge and perspective, will be able to drive the practice of change on the ground.

This is why we will continue to invest in this engagement. Across our world, the institutions for effective governance need to be strengthened. This is critical. Therefore, not only must we find ways to strengthen governance and accountability through new and innovative regulations, but also work to build capacity of individuals.

In this strategy period 2025-2030 – we will continue to deepen these partnerships. The key change is that we will also work to ensure that we follow up with the participants in the capacity building programmes so that we can track their work and also continue to engage with them so that learning is translated into practice.



4

# IDEAS AND LEARNINGS THAT WILL DRIVE OUR STRATEGY FOR 2025-2030



## **INCLUSIVE AND AFFORDABLE GROWTH IS AT THE CORE OF SUSTAINABILITY**

We stand at a crossroads today. Our unsustainable patterns of growth means we are hurtling towards a climate catastrophe; and our inequitable manner of growth means we are hurtling towards increased poverty, marginalisation and anger.

Our learning in India is that growth that is not affordable -- in other words, not equitable -- cannot be sustainable. The agenda for the future, therefore, must hinge on ensuring this: a growth that is affordable, equitable and hence, sustainable.

Consider the challenge of Delhi's toxic air pollution. It is not that we are not trying to make a difference. All coal plants have been shut; pet coke imports have been banned (incidentally, this product is what the United States exports as it is toxic for its own local use); and we are switching to the cleanest fuels and vehicle technologies. Despite these incremental actions, we stay behind the pollution crisis. CSE researchers estimate that air pollution in Delhi has reduced by 25 per cent over the past three years, compared to the previous three years -- but it still needs to be reduced by 65 per cent to get what you will call clean air.

The reason is simple: today, less than 20 per cent of Delhi drives in cars to work; just about 25 per cent own cars. But these vehicle owners take up 90 per cent of the road space.

The question is, if the demand of just 20 per cent of the population is leading to such huge congestion and pollution, where and how can the city find the road and air space for all? This is where the environmentalism of the poor kicks in. If the rich are to breathe clean air, we need to rework our mobility strategies for everyone. We cannot think of adding a few buses or trams or metros; we need to transform mobility so that it works for the rich and the poor. This means combining affordability, convenience and safety.

This is also the case with energy. Many households still use biomass to cook food because they are poor, adding to air pollution. These pollutants, which are killing poor people, are also contaminating the airshed -- one that is shared by both the poor and the rich. So, if we want clean air, we will have to get the rich out of their polluting vehicles, but we will also have to ensure that the poor households get options to move away from dirty fuels. Their energy transition is important for ensuring clean air. This is why without inclusive growth, we cannot have sustainability.

The opportunity is also enormous. If we reinvent for transformative action we will focus on the needs of the poor women and provide them viable, affordable options to leapfrog -- from non-fossil dirty fuels to non-fossil clean fuels. But this is where the world needs leadership so that finance for energy transition is concessional and provides the opportunity to scale up the system for the poorest in the world. The challenge of climate change is a mirror to the air pollution challenge we face in Delhi.

In 1990, we had argued in our publication *Global Warming in an Unequal World* that the world cannot combat climate change unless the agreement is fair and equitable. Today, the same issue is back on the table. If the solutions cannot meet the needs of all -- that is, they are inequitable -- they will not work.

This is where we need to understand the notion of ‘environmentalism of the poor’ once again. It is clear that events in our world are spiralling out of control. Every year is the hottest year, till the next year comes around. From forest fires to increasing frequency and intensity of storms to blistering cold waves and scorching heat – it is getting worse. We are facing the most inconvenient truth today.

At current rates, the world will run out of its carbon budget -- how much it can emit to limit global warming to 1.5°C -- by 2030. But there are vast numbers of people who still do not have access to basic energy. They need energy for their development. This is why we need cooperation so that future development can be low-carbon for all.

It is clear that the increasing numbers of disasters because of the growing intensity and frequency of weird and abnormal weather will make the poor, poorer. Their impoverishment and marginalisation will add to their desperation to move away from their lands and to seek alternative livelihoods. Their only choice will be to migrate -- move to the city or move to another country. This ‘double-jeopardy’ in the interconnected world is the push – a lack of options -- and the pull -- bright lights that suggest a choice of better futures. This will add to the already volatile situation of boat people and migrants at border walls, making our world insecure and violent.

This is the cycle of destructive change that we must fight. Our globalised world is inter-connected and inter-dependent, and we must recognise this. Sustainable development is not possible if it is not equitable. Growth has to be affordable and inclusive for it to be sustainable.

## **THE LAND-SOIL-LIVELIHOODS-NUTRITION CONNECTION FOR CLIMATE-RISKED TIMES**

With climate change in our mind, there is talk about the need to re-engineer the current model of agriculture and the food we eat. Agriculture today contributes to greenhouse gas emissions in a variety of ways – from rice cultivation and livestock that emit methane to nitrous oxide from the use of synthetic fertilisers and manure on fields.

But this is not all. The large-scale clearing of forests, including rainforests for livestock for beef or even palm oil, adds to the crisis of our climate-risked world. There is also the multi-continent transport of processed foods and its sale. After all this, we have a serious agrarian crisis across all continents where rich farmers want more subsidy to survive and the poorer agriculturists are getting squeezed and impoverished. The increased frequency and intensity of extreme weather events is making this literally unbearable. The question then is, what is the transition that we should aim for in the coming years?

This is where the farms and the food of our world – in countries like India – provide answers. We have, as yet, in most parts not moved to a highly input-intensive model of livestock production. Most dairy farmers are still individuals, using combinations of open and stall feeding for their animals. Their farms are based on agro-silvo-pastoral systems.

But this is changing fast. In many crops – including rice, wheat and cotton – farmers are increasingly using expensive inputs, ranging from fertilizers and seeds to pesticides. This is in turn adding to the debt burden of farmers, making them even more vulnerable to crop losses, which are now even more frequent because of climate change.

This leaves us with the question: what should be the elements of the agricultural model for livelihood-nutrition-nature security in our climate-risked world?

First and foremost, it has to be low-input so that it protects the farmer from multiple risks. This will put more money in the hands of farmers, particularly as we know that the high cost of food make it unaffordable in most countries. It is also clear that low-input agriculture is not necessarily lower in productivity. The conventional strategy – even what is being promoted in the name of smart agriculture – depends on high quality and high cost inputs, which add to the cost of cultivation. The argument is that this will lead to higher yields, which will give the farmer higher incomes. But this only works if the costs do not wipe out the profits. In the case of small-holding farmers, where there is little economy of scale, this is just not possible.

Increasing yields will need working on the health of the soil and in providing irrigation to farmers, when they need it the most. This is when it is also clear that climate change will bring new pests for farmers. This means it is all the more important for agriculture to be resilient -- but this does not mean increasing the use of pesticides. It can and must mean changes in practices of agriculture as well as the use of non-chemical alternatives. The bottom-line is that resilience requires more ability to cope and recover, which would lead to higher returns for farmers. This also means investing in markets that will provide opportunities to farmers to maximise gains.

Second, agriculture has to be built on the principle of risk minimisation. This would mean promoting multiple-option cropping systems, ones that will promote biodiversity as farmers would grow more than one crop on the field. This is also why livestock economy is integral – it allows for management of risk so that there is income from different sources. Think of it like the diversification of investment portfolios, which bankers would advise you in these times of uncertainty.

Third is the question of crops – ones that are both nutritive and compatible with the local environment. In other words, where there is a water shortage, farmers should grow crops like millets that are water-prudent. But this choice is not in the hands of the farmer. Government must enable policies that will promote growing of these crops. For instance, more biodiverse and climate-appropriate millets will be grown by farmers where governments have included them in the schemes for mid-day meals (this is one of India's most important programmes, aiming to provide hot-cooked food in every school of the country). Changing cropping patterns to make farming climate-resilient will need this supportive structure.

Fourth and perhaps most critically, the choice of food that farmers grow is in the hands of consumers – us. What do we eat? Why do we eat it? If we change our diets,



it provides signals to the farmer to grow differently. We know that food is medicine; yet we continue to eat wrong, eat junk. The food that we have on our plates has no connection to nutrition. We are in danger of losing the knowledge of good food – what our grandmothers and mothers cooked in different seasons. This is why we, as consumers of food, must be a part of this changed agriculture story.

The climate change crisis is human-made; it is we humans that have contributed to the emissions that threaten our present, and the very existence of our children's future. It is we who must rework our lives and our ways of doing business that threatens our existence. This is what we need to do to be a part of the change.

### **HEAT AND CLIMATE EXTREMES: THE HEALTH CONNECTION**

We know that climate change is impacting the weather, which is in turn devastating livelihoods. But what we don't discuss enough is how these extremes in weather will impact human health. In India and in many other parts of the world, we have seen a growing season of despair when temperatures have spiraled out of control -- we have learnt how heat can kill. We have also learnt how a rise in minimum temperatures – night-time heat – could be the cause of deaths. It is critical that we join the dots of what seems like a faraway crisis of a changing climate to what it will do to our health.

Research is now pointing to the dynamics of deadly heat. To begin with, what is now being understood is that rise in night-time heat is the cause of maximum

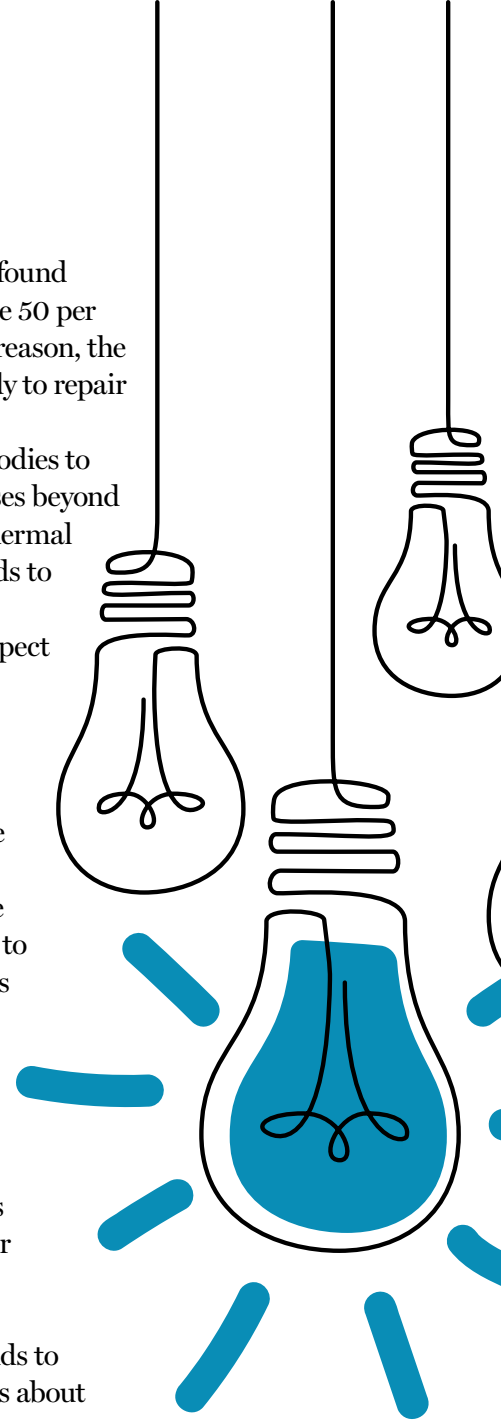
mortality. A 2022 paper in the British medical journal Lancet found “that the relative mortality risk on days with hot nights could be 50 per cent higher than on days with cooler night temperatures”. The reason, the authors explain, is heat affects sleep and does not allow the body to repair itself -- this in turn exacerbates the health stress.

Secondly, we know that evaporation is the method for our bodies to cool down; but this becomes ineffective when humidity increases beyond 75 per cent – this is known as the wet bulb phenomenon. So, thermal discomfort – and not just absolute temperatures -- is what needs to be understood.

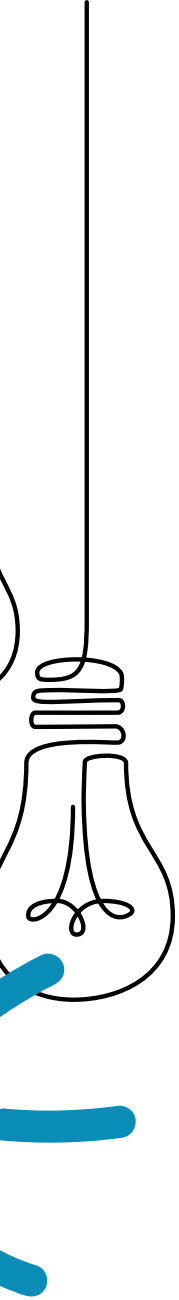
The worry is that we are seeing an increasing trend with respect to all the three killer factors, particularly in urban centers. Temperatures are rising beyond human tolerance; humidity is increasing; and so is the night-time heat. When CSE’s research tracked heat trends across major cities of India, it found that ambient air temperatures are increasing in cities, as against the average for the country. It also found that cities are not cooling down at night across all climatic zones. During summers in the decade of 2001-2010, night temperatures would drop by 6.2°C to 13.2°C from the day-time peak. But in the last 10 summers, this difference between day and night temperatures (or maximum and minimal) has been decreasing.

On one hand, there is a warming planet – this year has broken all previous high temperature records. Worse, there are changes afoot in the way the weather behaves in terms of erratic rain, intense heat and changes in wind patterns. All this makes heat more stressful, more deadly. On the other hand, our cities are seeing a dramatic change in micro-climate – the heat island effect is amplified as concrete takes over open and green spaces, while increasing traffic and use of energy for cooling adds to the heat being trapped in the air. This is why planetary health is about human health. It is time we made this connection. It is time we understood why climate change is an existential crisis -- it is literally about life and death.

This is what the heat management agenda must focus on. This requires firstly to look at what would reduce the impact of heat in the lived environment. Data shows that heat islands are equally intense in areas with high concrete and human density, as well as those with low vegetation and waterbodies. Temperature trends of big Indian cities show that with high concretisation, cities are not even cooling down during the night, thus adding to the heat impacts. This then needs a new generation of city planning where we can maximise the cooling gains brought about by green and blue cover. This in turn requires approaches to reduce the need for cooling devices – which means we undertake construction so that we can build with nature







and not against it. Today, this is called ‘passive architecture’ principles, but in the past it just meant that people used their knowledge to build really smart. Traditional houses incorporated all the principles of providing shade from direct sunlight to ensuring ventilation.

We know today that the ‘wow factor’ of keeping air conditioners below 19°C does not necessarily make us comfortable. In fact, thermal comfort is about how much the skin on our bodies can breathe. This means cooling with ventilation. In simple words, building closed rooms, with double-glazed windows and even highly efficient air cooling systems, is not as good as buildings with insulated materials, with windows, fans and then the addition of the air conditioner. This is the traditional building science that modern architects must learn in our climate-risked and hot times. In fact, we must relearn the science of wind-flows even in the design of our building layouts – something that is not being done, and never even considered.

### **WATER SECURITY FOR A CLIMATE-RISKED FUTURE NEEDS RESOURCE RECOVERY**

Every society must understand how the excreta that it produces is managed. It teaches us many things about water, waste, technologies to clean, economics and politics -- of who is subsidised to defecate in our societies. Today, the challenge also is that every society must connect the dots between the excreta it produces, the pollution it causes, and the opportunity to reuse and recycle that waste so that it becomes a resource.

Unlike the use of water in agriculture where it is ‘consumed’ for growing food, in the case of urban and industrial consumers, the bulk of the water that is used is also discharged as wastewater. This discharge of effluents is adding to our water crisis by degrading and polluting the available water. It is also adding to our health crisis as societies continue to drink this ‘sewage’-laced water. All this then points to the solution ahead: the way to take that ‘wasted’ water and make it ‘used’ water so that it can be returned to the hydrological cycle.

CSE has studied the excreta sums of various cities. The city ‘shit-flow’ diagrams mapped by CSE researchers point to a grim situation – almost every city is slipping on safely treating or disposing of its human excreta. This is because we often confuse toilets with sanitation. But the fact is that toilets are mere receptacles to receive waste; when we flush or pour water, the waste flows into a piped drain, which could be either connected, or not, to a sewage treatment plant (STP). This STP could be working, or not. If it is not, then this faecal sludge -- human excreta -- could be conveyed, but not safely disposed as it would be discharged into the nearest river, lake or drain. All this will pollute our water and land. In most Indian cities and cities of the Global South, this connection from the flush to the STP does not exist. According to the Indian Census of 2011, the flush water of about 30 per cent of urban India is connected to a piped sewer. But our surveys have found that in most cases, these underground drains have either lost their connections -- they need repair -- or are not connected to sewage plants.

## CLIMATE CHANGE AND PUBLIC HEALTH

### TRIGGERS FOR INCREASED HEALTH BURDEN AS WELL AS DRIVERS FOR ACTION AGAINST CLIMATE CHANGE

According to the Intergovernmental Panel on Climate Change (IPCC), climate change and increased frequency and severity of extreme weather events including heatwaves and heat-related illnesses are likely to impact public health significantly in countries like India. The combination of the environmental risk factors and poor nutrition level of low income groups will enhance the impact of infectious and zoonotic diseases and increase the risks. The spread of the diseases is expected to be influenced by changes in micro-climatic conditions; episodic vector-borne diseases will be affected by cyclones, storm surges and droughts. The impact will vary according to the vulnerability of the local ecosystems to climatic stress across the states of India.

There are wide ranging aspects and implications of this emerging health risk.

**Heatwaves and illness:** Increasing frequency and intensity of heatwaves causes heatstroke, dehydration and other related illnesses, especially among vulnerable populations like the elderly and children. In 2024, several Indian cities experienced record-breaking temperatures exceeding the 50°C mark. According to the India Meteorological Department (IMD) database, in the month of May in 2024, 26 out of 31 days suffered heatwaves across all topographies (plains, hills and coastal areas). Due to the urban heat island effect, cities can be 10-15°C hotter than their rural surroundings, exacerbating the effects.

**Vector-borne diseases:** Altered climate conditions and changing habitats are leading to surges in vector-borne diseases like malaria, dengue and chikungunya. According to the WHO, vector-borne diseases account for more than 17 per cent of all infectious diseases, causing more than 700,000 deaths annually.. Changing climate patterns are expected to alter the distribution and transmission of vector-borne diseases, potentially leading to outbreaks in new areas.

**Climate change, weather events and waterborne diseases:** Cyclones and storm surges are likely to aggravate the infectious disease burden in affected areas and trigger epidemics like cholera, diarrhoea, typhoid etc. Climate change can impact water availability and quality, potentially leading to increased cases of waterborne diseases like cholera, particularly in areas with inadequate sanitation. The agenda for clean water and sanitation will be critical in climate-risked times.

**Air pollution-related diseases and climate change:** There is an insidious link between climate change, air pollution and health risks. Warming temperature trends are increasing the formation of secondary pollutants like secondary particulate matter and ozone that have enormous health impacts. Heat-trapping pollutants

There is another route for excreta to flow. The household flush or pour latrine could be connected to a septic tank, which, if it is well constructed, will retain the sludge and discharge the liquid through a soak pit. The faecal sludge would still need to be emptied and conveyed for treatment. But in most cases, our surveys found the septic tank is not built to any specifications: it is just a 'box' to contain the excreta, and is either connected to a drain or emptied out. This is where the drama of faecal sludge begins. Who collects it? How is it transported, and most importantly, where does it go? Nobody knows.

The focus has shifted now towards intercepting the sewage; not through capital-intensive underground pipes, but through tankers that transport the sewage for treatment. The fact is that septic tanks are decentralised waste collection systems.

such as black carbon and ozone further heat up local environments. This becomes a vicious cycle. The climate change and public health programme of the Government of India recognises acute respiratory infection (ARI) as a major indicator of the air pollution-related diseases impacted by climate change. The incidence of ARI remains high with a significant number of cases reported each year, particularly among children.<sup>i</sup> Hospital-based surveillance for ARI and related healthcare infrastructure are under focus. While the number of cases and deaths attributable to ARI have increased in several states, air pollution is now known to impact a wide variety of diseases and organs.

**Climate change and malnutrition:** The IPCC says that climate change can disrupt agricultural production, leading to food insecurity and potential malnutrition, especially among vulnerable communities. It can reduce the quantity, quality and diversity of the food available. This can impact agricultural productivity, affecting livelihoods and leading to losses in earnings.

**Climate change and mental health:** Extreme weather events and climate-related displacement can also have significant mental health consequences. There is increasing evidence that extreme weather events that are more frequent, intense and complex can trigger post-traumatic stress disorder -- "major depressive disorder, anxiety, depression, substance abuse, complicated grief, survivor's guilt, vicarious trauma, recovery fatigue and suicidal ideation". Incremental

climate changes, such as rising temperatures, and episodic climatic events and disruption of water resources, food, weakened infrastructure, and financial stress increase the risks of aggression and displacement of entire communities.

**Impact on vulnerable populations:** Existing socioeconomic inequalities can exacerbate the health impacts of climate change, as marginalised communities are often more vulnerable to its effects. Vulnerable populations with poor sanitation and malnutrition will be at greater risk. This will increase overall health risk and put enormous strain on healthcare systems. The impacts are widespread and large populations are affected, which is noticeable on the vulnerable segments including the elderly, children, tribal populations, migrants or displaced persons, marginalised population, unauthorised sector employees, areas where population density is high etc.

Health interventions will require both curative and preventive action and response system at the needed scale. To make healthcare accessible and affordable for all, healthcare infrastructure and services need to be scaled up significantly.

Adequate health-based indicators need to be developed for all sectors to ensure climate resilience across all infrastructure and service interventions planned in urban and rural areas. Health risk management and reduction will require upscaled action on all environmental factors to control communicable and non-communicable disease burden.

Instead of thinking of building an underground sewerage network – which is either never built or never completed -- it would be better to plan for these systems as the future of urban sanitation. Individual septic tanks could be the way to achieve full sanitation solutions.

To enable this, government has made changes in policy and practice. It has recognised that these systems exist and that they need to be incorporated in sanitation plans. It is instituting regulations for the collection and transportation of faecal sludge, so that the waste is taken for treatment and not dumped somewhere. Most importantly, city governments are focusing on treatment systems for faecal sludge, which in turn will reduce the pollution in rivers and lakes. The challenge now is that we must reuse this treated water.

This is where the real opportunity lies. This treated water and sludge is nutrient-rich. Today, the global nitrogen cycle is being destroyed because we take human excreta, which is rich in nutrients, and dispose it in our waterbodies. In this case, we can return the human excreta back to the land, use it as fertiliser and reverse the sanitation cycle. The treated water or faecal sludge, after treatment, can be given to industry or cities to reuse as water and to farmers for soil enrichment. But this also means that we need new standards to be set for reuse of treated wastewater, so that the basic nutrients needed for land are not lost in the treatment. This approach makes the users of this treated water the agents to ensure compliance with standards – just imagine if you were to be a consumer of this treated water for your horticulture needs, you will be vigilant of its quality and the fact that it does not contaminate your land. In this way, we can be water-secure, because we are water-wise.

## **HUMAN MIGRATION IS ABOUT BUILDING RESILIENCE AND OPPORTUNITIES**

There is no simple reason why people choose to leave their homes, their families and their communities. What is clear is that the number of migrants is on the rise. The estimates of the World Migration Report, compiled by the Geneva-based International Organisation for Migration, finds that the triggers for internal displacement are changing – it is not just war and conflict that is driving out people from their homes, but also the onset of climate-related disasters, from floods to droughts. We know from our experience in India that migration from villages to cities and beyond is multi-pronged. It is driven by the loss of ability to cope with economic marginalisation, and is exacerbated by many factors including extreme weather disasters, losses in livelihoods and then, of course, the opportunities that a city represents.

We also know that this migration can be reversed by investment in natural capital and wellbeing. The evidence shows that in places where villagers have built their local economies – rejuvenated their water systems for enhanced productivity and adopted low-input agriculture – migration has been stemmed. This is also why India's national employment guarantee programme, which offers adults in villages a basic minimum wage for 100 days of work on ecological improvement, remains (with all its flaws) the single-biggest 'coping' mechanism in the country. This is also where the huge opportunity exists for the future: building resilience and economic opportunities.

We have to find ways to rebuild resilience so that even as war, conflict, poverty and extreme weather events induce migration, there is a counter-pressure to build local livelihoods and economies that can endure and survive -- indeed thrive -- in these tumultuous times.

# OUR STRATEGY

## 2025-2030

### WHAT WE WILL CONTINUE TO DO. AND WHAT WE WILL DO MORE, AND DIFFERENTLY

Our world today is faced with a growing triple crises.

- Poverty, marginalisation and lack of employment
- Environmental degradation, including air and water pollution which affects health
- Climate change and its impacts, which add to the burden of poverty and health

In all this, we are also seeing a reversal of gains made to combat climate change through drastic actions to reduce greenhouse gas emissions.

We are witnessing the changing geopolitics as well, which threatens to make the green transition more contested and difficult.

#### SO, WE NEED TO DO THE FOLLOWING:

1. Continue to work with deliberateness of action – know what we are doing and why – and not get distracted by the disruptions in our world.
2. Keep our focus on research so that the narrative – the pathways for action in our world – becomes a part of our development futures. Climate change action must not get disconnected from the growth strategies in our world; it should be infused and incorporated because we know we must 'fix' our local environment for our survival. This will help reduce greenhouse gas emissions.
3. Review and revise strategies so that they are more relevant and meet the demands of a development that is sustainable and inclusive. Stay focused on the politics of power and powerlessness so that programmes work to meet the needs of the poorest, the marginalised and women.
4. Focus on the need to scale up our influence; strategise each programme outcome differently so that it stays relevant and impactful.
5. Disseminate, disseminate, disseminate the message – reach the next generation so that the young are connected to the imperative of change, and understand the politics of development. Use social media and multimedia to capture their attention.
6. Focus on best practices -- the working solutions -- as these will be the beacons of change in our world. We have a 'duty to hope'.
7. Engage the public policy space, by ensuring that we stay publicly funded, credible and independent. Do not expand just because there is money in any programme; expand only when there is clear demand and a strategy to make a difference.

# About CSE

Centre for Science and Environment (CSE) is a public interest research organisation based in New Delhi. CSE researches and communicates the urgency of development that is sustainable and equitable. We believe that the scenario today demands using knowledge to bring about change. This is what we aim to do.

The challenge, as we see it, is two-pronged. On one hand, millions live within a biomass-based subsistence economy at the margins of survival. The environment is their only natural asset. But a degraded environment means stress on land, water and forest resources for survival. It means increasing destitution and poverty.

Here, the opportunity to bring about change is enormous by regenerating the natural capital. But it will need a commitment to reform in the way we do business with local communities.

On the other hand, rapid industrialisation is throwing up new problems: growing toxification and a costly disease burden. The answers will be in reinventing the growth model of the Western world, so that we can leapfrog technology choices and find new ways of building wealth that will not cost us the earth.

This is the challenge of the balance. CSE's most important contribution has been to build a strong narrative about the politics of environment that sustainability is not possible if growth is not inclusive and affordable.

Our aim is to raise these concerns, participate in seeking answers and – more importantly – in pushing for answers and transforming these into policy and so, practice. We do this through our research and by communicating our understanding through our publications.

We call this knowledge-based activism. We hope we will make a difference.





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