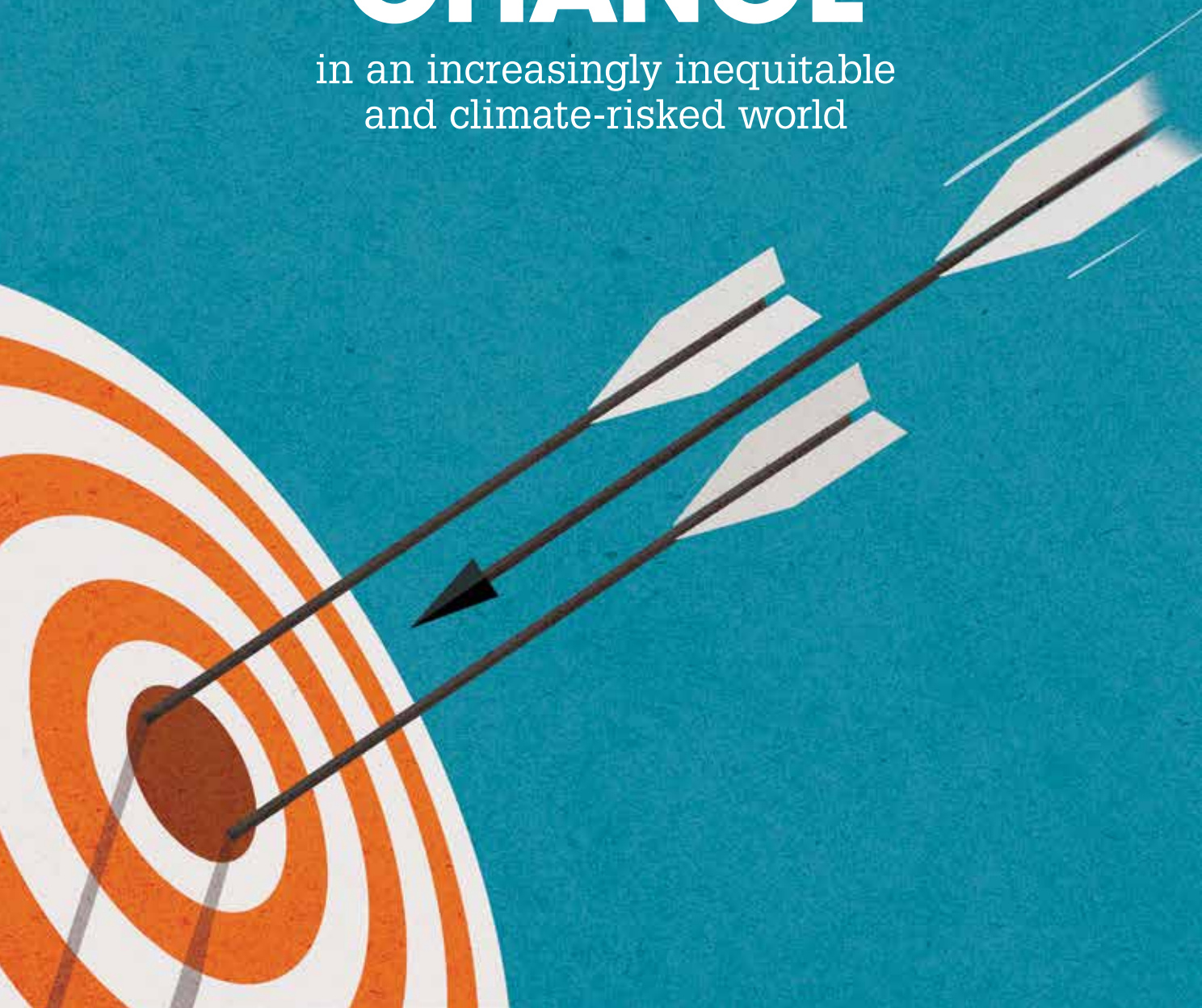


Centre for Science and Environment

STRATEGIC PLAN FOR 2019-2024

# USING KNOWLEDGE, DRIVING CHANGE

in an increasingly inequitable  
and climate-risked world



**W**e are standing at a crossroads today. The next five years would be crucial: the world will either become more insecure and climate-risked, or we will bend the curve and move towards an inclusive and sustainable present and future. We believe the last die has not been cast yet. We can still make a difference, and we must. The good news is that environmental challenges are now mainstream. Almost everyone agrees that climate change is real; the threat is urgent and the need is to transform our energy systems and trans-mutate our consumption.

We know that toxification is taking a toll of our health — air pollution is a great leveller and will hurt the health of the rich as well as the poor in our cities. We also know that the poor are the worst impacted because of environmental degradation. The marginalisation of the poor because of the mismanagement of our land, water and forest resources, combined with the growing risks of insanely weird weather because of climate change, will destroy development dividends and make the poor, poorer. It will also make the world, our world, more insecure, more violent and more intolerant.

But this is also a trigger for action. This is what we need to address. Knowledge makes a difference. The problem is that societies often lose sight of the solutions we must pursue. The noise on climate change and environmental degradation is growing; and with it, despondency can increase as societies start believing it is too late to act. Or that nothing they can do would work.

This is where CSE will step in. Our strategy will be to build consensus for change and to keep our sights fixed on the solutions that are possible. We will work democracy. We will use our research and our influence to communicate so that the focus remains on the need to act; on the action itself; and on the need to do more. In the next five years, more than ever before, we will be committed to make change happen. We will also be committed to make sure that we have a duty to 'hope' — we will engage with society on the possibility and the sheer adventure of the opportunity that exists if we can make business work for the poorest and the most marginalised. It is here that we will research and show the need for innovative solutions which ensure that growth is inclusive and equitable and because of this, sustainable.

In the next five years, we will sharpen our pens; deepen our engagement with society; and will ensure we retain our credibility, independence and politics. We strongly believe that in this age of social media and deeply polarised societies, the voice of the powerless and unconnected is being lost. We need to do more to make the invisible more visible and we need to do this at a time when the world has no appetite for more information or indeed, knowledge. CSE will do more to report from the ground on the changes we are seeing — good and bad — and to synthesise the learnings on the way ahead. We will stay on course. We will stay focussed on impacts and outcomes. Small or big. Every win will matter.



(Sunita Narain)

# CONTENTS

**04 THE PERSPECTIVE**  
Where our world stands today  
What we are seeing  
And where must we focus our attention

**14 BEING CSE**  
What is CSE's own understanding of the challenges it faces  
Why people come to work with us and stay on  
What makes us tick

**09 THE RATIONALE**  
What is our theory of change  
Whether it is working  
And what and how will we make a difference

**16 THE STRATEGY 2019-2024**  
What will we do differently

**17 THE PROGRAMMES**  
What would their focus be  
What would be their outcomes  
How would they achieve what they are setting out to do

- 18 Air pollution**
- 19 Mobility transformation**
- 19 Thermal power**
- 21 Industrial pollution**
- 22 Brickmaking sector**
- 23 Built environment and habitat**
- 24 Solid waste management**

- 26 Good food**
- 28 Water and wastewater**
- 31 Rural sanitation**
- 33 Climate change**
- 34 Renewable energy**

**36 THE STAGE**  
Global, regional, national, local — where will we work  
What have been our learnings  
How would we use that knowledge

**39 THE VOICE**  
How do we outreach and communicate our messages  
How do we amplify our voice  
How do we multiply our impacts and build virtual circles of change

**43 OUR DUTY**  
To hope, and not give in to despair  
To stay firmly on track, and keep working for solutions  
To keep illustrating and documenting the good news

**41 THE POLITICS**  
How do we mainstream our politics  
How do we ensure equal opportunity for women in work, in voices and in action



# THE PERSPECTIVE

Where our world stands today | What we are seeing  
And where must we focus our attention

It is over 25 years since the world signed the Earth Charter, signalling the importance of environmental issues on the global stage. It is 25 years since the World Trade Organization was born, signalling that commerce in the now inter-connected world would bring prosperity. Twenty-five years ago, it seems, was the period of innocence. It was the age of hope – even though issues of poverty, injustice, the African debt etc were all on the world's agenda. It seemed – bumps and blips included – things would turn out to be all right.

Now, 25 years later and counting, it seems the agenda has unravelled. The world has come unstuck. From weird weather because of climate change to acute agrarian distress because of development policies, it seems that everything must start all over again.

What is clear is that the most dominant determinant of our future's survival will be our ability to mitigate and cope with the changing climate. There is no doubt today that climate has become more variable, extreme and horrendously devastating for the poorest, who live on the margins of subsistence. It is they who face the intense heat waves, the floods and the droughts; and lose their crops and livelihoods to freak weather events.

As yet, in spite of all the talk and efforts of governments to curtail emissions, there are no full-stops. Humankind continues to pump vast quantities of greenhouse gases into the atmosphere. What will happen tomorrow and the day after? Scientific models are most unprepared when temperatures will cross 2°C, over the pre-industrial era. So, quite simply, we are moving towards an age of extreme uncertainty. The planetary limits are being breached. In this scenario, nobody knows what the future will bring. This is why coping and combating climate change will be our overwhelming task. How we do this is, literally, in our hands.

In this newly emerging world of ours, there are unique challenges as well. We are getting richer, but with huge strains of inequality, the mess of garbage, air and water pollution, and its resultant health problems. We cannot believe that we can switch on our air purifiers and be safe. No closed windows will work here. The fact, is that we don't have the luxury of believing that we can get rich and then clean up. The technologies and methods of clean-up have been invented in a world which made a business out of pollution. It was profitable to clean rivers or cities. But this meant that the cost of economic growth increased. It also meant that inequity increased. We don't have this option. We have the challenge of affordable growth and only then can it be sustainable.

So, we stand at another kind of crossroads – the challenge of unsustainable growth means we are hurtling towards climate catastrophe and the challenge of inequitable growth means we are hurtling towards increased poverty, increased marginalisation and increased anger.

The problem has been that we believed (and continue to do so with conviction) that we can practice unsustainable development and then clean things up. Make the pollution go away. Or we have believed that we can make environmental management part of growth – investment in pollution control is an economic activity, after all. But this does not work either, as we get busy with constantly managing small fallouts and stay behind the problem. It is technocratic. Not political.

Our learning is that growth that is not affordable or in other words equitable, cannot be sustainable. It is important to reassert our conviction that we cannot push away the politics of development when we discuss sustainability.

## Unaffordable sanitation = pollution

Indian rivers are increasingly running polluted. But how can we clean up when huge numbers of people are unconnected to sanitation systems and do not have access to clean water? We know the current system of water and waste management is capital-intensive and creates divisions between rich and poor. The state has limited resources and can only invest in providing for some – invariably the rich.

But if only a part of the city has access to sanitation and sewerage, pollution control will not work. The reason is simple: the treated waste of a few will be mixed with the untreated waste of many. The end result is pollution. Greater the pollution, higher the costs of cleaning the water.





## Inclusive = sustainable

Today, a miniscule number of people in Delhi (and in all other cities of the Global South) own or drive a car. In Delhi, it is a mere 15 per cent of the city's total population. Despite that, air pollution is high; congestion is crippling. How will Delhi combat air pollution as more and more people will begin driving? Is it possible to plan for the remaining 85 per cent? Is there space on the road, space in the airshed?

The answer is no. We cannot fix tailpipes of individual cars. We have to change the way people drive (or do not drive). We need to plan so that all can be sustainable and for this, we need to re-invent mobility at a scale not seen before. Not just for the poor, but also for the rich. We need public transport systems that are affordable for the poorest; and also modern, convenient and safe for the richest. It is this combination that has never been tried before. But it is this that must be made to work. Without this, we cannot clean our air.

In other words, solutions must work for the poor, for them to work for the rich.

Managing local air pollution is no different from the management of the global commons – the atmosphere is like the roads of Delhi. Climate change cannot be mitigated unless we address issues of equity and find ways of growth for all, ways that do not end up destroying the Planet.

## Resource degradation = insecurity

We have mismanaged our natural resources, particularly land and water, putting them at huge risk. The risk is now exacerbated by weird weather events, which is making millions more vulnerable and marginalised.

If we can improve our management of resources, we can shave off some of the worst impacts of climate change. We can build wealth and improve livelihoods. And by doing this, we can mitigate greenhouse gases (GHG) – by growing trees that sequester carbon dioxide; by improving soil health which helps capture carbon dioxide and changes agricultural practices; by introducing diets that reduce GHG emissions.

Today, climate change impacts are visible as variable and extreme rain events; as droughts and floods occurring at the same time. Each of these not-so natural calamities takes away the development dividend that governments work so hard to secure. Houses and personal belongings are washed away; roads and infrastructure destroyed – all of this has to be rebuilt.

It is also clear that the flood or the drought is not just about climate change or changing weather patterns. Drought is about the mismanagement of water resources, where not enough rain is being used to recharge groundwater or water is used inefficiently and inequitably. Flood is about the sheer inability to plan for drainage; about our lack of concern to protect forests on watersheds; or about the near-criminal act of building on and destroying the flood plains.

This is the double-whammy. High temperatures are only adding to the problems in already heat- and water-stressed lands. Lack of green cover is increasing desertification conditions; over-withdrawal of groundwater and poor irrigation practices are degrading land. Then there is the over-intensification of land use, largely for the way we are doing agriculture. The 2019 IPCC report on climate change and land rightly indicts modern agricultural practices for being over-chemicalised and over-industrialised, thereby adding to GHG emissions. The report has also called for changes in diets, which will make us tread lightly on earth. Our food and our climate change footprints are now connected.

The fact is, we are only just beginning to see the impacts of climate change. These will become deadlier as temperatures continue to spiral and get out of hand. This weird weather portends what awaits us. The change is not linear, it is not predictable. It will come as a shock and we will not be prepared for it.

The poor are the real victims of this 'human-made' disaster – local or global. The rich rarely die in sandstorms, or lose their livelihoods when the next cyclonic system hits. One impact of this corrosive change will be to make the poor, poorer. Their impoverishment and marginalisation will add to their desperation to move away from their lands, to seek alternative

### WE BELIEVE

**That sustainable development is not possible if it is not equitable.**

**That growth has to be affordable and inclusive to be sustainable.**

**That the environmental challenge of today is political, not technocratic.**

livelihoods. Their only choice will be to migrate. The double-jeopardy in today's interconnected world is the push (a lack of option) and the pull (the suggestion of a better future in a distant land). This will add to the already volatile situation of boat people and walls and migrant counting, which is making our world insecure and violent.

This is the cycle of destructive change that we must fight in our globalised world. Inter-connected and inter-dependent.

#### **Recognise the politics of change**

So, in the coming years, it is important to rethink the question of states, market and society. Today, we have dismembered the state; nurtured the market; and believed that we have empowered the society. We believed that the people would be the modulating voices over the market – they would be the check. But we forgot to ask: which society is being empowered and for what? And so slowly, the circles closed – the state-

market and the aspiring, consuming society merged and became one. Anyone outside this circle stopped getting counted. In fact, they are being slowly erased; the powerless are becoming voiceless, because the classes that make up the social media do not even consider them 'newsworthy'. All this is adding to the insecurity in our world and this means that we must go back to the drawing board to ask: how do we make the change we need so that it builds the world we deserve?

There is a need to think of the most important principle of environmentalism: Not in my backyard, or NIMBY. Can the poor, whose backyard has been used as an environmental dump – for things ranging from garbage to carbon dioxide – can be empowered enough to say

'enough is enough'? Dissent is critical for sustainable development. This is why 'strengthening' and 'working' of democracy is needed. Independent information, entitlements and enforcement of the law are needed. Only then the front-yards of all will be clean.

#### **Cacophony needs action and action needs hope**

As the world speeds towards a human-induced climate change disaster, we must work to stop this; or at least mitigate it and build the coping abilities of the poorest to withstand the worst. But it is equally important that the sheer shrillness of the environmental challenge does not distract us or make us 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 about the possibility of change. Therefore, we must remain fixated on the idea of what must be done, measure the difference and then push for more action.

**THIS IS CSE'S WORLD.  
THIS IS WHERE THE CORE OF  
OUR WORK MUST 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 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 RATIONALE

What is our theory of change | Whether it is working  
And what and how will we make a difference

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





# The CSE journey...



**1980**

CSE was established with a specific objective: to do timely research on current issues and disseminate this widely so that it would build an informed public opinion. From its inception, thus, CSE has worked to communicate its research. We began with a feature service – researched articles that were syndicated to news agencies so that the knowledge was disseminated.



**1982**

CSE began putting together the **SoEs** – State of India's Environment reports 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 context and the imperative on why a still-developing country like India should be concerned about its environment. Why it was not a matter of luxury, but of survival: the poor were most dependent on natural resources for their livelihoods and its protection and its regeneration would build wealth and well-being. The gross nature product was more important than the gross national product, argued these reports.

Thus began CSE's work into synthesis research – we collated information from disparate sources and put them together so that countries could get a macro-view of what was happening and what needed to be done.



**2000s**

In the decade of 2010, CSE's strategy evolved to incorporate programmes for capacity building. We did this because we realised that while the idea of the need for change and environmental management was accepted, the practice of it was not changing. 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. But partly also because current solutions did not push the envelope so that the practice would be done differently. It would be appropriate as it would be inclusive and so, sustainable. We, therefore, needed to build change-makers – to work deliberately to build capacity of professionals so that they could do things differently. Practice would then be multiplied. And we have seen this happen – from innovations in waste management to mobility planning and to incorporating risks of climate change in water planning.



**1990s**

CSE decided to undertake direct advocacy so that the research and the solutions we proposed were implemented. In 1996, we published *Slow Murder* and launched the campaign on the Right to Clean Air. In 1997, we published **Dying Wisdom** and started our work to change the paradigm of water management – from centralised to decentralised systems and from state to community management.



**Late 1980s**

CSE pushed its research into new frontiers, searching for solutions to drive policy change. Once again, our approach was to understand the nature of the problem from the ground – learn from the knowledge and practices 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; what made these efforts stand out; what, then, 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: it suggested that planting trees was about deepening democracy, and it put forward an agenda for community- and people-centric resource management.

# OUR THEORY AND PRACTICE OF CHANGE WILL BE:

## 1 RESEARCH

Ensure that it is independent, credible, hard-hitting, rigorous (forensic), accurate and controversial, so that it provokes change.

## 2 SYNTHESISE

Analytical synthesis reports that give the big picture, and suggest directions for future.

## 3 DISSEMINATE

Use research deliberately for advocacy – write letters, pursue the matter with agencies and push change.

## 4 PUBLISH

An informed public concern about environment through widely disseminated knowledge, which in turn will build the pressure to accept the change we seek

## 5 MULTIPLY

Multipliers – media, educators, regulators – to accelerate the pace of change we seek.

## 6 COLLABORATE

Deliberately at the country/ state level with government agencies to frame policies and catalyse and assist them to take forward the change we seek.

## 7 IMPLEMENT

Consciously designed pilot projects to demonstrate what works and how, to change policies and practice at scale, through government and other agencies.



Today, our work is to take this forward, but with the desperation to make change happen. CSE's objective – its only reason for existence – is to be involved in the **business of making and bringing change**. We will work on each programme of CSE so that it has clear outcomes: why we are doing what we are doing. This will help us identify what we intend to do and how we will measure our impact.

## OUR CHALLENGES

- **Of innovative policy:** To research on out-of-the-box ideas and to push society to agree to big ideas
- **Of scale:** To implement change at the scale of the transition needed
- **Of capacity:** To build multipliers in society to implement changes, think and act differently
- **Of driving solutions:** To stand behind solutions for the complex problems, and to be deliberate in the need for innovation in practice



# BEING CSE

What is CSE's own understanding of the challenges it faces  
Why people come to work with us and stay on | What makes us tick

**W**e needed to understand this. So we asked, debated and discussed amongst ourselves, and emerged with the following answers:

## Why are we in CSE? What brought us to CSE?

We are in CSE because we like what CSE does. Independent, unbiased, credible, and impactful research which matters to the poor and to the Global South.

- ▶ Because CSE gives us the creative space to work, to 'paint our own canvas', to design our own programmes.
- ▶ Because it gives us opportunity to learn and grow.
- ▶ Because CSE has a distinct brand and identity, which keeps it internally motivated towards making a difference.
- ▶ Because CSE communicates with different stakeholders, thus offering a bigger platform to drive change.

## Why do we stay on in CSE? What will make us stay on?

We stay on because we like the diversity of the work we do. Because the work is challenging and outcome- and impact-oriented – we drive change. But we also must ensure a balance in research, advocacy, training and communication, and we must build institutional 'leadership'.

- ▶ Because CSE constantly eggs us on to do good, impactful research, to stay ahead of the problem.

- ▶ Because it allows us to regularly revisit the question: why are we doing what we are doing.
- ▶ Because CSE has values – it believes in and works towards public interest, without any biases, including that of gender. Women have equal opportunity here.

## What do we see as the biggest crises/challenges in the world?

- ▶ Inequity. Of economic opportunities and access to resources. The world becoming more divided between rich and poor.
- ▶ Climate change and natural disasters, and the growing vulnerability of the poor and the marginalised.
- ▶ Pollution, and economic interests dominating environmental actions and measures.
- ▶ Livelihood insecurity, which is driving the poor to over-extract resources.
- ▶ Growing health crisis, with links to environmental mismanagement.
- ▶ Shrinking role of governments in delivery of public goods, while regulatory mechanisms are not being strengthened to ensure equitable welfare and accountability of the private sector.
- ▶ Too much noise without substance; too much information without credibility and too little funding for independent research.

## What should be CSE's strategic direction?

- ▶ We should continue to do solution-oriented research backed by good advocacy. Stay relevant and take



“ **We believe the crisis is the same as 20 years ago, but now it has become bigger and more pronounced. The environmental agenda has become mainstream, but the challenge is now to focus on solutions** ”

positions. Do research, communicate, educate, build capacity and keep our 'watchdog' role intact.

- ▶ We should continue to stand for people-centric environmentalism. Build public consensus. This is our strength. This is what ensures our work has impact. Given the scale of the crisis, public opinion is a key way to create political will.
- ▶ We should build engagement with new organisations and diverse stakeholders. We should continue to use 'direct' language to communicate.
- ▶ We should protect our independence and credibility fiercely.

## What should CSE not do?

- ▶ We must not compromise on our core values.
- ▶ We should not venture into areas and work where we do not have the competence.
- ▶ We should never do shoddy research that does not give us an edge in debates, and that makes us lose voice and credibility.
- ▶ We should remain lean, strategic and impactful. We should avoid consultancy work and stay firmly in the field of public-interest research.

# THE STRATEGY

## 2019-2024

What will we do differently

**Be more strategic** about the work we undertake. Ensure that we push for change, for outcomes. Drive ourselves with the knowledge of why we are doing what we are doing.



**Be more aware** of the need to scale up our influence. Disseminate the message of change. Decide what will work and how – policy advocacy, public opinion, regulations.



**Constantly and consistently** review the design of our programmes to ensure we are on track. Ensure that this becomes a part of the DNA of every member of CSE, that it is programmed within us, and that we understand it completely.



**Stay focused** on the politics of power and powerlessness so that programmes work to meet the needs of the poorest, the more marginalised and women. Ensure that growth is affordable, inclusive and sustainable.



**Ensure** that we have a 'duty to hope' – focus on solutions, and not just problems, so that we stand for the opportunity of doing things differently. Be bold, but not rude, about the need for transformation.



**Engage** the public policy space, by ensuring that we stay publicly funded, credible and independent. Consolidate work so that it stays focused on impact and change. Be deliberate about the need to expand work. Focus on driving change, not merely undertaking activities.

# THE PROGRAMMES

What would their focus be | What would be their outcomes  
How would they achieve what they are setting out to do



CSE's programmatic framing is designed to focus on sectors, within bigger fields, so that it is more driven to direct action and outcomes. We have found that governments do not work on large, inter-sectoral areas. For instance, it is hard to design a complete programme on cities. But if we focus our work on air pollution in cities, it allows us to intervene in mobility design and city planning, which makes the programme more compact and inclusive. It is the same with water – we have designed our work keeping in mind where there are the drivers and agents of change in society and in governments, so that we can have impact. Therefore, instead of a rivers programme, we

have a programme on urban water design and faecal sludge management. This addresses the challenge of affordable sanitation in cities; brings about a paradigm change in the way sanitation systems are planned and executed; and has an enduring impact on the cleaning of rivers and improvement in public health.

In this strategic plan 2019-2024, we will continue to work with this programmatic framing but with an additional design: we will make connections and linkages so that we can take the opportunity to drive collaboration within teams for greater impact. The areas of our work will be as follows.



## AIR POLLUTION

**Secure the right to clean air and public health for all. By linking air pollution to the health burden. And by demanding inclusive and transformative energy and mobility systems for our poor.**

CSE has worked long and hard to build a strong public opinion on the need to combat toxic air pollution in cities, especially in Delhi and its neighbourhood. Its work has had impact. The government has advanced the fuel and emission standards; coal power plants have been shut in Delhi, the use of coal for combustion banned, pet coke use and import stopped, and brick kilns have moved to cleaner technology. Analysis of pollution data shows a stabilisation and decline in levels, which is not a small achievement.

But there is still a long way to go. There is a growing crisis of air pollution in other cities of India, South Asia and Africa. There is a need to stay focussed on the strategy to reduce pollution and to make the transition to clean combustion and mobility at affordable costs.

### THE ACTION PLAN

- Ensure that pollution monitoring is credible, affordable and linked to health advisories, so that people know and can demand change.
- Keep pushing for vastly augmented public transport systems, designed for affordability and convenience.
- Continue working on car restraint strategies, including parking policies.
- Work on e-vehicles for public transport and last mile connectivity.



## MOBILITY TRANSFORMATION

CSE's objective is to use mobility as a tool to meet air quality standards and climate goals. We will intervene at the local-global levels so that work at the city level is taken forward through global forums.

### THE ACTION PLAN

- Advocate fiscal support to public transport in national policies and strategies, so that there is scaling up of 'affordable and modern' public transport.
- Leverage clean air plans in states and cities to implement mobility augmentation.
- Use parking policies and congestion planning for vehicle restraint in cities.
- Research and promote alternative paradigms of transport policy (nimble and affordable, based on para-transit and e-mobility) for smaller cities.
- Scale up the learning from cities through global platforms so that there is understanding of the air pollution and climate change co-benefits of this transformative change.

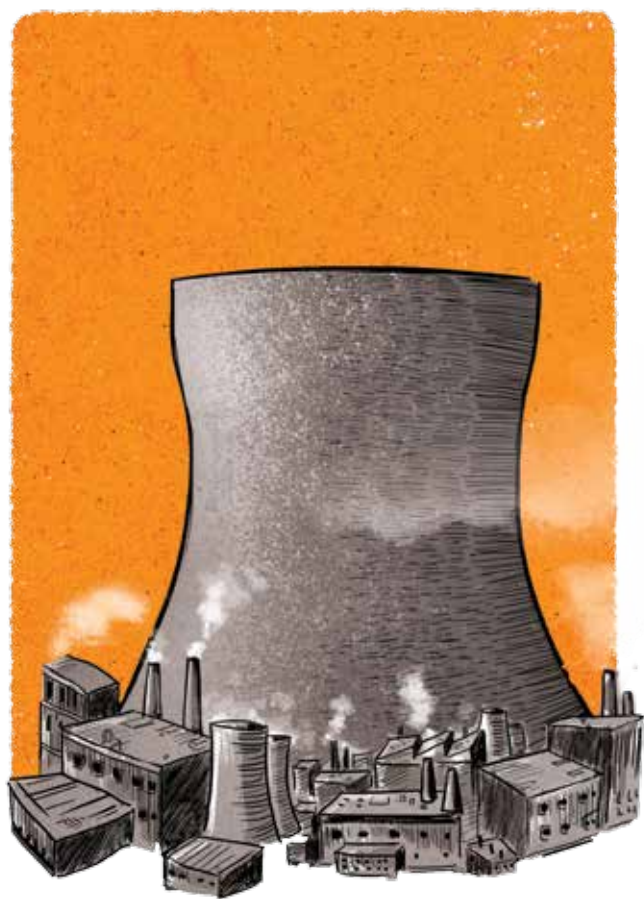
**Work towards inclusive and affordable public transport. Link it to mobility transformation, so that it provides for development and livelihoods of poor and safety of women and brings the co-benefits of combating air pollution and climate change**

## THERMAL POWER

Coal-based power plants are extremely polluting and are major contributors to climate change. But they also provide crucial energy in many countries of the Global South, where alternatives are not feasible or affordable as yet. CSE's position has been to recognise and address the impacts of using coal to generate power, particularly on poor communities. We have brought to attention how coal mining is destructive for forests, water sources and livelihoods of the poorest. We have pushed policy to recognise this, take careful and cautious decisions on clearance of coal mines and, most importantly, heed the voices of communities when they protest the mining in their backyards.

In addition, CSE has worked to push for stringent standards on pollutants from coal, including mercury. We also want all industries, including coal thermal plants, to pay for the real cost of the raw materials, including water. All this will make coal-based thermal power more responsive to environmental safeguards and local concerns and make clean fuels more competitive.

CSE's rating of the power sector has worked to get stringent emission standards enacted in December 2015. In the past few years, our work has been to push power companies to adopt the standards and to ensure that there is no weakening or dilution of the standards. Currently, thermal power plants in India are responsible for 70 per cent of the total freshwater withdrawal by all industries; over 60 per cent of particulate matter (PM) emissions; 50 per cent of sulphur dioxide (SO2) and nitrogen oxide (NOx) emissions; and over 80 per cent of mercury emissions. Implementation of the 2015 standards can reduce emissions of PM, SO2 and NOx by 40-



**Clean up the coal-fired thermal energy sector. Link the action to affordability, local air pollution and health impacts on poor communities that live in the hotspots**

50 per cent, mercury by 60 per cent, and water consumption by 40 per cent.

But what is also important is that implementation of the standards will reduce local pollution: many coal plants are located in densely populated regions where poor and tribal communities reside. It is they who suffer the most because of this pollution. The standards would also put coal power plants at a competitive cost disadvantage: because of the expense of implementing the emission control technologies, there is a decline in setting up of new thermal power plants.

CSE has taken the learning from India to Indonesia (a major coal producer and exporter and user of coal-based thermal power), where it has worked with civil society and government agencies to build an awareness of the need for stringent pollution control. As a result, Indonesia has enacted standards for emission control. But now, like in India, there is a need to work to ensure implementation.

#### THE ACTION PLAN

- Continue to keep the pressure on industry to meet the emission control standards.
- Work with other thermal power-using countries to build a common understanding of the technology costs and monitoring systems for compliance and the alternatives that are available

## INDUSTRIAL POLLUTION

Industrialisation requires cheap sources of energy, and these are often extremely polluting and hazardous for public health – this is true of most countries of the Global South. Till now, CSE has worked to improve environmental performance and build compliance of the large industrial sectors. We believe it is now important to focus on the small and medium scale industries that are operating in densely populated areas with extremely high pollution loads.

Research has found that these industries use poor quality and extremely polluting fuel, with massive health impacts on their own workers as well as on local populations. In a situation where pollution control technologies are expensive and regulatory systems for enforcement are weak, how will we control pollution from these units? The challenge is to find opportunities, technologies, fuel and enforcement systems that will bring environmental improvement, but in ways that can give economic as well as health benefits to the workers.

The experience from India and Africa has shown that strict enforcement, without incentives, only makes these industries move from the legal to the illegal areas in cities, where monitoring and compliance becomes a bigger challenge. CSE will work to advocate the need for affordable technologies and fuel transitions for pollution control, and for SMART emission monitoring systems for enforcement. This work will focus on cheaper (and smarter) equipment for monitoring of water and air pollutants. This work is relevant not just for India but also for the Global South, where regulators are struggling with capacity and technologies for monitoring.

The question is the credibility of this data and how this monitoring will be used for regulatory purposes. CSE has researched how SMART monitoring is being used in countries like the US for crowd sourcing of pollution data; it can be used to build baseline data; used in episodic pollution and by citizens to build pressure on governments. We have also reviewed the available equipment and its cost.

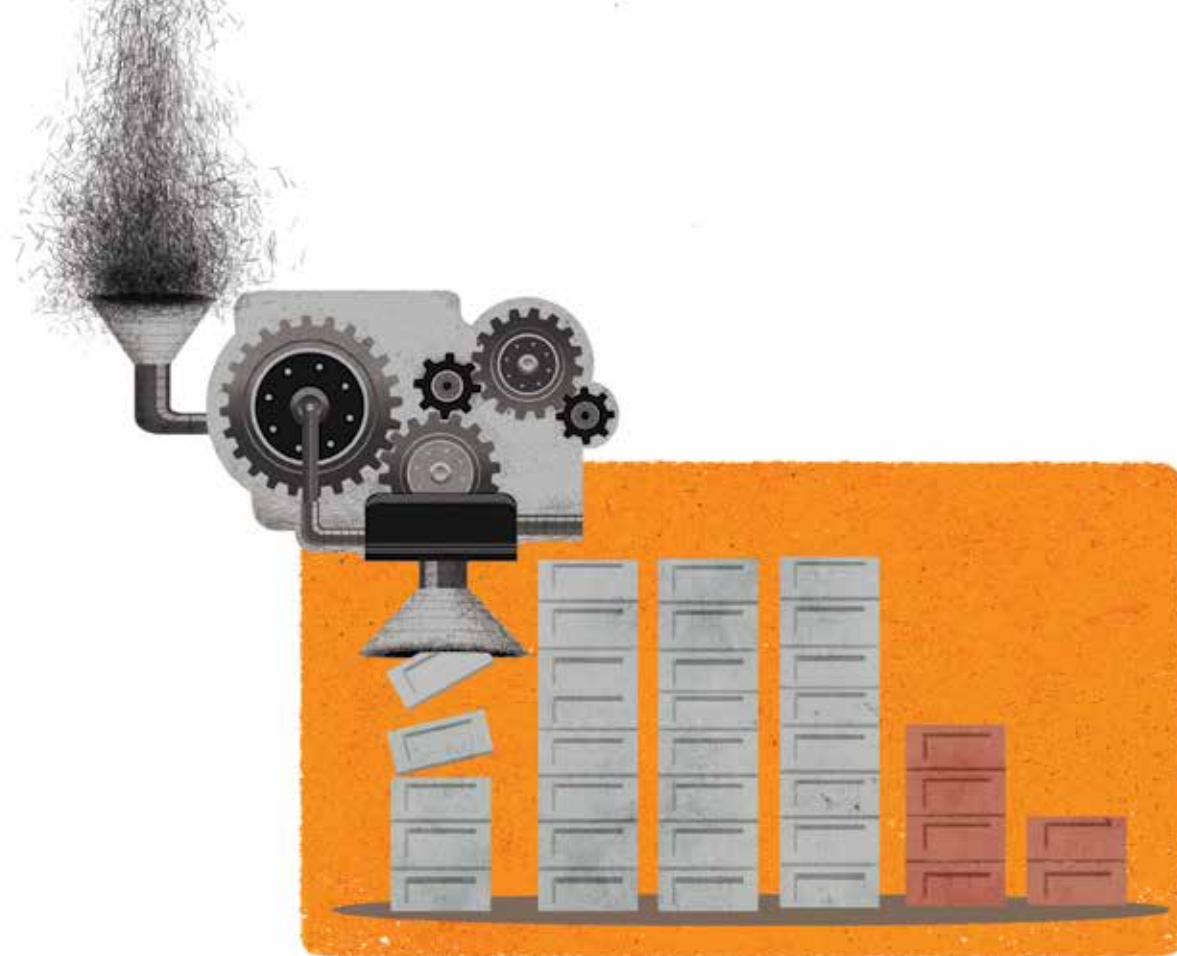
In Ethiopia's Awash Basin, CSE has done a detailed study on water use, sources of pollution and the state of monitoring. The study report, available on the Ethiopian government website, sets out an agenda for further monitoring of the basin. The case will be used for demonstration and scaling up work on other river basins and regions in Africa and Asia. We will combine this with our research on technology options for pollution control in small scale industries – from foundries to textiles and tanneries.

#### THE ACTION PLAN

- Advocate the need for affordable technologies, fuel transition, and SMART emission monitoring systems for pollution control and enforcement.
- Get standards notified for SMART equipment, so that quality is assured and these technologies can be scaled up. Make sensor-based technologies part of the regulatory legislation, so that these instruments get used for monitoring.

**Help industry reduce its pollution. Work towards affordable clean energy transition, but with concerns about livelihood, employment and health of the poor who work in these industries**





## BRICKMAKING SECTOR

Brickmaking has a huge pollution potential. It also uses up valuable top soil, and labour conditions in the sector are abysmal. CSE's programme has focused on changing the technology for brickmaking from the traditional bull trench to natural/induced draft zigzag technology.

**Drive technology change in the sector, with the aim of lowering pollution levels, saving on fuel, and improving labour conditions**

In the past year, there has been some success: today, only zigzag brick kilns are allowed to operate in the region around Delhi. Punjab has followed suit. CSE will continue to work with this sector to find viable technology options for pollution reduction.

Using fly ash – waste material from thermal power plants – for brick making provides options for resource recovery. The government has mandated that all construction done within a radius of 300 km from a coal-based thermal power plant must use bricks made from fly ash generated by that plant. But this important directive to promote circular economy has not been successfully implemented yet – partly because of quality and cost concerns. So what should be the way ahead? This is what we will work on.

### THE ACTION PLAN

- Continue to work to find viable technology options for pollution reduction in this sector.
- Promote circular economy by pushing for increased use of affordable, good quality, sustainable fly ash bricks in construction; incorporate these learnings into our programme on habitat.

## BUILT ENVIRONMENT AND HABITAT

The built environment – buildings in our cities – has a massive environmental footprint: from the materials it uses for construction to the energy consumed by its residents. Most of the Global South is yet to build its full quota of buildings: according to some estimates, roughly 80 per cent is still to be built. This provides us the opportunity to do things differently.

The crucial issue here is the affordability of implementing efficiency in material design and ensuring thermal comfort for all – and not just for those who can afford efficient air cooling systems. CSE's focus will be to research on and advocate the need for technologies and materials for improving thermal comfort in affordable housing. Existing state programmes for affordable housing focus only on the cost and speed of construction – but bringing about change through material choice and building design is important as the poor do not have access to cooling, and the technologies and materials for insulation are expensive. If this works, the energy requirements of large numbers of those moving towards critical shelter can be minimised, which in turn would be important for combating climate change.

**Ensure circular and resource efficiency, and waste reuse and recovery. Emphasise on the need for affordable thermal comfort in housing for the poor.**

It is also clear that green buildings need to be green, not just in design but in performance as well. This is where CSE has led with critiques of current green building certification programmes and has demanded change in how certification must monitor actual usage and real reduction in energy and water usage after construction. Based on this, changes have been made in regulatory systems so that there are linkages between energy conservation building codes used at the design stage and energy performance index, used to measure energy. But work remains to ensure that this is done transparently and that there is actual data on reduction in energy usage – this then needs to be promoted and scaled up



in India and other countries of the South.

Resource recovery is an important component of sustainability. CSE has worked to advocate the need for legislation to promote the reuse of construction and demolition waste. It has also worked to get building material codes revised so that this reused and recycled aggregate material can be used in construction. But now the work begins to get these legislations and codes implemented in cities: how can using recycled material be made mandatory? What can be done to disincentivise waste and incentivise reuse? The promotion of this resource recovery will be critical in combating air and waste pollution from the indiscriminate dumping of this material in many regions.

### THE ACTION PLAN

- Conduct research and advocacy on thermal comfort through material and building design – how to incorporate passive architecture in building codes.
- Conduct research and advocacy on building materials that are efficient, affordable, low carbon and promote reuse of materials.
- Conduct research and advocacy on use of energy-efficient appliances (including air conditioner and heating and cooling technologies) and ensure monitoring of energy and building codes for sustainability.
- Work with governments on incorporating sustainability guidelines in building bylaws, enabling educational and residential campuses to go green as models for others to emulate and building new knowledge on what is sustainable, appropriate and affordable architecture.

## SOLID WASTE MANAGEMENT

In 2016, CSE published Not In My Backyard which advocated a paradigm shift in waste management in Global South. Since then, there has been huge interest among governments and cities to develop programmes for decentralised waste management, household-level segregation and processing, recycling, and zero-landfill cities.

In all this, our opportunity and work lies in advocating solutions and best practices on how cities can and must process their waste, and how the informal sector – the recycling businesses run by the poor, working in poor working conditions – can be transformed, but still be incorporated in future waste management systems. We will do this through pilot projects – we have already worked successfully to implement city- and ward-level solid waste management in Muzaffarpur in Bihar (India) and in Shaurimoyo in Zanzibar. These efforts have being upscaled through changes in bylaws that promote household-level segregation and waste recycling (in Delhi, Bihar, Zanzibar and Swaziland). Our aim now is to promote these best practices through our Forum of Cities that Segregate – so that implementation is scaled up and made effective and sustainable.

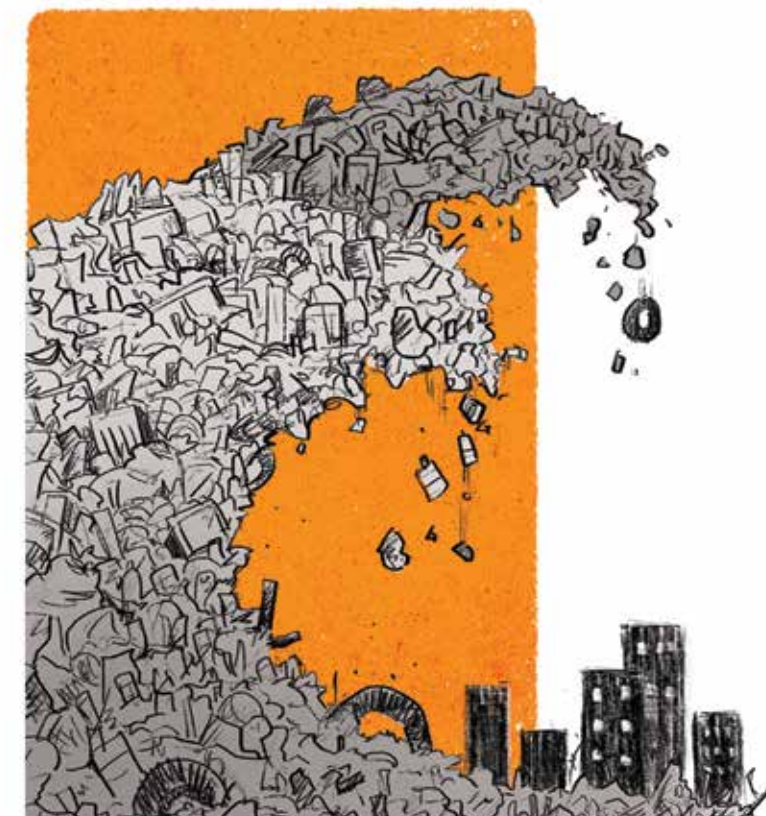
The issue of plastic waste has finally taken center-stage,

partly because it is now recognised that recycling of plastic has limitations (the Chinese ban on import of plastic waste for recycling has come as a jolt), and partly because plastic generated on land is ending up in oceans and in the food that we eat – fish. The question is, what is the way ahead? Many countries – several states in India have done the same – are looking at options to categorise and phase out single use plastic. Will this strategy work? What is the best practice for plastic waste regulations like extended producer responsibility (EPR)? Even if companies take back the plastic, does it lead to better practices in recycling and disposal? The concern also is that plastic waste will end up being exported illegally to countries of the Global South – evidence is emerging that after the Chinese ban, illegal and clandestine waste trade is happening. It is the NIMBY of the poor that will transform the waste practices of the rich. This is what CSE will research, promote and work to upscale.

### THE ACTION PLAN

- Use pilot projects for cities to advocate solutions and best practices
- Research and advocate how the informal sector can be transformed, but remain integral to future waste management systems
- Promote best practices through Forum of Cities that Segregate
- Research on strategies to tackle plastic waste, promote best practices and upscale.

**Emphasise resource recovery and recycling, in ways that build healthy livelihoods for informal businesses of the poor. Secure ways of combating plastic waste so that it does not cost us the Earth**





## GOOD FOOD

CSE's 'food' programme is multi-faceted and geared to deal with the growing problem of poor health of people and the planet. India has always faced the challenge of malnourishment; it is now also waging a battle with 'the bulge' and its associated diseases of diabetes, hypertension etc. But we also have an advantage – we have still not lost our culture of real food. The connection between nutrition, nature and

livelihood still exists as a majority of Indians eat local, nutritious, home-cooked meals, which are more than often frugal. This is because we are poor. The question and challenge is, can we continue to eat healthy meals that are sourced from nature and built on our rich culinary cultures even as we get rich? This is the real test.

Today, governments have allowed powerful industry to take over the most essential of our life's business – that of eating. When we eat 'bad', it points to changing practices in agriculture, which has started becoming integrated and industrial – a model which relies on supplying cheap food, with

**Link our work to nutrition and sustainable diet, agricultural and livestock production systems that minimise use of toxins (including antibiotics). But also build livelihood security for small holder farmers**



high resource and chemical inputs, leading to more contamination, and rising health burden.

CSE has worked hard to build an understanding of this challenge and advocated for change. We have tested pesticides in processed food, trans fats in edible oil, antibiotics in honey and, most recently, antibiotic residues in chicken. These tests have elicited consumer response and forced governments to act. As a result, there are now more stringent standards for pesticide residues in processed food; regulations (introduced reluctantly) on trans fats, a near-zero antibiotic standard for honey, and a ban on colistin, an important antibiotic used in livestock.

We need nutrition as well as livelihood security. To have both, we need a model of agricultural growth that will value the production of local good food, one that will not first 'chemicalise' and then try to learn better. Simultaneously, we need to protect against bad food. CSE has advocated bans and restrictions on availability of ultra-processed food – high in salt, sugar and fat – in schools; asked for prominent labelling on food which would specify how much fat, sugar or salt it contains in relation to daily diet; and explored other ways to stop the promotion of this food.

At the same time, we have celebrated our rich cuisine, built on the incredible colour, flavour and diversity of nature. If biodiversity disappears in the wild, we will lose this food wealth on our plates. The link between nature-nutrition and livelihood is important for our health and the health of the Planet.

This is also a time when there is global recognition of the role of 'good food' and diets in climate change action. It is estimated that food systems contribute roughly a quarter of the world's GHG emissions and of this, about half comes from livestock production and meat consumption. Therefore, changing diets and more importantly, changing the way livestock is grown and meat is manufactured is crucial. The opportunity for India lies in the fact that we have not yet chemicalised and industrialised our livestock production – it is in the hands of subsistence farmers and plays an important role in their economies.

### THE ACTION PLAN

- Focus on the food connection with unsustainable production and unsustainable nutrition – it is not enough to have just an organic food movement, which addresses the needs of largely the richer and more elite consumers.
- Advocate the need for policies that incentivise farmers to grow organic, low-chemical food and provide them with markets and with income that will value their labour and land.

## ANTIBIOTICS IN OUR FOOD

CSE has led the work – in India and globally – to link the issue of environment and food to anti-microbial pathways. Our laboratory studies on antibiotic residue in honey and then poultry built regulatory awareness about the need to act against use of antibiotics in food production systems. As a result, the Indian food regulatory agency has notified standards for antibiotic residue in food; the pollution agency (CPCB) has draft standards for antibiotics in effluent discharge from the pharma industry and now, more recently, the use of colistin an antibiotic of last resort has been banned for use in livestock.

We are also finding that there is a lack of capacity in governments – in India and Africa – to plan and regulate the use of antibiotic in humans and in food. CSE is already working with the Zambian government and the state government of Kerala to develop their antimicrobial resistance strategic action plans and to ensure that environment/animal pathways are included. We will also work to catalyse action on effluent discharge standards for pharmaceutical and other industries and most importantly, to monitor discharge of effluents.

We believe that it is important to build consumer awareness and pressure about anti-microbial resistance. Consumer test reports (like ours on honey or chicken) are the key to behavior change in the livestock industry. For instance, food giant MacDonald has committed to reduce antibiotic in chicken and in meat because of consumer awareness. Big food companies in US have come together on 'stewardship framework' for minimising antibiotic use. But this is not happening in the countries of the South, where these industries are fast expanding. We need to build the awareness and the voice of consumers in food business. CSE will continue to work on this area, through its laboratory studies.

## WATER AND WASTEWATER

CSE has been an important thought leader in this sector, influencing global and national strategies to focus on the need for technologies to augment water resources in a decentralised manner through rainwater harvesting and to use that water to optimise on benefits. In the mid-1990s, we published, *Dying Wisdom: The Rise, Fall and Potential of India's Traditional Water Harvesting Systems* on the need to reinvent traditional solutions for today's challenges. Today, rainwater harvesting has been made mandatory in many cities in India. In addition, the Indian government has recognised the need for decentralised water management strategies in its newly launched and massive water conservation programme.

In 2012, CSE published the two-volume comprehensive report *Excreta Matters* on the crisis of clean water supply, sanitation and pollution in urban areas. It found the current method of sewage management is capital-intensive, creates and maintains a divide between the rich and the poor and is natural resource-intensive (uses water first to flush, then to convey the waste). This work has led to greater understanding of the need for review of current infrastructure projects on

water-waste and to explore alternatives for waste management that are based on principles of re-use and recycling. The advocacy that followed this publication has led to a country-wide debate that had impacts on the National River Conservation Plan.

Since the past five years, CSE has taken this work further. We put together the excreta sums of different cities, or what we call the city's "shit-flow" diagram, which reveal the system of 'toilets' in cities, and how human excreta is conveyed, transported and how much is treated and then how much is safely disposed of. The research has found

that most cities (in India, South Asia and Africa, where this research has been done), do not treat or safely dispose the bulk of the 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. In the bulk of case, human excreta (our household waste) is not safely disposed but instead discharged, untreated into the nearest river, lake or a drain. In this way, pollution increases, which in turn leads to increased health burden because of dirty water.

We believe this learning is an opportunity to do things differently. Instead of waiting for the underground sewage network to be built, which is expensive, unaffordable and given the economics of municipalities often unviable, there is another route for excreta to flow. The faecal sludge can be emptied and conveyed for treatment. The system would work, if the septic tank is built to specification; if the system for collection of the human excreta (faecal sludge) is regulated and if the sludge, so collected is taken to treatment points so

**Link water to waste, sanitation, health and pollution. Focus on faecal sludge management, connecting it to affordable sanitation and pollution control**



that it can be made safe for reuse.

The fact is that this 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 water. In this case, we can return the human excreta back to land, use it as fertiliser and reverse the sanitation cycle. The faecal sludge, after treatment, can be given to farmers and used as organic compost. Or, it can be treated and mixed with other organic waste—like kitchen waste—and used for biogas, or to manufacture fuel pellets or ethanol.

We are also excited that this idea is taking root. Governments' are beginning to realise that this is not yesterday's system but can be re-engineered to work for today and tomorrow. They are recognising the fact that septic tanks are decentralised waste collection systems. Instead of thinking of building an underground sewerage network—that is never built or never completed—it would be best to think of these systems as the future of urban sanitation. After all, we have gone to mobile telephony, without the landline. Individual septic tanks could be the way to achieve full sanitation solutions.

So, city's sanitation plans are beginning to recognise that these systems exist and to incorporate them for future



improvements. The key is to provide oversight to the building of these systems—the codes exist, but they need to be implemented and structures certified. The most important is to provide minimal regulation for the collection and transportation of faecal sludge business, so that waste is taken for treatment, and not dumped somewhere. Then we need technologies so that the waste is reused – not discharged into waterbodies – but used on land, so that the nitrogen cycle is restored. This system waste management is more affordable and so more sustainable. It provides employment in the business of cleaning waste. It provides sustainable solutions so that waste, is not waste, it is a resource.

In the past few years, CSE has worked with state governments, particularly in cities along the Ganga river. In 2018, it mapped 66 cities of Uttar Pradesh (UP) in terms of excreta management to find the following:

- Roughly 70 per cent of the state's excreta management is 'on-site'
- 80 per cent 'septic tanks' in the state are connected to open drains where the liquid is discharged
- 50 per cent of the 'septic tanks' are mechanically cleaned – whenever there is the need
- 90 per cent of the septic tank waste is not treated – disposed of in drains/rivers/land

CSE is now working with the state government to implement pilot projects and fecal sludge treatment plants in cities of Bijnor and Chunar in UP, and to enact policies for FSM and scale up the implementation of these projects in the state. It has also worked with cities in India and in South Asia and more recently in South Africa (in partnership with the Water Research Centre (WRC)) to build an understanding of the ground situation and the solutions ahead.

In the coming years, now that this idea is accepted, CSE's work will be to focus on implementation so that there is scale and impact.

## THE ACTION PLAN

- ✎ Bring policy guidelines and then convert these into bylaws for enforcement and implementation – currently, no state has converted the guidelines into bylaws and this means there is no legislative framework to do this work in a city. This is why enforcement remains weak and inactive.
- ✎ Work on how to regulate transportation and payment by users – there are some emerging good practices in this area that need to be tracked and advocated.
- ✎ Work on treatment of faecal sludge, either in co-treatment plants with STPs or in designed FST plants. Track functioning of the plants and find answers on how can the treated waste – sludge and water – be reused and not discharged in the river. Focus on land-based sewage treatment systems that recycle nutrients.

## RURAL SANITATION

Over a decade ago, when the world began discussing targets for sanitation, the idea seemed simple – build toilets and people will use them. When the UN's Millennium Development Goals (MDG), set in 2000, came to an end in 2015, over two billion people had gained access to improved sanitation. But it still left nearly 2.6 billion people with none or poor sanitation facilities – it was the world's unfinished agenda.

The Sustainable Development Goals (SDGs), which succeeded MDGs have now set an ambitious global goal to completely get rid of this wicked problem – by 2030 all citizens of the world must have access to clean water and improved sanitation. All governments, and in particular, the government of India have taken on this challenge. CSE's work has been to track policy; challenge it with findings from the ground; and to broadcast and to celebrate the success – so that more can be done.

In the past years, there has been some critical learning. Firstly, it is clear that toilets do not equal safe sanitation. The faecal matter, if excreted into a poorly made pit in the ground or a latrine connected an open drain (as is case in most places) will contaminate and add to health burden. So, if building toilets must lead to the benefits that they are designed to do – reduced water-borne diseases, improved nutrition of children and improved productivity – then sanitation has to differently done. The toilet has to be built with provisions for management of human excreta. The toilet must also be built with provision for water. Once again, if people cannot wash hands or clean the toilet then it will add to the health burden. This is the toilet+ strategy.

Secondly, there is the realisation that toilets without changes in behavior will also not work – they could be built but not used. This is why the world now agrees that it must

**Link to water availability, health and excreta management to handle the world's most wicked problem for women**



focus on educating people of the benefits of using toilets. The most important trigger is to link the benefits of using toilets with the most obvious one – how it will impact health. It is also clear that entire communities are the best to cajole so that there is social acceptance and some pressure that makes people change habits. This is the toilet + + strategy.

India has worked hard to meet its own open-defecation free goal of 2019. In the past four years, as many as 100 million toilets have been built in about 0.6 million villages and another 6.3 million in cities. The country has been declared open defecation free (ODF)—a seemingly impossible task just some years ago.

We believe this extraordinary success will need to be sustainable. We know that slippages happen in all programmes. So, even if toilets are built and even if people have started using these, this trend can reverse in no time. Two, there is the issue of excreta disposal. Currently, the independent survey of the government’s programme uses an inadequate definition of “safe”—it defines safe disposal if the toilet was connected to a septic tank with a soak pit, single or double leach pit or to a drain. The fact is that this is only the system for containment of the excreta, not its disposal.

Furthermore, it finds that roughly 34 per cent toilets are septic tanks with a soak pit; another 30 per cent are double leach pit and another 20 per cent with single pits. It assumes that the toilet will safely decompose the excreta in-situ. However, it is well known that ‘treatment’ will depend on the quality of the construction of the toilets. If the septic tanks or double-leach pit toilets are constructed to design – if the double-leach pit, for instance, has brick-lined honeycomb in its lining – then the excreta will be safely decomposed and when removed, will be safe for reuse on land. But this may not be the case in many toilets.

Without safe disposal/reuse there will be another challenge when pits are emptied and not-yet-decomposed waste is dumped in waterbodies or in the fields. Then the toilet will not be the source of contamination, but soil and water contamination will take away the health gains.

This learning has also been important to take to many countries/regions of Africa, where the sanitation challenge is still massive. It is clear that the world cannot meet its important SDG target without this transformation in African countries. CSE has been working to build public awareness, through the media and through exposure trips for regulators/ government officials to India on key learnings and what needs to be done.

### THE ACTION PLAN

- Continue to work on tracking national level performance to build toilets and to research on what is working and where in terms of rural sanitation – technology for toilets, behavior change, waste management.
- Continue to build public awareness with the aim of getting countries to adopt strategies for sanitation and excreta management.



## CLIMATE CHANGE

It is very clear that climate change impacts are here and are even more devastating than we imagined. Because of this, the world is recognising the need for urgent action today, more than ever before. Yet the world has lost the momentum to make sure that these actions are indeed taken and at the scale and pace needed. More importantly, after the UN’s Paris Agreement/ rule book it is very clear that now countries are more or less left on their own to take action as much as they can. The global cooperation deal has been effectively twisted to become a domestic agenda. But this will be challenged, we believe, as the impacts of climate change become more urgent and more real. Also, climate change is capturing the imagination of the youth with new and renewed calls for action.

**Stay on track with the research focus on impacts, adaptation and mitigation**

### THE ACTION PLAN

- Work on the domestic (local) agenda for low-carbon growth, within a co-benefit framing. In other words, we will work not on climate change mitigation per se, but on advocating and catalysing strategies that will bring local benefits of say, reduced air pollution in our cities, with climate benefits. We have mapped this work to keep us on track (see table).
- Continue to work at global forums to argue for ambition and equity. This we believe is crucial as without global agreements that deliver on both counts, we will not be able to address this existential issue. It is important to reiterate that countries in the South will need their right to development, which as the world runs out of carbon budget will be difficult to secure. CSE will continue to research and to advocate for the need for climate justice and for transformational action.



Track climate change impacts in South Asia and Africa so that the world is aware of the scale of the problem and the fact that victims of climate change are the poorest and most vulnerable. We recognise that adaptation is really about doing development and to do development in a way that minimises the risk of climate change but also provides welfare to large numbers of people. We have worked in the past on the insurance scheme as a way of building coping mechanism of farmers when it comes to weather related disasters; we intervened in framing the insurance policies in India; we did a workshop in Africa and worked to advocate for a global agreement on insurance. CSE has also worked on the global mechanism on loss and damage. We have also identified that a key issue in adaptation will be weather forecasting. We have researched the current state of preparedness in different regions of the world. Based on this, we will take forward our work to build awareness and capacity to understand impacts and the links with our own mismanagement of land and water resources.

THE CO-BENEFIT AGENDA

Co-benefits that will drive low-carbon growth and combat climate change

PROGRAMME	INITIATIVES	OBJECTIVES
Sustainable industrialisation	Resource efficiency improvement in thermal power plants in India	Cut emissions in coal-based power plants for major climate benefits
Green building	Green buildings: designing for thermal comfort	Make buildings more energy-efficient; reduce need for air conditioning through design
Renewable energy	Renewable energy	Work to upscale renewables and make clean energy accessible to poor
Air pollution	Clean air and clean diesel (including black carbon) Reinventing mobility and car restraint strategies	Reduce black carbon emissions Reduce CO2 emissions

RENEWABLE ENERGY

There is no question about the importance and relevance of renewable energy (RE). Today, few will argue about its imperative or feasibility. The renewable energy industry has matured; there are companies that can bid and out-bid each other for the supply of panels, solar power plants or wind turbines. In today’s world renewable energy plants compete with coal-based energy. India, for instance, has set an ambitious target of 175 GW by 2022. Today, the Ministry of New and Renewable Energy (MNRE) says that the country has hit 73,000 mw of installed RE power, which is some 20 per cent of the country’s installed capacity for power generation.

On good days, when the sun is shining and the wind is blowing, RE meets some 12.5 per cent of the country’s electricity demand. On other days, it is over 7 per cent. This is big, yet not big enough. This is where we see our work – as a public institution that will track the change and seek for more.

But even as renewable energy is growing in different parts of the world, including India, the challenges that confront us in terms of energy access and pollution and even climate change are also growing. CSE will work on these aspects.

First, there is the challenge of access to energy. The fact is that even as the grid reaches everywhere, the light does not. Millions of households in the world are still in darkness. Second, there is the challenge of clean cooking energy. This is the world’s wicked, wicked problem. Women, across our world continue to be exposed to toxic emissions because of the biomass they burn to fuel their cooking stoves. The Indian government’s much needed push to provide LPG to poor households has made a dent in the cooking energy sector. But it is also a fact that in spite of this, households are still using dirty biomass fuels; there is a definite correlation between income and cooking fuel. So, households do not get the refill of their cylinder as frequently as they must.

The other challenge is air pollution. The health impact of the foul air is now so big that even governments cannot deny the problem. Clean combustion, in other words RE, has a big role to play in clearing the air of toxins.

Also, in spite of the climate conundrum, the world and India, remain addicted to fossil fuels. The countries of the South need to provide affordable energy to large numbers of their people. CSE is therefore, arguing for a different discourse about RE. We need to redefine its objective so that it can meet societal needs. It cannot be enough to meet targets. It must meet poor’s energy, clean air and climate change needs.

Our approach is that energy security for vast numbers of the poor requires an energy delivery system that is different. It will require reaching energy, which costs less but is advanced and cleaner, into households that cannot even afford to buy basic fuel or light. Currently, RE is like all energy sources – it could be coal or gas – is produced and pushed into the grid. It is supplied through the conventional (and broken) distribution network.

Link to access to energy for all, particularly for women who continue to cook using biomass and are exposed to toxic pollution. Also, connect to climate change mitigation

THE ACTION PLAN

Address the gaps discussed above through research, advocacy and efforts to catalyse policy and action – in India and in countries of the South

# THE STAGE

Global, regional, national, local — where will we work  
What have been our learnings | How would we use that knowledge



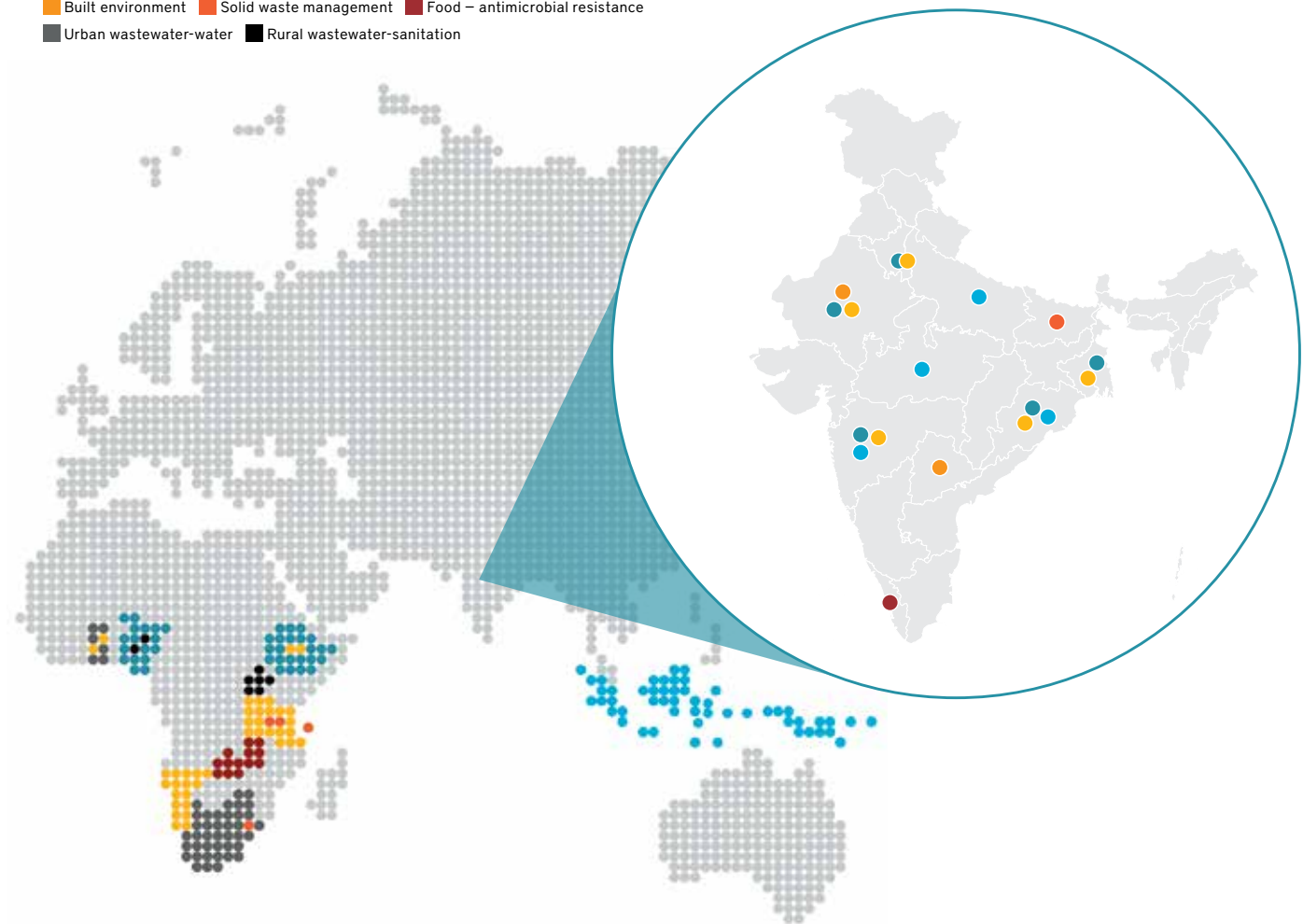
2014-19 Strategic Plan, we had set out to expand our work to global forums and countries beyond India. We did this, arguing that global cooperation requires participation and engagement from the South. The approaches and solutions emerging from the countries of the South would influence global action – global agenda requires learning from local action, and in turn,

local action needs global support. In this global-is-local world, our strategy was to take the work in which we had the knowledge, expertise and ability, to where there was demand, so that we could drive change.

In the past five years, this strategy has worked. We have developed clear programmes of work in each area and have selected partners and countries of focus.

## COUNTRY/STATE WHERE CSE WILL WORK TO INTERVENE IN 2019-2024

■ Air pollution/mobility ■ Thermal power plant pollution ■ Industrial pollution, including brick kilns  
■ Built environment ■ Solid waste management ■ Food – antimicrobial resistance  
■ Urban wastewater-water ■ Rural wastewater-sanitation



Area of work	Country/state where CSE will work to intervene in 2019-2024
Air pollution/mobility	<b>INDIA:</b> Delhi-NCR, West Bengal, Odisha, Rajasthan and Maharashtra <b>OTHER COUNTRIES:</b> Ethiopia (Addis Ababa), Nigeria (Abuja) and at the pan-Africa and national levels to influence policy and build awareness
Thermal power plant pollution	<b>INDIA:</b> Madhya Pradesh, Uttar Pradesh, Maharashtra and Odisha <b>OTHER COUNTRIES:</b> Indonesia
Industrial pollution, including brick kilns	<b>INDIA:</b> NCR, West Bengal, Odisha, Rajasthan and Maharashtra <b>OTHER COUNTRIES:</b> Ethiopia (Awash basin), Ghana (environmental audit/SMART monitoring), Tanzania (mining and EIA) and Namibia (mining),
Built environment	<b>INDIA:</b> Telangana, Rajasthan (C&D waste) and green campuses across India
Solid waste management	<b>INDIA:</b> Muzaffarpur (Bihar) and other cities through the Forum of Cities that Segregate and new partnerships on plastic management <b>OTHER COUNTRIES:</b> Zanzibar, Tanzania and Swaziland
Food – antimicrobial resistance	<b>INDIA:</b> Kerala <b>OTHER COUNTRIES:</b> Zambia
Urban wastewater-water	<b>INDIA:</b> New partnerships through work on developing shit flow diagrams in cities of Ganga basin: Chunar and Bijnor <b>OTHER COUNTRIES:</b> South Africa and Ghana
Rural wastewater-sanitation	<b>OTHER COUNTRIES:</b> Nigeria, Uganda



## OUR LEARNING, 2014-19

- Our ability to reach and influence governments is based on our credibility as an institution that has ideas as well as solutions, and one that has been able to deliver at the national level. Governments need the assurance that there is similar work happening, or has succeeded, in other countries. For instance, the Indonesian government agreed to work on reviewing its thermal power emission standards and monitoring systems only because India has upgraded its emission norms.
  - The 'buy-in' we have got in different countries is, as yet, proving reliable and long-term. CSE has signed MoUs with government agencies in some countries – in our work on air pollution, renewable energy, mining and sustainable industrialisation, our partnerships are with departments of environment in Ethiopia and Nigeria and the ministry of energy and minerals in Tanzania.
  - This suggests that there is a willingness to learn and to emulate. Countries want to know more about what is working and where. But this knowledge and information has to be based on changes that have been made on the ground in similarly placed polity. Experience has to be relevant and has to be seen as a model to emulate. In Ethiopia, we discovered examples of successful health-linked sanitation initiatives. Exposure visits to Sri Lanka to understand good examples of solid waste management or to Zanzibar to witness the work on community segregation has led to changes in policy and practice.
  - There is a need to be 'nimble' and flexible in our ideas and approaches to address the new challenges that keep emerging constantly. In Zanzibar, for instance, where we have been working on waste management, tourism is a big issue; they are keen to know how best to balance its growth with sustainability. In all such cases, we need to research and respond to the specific issues. This, in turn, has provided us with new knowledge that we can share with other countries.
- In all, we have learnt, that the 'honey-bee approach' – taking the nectar of learning from one case to another – works when there is relevance, knowledge and commitment to make the difference. This is what we will continue to pursue in the coming year, with more clarity and more persistence.

## OUR STRATEGY, 2019-24

- Intervene in relevant global and regional forums and processes, including UN agreements on climate change, with our research, to achieve equitable and ambitious outcomes.
- Intervene at the country level to push for better policy and practices by working with stakeholders.
- Continue to build capacity of regulators, media and civil society and convene meetings of stakeholders, particularly at the regional level, to develop new partnerships and engagement with multipliers.
- Continue to strongly communicate our research and perspectives and reach new audiences, so that the imperative for action is broad-based and its urgency understood.

# THE VOICE

How do we outreach and communicate our messages

How do we amplify our voice

How do we multiply our impacts and build virtual circles of change

**C**ommunication – visible, high-quality, attention-holding and yet in-depth and relevant – is crucial to bring change. It is also important that we multiply the message, by multiplying and reaching out to agents in society who can take forward our ideas and push for implementation.

CSE has always invested in this, and in the coming years (2019-2024), this work has to be further

strengthened and intensified. We need to do more to 'push out' our research on our websites. In this strategy, our objective is to increase the national and global ranking of our websites and get more readers and more visibility for our content. We will engage more with media across the Global South so that we can build opinion on these critical issues.



# THE STRATEGY

## current and future

### 1 Repositioning Down To Earth as a popular and powerful voice from the South

**2014-19:** 2.5 million page views per month. Over 1 million unique visitors per month. Ranks among the 50,000 top websites of the world and 3,500 top websites in India. Hindi edition reaching new audiences. 0.1 million subscribers of DTE multimedia on YouTube. Over 4 million views in 2019 alone.

**2019-24:** Take this even further. Ensure that the reach of our knowledge, perspectives and politics grows.

### 2 Building a network of environment and climate change media

**2014-19:** Built partnerships with key media groups in Africa. Brought together professionals for meetings in India and Africa. Developed a vibrant and impactful relationship.

**2019-24:** Work towards building a School of Development Communication. Nurture this work and make it more impactful.

### 3 Joining hands with educators through the Green Educators Network

**2014-19:** Over 5,492 schools conduct our annual audit under the Green Schools Programme. Schools benchmarked in terms of their performance, thus ensuring continuity and sustainability. Providing a learning for children to be environmental leaders and building a cadre of teachers committed to doing things on ground. Built up and grown the Green Educators Network for universities and colleges through national and regional meetings and quarterly interaction through Facebook Lives.

**2019-24:** Grow this interaction as we believe educators play a huge role in building the new generation of change-makers in our society.

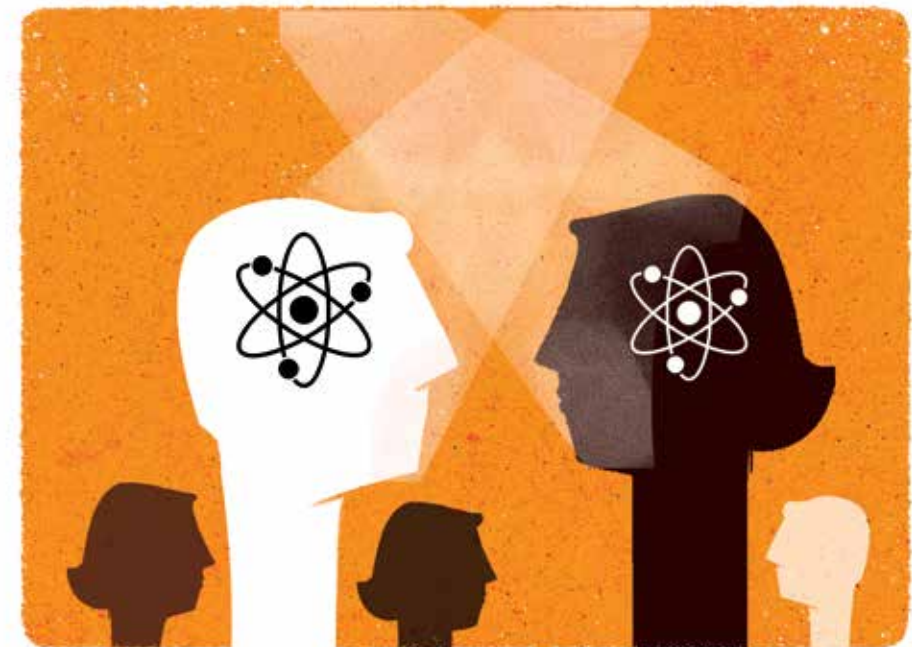
### 4 Building institutional capacity through the Anil Agarwal Environment Training Institute (AAETI)

**2014-19:** The most important engagement across sectors we find is institutional capacity building. 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. CSE has set up its new learning, training and innovation and demonstration centre, named after its founder-director, the late Anil Agarwal. The campus is located in Nimli, in Alwar district of Rajasthan, a two-hour drive from Delhi. AAETI has been fully functional since December 2017, hosting CSE's trainings and workshops. The Institute brings together expertise, knowledge, research and innovative learning tools from across India and the world to build capacities of a range of audiences – regulators, lawmakers, communicators, professionals, students, civil society members and administrators.

**2019-24:** We will build schools of training at AAETI so that this knowledge can be multiplied and each participant can become an agent of change.

# THE POLITICS

How do we mainstream our politics  
How do we ensure equal opportunity for women in work,  
in voices and in action



**C**SE, because of its roots in India, will always position the local community, the marginalised, and the powerless at the centre of its work. A public research institution like CSE must work to address the development issues of the poor. Our politics of environment encompasses the politics of development. The focus in all our programmes, therefore, is to address the core issue of poverty and to improve well-being in society. The clear objectives are to target the needs of the most marginalised and to see how their knowledge, labour and organisation can be integrated into sustainable development strategies.

For instance, in solid waste management, we advocate for affordable systems that process, recycle

and use informal sector for employment. Similarly, in the case of sustainable mobility, our position is that the existing informal para-transport system needs to be upgraded to meet the needs of convenience, reliability and efficiency that modern cities desire. In the case of sewage, we are working to build models of decentralised waste management, which again would provide affordable solutions as well as employment for larger numbers of people.

We believe this paradigm shift in the approach to sustainable development will provide solutions to challenges of poverty eradication, employment and sustainability. Our politics of environment is clear that without inclusive and equitable growth, there cannot be



sustainability. This is what we believe in, and we translate this belief into our work and our programmes.

#### Strategy 2019-24

- Ensure that we make more deliberate efforts to include voices of the most powerless/marginalised in our reporting. Take these voices out so that these become a 'shout' – researchers and reporters will make special efforts to ensure they reach out to these communities/people.
- Ensure that we keep the politics of inclusion at the core of our work – we will monitor and track what we are doing to see if it improves the well-being of the poorest. As a research institution, our work does not involve implementation. But as a research institution,

we need to know that our work is on track, has objective and direction, and that it will bring change in the lives of the most dispossessed and most vulnerable.

- Ensure that we make deliberate efforts to mainstream gender in our programmes – this will be done among our staff; participants in our training programmes and workshops; and in covering the voices from the ground.
- Build new engagement to ensure interests of children and youth are addressed – children are not just the inheritors of the future, warmer world, they are also the worst hit by environmental destruction and toxification.

## THE QUESTION OF HEALTH

We need to make linkages between our health and the health of the environment.

Today, it is polluted water which is visible in the deliberate murder of our rivers – it is also one of the largest killers of children in the country. Today, it is the lack of clean energy in homes that forces women to cook using biomass fuel – it also forces them to suffer from killer respiratory disorders and is responsible for pollution that is making air toxic to breathe in our cities. So, health is an indicator for the environment.

The good news is that our health is also the only real trigger for environmental action. We will act to improve the environment when we know and believe that it impacts us directly. For instance, today, in Delhi there is outrage against the pollution in the air. The reason for the change is that citizens of the city have public information about the state of air quality and its link to health. Some years ago, the government introduced the air quality index (AQI), in which, we were informed about the level of pollution and its impact on our health. We now have a large number of air quality monitoring stations providing real-time information. This knowledge, on a breath-to-breath basis, is available on our phones and computers. People are worried and demanding action – forcing the government to respond.

Let's also be clear, this network of stations does not exist in any other part of the country or in most countries of the South. People in those regions do not know how polluted their air is; how harmful it is for their bodies.

Similarly, when it comes to consumer behaviour on food, people change their behaviour only when they know that antibiotics or pesticide residues are harmful for their health, or excessive meat in their diet is not good. When rural communities understand that lack of sanitation adds to their health burden, they will use the toilet (provided it is accessible and has water).

This means that we need to increase our work on the interface between health and environment. It is an opportunity.

# OUR DUTY

To hope, and not give in to despair  
To stay firmly on track, and keep working for solutions  
To keep illustrating and documenting the good news

**T**he world needs solutions. It needs optimism that there are answers, and that they are within reach. It cannot be despair. We cannot give up because the problem of climate change, or the growing inequality, or the sheer lack of sagacious global leadership makes us despondent; makes us believe that nothing can change.

The answers will lie in keeping our view firmly on the need for solutions, and in showcasing what is working and where. CSE will work on this more in this period – we will do all we can to bring the nuggets of good news, where individuals and communities are managing their water or their waste or are taking control of their forests for regeneration. Or where countries are bending the curve on greenhouse gas emissions. The scale does not matter in this case, the enterprise does. It builds the way forward. It builds the response we need for governments, from people and from industry.

Too often we do not do enough to illustrate these works. In 2019-24, we will do more, much more to lend a voice to these initiatives and turn them into a shout.

[illegible]





**Centre for Science and Environment**

41, Tughlakabad Institutional Area, New Delhi 110 062

**Phones:** 91-11-40616000

**Fax:** 91-11-29955879 **E-mail:** [sales@cseindia.org](mailto:sales@cseindia.org)

**Website:** [www.cseindia.org](http://www.cseindia.org)