CENTRE FOR SCIENCE AND ENVIRONMENT

2017–18 AND 2018–19

ANNUAL REPORT

Knowledge-Based Activism

CONTENTS

FOREWORD

We live in interesting times, that much is clear. But the last two years have been tumultuous, more than ever before. Firstly, the sheer speed and scale of climate change-related weather disasters have taken everyone by surprise – even us, who have been arguing for an effective, ambitious and equitable climate agreement for the past 30-odd years. Even we did not anticipate the sheer speed of the change. Each year, it is getting hotter; each year our monsoons are getting more extreme and more variable. We see droughts and floods happening together, with one region going underwater because of extreme rain and another grappling with drought.

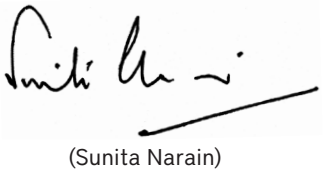
The victims of climate change are the poorest and most vulnerable, who are not responsible for the gases in the atmosphere. The sheer immorality of the crisis stuns us. But what is also clear is that the scale of devastation we see because of weird and unseasonal weather cannot only be attributed to climate change. We are mismanaging our own environment – our land is getting desertified; our water is overused and polluted and waterbodies destroyed. We are losing each day because each disaster takes away the development dividend. It makes the poor poorer, and makes governments reinvest again and again in providing basic facilities like housing or toilets. It makes growth more contentious and more difficult. And this is where the opportunity for change is.

This is where the second tumultuous change comes in. It is a fact that environment is today a hot issue. When we began work in the 1980s – when environmentalist Anil Agarwal founded CSE – it was difficult to find a friend of the environment; now the situation has reversed. People in cities are outraged by air pollution; they see the damage it does to their bodies, they want change. Also, now they have knowledge of how polluted their cities are. They can see it on their phones, read it in papers day after day. It is an issue that has caught the imagination of people in cities. Air pollution is also a great equalizer – the rich and the poor in the city are almost similarly affected. The air purifier does not take away the need to breath.

The question is: How does an organization like CSE respond to these challenges? These are issues with which we are deeply engaged; we do in-depth research of the problem so that we can we seek the solution. We look and want to drive serious and meaningful change. But in the rush of the moment; the cacophony of the noise and the sheer scale of the problem, it is difficult sometimes to keep focus and to keep working on the difficult issues that we know must be resolved.

I am writing this to explain to you our challenges in these interesting times. But also to tell you that we are staying on course. We strongly believe that we can make a difference if we can understand the problem and then work on the solution. In issues where there is public appetite for change, it is our work to push the boundaries of the solution that is needed. To be persistent and to be dogged about the need to do more and at scale. We want to see that the solution gets implemented and we can see the difference. In other areas, we work to build public opinion. Our politics is about ensuring affordable and inclusive growth so that it is sustainable. We are also working to build capacity of change-makers so that we can have multiplier for our perspectives and our ideas. The Anil Agarwal Environment Training Institute (AAETI) is not just our way to pay tribute to the extraordinary man who founded CSE, but also our way to build the path-makers for the future change.

Our theory of change is in our work. We all hope we will continue to get your support and your encouragement. We need it now, more than ever.



(Sunita Narain)

CLEAN AIR AND SUSTAINABLE MOBILITY

TO ENABLE OUR CITIES TO SECURE THE RIGHT TO CLEAN AIR AND PUBLIC HEALTH

National and state-level coordinated action for air- pollution control

One of our long-standing demands in this field has been the introduction and enforcement of legally binding air quality standards and action plans in the country. In December 2017, due to our intense advocacy, the Union Ministry of Environment (MoEF&CC) informed the Supreme Court that it was preparing a National Clean Air Programme (NCAP); the plan was issued in January this year. CSE has submitted comments to the ministry seeking a stronger compliance mechanism to meet the targets.

We have also engaged with the ministry on other air quality actions and contributed in preparing the CII-NITI Aayog's National Action Plan reports on biomass management, clean fuel and clean transportation.

In the period 2018–19, besides continuing our work in Delhi–NCR (details follow), we have also made forays in three other states – Odisha, Andhra Pradesh (AP) and

West Bengal. CSE is formally helping these states develop their Clean Air Action Plans. The NCAP requires states with non-attainment cities to prepare clean air action plans.

ODISHA (BHUBANESWAR, BALASORE, CUTTACK, ROURKELA, ANGUL AND TALCHER)

As part of a formal agreement with the Department of Environment, Government of Odisha, CSE has prepared the Comprehensive Action Plans (CAP) and Graded Response Action Plans (GRAP) for these six cities. The plans have been approved by the Central Pollution Control Board (CPCB) and are scheduled for immediate implementation in these cities.

ANDHRA PRADESH (VIJAYAWADA, VISHAKHAPATNAM, GUNTUR, KURNOOL AND NELLORE)

As part of a formal agreement with the Andhra Pradesh Pollution Control Board, CSE has prepared the CAP and GRAP for the five cities. These plans have been approved by the CPCB and are slated for immediate implementation.

WEST BENGAL (KOLKATA AND HOWRAH)

The Government of West Bengal (Department of Environment) has included our recommendations in the Clean Air Action Plans for the twin cities. Earlier, CSE had been engaged by the High-Level Committee on Air Pollution Control under the West Bengal government to develop the CAP and GRAP for Kolkata and Howrah. To ensure effective implementation of the CAPs, the state government is planning strategies to reduce emissions from vehicles through an improved inspection and maintenance programme, better mobility and reduced impact from mismanagement of municipal solid waste and construction and demolition waste.

DELHI–NCR

In these years, we supported the measures for implementation of action points under CAP and GRAP in Delhi–NCR. Earlier, the Supreme Court had directed preparation of one CAP for all pollution sources for Delhi and NCR that integrates all existing state level and Central plans; CSE contributed to this process. The CAP plan is now in force in Delhi–NCR, and is becoming a template for other cities.

The GRAP, notified in January 2017, was operationalised in October 2017. During that winter, its implementation reduced emissions. The SAFAR programme estimated that the emergency plan under GRAP resulted in drop in pollution levels by 15–20 per cent during the smog episode.

CSE'S SUPPORT TO THE ENVIRONMENT POLLUTION (PREVENTION AND CONTROL) AUTHORITY (EPCA)

- Industrial hotspots identified – this led to preparation of local area action.
- Sticker policy to label cars running on different fuels: As per SC order of August 13, 2018, this measure is under implementation in Delhi and Haryana; Uttar Pradesh and Rajasthan will implement from April 2020.
- Supply of natural gas to industries – in Delhi-NCR number of industries converting to PNG has increased. Specifically in Bhiwani, Bhiwadi and Narela, extensions of gas pipeline facilitated; 51 new CNG stations added in Delhi–NCR and IGL has crossed the 500 mark.
- Badarpur coal-based power plant closed; CSE and EPCA have also pushed for increased power generation from the natural gas power plant in Bawana, which is currently underutilized.
- Import of pet coke banned across India; usage banned in four states of NCR. Four categories of industries including cement exempted from the import ban as these use pet coke for manufacturing, not as fuel.
- Court directs government to notify Sox and NOx standards for 35 groups of industries.
- CSE also advocated for an Approved Fuel Notification – polluting fuels, including coal, banned in the city as a result.
- CSE contributed to government committees and provided knowledge support on management of crop residues.
- Remote sensing for pollution control from on road vehicles, a pilot study by ICAT in Delhi–NCR conducted, report under review for implementation.
- Action initiated on brick kilns in the NCR – only kilns using zigzag technology will be allowed to operate. Brick kiln owners are in the process of shifting to the cleaner technology.
- Air quality forecasting mechanism developed by Ministry of Earth Sciences jointly with CPCB.
- Removal of cap on three-wheeler registrations – EPCA report in Supreme Court for allowing registration of BS-VI three-wheelers in NCR.
- Radio frequency identification tags (RFID) for automatic and electronic toll collection operationalised at major entry points; This will help bar entry of 10-year-old trucks and other non-compliant vehicles into Delhi and reduce congestion and emissions near toll gates.
- To organise the movement and bypass the truck traffic from Delhi, the Eastern and Western Peripheral Expressways also functional.

Enforcing fuel economy standards

- **HEAVY DUTY VEHICLE (HDV) NORMS:** We have attempted to thwart the auto industry's pressure for non-compliance to the HDV standard. However, a decision on this from the Ministry of Road Transport and Highways is still awaited. We will continue working on this agenda.
- **LIGHT DUTY VEHICLE NORMS:** The first compliance report from the government is awaited. Our assessment will be done once this report is put in the public domain.

Vehicle emissions and fuel improvement

Our consistent advocacy has led to a Supreme Court order that directed that only BS-VI vehicles (running on petrol or diesel with 10 ppm sulphur) will be sold or registered in India after April 2020. In fact, CSE stridently pushed for advancement of the cut-off date for Delhi – BS-VI fuels were introduced in Delhi in April 2018 and in the NCR in April 2019, ahead of the national schedule of April 2020.

The oil industry has assured that BS-VI fuel will be available across the nation by that deadline. The automobile industry has agreed to follow the real driving emission test as an actual on-road testing mechanism. CSE's task now is well cut out – it must ensure that this deadline is met and that there is compliance with on-road emission testing.

Alerted by the Volkswagen scandal and reports from Europe that diesel vehicles – even after meeting Euro-VI emissions standards – are emitting several times higher than the prescribed limit, we have been pro-actively demanding adoption and implementation of real world driving emissions standards along with the BS-VI emissions norms. This will now be implemented from 2020.

CSE had also participated in the evaluation of the 'Pollution under Control certificate (PUC)' programme for on-road vehicles; its assessment exposed several lacunae with the way the programme is implemented currently. The Supreme Court has now directed implementation of reforms and ordered the government to assess and consider integration of on-board diagnostic system (OBD) and application of remote sensing emissions measurements to upgrade the tests.

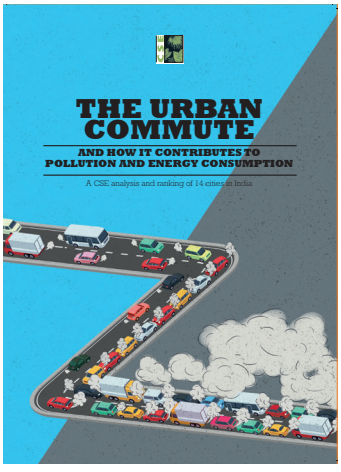
National mobility transition

AFFORDABILITY AND ECONOMICS OF PUBLIC TRANSPORT

Our study on affordability and economics of public transport in Indian cities, disseminated at the International Conclave on Low Carbon Mobility held on September 4–5, 2018 in New Delhi, stirred a debate in the media and at the Central and state-government levels. As a follow-up to the Conclave and the study, a petition has been filed in the Delhi High Court asking for appropriate subsidies to be given to the poor to ensure the Delhi Metro remains affordable for them. The High Court has sought responses from the Delhi government and the Delhi Metro Rail Corporation.

MISSING FOCUS ON URBAN TRANSPORT AT THE CENTRE

In the same Conclave (International Conclave on Low Carbon Mobility), CSE also disseminated its findings on the lack of focus on urban transport



under Central government schemes in the last four years. It kicked off a policy debate and helped put in perspective the Indian government's approach on this subject, as well as the shortfalls of this approach. Moving ahead, this momentum will be used to pursue the agenda of utilising fiscal and regulatory instruments available with the Central government (including Metro funding) as a leverage to push for reforms in urban transport.

THE URBAN COMMUTE

The release of CSE's study *The Urban Commute*, which ranked 14 of India's largest cities in terms of their emissions and energy consumption from urban transport, created a nation-wide media and policy debate on the urgent need for transition to low-carbon mobility. It has given us the leverage to now approach various state governments with our agenda of low-carbon transport.

State-level mobility transition

COMPREHENSIVE ACTION PLANS IN STATES

- CAP IN DELHI: The Comprehensive Action Plan (CAP) for Delhi–NCR includes time-bound targets for components on mobility and public transport, such as procurement of 10,000 buses as per the long-standing Supreme Court order.

- CAP FOR SIX CITIES OF ODISHA, FIVE OF ANDHRA PRADESH, AND KOLKATA: Through the NCAP, CSE has helped in bringing the mobility agenda within the CAP mandate for these 12 cities. We have assisted in formulating the Action Plans which have now been approved. This paves the way for making inroads on further mobility work in the states.

THE BUS SCENARIO

- BUS PROCUREMENT IN DELHI: CSE's consistent advocacy and push for augmenting Delhi's bus fleet has started showing results. Our research on public transport crisis in the city, titled *Waiting for the Bus,* was well received by government agencies and triggered a public and political debate on the inadequacy of bus services. The Delhi government has now decided to buy 3,000 buses for the city (1,000 under the Delhi Transport Corporation or DTC, 1,000 under the Cluster Scheme and 1,000 electric buses). A purchase order for 500 standard floor buses has been placed under the Cluster Scheme, while approval for another 500 is pending a court review. Through the EPCA, an intervention was made to ensure due diligence is

conducted before the purchase of electric buses; consequently a DPR was prepared and now Delhi government is pushing ahead with the procurement.

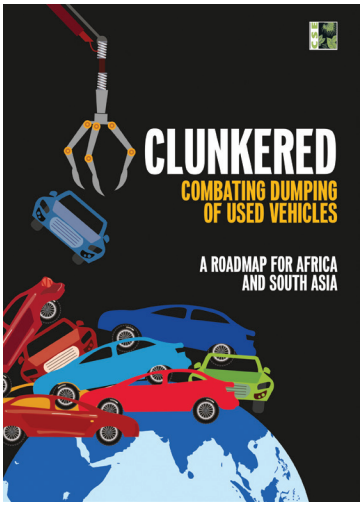
- STATE WORK ON BUSES: CSE has helped build capacities of bus officials in many cities, including from Delhi, Kolkata and Hyderabad, through training and exposure visits. Our first phase of work on buses in these three cities is over; it has provided a platform for in-depth engagement on specific reforms in these cities. A conference on air pollution and mobility organised in Kolkata was attended by officials from across the state, including the Secretary-Transport, Principal Secretary-Urban Development, and Additional Chief Secretary-Environment. The West Bengal Transport Corporation, the agency that provides state-run bus and tram services in Kolkata, has agreed to partner with CSE for public transport reforms in Kolkata. Telangana State Road Transport Corporation has signed a Memorandum of Understanding (MoU) with CSE for bringing in reforms in Hyderabad's city bus system. The aim is to increase ridership of the system.

ADDRESSING THE PARKING CONUNDRUM

- PARKING RULES IN DELHI: The Delhi government has published a draft parking policy which, once notified and implemented, can have far-reaching impacts on the state of pollution and congestion in Delhi. Through EPCA, CSE has been advocating to get the parking policy notified – the matter is now under review in the Supreme Court. Earlier, CSE had supported the framing of the policy – it was a part of the Committee constituted to draft the parking rules. We also headed a sub-committee on framing guidelines for parking management district.

- PARKING RULES IN PUNJAB: CSE has prepared the parking rules for the Punjab government, which has notified them. The notified rules incorporate, inter alia, the requirement of drawing up parking area management plans in cities, a key policy measure that CSE has been stressing on for parking management in cities.

Global work



INFLUENCE POLICIES AT PAN-AFRICA AND COUNTRY LEVELS ON AIR-POLLUTION CONTROL

We have developed a network of African countries whose officials participate in our Pan-Africa forums and training workshops. A CSE report on second-hand vehicles and their impact on pollution, titled *Clunkered*, has been widely disseminated among the concerned regulatory agencies. The Ethiopian Revenue Customs Authority has presented the report to its ministers and officials. The Federal Transport Authority has sought information on the report, and The Ministry of Finance and Economic Cooperation (MoFEC) has used it to draft its policy on used vehicle import. Ethiopia's Directorate of Road Traffic Services has used a parking report done by CSE to draft the country's parking policy. Côte d'Ivoire has requested a French translation of *Clunkered* and expressed an interest in working with CSE. The report's findings also reverberated at the Better Air Quality (BAQ) conference held in Kuching, Malaysia, in November 2018.

ORIENTATION PROGRAMME: A total of 211 regulators from India and Africa participated in 12 training programmes conducted by the team. Participants responded very positively to the training, and the Federal Road Safety Corps (Nigeria) and the Andhra Pradesh Transport Department sent appreciation letters.

CLIMATE CHANGE

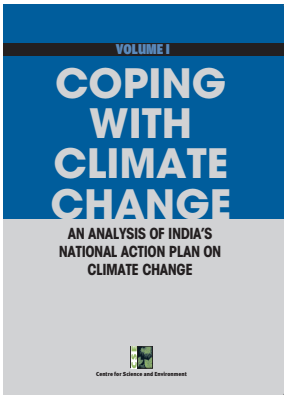
TO PUSH FOR LOW-CARBON GROWTH STRATEGIES; MAINSTREAM CLIMATE CO-BENEFITS AND BUILD A CLIMATE-RESILIENT SOCIETY IN INDIA; AND WORK TOWARDS AN AMBITIOUS CLIMATE DEAL IN THE GLOBAL ARENA, BASED ON EQUITY, FAIRNESS AND HISTORICAL RESPONSIBILITY

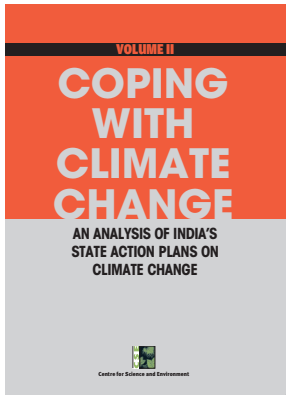
Building resilience of the marginalised, with focus on agriculture and food security

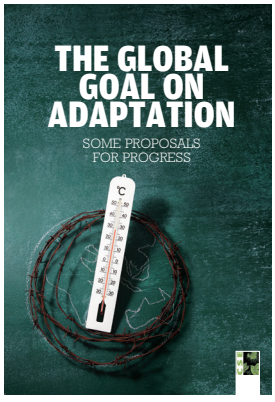
In 2017–18, we released an assessment report of the Pradhan Mantri Fasal Bima Yojana. The assessment received extensive coverage, and triggered detailed responses and rebuttals from the Union Ministry of Agriculture and the Tamil Nadu Agriculture Department. Findings of the report were raised in Parliament, and the government ordered a review of the scheme. The ministry initiated the practice of issuing 'acknowledgment receipts', based on a recommendation of the report.

The team also prepared a set of reports on India's National Action Plan on Climate Change (NAPCC) and State Action Plans on Climate Change (SAPCC) – these have been acknowledged as some of the first and most comprehensive assessments of the plans in the country. The findings were discussed at a stakeholder consultation of select experts and policymakers. CSE is now using the outcomes from these reports and the consultation to evolve a strategy on mainstreaming adaptation in India.

In the year that followed, we focused on pushing for an equitable global goal on adaptation (GGA) under the Paris Agreement. A report was prepared, which attempted to demystify and simplify the otherwise unclear and obtuse concept for implementation. The team also did a side event at the 24th Conference of Parties (CoP) to the UNFCCC in Poland on the subject jointly with CARE International. The subject of loss and damage and global parlays on it were closely followed and commented upon – the key meetings that were tracked included that of the Warsaw International Mechanism on Loss and Damage (Bonn, October 2018) and the Suva Expert Dialogue on Loss and Damage (Bonn, May 2018). We have also engaged with Act Alliance, Action Aid and German Watch to push for mobilisation of finance with regard to loss and damage. At CoP24, the team campaigned to have loss and damage reflected across the elements of the Paris Agreement Rule Book, by engaging with Indian, African and Island group negotiators. We have also been a part of the CAN working group on adaptation and loss and damage.





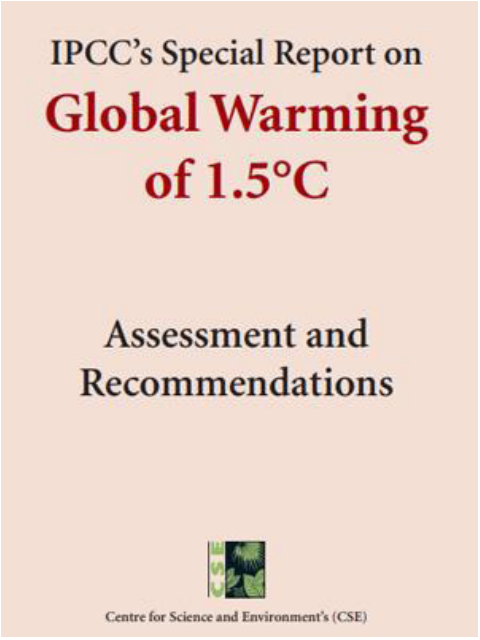


Global campaign on HFCs

CSE has primarily engaged in advocacy and engagement with different stakeholders to push for energy efficiency and safety standards. At the national level, we have been included in the Mechanical Engineering Department (MED-03), a sectional committee of the Bureau of Indian Standards (BIS). The committee has recently agreed to publish ISO-5149, which is the first standard in India on hydrocarbons. CSE is now pushing for adoption of IEC-60335 on use of hydrocarbons in air conditioners. We are also intervening in the National Cooling Plan of Action.

Globally, at the Open Ended Working Group of the Parties to the Montreal Protocol meeting in Vienna in July 2019, CSE collaborated with the African Group to prepare a Conference Room Paper (CRP) on energy efficiency. It has participated in the Indo-German Partnership on HFCs. At the Montreal Protocol, MOP meeting in Quito in November 2018, CSE organised an international meeting on energy efficiency and safety standards.

Strengthening the Paris Agreement for equity and ambition



PUSHING FOR AN EFFECTIVE AND EQUITABLE CARBON MARKET: Our proposal for the creation of a sink mechanism under non-market approaches within the Paris Agreement elicited great interest and response among negotiators and members of civil society at the Bangkok climate inter-session in September 2018. The proposal is novel in arguing against treating sinks as tradable commodities as was the case in the Kyoto regime – instead, it advocates for the creation of a non-market sink mechanism that would facilitate increase of sinks through ownership, financial support and capacity building of farmers and forest communities, thus serving as a natural solution for enhancement of sinks driven by a non-profit motive. We have argued that this is an important way to operationalise equity and environmental integrity. The proposal has been sent to 180 chief negotiators who attended the Bangkok inter-session; positive feedbacks have come from Saint Lucia, Ghana, Brazil, Namibia and Columbia.

PUSHING FOR AN EFFECTIVE AND AMBITIOUS CLIMATE REGIME TO ADDRESS CLIMATE CHANGE: The team has engaged with negotiators and civil society to advocate CSE's stance on global climate negotiations, focusing on the role played by the US, the need for an equitable Rule Book, and rising instances of extreme weather events. It has reported extensively in *Down to Earth* on global developments related to climate change, and has circulated its comments in various forums and among negotiators. The Union environment ministry has acknowledged the usefulness of our research, and IIT-Delhi is using our content in its course curriculum.

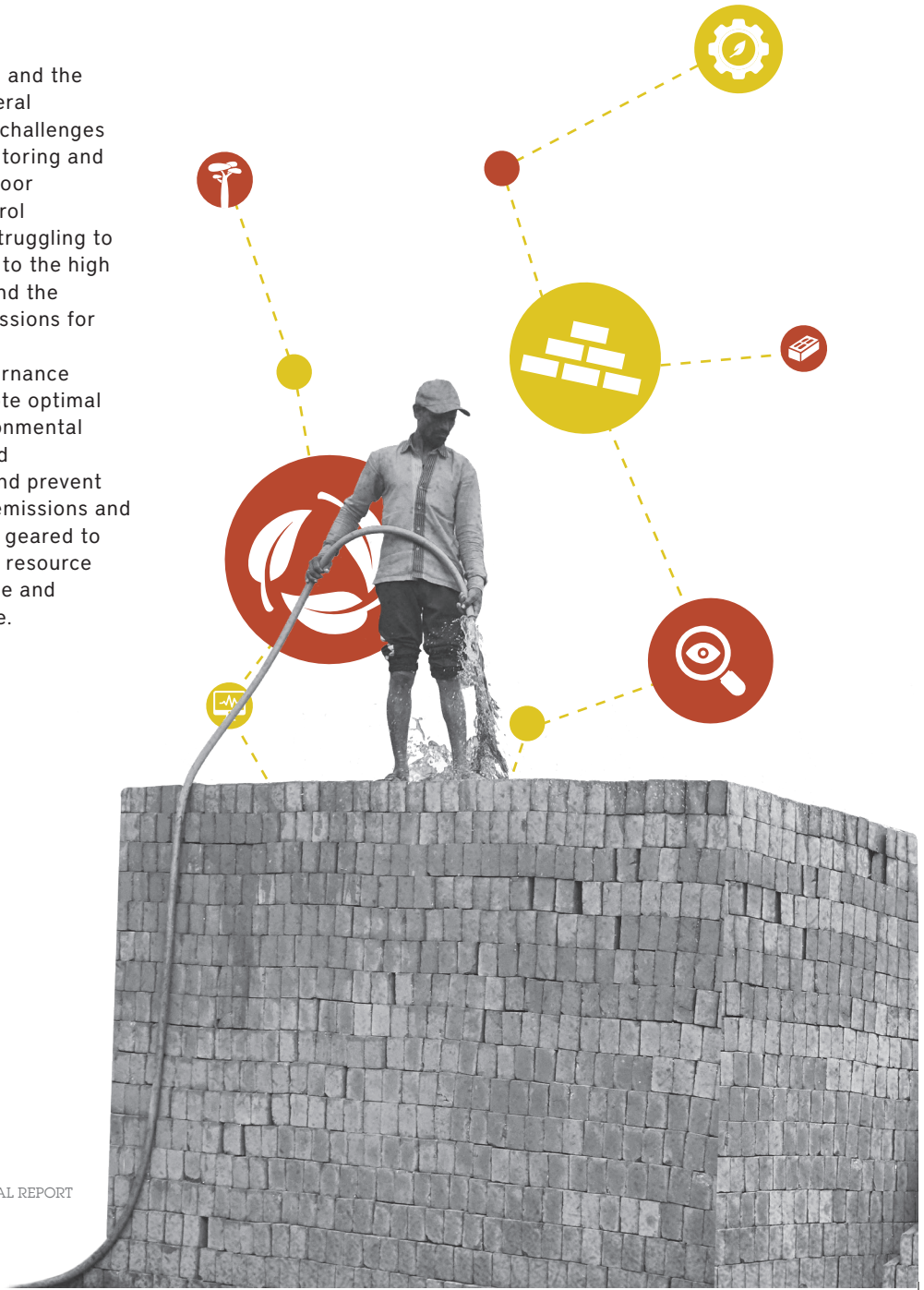
ANALYSING IPCC'S SPECIAL REPORT ON 1.5°C: The team has done a detailed analysis of the IPCC's Special Report on 1.5°C of global warming, and offered some recommendations. The analysis, in the form of a fact sheet, was covered widely by the media and various climate forums.

ENVIRONMENTAL GOVERNANCE

TO IMPROVE CORPORATE GOVERNANCE; HELP INDUSTRY INTERNALISE RESOURCE EFFICIENCY AND POINT IT TO THE PATH OF LOW-CARBON DEVELOPMENT; AND STRENGTHEN POLICY FRAMEWORKS, ADAPTIVE CAPACITIES AND COMMUNITY RESILIENCE FOR PARTICIPATING IN DEVELOPMENT PROJECTS

The industry sector in India and the global South confronts several interrelated environmental challenges – from weak planning, monitoring and regulatory procedures, to poor capacities of pollution control agencies; from industries struggling to deal with newer pollutants, to the high costs of pollution control and the challenge of mitigating emissions for low carbon growth.

Our environmental governance programmes seek to promote optimal resource use, reduce environmental damage from extractive and manufacturing industries and prevent lock-in of greenhouse gas emissions and local air pollution. They are geared to help industry become more resource efficient, socially acceptable and environmentally responsible.



Continuous Emission Monitoring System (CEMS)

CSE considers CEMS (real-time/continuous monitoring of pollution) an important tool to improve compliance enforcement in the country – our effort, therefore, is to work towards institutionalising CEMS globally and in India.

In 2017–18, CSE published a technical guidance manual and an inspection manual on CEMS, and assisted the CPCB in publishing its CEMS guidelines. Capacity-building workshops were conducted in West Bengal, Gujarat and Madhya Pradesh, and independent CEMS surveys and monitoring have been done to understand the existing state of implementation. Under this programme, CSE has acquired pollution monitors, which are now being used by different teams for research and training. We have now recommended that the government should set up indigenous CEMS certification and lab empanelment systems, which are crucial for proper implementation. However, the existing infrastructure, skills and availability of human power with CPCB appears to be a big barrier. The team, therefore, is preparing a fresh strategy for CEMS implementation.

The team's involvement at the global level has been limited so far. By participating actively in an international meet on CEMS in 2016, 2017 and 2018, it managed to highlight CSE's expertise in and contribution to the subject.

Monitoring compliance

The team's major thrust has been on cleaning up the brick-making sector, one of the key sources of pollution in the country, especially in the Delhi–NCR region. In June 2017, CPCB had ordered brick kilns across India to shift to the cleaner and more efficient zigzag technology. CSE had consistently pushed for policy action on this score and also worked with kiln owners to help them make the transition. In 2018–19, we undertook a study to assess the status of conversion. The assessment, titled *Makeover*, highlighted the poor conversion rate and quality in Delhi–NCR. The study's findings, which were also translated into Hindi, were accepted and acknowledged by all stakeholders.

The team has actively campaigned to push the transition to zigzag. Workshops have been conducted in Jharkhand, West Bengal, Haryana, Tamil Nadu and Andhra Pradesh to understand how brick manufacturers are shifting towards the cleaner technology. Following a training programme for its officials, the Jammu and Kashmir Pollution Control Board has ordered all brick kilns in the state to convert to a cleaner technology by October 2019.

Another area of the team's work has been on fly ash: it has published a report on environmental management in fly ash units and conducted training programmes on fly-ash brick production. Our consistent advocacy on addressing the issue of fugitive emissions due to open storage and transportation of fly ash has led the National Buildings Construction Corporation Limited (NBCC) to pass an order for closed/covered storage of all raw material used for construction, including fly ash.

The team's trainings have gained in popularity. Its engagement with state pollution control boards (SPCB) have led to requests like the one from the Goa SPCB, which has asked CSE to prepare an environmental audit scheme for the state. We have also received requests from the Delhi Airport Authority to conduct a training programme for its officials.

Green rating of industry

The fundamental premise behind CSE's Green Rating Programme (GRP) is to strengthen environmental governance for improved energy and resource efficiency in select industrial sectors in India. The programme assesses the environmental performance of companies in key industrial sectors.

Each rating, which takes around two years to complete, results in a very detailed analysis of the sector; we have found that this can be an effective tool to drive environmental improvement in industries. GRP has played a major role in making Indian industry more transparent, particularly when it comes to environmental matters.

We have successfully rated seven such sectors till date, with the fertiliser industry being the latest sector, and hope to release the report by mid-2019.

Social impact assessment

The team's forte has been its training programmes. In 2017–19, the team conducted 18 national training programmes, with a total participation of 350 trainees. Organisations and entities in India (such as CIDCO, NCRTC, NMDC and CIL) and from other countries (such as Ministry of Environment of the United Arab Emirates and the Ministry of Sanitation and Water Resources of Ghana, Ministry of Lands, and Housing and Urban Development, Uganda) have availed of the training or have expressed an interest in it. The Gujarat Environment Training Research Institute (GETRI) in Vadodara is using CSE's training resources in its own training programmes to improve capacities of its officials, especially in energy, mining and associated activities such as R&R in land acquisition.

The team has developed two documents – on the social impact assessment (SIA) scheme of empanelment and SIA report structure; these have been shared with revenue departments across India. The Goa Revenue Department has already circulated this document to concerned officers in the state for further action. The Haryana revenue department had a detailed discussion with the team pertaining to issues of empanelment and report structure prior to formulating their regulations. These documents are also being used as resource material for SIA training programmes.

The team further developed a report on the status of land acquisition across states in India. The report was an outcome of several RTIs filed by the team in state revenue departments to understand the implementation of the new land acquisition act.

Global work

COUNTRY-LEVEL STRENGTHENING OF ENVIRONMENTAL REGULATION, COMPLIANCE AND ENFORCEMENT IN AFRICA: The team has been able to build an engaged network of regulators for collaboration on South–South environmental management. Trainings have been conducted to build the capacity of African regulators – one of these was organised in Accra in collaboration with the Environmental Protection Agency Ghana (EPA Ghana). An MoU has been signed with Ghana to strengthen capacities of officials for conducting environmental audit and developing inspection checklists. The Ethiopian government has evinced an interest in CSE training its staff to operate low-cost air-monitoring instruments.

PAN-AFRICA SMART MONITORING: CSE is keen to develop and implement smart and affordable environmental monitoring guidelines across Africa – we have submitted a guidelines document for setting up the monitoring network in Awash River Basin in Ethiopia. Once the Ministry of Environment, Forest and Climate Change approves and publishes the guidelines, CSE will work with it on implementation and on a water quality management plan. The Rift Valley Authority of Ethiopia has also requested CSE to develop a monitoring network, while Addis Ababa University wants us to undertake joint research with the MEFCC to identify pollution hotspots in the Ethiopian capital. The team has conducted a successful training programme on smart and affordable monitoring, with participants from different countries.

Partnerships

TRAINING COLLABORATIONS: Alliances are in the pipeline with the Central Environment Agency (CEA) of Sri Lanka, as well as its Geological Survey and Mines Bureau (GSMB) – both organisations are looking forward to training programmes to be conducted by the team. The GSMB is using our resource material for building capacity in its regional offices. In 2017, we were invited to a Mineral Symposium by Sri Lanka's Ministry of Environment to share environmental and social experiences of the Indian mining sector.

An MoU signed with the National Environmental Commission (NEC) of Bhutan resulted in a two-week intensive customised training programme for its officials. Similarly, officials from the Ministry of Agriculture, Irrigation and Livestock (MAIL) of Afghanistan have undergone an eight-day training on environmental and social safeguards in agriculture projects. The ministry is keen to continue this collaboration. Another Afghan ministry – the Ministry of Rural Rehabilitation and Development – has expressed interest as well.

TANZANIA – COUNTRY-LEVEL WORK ON MINING AND EIA: CSE has provided a crucial support in formulating new regulations to the National Environmental Management Council (NEMC), the nodal agency in Tanzania, for conducting environmental impact assessments, compliance and enforcement. The Government of Tanzania has notified the regulations on August 31, 2018. The amended regulations lay down a renewed process of categorising industries (which apply for environmental clearance certificates) based on their potential impacts on air, water and land, and generation of waste. Accordingly, the regulations mandate an Environmental and Social Management Plan (ESMP) and a Monitoring Plan.

CSE has also conducted trainings/ consultations on EIA in building and construction projects in Tanzania. The programme was attended by various stakeholders, including municipal officials, architects, consultants, and representatives from the National Housing and Building Research Agency (NHBRA), the Vice President's office and NEMC.

NAMIBIA– COUNTRY-LEVEL WORK ON MINING AND EIA: CSE, in collaboration with the Ministry of Environment and Tourism, released a report titled *Namibia – Improving Environment and Social Aspects of the Mining Sector.* The report triggered a discussion in the Namibian mining sector: Most notably, CSE's input of levying a cess on mineral production to supplement mining royalties paid to the government is being widely discussed.

Another area of intervention has been sand mining. We have also submitted draft regulations to the Namibian authorities, and the matter is under consideration. CSE has forwarded its comments on the proposed Environmental Management Act (EMA) and EIA Regulations (Amendment) to the Namibian Ministry of Environment and Tourism. These are likely to be notified shortly.

PAN-AFRICA AND ASIA WORK ON MINING AND EIA: The team has conducted a pan-Africa workshop at the Anil Agarwal Environment Training Institute (AAETI) on mine management and Its compliance, where officials from seven African nations (Zambia, Botswana, Tanzania, Namibia, Swaziland, Mozambique and Ghana) participated. Three of these countries (Zambia, Mozambique and Botswana) have expressed an interest in collaborating further with us.

The team conducted another pan-Africa workshop in Namibia, titled African Nations' Experience Sharing Workshop on Strengthening EIA Regulations. Senior officials from 14 countries participated. It was mutually decided that there are five key focus areas where CSE can extend support at the pan-Africa level, including sector-specific guidelines, transparency frameworks, self-monitoring frameworks, frameworks for EAPs, and global-South guidelines for EIA. Botswana has requested CSE to review its EIA regulations.

The team released two reports, *Inclusion of Gender in EIA* and *Project Categorization Framework for Strengthening EIA*.The reports have been uploaded by four countries – Namibia, Ghana, Kenya and Swaziland – on their respective official websites as reference documents for their officials, consultants and project proponents to strengthen EIA practices.

SUSTAINABLE WATER MANAGEMENT AND SANITATION

TO ESTABLISH POLICY PRINCIPLES, INNOVATIVE TECHNOLOGIES AND IMPLEMENTATION STRATEGIES FOR WATER AND WASTEWATER MANAGEMENT TO HELP LAY THE FOUNDATIONS FOR A WATER- AND WASTE-PRUDENT SOCIETY

With growing urbanisation and affluence, cities are becoming water guzzlers, drawing water from cleaner upstream sources and disgorging their waste – sewage and industrial effluents – downstream. Cities are too poor to afford the capital intensity of the modern sewage system and the energy required to transport, pump and treat wastewater. The current method of water and wastewater management used by cities is capital- and resource-intensive, while the benefits do not percolate down to the urban poor.

CSE's Sustainable Water Management and Sanitation programme is geared to help reinvent the urban water-wastewater management system. Interventions are designed to help build institutional and technical capacities of key agencies and practitioners, install demonstration projects on alternative technologies that serve as useful models of good practices, and leverage policy and implementation opportunities by working closely with city-level water and sanitation agencies.

Urban water and wastewater management

CSE's urban water and wastewater management programme has emerged as a key policy advocacy, applied research and capacity building hub. During 2017–18, we built up a community of practitioners with over 450 members as multipliers and change agents aimed at supporting scaled up interventions towards making human settlements water frugal and prudent.

A CSE–GIZ partnership propelled 10 cities in Andhra Pradesh towards preparing their city sanitation plans (CSPs) with the focus on faecal sludge and septage management (FSSM). As a result, these cities have improved their rankings in the Swachhata Survekshan 2017. Six champion cities – Eluru, Bhimavaram, Siddipet, Kanoor, Karimnagar and Kalpeta – have developed their CSPs based on SFDs (sewage flow diagrams). One of the major outputs of this work has been the creation of a designated body, the City Sanitation Task Force (CSTF), to set in motion the CSP implementation mechanism in these cities. In this period, the team received renewed support from Bill and Melinda Gates Foundation (BMGF) to scale up advocacy, research and capacity building work across India.

A complete set of training guidelines and manuals – Practitioner's Guides for the Ministry of Urban Development – was developed to guide urban local bodies in implementation of sustainable water management systems and practices. The guides included *Water-Sensitive Urban Design and Planning*; *Septage Management*; *Green Infrastructure*; *Water Efficiency and Conservation*; and *Urban Water Sustainability*. Content from some of these guides and another CSE publication (*Decentralised Wastewater Treatment and Reuse*) is now included in orientation modules of the National Institute of Urban Affairs (NIUA). Lawmakers have been involved as well – the team was invited by the Parliamentary Consultative Committee to present CSE's work on rainwater harvesting and by the Ministry of Housing and Poverty Alleviation to present on septage and sewage management work.

The School of Water and Waste Management, AAETI

The School has been designed as a one-of-its-kind capacity-building hub for urban water and sanitation for India and the global South. Currently, five training modules and an online course are operational. Till March 2019, the School had conducted nine training programmes, with a total of 210 trainees. Its online course and webinars attracted another 150 participants. Practitioners trained at the School have taken the learnings forward in their respective states and professional domains – one of its trainees from Odisha has been instrumental in designing and implementing FSTPs in his state.

The School has established partnerships in India and abroad. MoUs have been signed with the governments of Odisha, Delhi and Jharkhand for building capacity of their urban local bodies. Partnerships for joint research and training with the University of West England and International Water Security Network (IWSN) and WaterAid India are in the final stages. UWE-IWSN has shown interest in seeding a Centre for Green Infrastructure as a part of the School, which will conduct specialised training courses on nature-based/green infrastructure solutions in the global South.

Water and waste management in Ganga towns

In 2018–19, the main focus was to build state-level capacity in Uttar Pradesh (deep dive in the towns of Bijnor and Chunar) and Bihar (deep dive in the towns of Bodh Gaya and Katihar) for city-wide sanitation systems. This collaboration between CSE and the state helped in strengthening the ongoing efforts towards reducing pollution in the Ganga by allowing disposal and co-treatment of faecal sludge and septage in all existing and upcoming STPs and faecal sludge treatment plants.

The team worked on developing more resources. A toolkit called SANIKIT, on preparing CSPs, and MOUNT, an aggregator of FSM and DWWT case studies, were launched by the Principal Secretary to the Urban Development ministry to help towns/cities across the Ganga Basin to design and implement city-wide sanitation. A Hindi translation of our *Practitioner's Guide on Septage Management* was released by the Mission Director of Swachcha Bharat Mission (Urban) and is now uploaded on the SBM website as a resource guide. The team trained a cadre of state- and ULB-level officials who are now pushing the agenda on city-wide sanitation, with a special focus on effective FSSM.

Since May 2018, the programme has stationed a small team in Lucknow, which provides technical advice and support to the state government. A report titled *Managing Septage in Uttar Pradesh* and a 30-city SFD fact sheet were released in 2018. On the request of the Prime Minister's Office (PMO), CSE has made a presentation on FSSM to a high-level group of top officials from the NMCG and the MoHUA. This has led to the setting up of a sub-mission on FSSM under the AMRUT programme of the government. This sub-mission makes it mandatory for the 48 cities along the main stem of the Ganga to implement FSSM. We believe this development will encourage the UP and Bihar state governments to notify guidelines and policies on FSSM, a draft of which has already been submitted by CSE.

The partnership with NMCG has been institutionalised – CSE is now a Programme Support Unit for improving river health by linking it with urban sanitation, especially by mainstreaming septage management across the Ganga Basin. The UP and Bihar governments have approached CSE for building capacity of their ULBs under the AMRUT programme.

CSE alumni (urban and state officials trained by CSE) are now involved in designing and rolling out 31 FSTPs and 21 co-treatment facilities in UP. The team has prepared the project report for the FSTP in Chunar, and is building capacity of Bijnor's city planners and officials (the town is among the top 10 urban centres in UP in the Swachh Sarvekshan rankings). In Bihar, the project report for the Katihar FSTP (prepared by CSE) has been approved at the state-level. Bihar is considering FSM intervention in an additional 27 cities (besides Bodh Gaya and Katihar), and is looking at us for technical support.

The team has had some impact in Delhi as well. Its 2016 SFD report on Delhi has prompted the National Green Tribunal (NGT) to issue directions to the government for enacting a septage regulation and developing an implementation plan for reviving the Yamuna, with FSM as a key intervention area.

CREATING AND NURTURING PARTNERSHIPS

WITH THE UTTAR PRADESH STATE GOVERNMENT: Long-term partnership for technical knowledge support and capacity building for scaling up city-wide sanitation across the state, including in more than 60 AMRUT cities and four target cities along the river Ganga. CSE has been invited to develop state FSM guidelines and model city interventions in two three cities and provide overall programme support to urban local bodies across the state.

- ON GOVERNMENT COMMITTEES: Nominated as member of the UP State River Ganga Conservation Authority (SRGCA) and on the high-level committee of the Ministry of Urban Development on innovative wastewater technologies for sewage and septage treatment.
- WITH THE NATIONAL MISSION FOR CLEAN GANGA (NMCG): Working with the Mission towards mainstreaming septage management in all towns and cities along the main stem of the river.
- WITH AMRUT: Nominated as an empanelled entity for capacitating municipal functionaries and elected representatives. MoUs signed with Jharkhand, Andhra Pradesh and Odisha.
- CASE STUDIES AND DEMONSTRATION PROJECTS: The DWWT model project at the Delhi Jal Board's (DJB) head office is a good demonstration site. Persistent advocacy by CSE has egged DJB to declare the creation of 600 DWWTs. Many practitioners trained by CSE have gone on to implement treatment practices and systems in their respective locations.

Rural water and sanitation management

The team has advocated safe and sustainable sanitation through its network meetings, publications and reportage. It has essentially played a role of a watchdog for tracking national-level performance to build toilets and to research on what is working and where in terms of rural sanitation – the areas of research being technology for toilets, behaviour change and waste management.

It has initiated ground-level work in Alwar (Rajasthan) in response to a request for institutional collaboration from the district administration. CSE is now planning and implementing decentralised liquid waste management systems in two gram panchayats of Alwar district – Manka in Mandawar block and Kotkasim in Kotkasim block. As a continuation of this, the Alwar district administration has now approached us to begin work on safe sanitation in schools. Ten government schools of Bagor gram panchayat in Tijara block have been identified for this.

A training programme conducted by the team on sanitation management in rural areas has increasingly become popular – states like Sikkim, Rajasthan, Karnataka and Assam have been sending their officials for the hands-on capacity building sessions conducted at AAETI.

Global work

A status report on sanitation in Africa, titled *Bottom to the Fore,* was complemented by a special issue of *Down to Earth* and a media briefing in Africa on the subject. The team has also organised a meeting with stakeholders, with the aim to provide cross-country learning to understand the challenges and issues concerning rural sanitation in Africa and India and build a network for research, capacity building and sharing of best practices.

The First SFD Week

The team successfully organised SFD Week, an international conference on affordable and sustainable urban sanitation solutions in April 2019 at AAETI in Nimli, with active support from Sustainable Sanitation Alliance (SuSanA), International Water Association (IWA) and National Faecal Sludge and Septage Management Alliance (NFSSM Alliance). The sessions in SFD Week covered issues ranging from water security and climate change, to tools and approaches for ensuring city-wide inclusive sanitation, and best practices, solutions and technologies. Several experiences from across the world were shared by the speakers over the three days of the conference. An MoU was signed at the closing ceremony of the conclave between CSE and IWA, to facilitate greater collaboration and co-operation between the two organisations on research, knowledge production, communication and dissemination, and training and capacity building.

Global work: Urban

Through its trainings, CSE has been able to build a practitioners' community on RWH in Rwanda. These trainees are now taking RWH projects forward in places like Horezo and Kanyenyeri model villages in Muhanga (Rongi sector) and Ngororero districts, respectively. A report titled *Potential of Rainwater Harvesting in Rwanda* was submitted to Rwanda Water and Forest Authority RWFA. The Water Research Commission (WRC) South Africa has approached CSE for building capacities of practitioners in the area of water-sensitive urban design and planning. Further, learning from CSE's use of SFDs as an advocacy tool in India, WRC has taken up a nation-wide campaign for preparing 30 SFDs for town and cities in South Africa, with help of CSE. Of these, an SFD for TEMA has been completed and submitted to the government. In Ghana, the team has signed a MoU with the Council for Scientific and Industrial Research (CSIR) for mainstreaming and implementing FSM.

SOLID WASTE MANAGEMENT

TO ADDRESS MANAGEMENT, TECHNOLOGIES AND REGULATIONS FOR DEALING WITH WASTE GENERATION TRIGGERED BY GROWING AFFLUENCE AND RESOURCE-INTENSIVE CONSUMPTION

The programme addresses institutional structures involved in waste management, treatment and disposal; helps build regulatory and technical capacities of cities; and highlights the role of the informal sector.

Interventions include strengthening regulatory practices; exposure to best practices on handling and disposal of all kinds of waste – municipal, hazardous, e-waste and biomedical; and creating handy toolkits to simplify waste handling and management, including standard operating procedures on effective compliance, monitoring and enforcement for waste handling, processing and disposal.

Effective and affordable waste management in India

On December 15, 2016, the Swachhta Swasthya Samridhi programme was launched in Muzaffarpur (Bihar). Under it, an MoU was signed between CSE and the Muzaffarpur Municipal Corporation (MMC) for facilitating better solid waste management in the city. Today, the programme is helping transform Muzaffarpur into a clean city by adopting segregation and processing at source. All the 49 wards of the city are involved – Muzaffarpur has a segregation percentage of over 80 per cent. The city also houses the first learning centre in Bihar on composting.

CSE is part of the State-Level Advisory Committee on SWM (solid waste management); the state has notified by-laws on SWM and plastic waste management, based on the Muzaffarpur model by-laws. The state government's urban department has passed the State Policy and Municipal Solid Waste Management Strategy in 2018 – elements in these have been sourced from CSE's Model Framework for Segregation. These are to be adopted by 42 ULBs in Bihar.

A regional forum meeting held in Muzaffarpur in February, 2019 has provided further impetus – representatives from 52 ULBs from Bihar and 12 from other states participated, and the state urban minister was present as well. Many cities in Bihar have started interventions on SWM with technical advice from CSE. In 2018, Uttar Pradesh passed its policy framework on SWM based on CSE's model segregation framework.

In Delhi, as part of the Waste Management Committee set up by the High Court, CSE played an instrumental role in preparing an action plan for waste management. The plan was approved by the High Court in September 2017. CSE has been a major contributor in drafting the Delhi by-laws as well, that were passed in December 2017 and notified in January 2018.

CSE was also a part of the committee formed by CPCB and UNDP in December 2018 to prepare the Extended Producer Responsibility (EPR) framework under the Plastic Waste Management (PWM) Rules, 2016. Our research reports on compost (*Charting the Future of City Compost*) and waste-to-energy (*To Burn or Not to Burn*) have generated a substantial response – two PILs were filed on their basis in Kerala and Gurugram and the Ministry of Housing and Urban Affairs (MoHUA) has taken cognisance of both the reports. The Ministry has opted to pilot for co-processing related technologies for 100 pilot cities and not incineration incentive technologies. Our response to and inputs on the Swachh Survekshan surveys and rankings for 2018 and 2019 have also elicited response – our recommendations were incorporated in the 2019 survey questionnaire.

The team has also conducted trainings on SWM: many of the trainees have taken the initiative to use the learning in their specific work-fields.

Forum of Cities that Segregate

CSE has been working with cities to promote and implement source segregation. In December 2017, we launched the Forum of Cities that Segregate, under which we are pushing cities to adopt 100 per cent source segregation and become the pioneers of waste management in the country. Over the two years, the strength of the Forum has increased from 20 to 82 cities across India. Forum cities are taking big strides – Indore has started decentralised pilot for 500 households; Balaghat is going for 100 per cent decentralised segregation and processing in all its wards; Patna has begun segregation in one circle; Hyderabad is working on decentralised implementation and policy; in Imphal, one ward has started segregation at source; and Bengaluru and Imphal are formulating SWM by-laws with CSE's assistance.

The Maharashtra State Urban Development Department and Civic Response Team (CRT) has approached CSE to bring more cities of Maharashtra on board and has to create a state-level forum for Maharashtra. CSE's report titled *Model Framework for Segregation* is being considered by many ULBs for making their waste management plans.

Implementing decentralised waste solutions globally

ZANZIBAR: In September 2017, CSE had joined hands with the Zanzibar Environmental Management Authority (ZEMA) and the Zanzibar Urban Municipal Council (ZUMC) to initiate the Waste Segregation for Clean Zanzibar programme in Shaurimoyo. The programme has been a success: Shaurimoyo has become a model site and learning centre on decentralised waste management in Africa, with over 400 of its 626 households segregating at source. It has six pits for composting and is generating revenues and incentives for local communities. The Shaurimoyo experiment is now being replicated in other parts of Zanzibar (such as Mpendae), while city councils from Tanzania (Ubungo and Dar es Salaam) have also expressed an interest. CSE has assisted Zanzibar in formulating its draft municipal by-laws – these are now awaiting notification.

eSWATINI: eSwatini launched its first decentralised pilot on waste management in August 2018 in Matsapha town council; this was a joint initiative of CSE, the eSwatini Environment Authority (SEA) and the Ministry of Housing and Urban Development. CSE has also signed a MoU with the Mbabane Town Council (capital of eSwatini) for providing core support in framing its by-laws and establishing a waste management framework based on segregation, recycling and reuse.

OTHERS:
A key intervention has been to create an integrated solid waste management strategy for African countries comprising a comprehensive approach to waste prevention, recycling, composting and safe disposal efforts. A two-day working group meeting was organised by CSE to finalise the Integrated Policy and Legislations on Waste Management for African Nations. The meeting was attended by Task Force members from Ghana, Tanzania, Swaziland, Namibia and Ethiopia. Following this, Ghana has sought CSE's inputs on its draft SWM guidelines and Namibia has worked on country's strategy on waste management.

Following a request by the Ministry of Environment, Forest and Climate Change (MEFCC), Ethiopia, the team has trained Ethiopian urban development and waste management officials.

FOOD SAFETY AND TOXINS

TO INFLUENCE THE FOOD BUSINESS TO ALIGN WITH SOCIETAL OBJECTIVES OF NUTRITION, LIVELIHOODS AND SAFETY

The programme adopts a range of measures and approaches, from laboratory tests on food, toxins and nutrition to research, surveys and policy analyses, advocacy and campaigns targeted at schools, health professionals, food policymakers, health regulatory and food certification agencies and the general public.

It addresses new challenges on environment and health, and responds to emerging issues such as junk foods and non-communicable diseases (NCDs), the growing crisis of heavy antibiotic use in food animals, and the environmental spread of antimicrobial resistance in humans. The campaign against toxins in food, including policy of safe pesticide use, pushes for reform in the regulation of toxins in food for reduced public health risks, while the Good Food campaign connects organic food and food safety to livelihoods of food producers and nutrition for all.

Campaign against antimicrobial resistance

In 2017–18, our interventions in this area had largely focused on national actions. CSE's recommendations were incorporated in the Indian National Action Plan on antimicrobial resistance (AMR), and we were recognised as a key stakeholder in implementation. We brought the focus on to the animal and environmental aspects of AMR, and engaged with states like Kerala. We have helped Kerala develop its State Action Plan on AMR and are an implementation partner; we are now finalising the state's integrated AMR surveillance plan. CSE is also a member of the technical committee tasked with developing Delhi's State Action Plan. In Madhya Pradesh, CSE's recommendations are reflected in the draft State Action Plan on Containment of AMR, which is likely to be finalised soon.

The CPCB is developing standards for antibiotics in pharmaceutical industry effluents – something that CSE has been pushing for. CSE is a member of the expert panel which is developing these standards. Our work has also had some 'indirect' impacts: the Food Safety and Standards Association of India (FSSAI) has notified standards for antibiotic residues in food from animals. The corporate world is waking up as well: Jubilant Food Works, which operates over 1,000 outlets of Domino's Pizza in India, publically issued its commitment to stop antibiotic misuse in chicken by 2019.

AMR: The global challenge

CSE is now actively intervening to influence the global guidance on AMR and has emerged as a leading voice on it from the global South. Sunita Narain has been nominated a member of the United Nations Inter-Agency Coordination Group (IACG) on AMR, which provides practical recommendations for global and national action on AMR. The team has started participating in and making its presence felt in various global meetings, and its interventions have been reflected in drafts of documents released by IACG and other bodies.

In 2018–19, our AMR programme entered Africa. The team is engaging with the government of Zambia to help operationalise its National Action Plan on AMR. An MoU has been signed with the health ministry of Zambia, and workshops conducted. The intervention has helped Zambia in prioritisation of the plan, assessing the required baseline data/information, and developing an integrated AMR surveillance framework. Five other African countries participated in one of these workshops – Kenya, Ghana, Nigeria, Uganda and Zimbabwe. This has opened up a possibility in future of extending CSE's work on AMR to these countries.

The Good Food initiative: Dealing with junk food and pesticides

CSE's continuing advocacy has led to the drawing up of draft regulations on (a) guidelines for safe and wholesome foods in schools; (b) labelling and display; and (c) menu labelling as well as a notified regulation on advertisement and claims. With these, the overall proposed policy landscape on packaged foods (junk food+) is much better than before. For example, the proposals include mandatory labelling of salt content, stronger nutrition fact labelling, introduction of front-of-pack labelling, etc. In addition to these policy developments, the momentum to limit availability of junk food in school and college campuses continues to build up through state child rights protection commissions and the University Grants Commission. The FSSAI has begun awareness campaigns on freedom from trans fats, and is working to bring down the level of trans fats in food in India – something CSE has been advocating.

The FSSAI has moved to strengthen standards for pesticides and has amended the FSS (Contaminants, Toxins and Residues) Regulation, 2011, covering more pesticides for more crops (as advocated by CSE). The team's campaign on banning class I pesticides has seen some results – a Central government notification of August 2018 has banned 18 pesticides, including seven class I varieties. Earlier, Punjab had banned the sale of select pesticides due to safety concerns.

Promoting organic farming

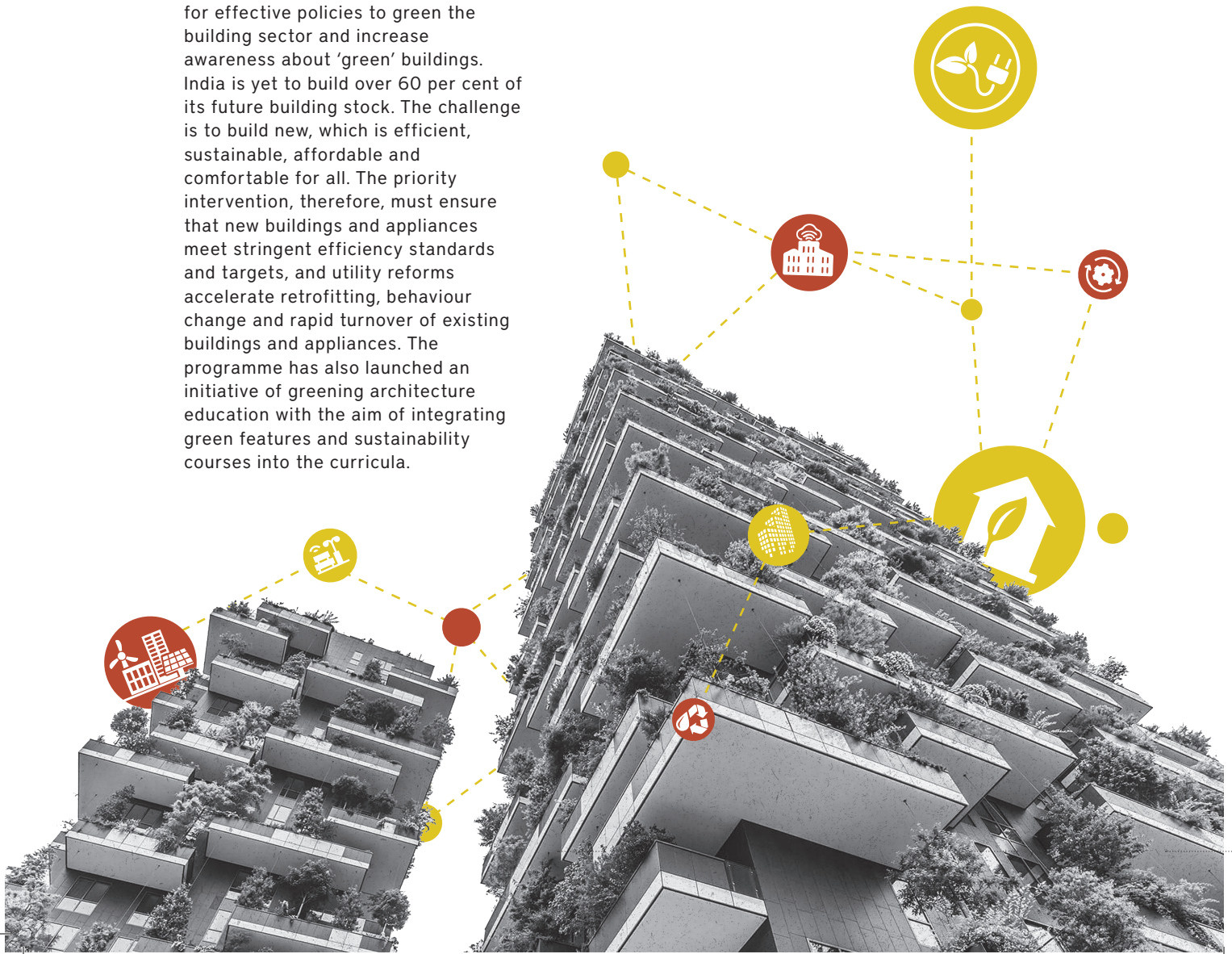
In line with the CSE recommendations on FSS (Organic Food) Regulations, 2017, small original producers or producer organisations have been exempted from compliance to the National Programme for Organic Production (NPOP) certification process while labelling their products 'organic'. This has helped the cause of small farmers.

As a pilot, CSE initiated 25 farmers from two gram panchayats in Tijara, Rajasthan, into organic farming. These farmers have been trained to adapt organic practices of farming during the rabi crop cycle starting October–November 2018 to March–April 2019 in over 25 acres of land. The team is studying and analysing the results of this pilot, which would be used to design CSE's future intervention in organic food.

SUSTAINABLE BUILDINGS AND HABITAT

TO DEVELOP AND FACILITATE IMPLEMENTATION OF POLICIES, STRATEGIES AND PRACTICES TO GAIN RESOURCE EFFICIENCY IN THE BUILDING AND CONSTRUCTION SECTOR, CONTRIBUTING TO THE TRANSITION TOWARDS AN URBAN HABITAT WHICH IS SUSTAINABLE AND AFFORDABLE FOR ALL

The goal of the programme is to push for effective policies to green the building sector and increase awareness about 'green' buildings. India is yet to build over 60 per cent of its future building stock. The challenge is to build new, which is efficient, sustainable, affordable and comfortable for all. The priority intervention, therefore, must ensure that new buildings and appliances meet stringent efficiency standards and targets, and utility reforms accelerate retrofitting, behaviour change and rapid turnover of existing buildings and appliances. The programme has also launched an initiative of greening architecture education with the aim of integrating green features and sustainability courses into the curricula.



Environmental sustainability guidelines and practices

IN THE STATES: The team is working with the Andhra Pradesh government to integrate environmental conditions/sustainability guidelines into the recently notified Andhra Pradesh Building Rules; state regulators and municipal officials have undergone training, and a MoU has been signed with the Andhra Pradesh Human Resource Development Institute and the State Pollution Control Board to establish an Environmental Training Cell at the state level. In West Bengal, the team is trying to influence the Urban Developments & Municipal Affairs (UD&MA) Department's Green Cities Mission to implement sustainability guidelines.

GREEN CAMPUS INITIATIVE: This Initiative enables colleges and universities to benchmark the performance of their campus. The team has started working on this with institutions such as the National CPWD Academy (Ghaziabad), Guru Nanak Dev University (Amritsar), Ramakrishna Vivekananda Centenary College (Kolkata), Assam Don Bosco University (Guwahati), Gargi College (New Delhi), JSS College (Mysuru), TKMM College (Alleppey) and Woodstock School (Mussoorie). This network has expanded over the two years, with about 100 universities undergoing training and eight pilot campuses at different stages of benchmarking and implementation. About 250 representatives from these and other institutions have been trained by CSE in the past two years. The team plans to develop a green rating criteria and persuade NAAC for its adoption. A few more collaborations are in the pipeline with Jadavpur University (Kolkata), IIT-Kharagpur and IIEST-Sibpur. The team is also working to influence curriculum committees at ITPI and AICTE.

WORKING WITH RWAs: The team launched a campaign, My Ability for Sustainability, for residential welfare associations (RWAs) – a toolkit titled *Green Sense: Residential Campus Inventory* was developed as well. The initiative involves performance benchmarking of gated communities and will be expanded in Gurugram and CPWD colonies.

TRAINING: Around 500 professionals of built environment, including CPWD engineers and architects, underwent training under the team. As part of its sensitisation drive in the states, CSE collaborated with Andhra University (Visakhapatnam), Guru Nanak Dev University (Amritsar), Amity University (Kolkata), School of Planning and Architecture (University of Mysore) and Jawaharlal Nehru Architecture and Fine Arts University (Hyderabad). Professional institutions like the Council of Architecture and Institute of Town Planners India have also been engaged for cadre building and mainstreaming sustainability in academic curricula of built environment courses. The team's training modules on high-performance buildings, passive design techniques, etc. – which use the AAETI campus as a demonstration centre – have been much appreciated by stakeholders such as the CPWD, which now wants to adopt the AAETI model in its own National Academy.

Energy efficiency

INDIA COOLING ACTION PLAN: CSE has actively contributed to strengthening the recently released India Cooling Action Plan, which now stresses on a need to address adaptive thermal comfort in buildings by using climate-appropriate and energy-efficient building design. This has a strong implication on the Housing for All Mission, particularly the EWS and LIG segments.

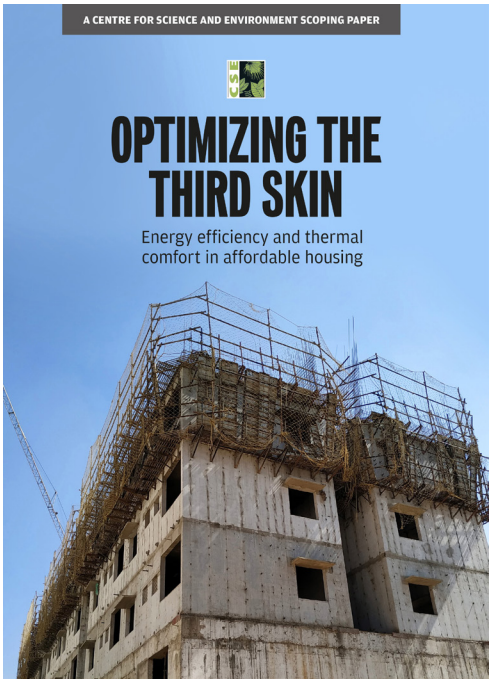
ECBC: CSE has played a watchdog role for the Energy Conservation Building Code (ECBC) and Energy Conservation Building Code-Residential (ECBC-R). A series of round tables have been conducted to draw a roadmap for adoption of ECBC and ECBC-R. The team has also analysed walling assemblies promoted by the Building Material and Technology Promotion Council for their thermal comfort, energy and environmental performance. CSE's partnerships with states is being used for continued advocacy on scaled-up implementation of key energy efficiency requirements, including adoption of ECBC and ECBC-R.

NEW STUDY: CSE released a first-of-its-kind study, titled *A Midsummer Nightmare,* which attempts to answer questions around human thermal comfort, primarily by linking space cooling and resultant energy guzzling. The study puts forth a case to design its buildings and cities for thermal comfort and work to minimise the use of mechanical cooling systems. The study has received encouraging response from stakeholders.

Affordable housing

ANALYSIS OF AND WORK ON GOVERNMENT SCHEMES, GUIDELINES ETC: CSE has played a watchdog role for the Pradhan Mantri Awas Yojana (PMAY) by analysing this flagship scheme, which aims at constructing houses for economically weaker section (EWS) and lower income group (LIG) segments. A status paper is being prepared. The team is also assessing the Building Materials and Construction Technology promotion Council (BMTPC) Sub-Mission's promotion of alternative materials and construction technologies. It found that while the BMTPC's criteria for evaluation included elements like thermal comfort etc., they are not prioritised; CSE will be pushing for prioritisation of these criteria for identifying of climate-appropriate technologies.

CSE will now work on state-specific guidelines for mass housing that address site layout, building envelope design and material choice for thermal comfort and energy efficiency. The guidelines will include fiscal strategies to offset the cost of adopting climate-appropriate designs and materials.



NEW METHODOLOGY FOR ASSESSING THERMAL COMFORT: CSE has formulated a unique methodology for assessment of thermal comfort and energy performance in mass affordable housing. This can help develop a nation-wide guidance framework and building by-laws for thermal comfort. Following a pilot in Telangana, an analysis of green walling has been published in a pilot study titled *Optimizing the Third Skin*. The team plans to upscale the study in Telangana and one more state.

Circular economy

C&D WASTE: Advocacy on C&D waste management and circular economy principles has continued, with an article in *Down to Earth*, exposure visit for regulators, and workshops and trainings to push for adoption of C&D waste rules by states. The team is also making city profiles with regard to implementation of the C&D Waste Rules, 2016 – Andhra Pradesh and West Bengal have expressed an interest in seeking our guidance on C&D waste management.

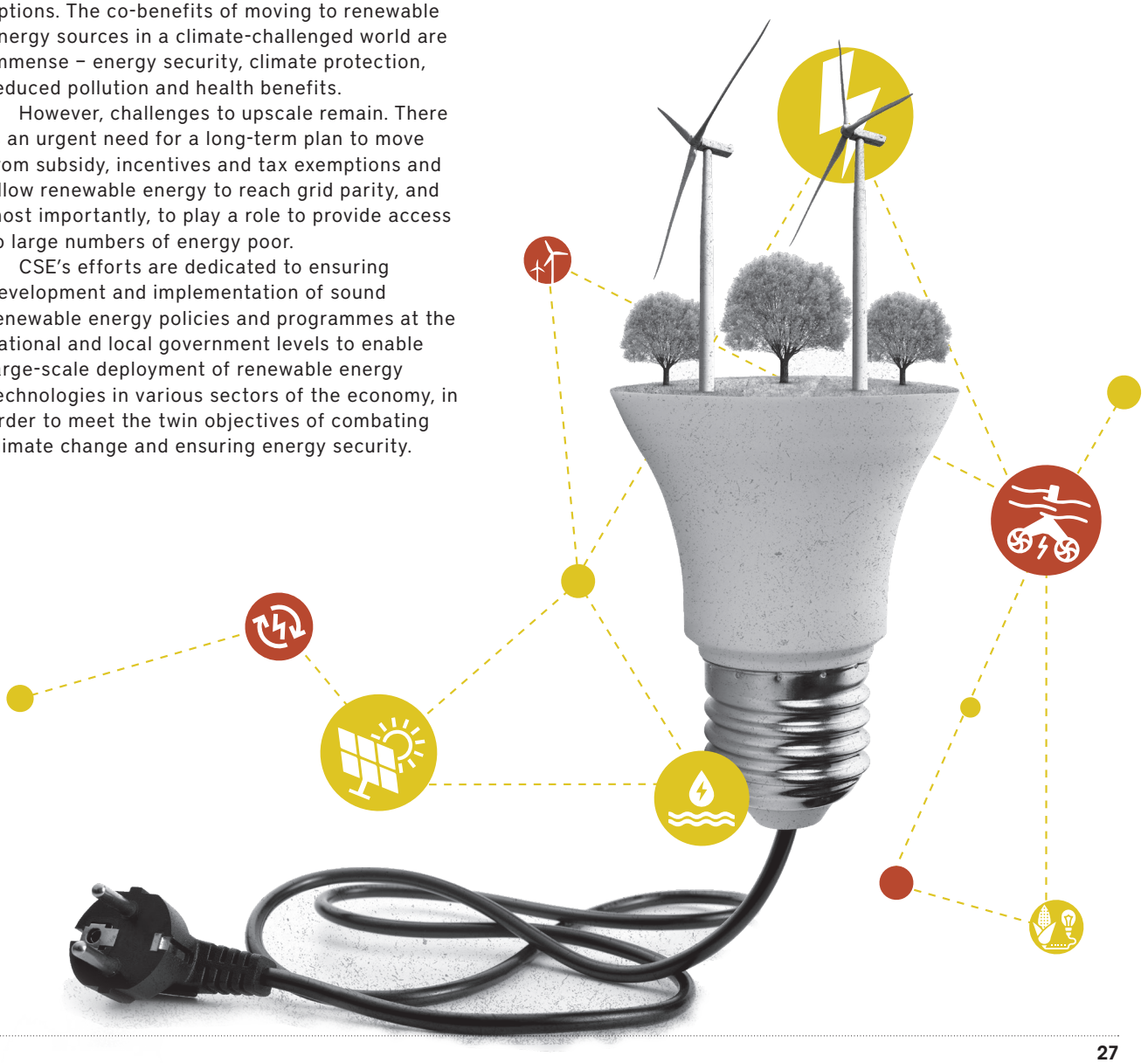
RENEWABLE ENERGY

TO ACCELERATE GROWTH OF RENEWABLE ENERGY AND ENERGY ACCESS FOR THE POOR THROUGH POLICIES AND PROGRAMMES, ESPECIALLY FOR DECENTRALISED, OFF-GRID CLEAN POWER OPTIONS

CSE's renewable energy programme is designed to accelerate the deployment of renewable energy and strengthen energy access for the poor by designing relevant policies and programmes especially for decentralised, off-grid clean power options. The co-benefits of moving to renewable energy sources in a climate-challenged world are immense – energy security, climate protection, reduced pollution and health benefits.

However, challenges to upscale remain. There is an urgent need for a long-term plan to move from subsidy, incentives and tax exemptions and allow renewable energy to reach grid parity, and most importantly, to play a role to provide access to large numbers of energy poor.

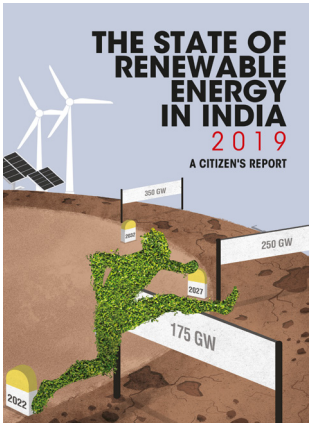
CSE's efforts are dedicated to ensuring development and implementation of sound renewable energy policies and programmes at the national and local government levels to enable large-scale deployment of renewable energy technologies in various sectors of the economy, in order to meet the twin objectives of combating climate change and ensuring energy security.



The State of Renewable Energy in India 2019

The second Citizen's Report on the State of Renewable Energy in India, released in January 2019, offers an analysis of all the key sub-sectors and the associated infrastructure – solar (large-scale, rooftop and manufacturing), wind, waste-to-energy, energy access, grid integration and distribution. It also offers a blueprint which could help the sector reach its 175-gigawatt goal seamlessly.

The CSE report provides crucial policy recommendations to stimulate investments in large-scale solar and wind energy sectors, both of which are showing signs of stagnation. It also recommends policy measures to increase the share of distributed renewable generation – solar rooftops and mini-grids – besides encouraging development of 'smart grids' that use communications infrastructure, control systems and information technology for efficient delivery. The team says the report has helped re-establish CSE's presence in the renewable energy sector, expand the team's capabilities and understanding, and open new avenues of work.



Solar rooftop development in Gurugram

CSE has carried forward its ongoing work in Gurugram to promote greater deployment of solar rooftop in the city by proving its economic and environmental benefits. The team has surveyed the status of compliance for SRT deployment to institute an action plan; simultaneously, a survey has been conducted to assess the air pollution impact of diesel generator (DG) sets in high rise buildings. The team has submitted the findings and the implementation strategy to HAREDA and DHBVN, and has engaged in capacity building of local civil society to push for the implementation.

Mini-grids in Uttar Pradesh

The Uttar Pradesh government introduced its mini-grid policy in February 2016. The aim was to encourage development of a financially viable industry that provides affordable power for a minimum number of hours. CSE assessed the progress made under the policy, and its findings were published as a comprehensive report titled *Mini-grids in Uttar Pradesh: Policy Lessons*. The report clearly brings out the skewed terms of service provided by existing mini-grid developers, and recommends solutions to regulators.

Global work

CSE's focused engagements have helped build inroads into Tanzania's renewable energy sector. Our report titled *Analysis of National Power System Plan* and meetings and policy exposure visits collectively established our credibility and capability with stakeholders, especially senior government officials. The relationship with Tanzania's Ministry of Energy has strengthened significantly, and the team has submitted to the ministry an MoU for research and capacity building.

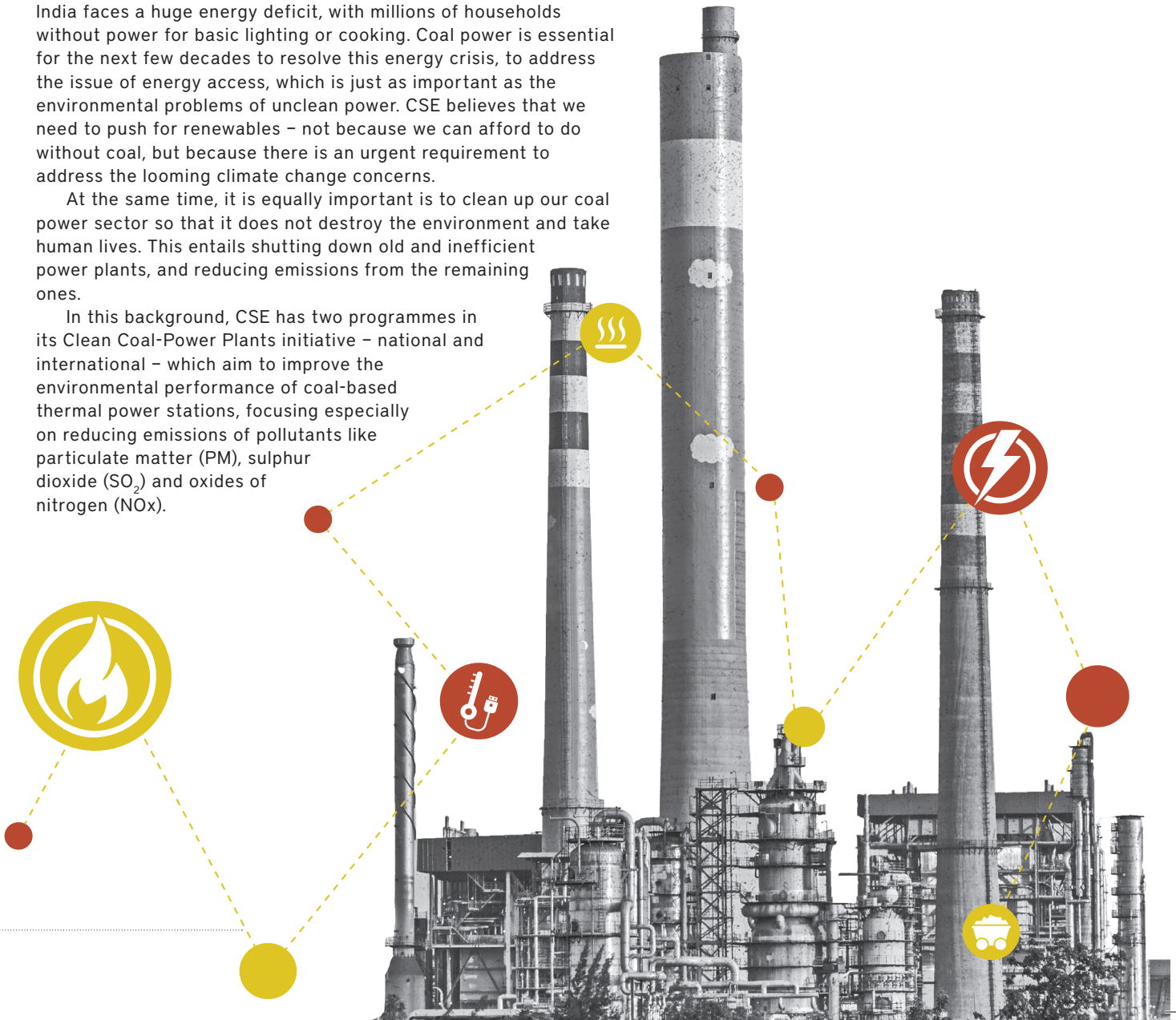
COAL-BASED THERMAL POWER PLANTS

TO CLEAN UP THE COAL-FIRED ENERGY SECTOR – SO THAT IT DOES NOT DESTROY THE ENVIRONMENT – BY CAPPING EMISSIONS, INCREASING EFFICIENCY AND DISCOURAGING OPERATIONS BY INEFFICIENT PLANTS

India faces a huge energy deficit, with millions of households without power for basic lighting or cooking. Coal power is essential for the next few decades to resolve this energy crisis, to address the issue of energy access, which is just as important as the environmental problems of unclean power. CSE believes that we need to push for renewables – not because we can afford to do without coal, but because there is an urgent requirement to address the looming climate change concerns.

At the same time, it is equally important is to clean up our coal power sector so that it does not destroy the environment and take human lives. This entails shutting down old and inefficient power plants, and reducing emissions from the remaining ones.

In this background, CSE has two programmes in its Clean Coal-Power Plants initiative – national and international – which aim to improve the environmental performance of coal-based thermal power stations, focusing especially on reducing emissions of pollutants like particulate matter (PM), sulphur dioxide (SO_2) and oxides of nitrogen (NOx).



Standards for coal-based thermal power plants

In 2015, CSE's research and advocacy had added to the pressure on the government to make a landmark decision – to notify revised standards for coal-based thermal power plants (TPPs). These standards were proposed to be implemented in a phased manner by December 2017. But the industry has been stridently resisting their imposition. CSE has been working consistently to advocate implementation of the new emission norms. The Central Pollution Control Board (CPCB) has now extended the timelines for most plants by five years; for power plants in Delhi–NCR, the deadline is December 2019.

Currently, the CSE programme focuses on pushing implementation within the new deadlines by working at two levels – national level, where it is engaging with Central agencies, and the state-level, where it has initiated on-ground engagement to track implementation status, survey plants, and build the technical capacity of industry and regulators. To assist regulators in monitoring and implementation, the team has released fact sheets and papers (such as the *Milestone Tracker*). It has also engaged with state electricity regulatory authorities in eight states – Chhattisgarh, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Punjab, Rajasthan and Uttar Pradesh – along with the CERC in Delhi, to understand the roadblocks hindering implementation.

These efforts have culminated in a round table held in March 2019 with officials from state electricity regulatory commissions to discuss the process to approve additional capital investments required by coal-based TPPs. To meet the prescribed emission norms, power stations need to invest to upgrade/install their pollution control equipment.

In the case of TPPs in Delhi–NCR, CSE has surveyed the plants and brought out a progress report and analysis of their status – a report titled *Shifting Goalposts: Status of Pollution Control in Delhi-NCR Power Plants* has recommended a tougher push along with penalties to ensure compliance by the deadline; the move will go a long way in improving Delhi's air quality.

Global work

The learnings from India have been used by the programme to share experiences, increase knowledge, convene and influence key actors to commit to setting more stringent resource efficiency policies and pollution norms for coal-based thermal power plants in Global south, in particular in South Africa, Indonesia and China.

Indonesia is heavily dependent on coal for power generation and the rising pollutant emissions from coal-based power plants remain a serious concern for public health as well as for climate. CSE had worked closely with its country sector partner, Indonesia Centre for Environmental Law (ICEL), to submit detailed comments to the draft norms in 2018, and had also engaged with the MoEF on a roadmap for implementation. The team organised a visit in November 2018 of regulators and stakeholders from South Asia and Southeast Asia to India to sensitize them on emission norms and continuous emissions monitoring systems (CEMS)-based monitoring.

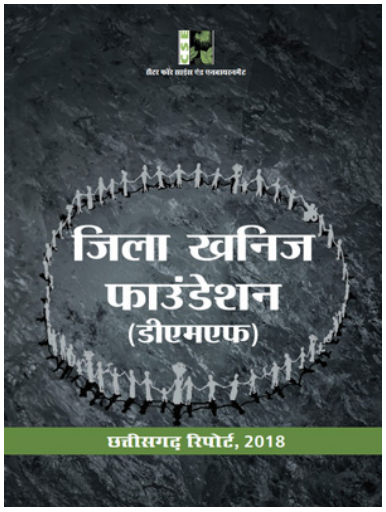
MINING AND GOVERNANCE

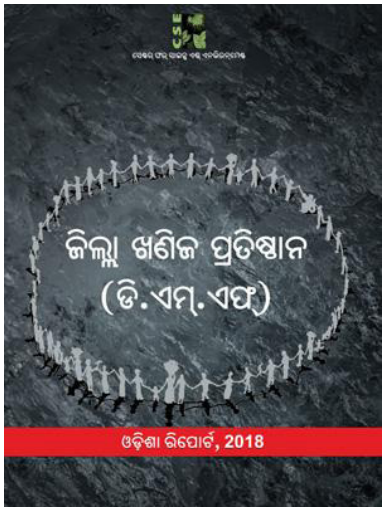
TO ENSURE ENVIRONMENTAL SUSTAINABILITY AND SOCIO-ECONOMIC JUSTICE FOR COMMUNITIES IN INDIA'S MINERAL-BEARING AREAS

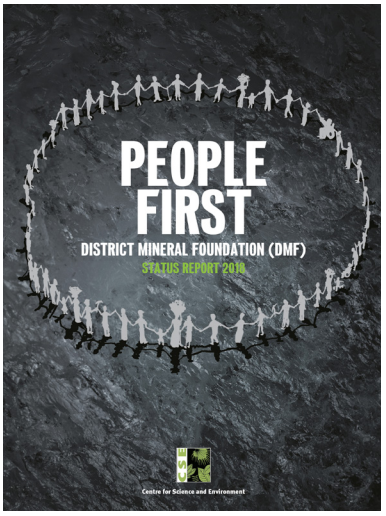
CSE's Mining and Governance programme has a multi-stakeholder engagement including policy makers at the national and state levels, members of panchayati raj institutions in mining areas, civil society organisations and the local communities. The programme aims to push for policies and practices to ensure environmentally responsible mining. At the same time, its focus also lies on ensuring justice for the mining-affected.

The latter, in fact, has been a key attention area for the programme over the past few years – the engagement has been particularly with respect to ensuring proper implementation of District Mineral Foundation (DMF), a mechanism of benefit sharing with mining-affected communities. Besides significant potential to improve people's lives and livelihoods, DMF is also an important opportunity for strengthening institutions of local governance and empowering local communities.

Mining governance and District Mineral Foundations (DMF)







The DMF programme of CSE has completed two years since its commencement in April 2017. The programme's goal is to ensure proper implementation of DMF so that mining-affected people are appropriately benefited, the administration is inclusive and people-centric, and the institution functions with utmost transparency and accountability. CSE today is the most prominent civil society voice on DMF. Its status reports on DMF (such as *People First: District Mineral Foundation Status Report*), which evaluate the progress and performance of DMFs in India's key mining districts, generate much interest among stakeholders.

The Ministry of Mines (MoM) has incorporated most of CSE's recommendations in its DMF manual (published in 2019). The Ministry is also considering a revision of the PMKKKY guidelines and sending directions to the state governments to make necessary amendments in their DMF Rules. The Ministry has shared the report with the Parliamentary Standing Committee on Coal and Steel, and the Committee's report tabled in the parliamentary session reflects the suggestions for such reforms. The Central Government had discussed DMF in the PRAGATI (a multi-purpose, multi-modal platform for Pro-Active Governance and Timely Implementation) meeting (chaired by the Prime Minister) held in September 2018 – the CSE report had formed the basis for the discussions and further action.

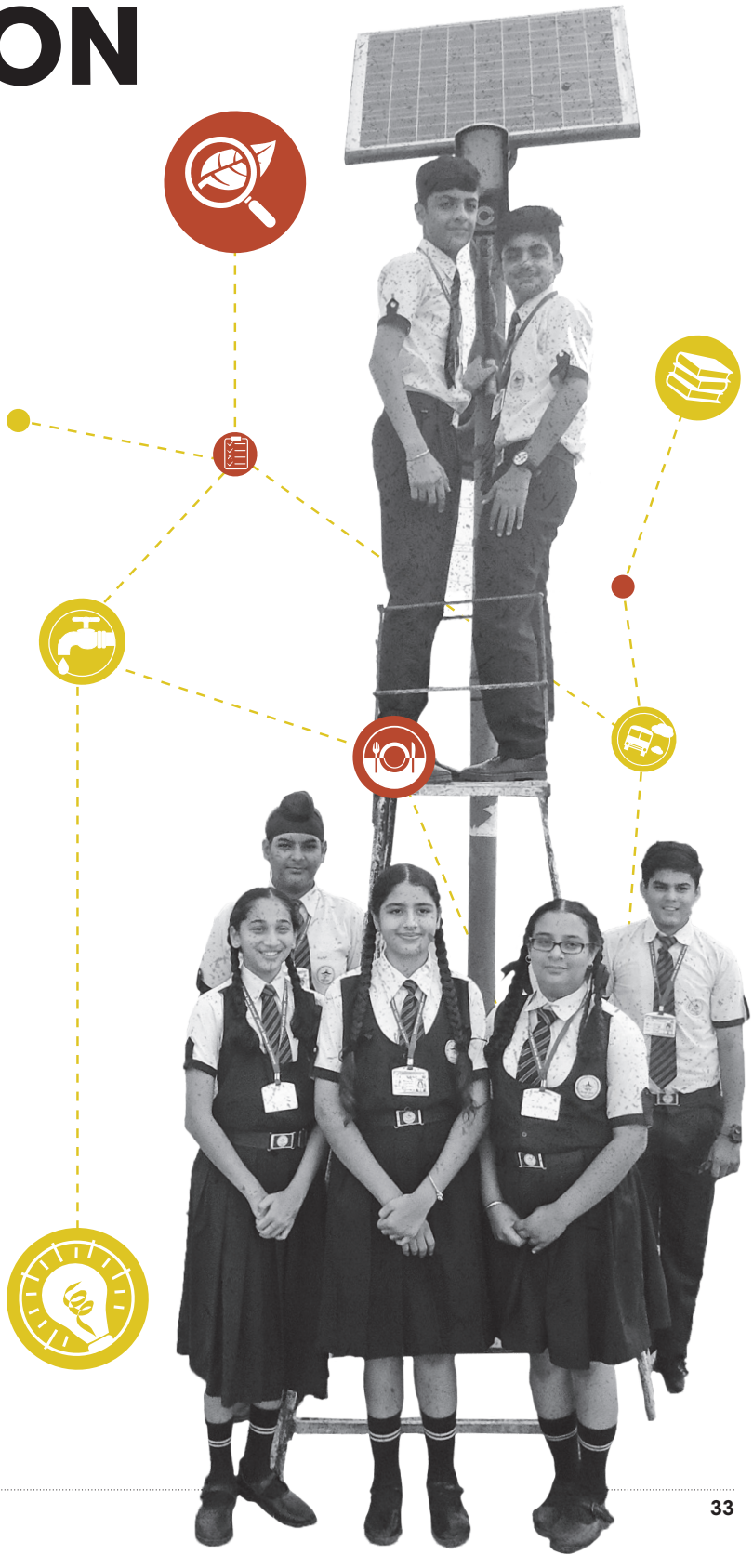
The indicative plans developed by CSE are guiding better DMF investments in certain districts. Some have revised their DMF investments to improve intervention. For example, West Singhbhum and Ramgarh districts (Jharkhand) have revised their approaches for nutrition and health investments. Chatra district is engaging with external experts to develop a perspective plan based on the approach CSE provided in the district's indicative plan. Goa has incorporated many of CSE's recommendations in its new DMF Rules. The Gujarat government has adopted measures on DMF administration, planning and accountable operations as per CSE recommendations. The state has also set up DMF cells in every district and had sent all officials from the key districts for CSE's training.

We have also been able to generate wider civil society engagement on what is DMF and its importance, and also on monitoring DMF implementation. These groups have started conducting meetings on DMF and giving submissions to respective state governments on DMF implementation.

ENVIRONMENTAL EDUCATION

TO FOSTER ENVIRONMENTAL LITERACY AND MEANINGFUL ENVIRONMENTAL EDUCATION AMONGST SCHOOL AND COLLEGE STUDENTS BY MOVING BEYOND THEORIES AND TEXTBOOK KNOWLEDGE TO 'KNOWING BY DOING'

The Green Schools and Environment Education programme engages with school and college students, teachers and green educators to impart an understanding of environment-development linkages and to provide easy-to-use tools to help put in practice what is learned. GSP also offers a platform and a network of educators to catalyse cross-learning on the best green practices from different educational institutions, and on building education tools for environmental learning.



Green Schools Programme

The Green Schools Programme (GSP) is an environmental education initiative aimed at sensitising students, teachers and parents to the environment. It incorporates an environment management system that audits, through students, the consumption of natural resources within school campuses and helps schools become good environmental managers by deploying pragmatic solutions to reduce wastage of precious resources.

In 2017–18, GSP registrations and submissions had seen a year-on-year growth of 14 per cent and 70 per cent, respectively – 2,863 schools from across India had registered for the 2017 GSP Audit, of which 1,193 completed and submitted the audit. The GSP network today includes 5,360 schools. This year (2018-19) 1,689 have submitted their completed audit reports to CSE – a jump of 85 per cent in registrations and 42 per cent in audit report submissions over the previous year. This reinforces the fact that schools are increasingly becoming conscious of their natural environments and resources, and of the urgency to manage them efficiently. They are using the GSP audit tool to bring about change.

Not only has the participation increased, but also green practices. For example, in 2018-19, 717 schools out of over 1,600 have reported that they practice RWH, up from 434 schools the previous year; 1,356 schools now segregate waste at source, compared to from 917 in 2017. In these two years, GSP has instituted a shift in its audit parameter – instead of ranking, the demonstration of change has become an important parameter. Participating schools have endorsed this shift.

University Programme – The Green Educator's Network

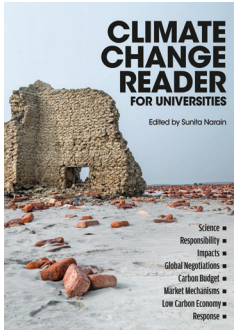
As a logical extension to GSP, CSE launched a university intervention initiative in 2016. Called the Green Educators' Network, it provides college and university teachers teaching environmental studies a platform to interact amongst themselves and with others. More than 500 educators have registered for this network.

In 2017–18, to show that environment education (via the GSP audit) can be dovetailed into regular classroom teaching in colleges, GSP partnered with one of the members of the network, Lady Irwin College in Delhi. The college has a B.Ed programme and trainee teachers mapped the audit activities and created lesson plans in accordance with the NCERT curriculum.

The Green Educators' Network comes together every year in a National Knowledge Conclave: the fourth of these conclaves was held in March 2019. Based on feedback from members of the network that similar conclaves be organised regionally, the team organized two regional conclaves in Kolkata and Mysuru, in partnership with members of the network. These conclaves provide educators with an opportunity to interact with experts and peers.

Release of the *Climate Change Reader*

Climate Change Reader for Universities was launched during the fourth National Knowledge Conclave. This book was specially written keeping in mind the UGC syllabus and will enable professors and students gain a deeper understanding of the most burning issue of our times. The reader breaks down the science, impacts, politics and sustainable pathways from innumerable scientific studies and reports, using infographics, case studies and lectures. Earlier, CSE had introduced *Environment Reader* for universities. The Green Educator's Network is helping promote both these books.



Quarterly online lectures (Facebook Live)

This initiative helps us reach out to students of environment across the country. Thematic/issue-related discussions take place during these online lectures, and students actively participate by asking questions. These lectures have proved to be an efficient medium for students to get a quick overview of the issue in question and to also interact directly with the resource person. Topics such as climate change, air pollution and solid waste management were covered during the first three online lectures conducted by CSE in 2018–19.

Typically, around 15 colleges participate and each educator brings in 20–30 students. In the one of the sessions, a college in Bengaluru booked an auditorium for its students and the session was attended by 330 students. The lecture held in January 2019 coincided with a seminar organised by the Department of Environment, Kannur University – the department live-streamed t he session for its participants. Beginning with 14 institutions and 300 students participating in the first session, the last and the third session of the year was attended by 21 institutions and 1,000 students.

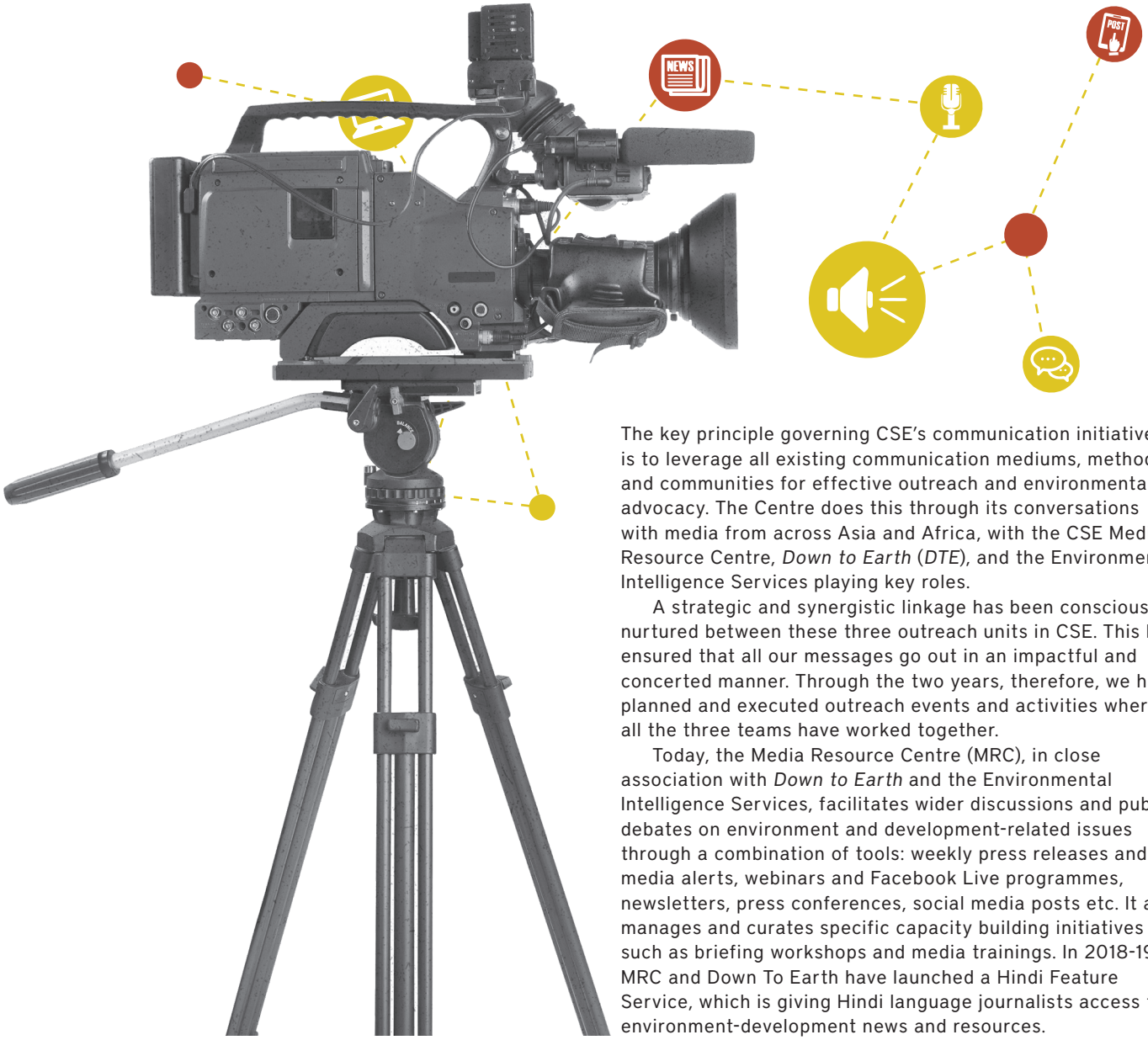
e-Newsletter

e-newsletters are released every month to the members of CSE's Green Educator's Network. The content of the newsletter is based on the case studies/articles/ blogs/videos of *Down to Earth* magazine and DTE TV. These newsletters help our educators stay updated and also provide teaching assistance during their daily lectures.

Rising interest in these newsletters could be gauged from the active contribution of content by our network members for the section 'From the Educators'. With the aim of increasing viewership and engagement, we have invited one of our network members to take the lead in developing the content of one of our future newsletter issues.

COMMUNICATION AND OUTREACH

TO STRATEGICALLY AND SYNERGISTICALLY CREATE LINKAGES AMONG THE CSE MEDIA RESOURCE CENTRE, *DOWN TO EARTH*, AND THE ENVIRONMENTAL INTELLIGENCE SERVICES TO ENSURE IMPACTFUL DISSEMINATION OF OUR MESSAGES



The key principle governing CSE's communication initiatives is to leverage all existing communication mediums, methods and communities for effective outreach and environmental advocacy. The Centre does this through its conversations with media from across Asia and Africa, with the CSE Media Resource Centre, *Down to Earth* (*DTE*), and the Environmental Intelligence Services playing key roles.

A strategic and synergistic linkage has been consciously nurtured between these three outreach units in CSE. This has ensured that all our messages go out in an impactful and concerted manner. Through the two years, therefore, we have planned and executed outreach events and activities where all the three teams have worked together.

Today, the Media Resource Centre (MRC), in close association with *Down to Earth* and the Environmental Intelligence Services, facilitates wider discussions and public debates on environment and development-related issues through a combination of tools: weekly press releases and media alerts, webinars and Facebook Live programmes, newsletters, press conferences, social media posts etc. It also manages and curates specific capacity building initiatives such as briefing workshops and media trainings. In 2018-19, MRC and Down To Earth have launched a Hindi Feature Service, which is giving Hindi language journalists access to environment-development news and resources.

Reaching the national media: Anil Agarwal Dialogues

A number of briefings for the national media have been conducted through these two years, culminating in the first Annual State of India's Environment Report release at our Nimli campus, christened as the Anil Agarwal Dialogue (AAD) 2019. Among the noteworthy briefings was one held in Ranchi (Jharkhand), which focused on the Patthargadi campaign for self-rule which has spread like wildfire in three states of central India. The briefing helped change the narrative and forced the regional media to understand and report on the subject from the point of view of the local communities (instead of the government).

The AAD 2019, which was fashioned as a special media conclave with 90 participants, was designed as much to give a bird's-eye view of all the key environmental issues facing the country, as a celebration of the AAETI campus – the journalists were experiencing the facility for the first time, and they loved it. The event was inaugurated by former Supreme Court judge Madan Lokur, and had some of the country's top experts briefing the assembled journalists.

The media team also collaborated with ERU and DTE to develop and conduct short journalism training courses. All these activities and initiatives have generated extensive coverage and made CSE's national media network (which now has about 4,000 contacts) stronger and more vibrant.

Environmental Intelligence Services

CSE's environment research and data services provider, the Environmental Intelligence Services, organises, packages, visualises and delivers relevant, cross-tagged, timely and contextual environmental information, data and audio-visual content to a global audience. In 2017–18, the team conducted a district-level mapping of climate vulnerability in the agriculture sector in India. It has continued to track new reports, research papers, studies, government policies and action plans. Close to 90,000 research reports, studies and government policies have been downloaded for research, advocacy and education from its India Environment Portal. CSE's environment photo library today contains 175,000 unique environmental photos, downloadable on request, and most are under creative commons licensing copyright regime.

The team also created 70 interactive features and infographics, which have been reused by some leading print and electronic media. A weekly information service, the *Africa Digest*, has been disseminated to close to 1,350 subscribers based in Africa, and has been much appreciated. Two new electronic databases – the Environment Governance Database (http://egd.cseindia.org) and the Environment In-Court Database (http://eic.cseindia.org) have been launched.

Connecting with global media

The global thrust of the team – largely aimed at the African media – has remained two-fold: to plan and execute campaigns and activities for ensuring maximum outreach of CSE and *DTE* among African journalists, and to work consistently towards building a network of skilled environmental reporters and writers in Africa. Towards this end, we have conducted several media briefings in Africa, for African journalists, on issues ranging from climate change (held in Zanzibar) and water and sanitation management (held in Nairobi) to agriculture (held in Addis Ababa) and health (held in Kigali). Each briefing was complemented by a special DTE issue on the subject. African journalists had been commissioned to write in these special issues – these journalists are a part of the CSE network which the Media Centre has built up over a period of time.

About 100 journalists from across the continent have participated in these briefings, which combined sessions on their specific subjects, as well as specialised training modules on the skills and crafts of reporting and data journalism. Two of the briefings also offered field trips to the participants. To ensure widest participation, MRC also tied up with African media associations such as MESHA-Kenya and the Rwandan Science Journalists' Association which actively participated in these briefings. CSE also participated as a partner organisation of MESHA-Kenya in the African Science Journalists' Conference held in Nairobi.

These briefings and interactions have resulted in generating a large number of stories in a wide variety of media, ranging from radio and TV to daily newspapers, magazines and on-line news portals. More importantly, the journalists who participated in these briefings, created Whatsapp groups which are extraordinarily active – they consistently report on issues of environment and development, swap story ideas and stories, and have become a regular source of information and news from Africa. The briefings have played an invaluable role in bolstering the African media network that CSE has developed, whose strength now stands at over 500 contacts. This network plays an important role in spreading the word of every CSE initiative in Africa.

ANIL AGARWAL ENVIRONMENT TRAINING INSTITUTE (AAETI)

TO FIND APPROPRIATE AND AFFORDABLE SOLUTIONS TO SOME OF THE MOST PRESSING PROBLEMS FACED BY DEVELOPING COUNTRIES

CSE's new learning, training and innovation/demonstration centre has been named after the late Anil Agarwal, the Centre's founder-director. 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.

AAETI at a snapshot 2017-19

72
trainings conducted

86
workshops and other events organised

1,629
people underwent training

2,056
participants in workshops and other events

365
training-meeting days in a year

'This is a great platform for an overview of the interventions that can be done in the field of water and waste. This training helped enhance my knowledge and develop new insights to manage liquid and solid waste, which I can further utilise in my ongoing projects.'

ABHISHEK CHOUDHARY
Senior Manager, Finish Society

'The sessions on liquid waste management, planning of IEC and BCC activities, communication strategies and field exposure visits are very informative. Whatever we learn from here will help us in better implementation of various projects.'

CHIRAN RIZAL
Block Development Officer, East Sikkim

'The concept of sustainable habitat is perfectly implemented at AAETI... appreciate the engineering and the energy incorporated for a memorable stay at AAETI. Would work on my own composting unit at home.'

SHALINI TAMAR
Assistant Engineer, MP-UADD

'The programme structure and the topics covered under the training were excellent. A perfect blend of learning through rules and their implementation status on ground. Learned a lot about solid waste management at the village level and could identify the level of seriousness of the problem. Looking forward to apply the learnings in practice at my urban local body.'

ROHIT MALVIYA
Assistant Engineer, NagarPalika-Khargone

Green Features

When we began working on AAETI we had several ideas about what 'green' meant. But as we worked on these concepts and put them in practise, we learnt what works and what does not.

What have we tried to put into practise? What is a green building?

Energy: Materials, insulation and appliances

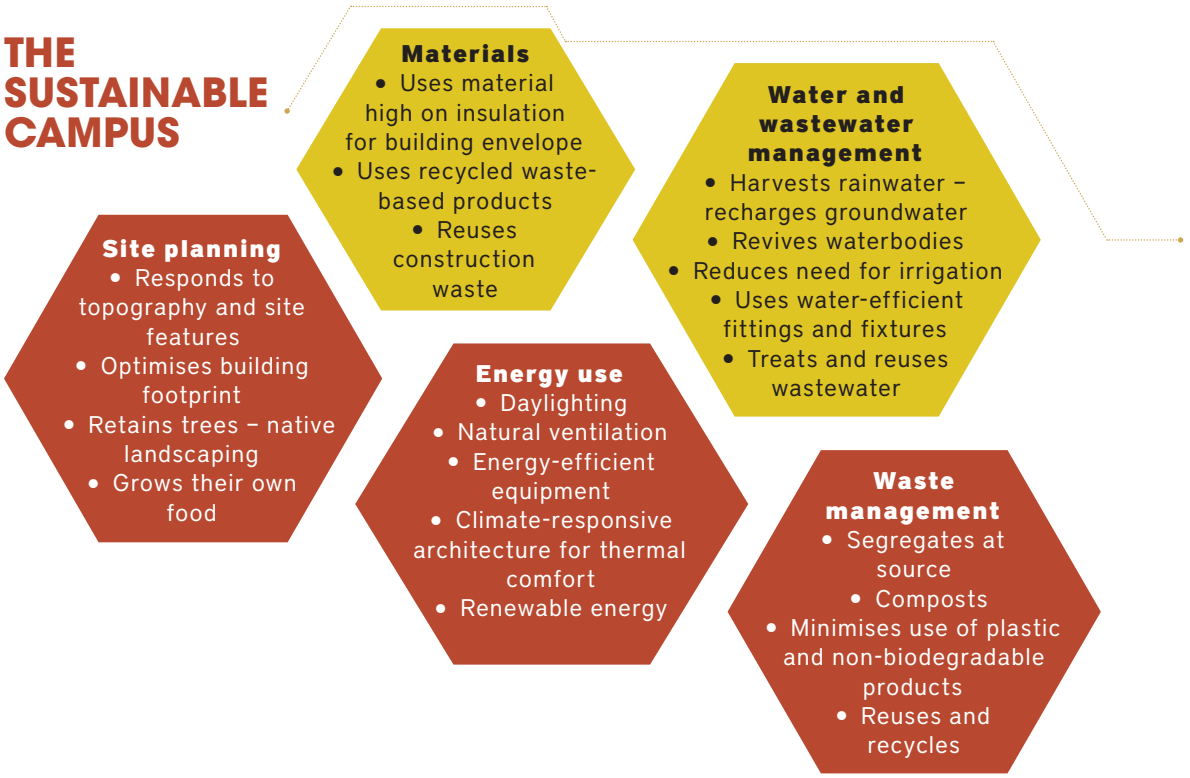
- Minimised the footprint of the building so that it is as compact as possible and utilises maximum daylight. We have designed our building in such a way that maximum daylight is achieved and the least usage of artificial light is required.
- Built to optimise on the local ecology and climate – built around the sun and the wind. This practise of passive architecture brought down the energy footprint.
- Insulated as best as possible – the choice of building material is important.
- Shaded the building so that direct sun is avoided and ventilated so that wind becomes important for 'comfort'.
- All this done, we chose the most efficient heating, ventilation and air conditioning system (HVAC), which is best for long-term energy use. We decided on a range of temperatures in buildings that are not too cold or too hot.
- Chose efficient appliances – used this to reduce energy use further.
- When all was done to reduce energy demand, we planed for energy generation (as much as possible) from renewable sources.

Water waste

- Made the campus water-neutral – i.e. took less from groundwater then what is put back.
- Ensured all sewage is treated locally.
- Ensured that all treated sewage is reused and wastewater is recycled.

Garbage

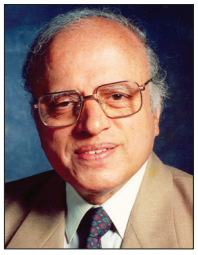
- Fully segregated at source.
- Minimised the use of plastics and non-biodegradables in the campus – moved towards zero-plastic use over time.
- Reduced food waste – educated people about taking only as much as they need.
- Composted all biodegradable waste on site.
- Recycled all other waste – segregated and planed its reuse. Worked towards no waste for landfill.



Monitoring resources and their use

- **GROUNDWATER LEVEL:** Use of peizometer to monitor the levels and understand the net effects of use and recharge
- **DAILY WATER CONSUMPTION:** Water meters in the buildings
- **WATER USE IN IRRIGATION:** Meters to measure this
- **WATER QUALITY OF DRINKING WATER AND WASTEWATER:** Both tested in the CSE lab once a quarter
- **DAILY ENERGY USE:** Meters installed in buildings to ensure that systems are optimised to the designed EPI
- **REDUCING FOOD WASTE:** Daily food waste measured; residents and visitors motivated not to waste food
- **REDUCING PLASTIC WASTE:** Ban on use of plastic bags on campus, and cloth bags distributed to trainees
- **WEATHER:** Continuous weather data disseminated through the website

Executive board



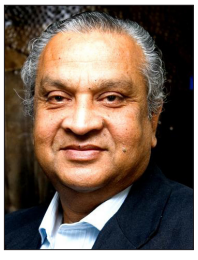
M S Swaminathan is one of India's foremost agricultural scientists and is best known as the scientific leader of the 'evergreen revolution movement' in India. His pioneering work in the field of agricultural science and food security has earned him several awards, both national and international, including the Padma Shri, Padma Bhushan, Padma Vibhushan, Ramon Magsaysay Award, World Food Prize, and the Tyler Environment Award, to name a few. He has held several distinguished positions, including Director General of the Indian Council of Agricultural Research and of the International Rice Research Institute, and Secretary of the Ministry of Agriculture and Cooperation.

William Bissell has been closely associated with the Centre for Science and Environment for many years. He is the Managing Director of FabIndia, a company that has made a signal contribution in popularising handlooms nationally and internationally.

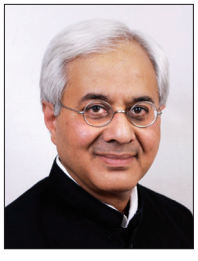
He is deeply interested in issues of environment and sustainable development. Besides CSE, he is also involved with other non-profit organizations. William Bissell is the Managing Trustee of the Bhadurajun Artisan Trust, which runs schools in Rajasthan to bring quality education to the artisanal families living in rural areas.

G N Gupta joined the Board of CSE in 1998 and is among the core group that provides guidance on institutional development issues, particularly on financial issues.

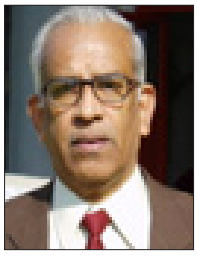
As a member of the Indian Revenue Service, he has held several key positions in the revenue department of the Ministry of Finance. He served as the Chairman of the Central Board of Direct Taxes, India's highest tax-making body, and also as a Director in the Planning Commission. He currently serves on the Board of several companies and offers consultancy services on issues related to direct taxes.



Raj M S Liberhan, management and financial expert, has varied experience, with a significant range of responsibilities at the senior level in government, public sector and NGO environments, building and sustaining organisations, programmes and missions with sector-specific objectives and services. He served as Chief Executive of the India Habitat Centre, New Delhi, for 15 years and helped create a unique institutional mechanism.



A K Shiva Kumar is a development economist and professor. He teaches various courses at Harvard University, Indian School of Business and the Young India Fellowship. He served as the Director of the International Centre for Human Development, New Delhi. In addition to serving as an advisor to UNICEF – India, he was a member of India's National Advisory Council. He is a recipient of the MacArthur Fellowship, Mason Fellowship, and the Certificate of Excellence in Teaching from Harvard University.



N J Rao has done B.Tech (Hons.) and M.Tech in Chemical Engineering from IIT Kharagpur and Ph.D. in Chemical Engineering from University of Roorkee. He served for over 34 years at IIT Roorkee/University of Roorkee at the Chemical Engineering Department and Department of Paper Technology. He worked for several years as Director of Institute of Paper Technology. He was the Director of Central Pulp and Paper Research Institute, a national laboratory under Ministry of Industry (GOI), for one year. He has published over 160 research papers. Currently, he is the Vice Chancellor of Jaypee University of Engineering and Technology, Raghogarh, Madhya Pradesh.

Bharati Chaturvedi is an environmentalist and writer. She is the founder and director of Chintan Environmental Research and Action Group. Bharati has served on various committees of the Government of India, including the Expert Committee on Plastic Waste set up by the Ministry of Environment and Forests to finalise rules for plastic waste handling, and a Task Force for social security for the informal sector set up by the Ministry of Labour and Employment. She has also been involved in consultations about the Indian government's Hazardous Waste Strategy and Electronic Waste Rules.

Sunita Narain has been with the Centre for Science and Environment since 1982. In her years at the Centre she has worked both to analyse and study the relationship between environment, development and to create public consciousness about the need for sustainable development. Her research interests range from global democracy, with a special focus on climate change to the need for local democracy where she has worked on forest-related resource management and water issues. She serves on the boards of different organisations and on governmental committees and has spoken at many forums across the world on issues of her concern and expertise.

Chandra Bhushan is currently the Deputy Director General of CSE. He is a distinguished expert in the field of natural resource management, environmental geo-politics and industrial pollution. He has a diverse and distinguished track record in research, writing, management and policy advocacy. Chandra Bhushan has researched and written about issues ranging from industrial pollution to energy and climate change and from water crisis in the Indian subcontinent to political economy of natural resource extraction. His academic qualifications include a bachelors in civil engineering and a masters in environmental planning and technology.

Jagdeep Gupta is currently the Executive Director, Planning and Operation. She brings a rare and befitting mix of a pure science background with a degree in management, indispensable to understanding the nature of work and the ethos behind an organization like CSE. Over the years she has shown her excellence in acquiring the best talents, developing a wholesome system of monitoring the research outcomes, providing the best infrastructural facilities, developing a wide array of important contacts, and widening the outreach of CSE's research publications. Her forte has been her human management skills, which gives her the edge to handle problem situations in a balanced and unbiased approach.

CSE in Images 2017-19

CLEAN AIR AND SUSTAINABLE MOBILITY

Stakeholder Workshop on Clean Air Strategic Action Plan and Implementation in Nigeria, Abuja (Nigeria), February 20, 2018

At the workshop, the Nigerian government reiterated its resolve to mitigate air pollution in urban areas

Seminar on Who Guzzles and Pollutes More, Kolkata, August 24, 2018

The Urban Commute, released at the seminar, ranked 14 Indian cities in terms of their emissions and energy consumption from urban transport

International Conclave on Low Carbon Transport Strategies, New Delhi, September 4-5, 2018

EPCA chairperson Bhure Lal addresses the Conclave

Orientation and training programmes, AAETI, Nimli

12 such programmes have been conducted for African and Indian participants

CLIMATE CHANGE

CSE Side Event at UNFCCC CoP24, Katowice (Poland), December 11, 2018

Subject of the Side Event was 'Global adaptation goal and the importance of gender transformative resilience finance'

Climate Week – A Meeting of the Minds, AAETI, Nimli, February 19-23, 2018

The Week included a training programme and a workshop on climate adaptation planning

ENVIRONMENTAL GOVERNANCE

Pan-Africa Workshop – Development of Environmental Monitoring Network Using SMART and Affordable Systems, Addis Ababa, Ethiopia, August 14-17, 2018

The programme was jointly conducted with the Ethiopian Ministry of Environment

Training – Environmental and Social Risk Management in Agriculture Projects, New Delhi, September 11-19, 2017

This eight-day programme was tailor-made for officials of Afghanistan's Ministry of Agriculture, Irrigation and Livestock

SUSTAINABLE WATER MANAGEMENT AND SANITATION

First SFD Week, AAETI, Nimli, April 2-5, 2019

The event was inaugurated by the secretary, MoHUA and director general, NCGM

State Workshop – Planning and Implementing Effective Septage Management, Lucknow, October 22, 2018

The report 'Managing septage in cities of Uttar Pradesh' was launched at this workshop

Trainings – Water Sensitive Urban Design and Planning, South Africa, 2017-2018

The team conducted several training programmes across multiple cities, including Durban and Cape Town

Meeting on Rural Sanitation (for African participants), AAETI, Nimli, March 26-29, 2019

Representatives from 12 African nations participated in this

SOLID WASTE MANAGEMENT

Meeting of Forum of Cities that Segregate

82 cities are now part of the Forum

Implementing decentralised waste solutions in Africa

CSE's solid waste management team is working in Zanzibar, Swaziland and other African countries to create their integrated solid waste management strategies

RENEWABLE ENERGY

Building inroads into Tanzania's renewable energy sector

CSE has strengthened its relations with the ministry of energy in Tanzania

MINING AND GOVERNANCE

Release of status report on DMF

CSE today is the most prominent civil society voice on DMF

ENVIRONMENTAL EDUCATION

The Green School Awards

The GSP network today includes 5,360 schools

COMMUNICATION AND OUTREACH

Anil Agarwal Dialogue and Annual Media Conclave

The event was inaugurated by former Supreme Court judge Madan Lokur, and had some of the country's top experts briefing the assembled journalists

CSE's national and global media presence (April 2017–March 2019)

	Number of clippings (Newspapers + journals)		India		Global/South Asia	
Coverage keywords	2017–18	2018–19	2017–18	2018–19	2017–18	2018–19
Air pollution	521	631	488	579	33	52
Agriculture	39	7	39	7	0	0
Climate change	88	87	70	70	18	17
Food safety	85	96	80	90	5	6
Forests	9	14	7	14	2	0
Industry	25	7	22	5	3	2
Natural disasters	3	27	1	21	2	6
Energy	27	32	22	28	5	4
Environment and wildlife	70	84	67	76	3	8
Pesticides	9	0	9	0	0	0
Mining	26	43	24	41	2	2
Water	67	106	61	94	6	6
Solid waste/ hazardous waste	99	91	88	87	11	4
Sanitation	51		49		2	
Syndicated articles by CSE senior management	58	58	58	58	0	0
Book reviews	66		63		3	
Coverage on CSE trainings	8		5		3	
Miscellaneous	36	65	35	58	1	7
Total	1,287	1,348	1,188	1,228	99	120

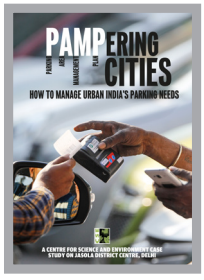
CSE's national and global media presence (electronic media)

	2017-18	2018-19
Air pollution	388	129
Transport	NA	18
Agriculture	4	NA
Food and food safety	9	9
Climate change	30	14
Water	13	19
Sanitation and waste management	51	25
Forests	3	NA
Miscellaneous	46	31
Total electronic media coverage	**544**	**254**

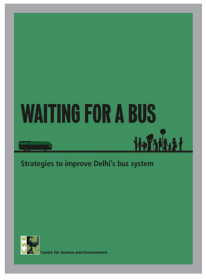
Key CSE publications (2017–19)

A SELECTION FROM THE OVER 100 TITLES PUBLISHED IN THIS PERIOD

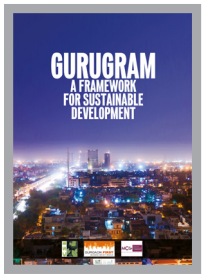
CLEAN AIR AND SUSTAINABLE MOBILITY



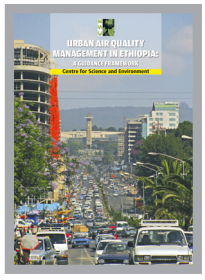
Pampering Cities: How to Manage Urban India's Parking Needs



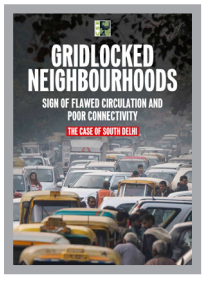
Waiting for a Bus: Strategies to Improve Delhi's Bus System



Gurugram: A Framework for Sustainable Development

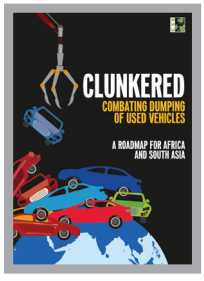


Urban Air Quality Management in Ethiopia

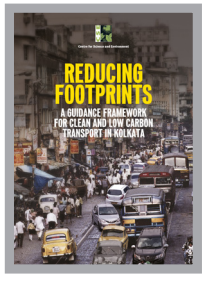


Gridlocked Neighbourhoods: Sign of Flawed Circulation and Poor Connectivity – The Case of South Delhi

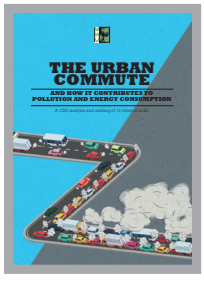
Air Pollution Report Card: Delhi–NCR, 2017–18



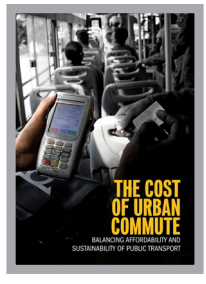
Clunkered: Combating Dumping of Used Vehicles



Reducing Footprints: A Guidance Framework for Clean and Low Carbon Transport in Kolkata

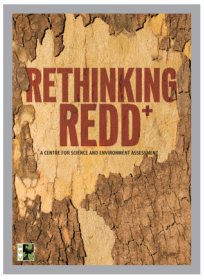


The Urban Commute: And how it adds to pollution and energy use

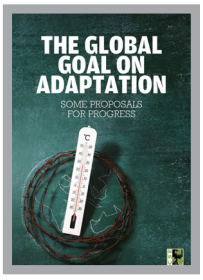


The Cost of Urban Commute

CLIMATE CHANGE

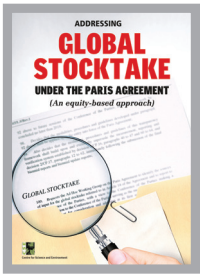


Rethinking REDD+

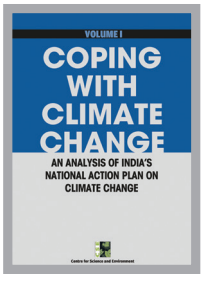


The Global Goal on Adaptation

Pradhan Mantri Fasal Bima Yojana: An Assessment



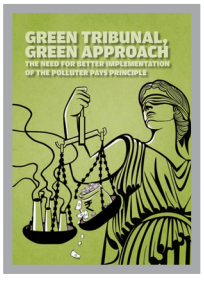
Global Stocktake under the Paris Agreement



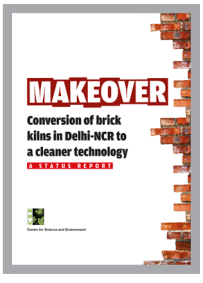
Coping with Climate Change: Analysis of India's National Action Plan

Climate Change Now: The Story of Carbon Colonization

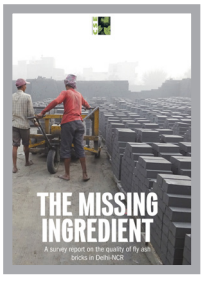
INDUSTRY AND ENVIRONMENTAL GOVERNANCE



Green Tribunal, Green Approach: The Need for Better Implementation of the Polluter-Pays Principle

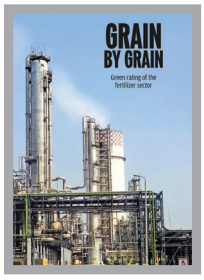


Makeover: Conversion of Brick Kilns in Delhi-NCR to a Cleaner Technology

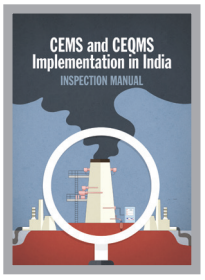


The Missing Ingredient: On Quality of Fly-Ash Bricks

Smart and Affordable Monitoring: A Regulatory Approach

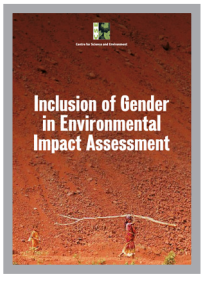


Grain by Grain: Green rating of the Fertilizer Sector

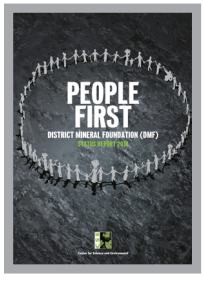


CEMS and CEQMS Implementation in India

Dilution by Design: Status of Land Acquisition in India

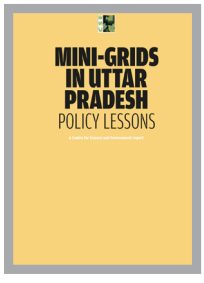


Inclusion of Gender in EIA

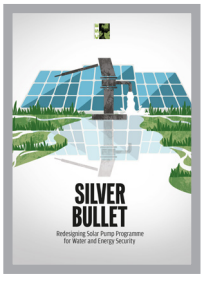


People First: District Mineral Foundation (DMF)

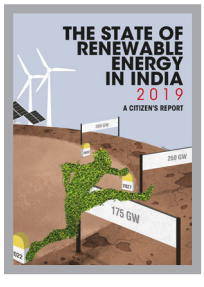
ENERGY



Mini-Grids in Uttar Pradesh



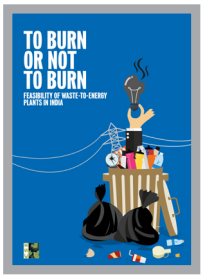
Silver Bullet: Are Solar Pumps a Panacea?



The State of Renewable Energy in India 2019

Off Target: Coal Power Stations in Delhi-NCR

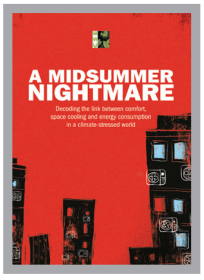
SOLID WASTE MANAGEMENT



To Burn or Not to Burn: Feasibility of Waste-to-Energy Plants in India

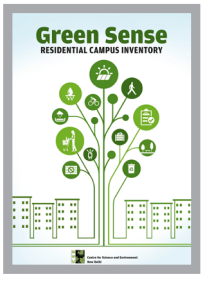
Charting the Future of City Compost

SUSTAINABLE HABITAT



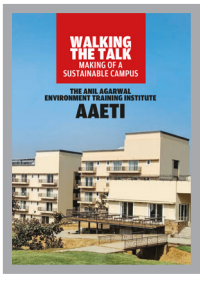
A Midsummer Nightmare

Optimizing the Third Skin: Energy Efficiency and Thermal Comfort in Affordable Housing

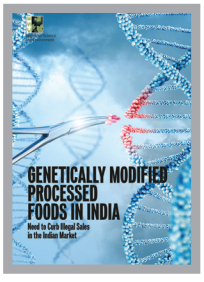


Green Sense: A Residential Campus inventory

Walking the Talk: AAETI – Making of a Sustainable Campus



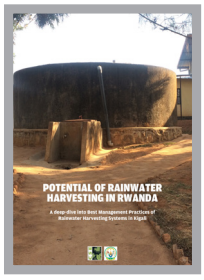
FOOD AND TOXINS



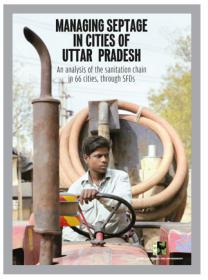
Genetically Modified Processed Foods in India

Double Standards: Antibiotic Misuse by Fast Food Companies

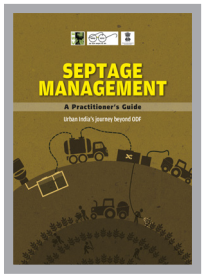
WATER AND WASTEWATER MANAGEMENT



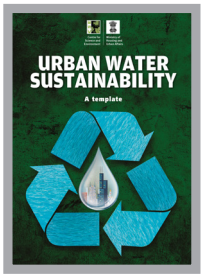
Potential of Rainwater Harvesting in Rwanda



Managing Septage in the Cities of Uttar Pradesh

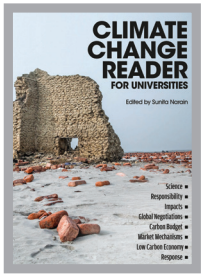


Septage Management

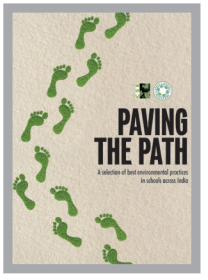


Urban Water Sustainability: A Template

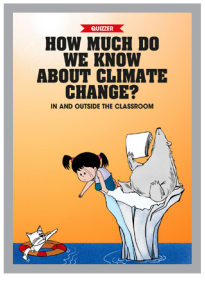
ENVIRONMENT EDUCATION



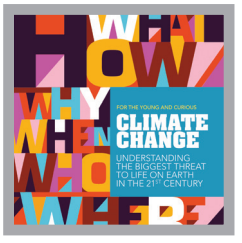
Climate Change Reader for Universities



Paving the Path: A Selection of Best Environmental Practices in Schools across India



How Much Do We Know about Climate Change?



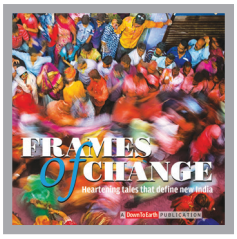
Climate Change for the Young and Curious

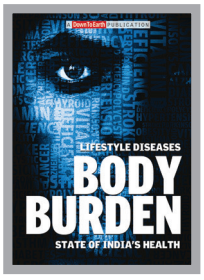
Getting to Know about Environment

DOWN TO EARTH

First Food: Business of Taste

Frames of Change: Heartening Tales that Define a New India



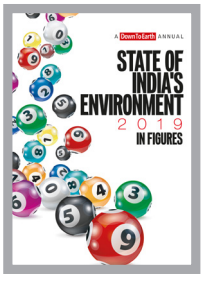


Body Burden: Lifestyle Diseases

State of India's Environment 2018

State of India's Environment 2018 in Figures

State of India's Environment 2019



State of India's Environment 2019 in Figures

Institutional development

Human resources

CSE is today a 170 people-strong organization drawing talent from 21 of the 29 states in India, which helps in introducing a regional perspective and cultural diversity to our workforce.

CSE talent pool

16.36%	14.40%	10.24%	10.84%	4.80%	7.22%	36.14%
Scientists	Engineers	Environment Managers	Journalists	Planner/ Architects	Sociologists	Others

Gender ratio

CSE is an equal opportunity organisation. There have been years when women have outnumbered the count at the senior management level. The average gender ratio recorded this year has been **40 per cent female and 60 per cent male.**

Leadership trends

Sustained and concerted efforts are made to groom middle managers to shoulder key positions. Over the last few years, 11 managers have been promoted to independently handle portfolios, each with two to six people reporting to them. Most of these middle managers now have team leadership responsibilities. This has provided our senior managers and directors with more time to concentrate on strategy development and network with domestic and global sector decision-makers.

Staff welfare schemes

Health insurance cover has been raised from Rs 2 lakh to Rs 5 lakh for all employees and their families. Staff members have also been offered a choice of raising the limit of the contributory term insurance or death insurance cover of Rs 10 lakh and Rs 50 lakh. CSE and its staff members contribute 50:50 towards the premium. Every year, these insurance companies organise health and dental check-up camps for the employees.

Awards and recognitions

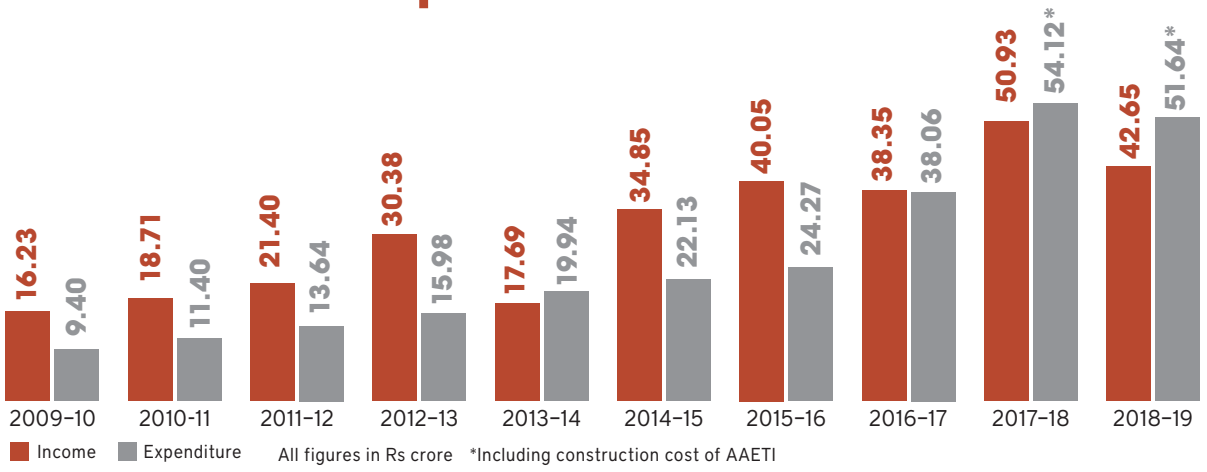
2018

Bologna Sustainability and Food International Award 2018. The award values the scientific research and initiatives concerning agricultural and agri-food sectors oriented to sustainable and lasting development.

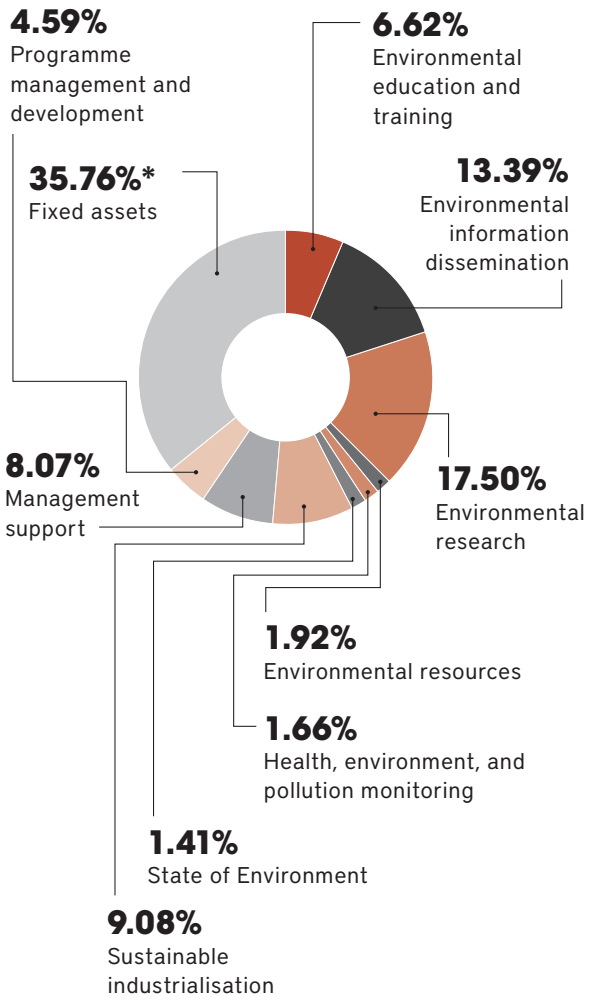
2018

CSE bagged the prestigious Indira Gandhi Prize for Peace, Disarmament and Development for 2018

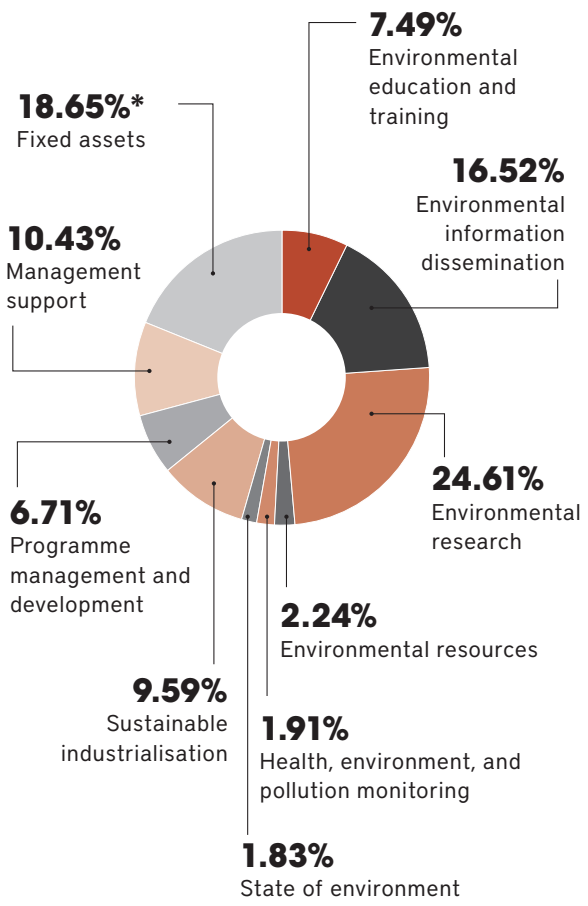
Income and expenditure in FY 2017–19



Expenditure in FY 2017–18



Expenditure in FY 2018–19



*AAETI additions

List of donors 2017–19

Swedish International Development Cooperation Agency (SIDA)

Bill & Melinda Gates Foundation

Bread for the World

MacArthur Foundation

Misereor

Oak Foundation

Heinrich Boll Foundation

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Water Aid, Bangladesh

Shakti Sustainable Energy Foundation

Charity Aid Foundation, India

Indian Public Spirited Media Foundation (IPSMF)

Ministry of Environment, Forests and Climate Change, Government of India

Ministry of Housing and Urban Affairs, Government of India

Department of Environment, Government of Delhi

West Bengal Government

Dr Kamla Chowdhry Endowment

Maitri Trust

Lancaster University

Individual donors: 2017–19

Navneet Aggarwal | Abinash Sinha | Divy | Anish Modi | Aditya Veer | Pranjal Agarwal | Nitin Bharat Pawar | Shashidhar Peddi | Navneet Aggarwal | Nimisha Srinivas | Pranjal Agarwal | Prabuddha Singh Payak

NOTES


DownToEarth
FORTNIGHTLY ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH
Subscriber copy, not for resale
₹60.00
16-30 SEPTEMBER, 2019
OZONE DAY SPECIAL
AMAZON ABLAZE
WHY IT IS A PLANETARY EMERGENCY
Fortification: a boon for multinationals
P18
Mismanagement of dams causes floods
P22
डाउन टू अर्थ
फसल
प्रवेशांक
1-15 AUGUST, 2019
SPECIAL COVERAGE
THE RIVER
GOBAR TIMES
A DOWN TO EARTH SUPPLEMENT
Not just clean we want green scho
OUR DISCARDED CLOTH IS A
WORLD ENVIRONMENT DAY SPE
पहली बार मताधिकार का प्रयोग करेंगे 5 करोड़ से ज्यादा युवा P48
पंचायत पर कब्जे के लिए दलित महिलाओं से शादी की जुगत P20
बोझ
gobar times
A DOWN TO EARTH SUPPLEMENT FOR THE YOUNG AND CURIOUS
BOOK REVIEW | LIFE WITHOUT BEES | POEMS
Green Literature special
Fiction is greener than fact
BOOK REVIEW | ANATOMY OF SOLAR PANEL | SPOOF
0% Emission
GOBAR TIMES
ENVIRONMENT DAY SPECIAL
Polluted panchatatva
A closer look at how we are destroying the five basic elements
1-15 JANUARY, 2019
IN CONVERSATION WITH PLANTS
Not just your five senses, plants can remember and have a spirit too
ANNIVERSARY SPECIAL
1-15 MAY, 2019
NEW WORLDS
A few billionaires and governments are on a mission to colonise planets and exploit celestial resources. Human habitations beyond Earth are just a decade away
WORKED FOR THE FARMERS?

Anil Agrawal
(1947~2002)

Centre for Science and Environment (CSE) is a non-governmental, independent policy research institution based in Delhi, which was started in 1980 by the late Anil Agarwal, a leading figure in India's environment movement.

For more than three decades, CSE has helped shape policies and build public awareness to bring change in areas of pollution mitigation and public health security, low-carbon development, natural resource management and livelihood security to make growth sustainable and inclusive.

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062
Phones: 91-11-40616000 Fax: 91-11-29955879
E-mail: cse@cseinida.org Website: www.cseindia.org