ANNUAL REPORT

2015-16

CSE

Centre for
Science and
Environment

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RESEARCH AND
ADVOCACY

NUAL PORT

RESEARCH AND ADVOCACY

CLEAN AIR AND SUSTAINABLE MOBILITY

To enable our cities to secure the right to clean air and public health

The Clean Air and Sustainable Mobility programme addresses the challenge of rapid growth and motorization that has enhanced air pollution, public health concerns and climate risks.

India and Africa—the targets of this programme—cannot remain conventional in their approach or act incrementally. These regions need a leapfrog strategy that is affordable, scalable, inclusive and inventive.

The programme influences national- and city-level policy and action and build regulatory capacity to enable the framing of clean air action plans to cut pollution from all sources, especially vehicular pollution.

It aims to influence national- and city-level policy and action by pushing for stringent emissions standards, curbing dieselisation, arresting the dramatic shifts towards personal vehicles and curb the growing share of fuel-inefficient vehicle stock and the growing share of road-based freight transport.

↘ 2015-16: THE YEAR IN REVIEW

Government of India issues draft notification to leapfrog directly to Euro VI emissions standards in 2020 from Euro IV. Consistent campaign by the programme has helped build policy support for this move. Euro VI standards are not only 90 per cent cleaner than current standards, they also equalise the emissions levels between petrol and diesel vehicles. This can reduce the toxic and warming impact of new motorisation.

THE PROGRAMME INITIATIVES

Clean air and clean diesel
The focus has been to build public awareness and push governments and regulatory agencies to adopt time-bound plans for clean air actions—creating a roadmap on emissions standards and instituting anti-diesel measures.
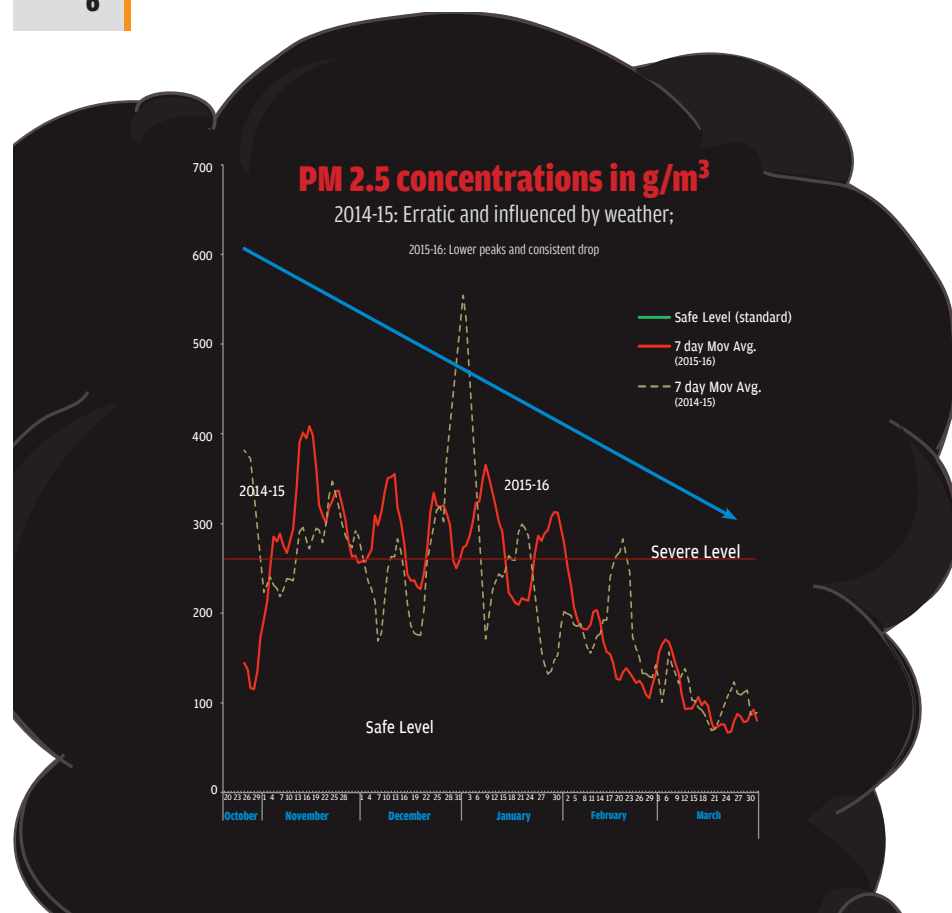
Bus, walk and cycle campaign
This campaign is working with select 'champion cities' from Asia and Africa to create safe and accessible cities. The aim is to achieve 60-80 per cent modal share for public transport and non-motorised transport by 2030.

Reduce emissions from long-range transportation systems
CSE has initiated engagement to influence global decisions on emissions standards and mitigation strategies for marine and aviation sectors by integrating sustainable transportation with issues related to transfer of knowledge, finance, and technology under the UNFCCC process.

Source-wise clean air action plan approach for comprehensive impact on air quality: In 2015-16 particulate matter concentration in Delhi was consistently lower than the previous winter. Weather continued to be major factor but the crests and troughs were smaller in 2015-16.

PM 2.5 concentrations in g/m^3
2014-15: Erratic and influenced by weather;
2015-16: Lower peaks and consistent drop

— Safe Level (standard)
— 7 day Mov Avg. (2015-16)
--- 7 day Mov Avg. (2014-15)

2014-15
2015-16
Severe Level
Safe Level

October | November | December | January | February | March

Fiscal measures to curb pollution from trucks in the National Capital Region (NCR). A campaign against highly toxic and carcinogenic pollution from heavy-duty trucks in the NCR has led the Supreme to enforce an environment compensation charge on each truck entering Delhi; besides, pre-2006 trucks and non-destined trucks have been banned from entering the capital. Trucks have been estimated to be responsible for at least 30 per cent of the total particulate load from the transport sector. The court judgment has reduced truck numbers by close to half, leading to a lowering of night-time pollution.

Controlling dieselisation of cars.
One of CSE's longest-running campaigns, this has consistently highlighted how the rise in diesel car numbers is contributing to pollution and increasing the cancer risk. After imposing a temporary ban on registration of luxury diesel cars and SUVs in the NCR, Supreme Court has now ordered a 1 per cent environment tax on sale of these cars. The Court has lifted the ban, but has said that the quantum of the tax can change in future.

Odd-even license plate scheme adapted by Delhi government as a pollution emergency measure.
The Delhi government introduced its first-ever pollution emergency measure of license plate regulation for cars to reduce

car numbers by half during severe smog episodes — this was part of a proposal that CSE had submitted to the government. This experiment led to a lowering of peaking of pollution for the duration of the emergency action, reduced congestion, saved journey time and fuel, and improved use of public transport.

Successes from the 'Bus, walk and cycle' campaign. CSE has leveraged the ongoing public interest litigation in Supreme Court to augment the bus fleet in Delhi and help commit land area for terminal space for buses. The Court has also directed that the revenues from the environment compensation charge on trucks will feed into a dedicated fund that will be invested in public transport systems and infrastructure for walking and cycling. Thus, intensification of the campaign has helped create a template for action and solution that can be scaled up in global South.

Action on farm fires for regional air quality improvement. This year, CSE has demonstrated that local action in Delhi is not sufficient to meet air quality targets. For instance, farm fires in the neighbouring states of Punjab and Haryana negated whatever air quality gains Delhi made from its odd-even scheme. CSE has evaluated this problem and informed the policy deliberation of the Environment Pollution (Prevention and Control) Authority. This has led to more state-level coordination on this issue.

The future strategy of CSE's Clean Air and Sustainable Mobility programme will hinge on pushing ahead with advanced action on all these fronts. The principle governing this action will remain the same: the need for a leapfrog strategy to clean up vehicles and fuels; paradigm shift in mobility patterns so that we can move people, and not vehicles; and an integrated action plan for all pollution sources to meet clean air targets in cities.

EXPANDING FRONTIERS IN AFRICA

Direct engagement with governments in Ethiopia and Nigeria to help them prepare their national clean air action plans. CSE has built knowledge partnerships with the ministry of environment, forests and climate change in Ethiopia and the Federal ministry of environment and forests in Nigeria, to support the two governments to develop a guidance framework for urban air quality management and clean air action plan for their cities. Four large multi-stakeholder consultation workshops have been held. Based on in-depth research and stakeholder consultations, CSE has prepared and presented a guidance framework for urban air quality management to the concerned governments. The next steps that are under discussion include setting up of a multi-stakeholder task force in both countries to steer the process for future action.

Pan-Africa Regulators Forum to inform policy making on issues of common concern in the region. A separate Pan-Africa Forum for regulators from different African nations has been created for periodic deliberation on critical issues of common concern across Africa and promote cross-learning to inform regional initiatives. This orientation is designed to build regulatory capacity for good policymaking and compliance strategy.

CSE organised two pan-Africa consultation events in Nairobi (Kenya) that brought together regulators from several African countries to share information and knowledge. Requests for collaborative work have come forth as a result — the National Environment Monitoring Authority of Kenya has expressed an interest in a joint initiative to work on strategies for air quality monitoring and management.

Leveraging international forums to influence and inform the debate on present priorities of the global South.CSE has participated in the Urban Health Initiative of the World Health Organization that is now integrating health and climate as part of the Conference of Parties on Climate Change. It has participated in the annual Non-CO2 Summit in Slovenia to build the policy debate around co-benefits from reduction in short lived climate forcers. It has participated in the Global Fuel Economy Initiative and UNEP Partnership on Clean Fuels and Vehicles to take forward the agenda on vehicle technology and fuel quality.

Pan-Africa Regulators Forum to inform policy making on issues of common concern in the region: to build regulatory capacity for good policymaking and compliance strategy

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 turning into gigantic water-guzzlers, drawing water from cleaner upstream sources and discharging their waste—sewage and industrial effluents—downstream. The results of this have been catastrophic: water conflicts have flared up between users and almost every water source has become severely contaminated. Current methods of water and wastewater management used by cities are capital- and resource-intensive, and their benefits do not percolate down to the urban poor.

CSE's Sustainable Water Management and Sanitation programme is geared to help re-invent 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.

The programme has also ventured into a relatively new thrust area—rural sanitation. The effort in this would be to begin with finding an answer to a fundamental question that has dogged India's policymakers: What is the reason for the poor state of rural sanitation in India?

THE PROGRAMME INITIATIVES

Equitable access to clean water and sanitation for all
To ensure this objective, the programme initiative focuses on alternative paradigms of water supply and sanitation, such as rainwater harvesting (RWH), decentralised water supply systems and urban sanitation. The effort is to develop strategies for building technical capacity to implement projects on these alternative paradigms.

Alternative wastewater management technologies for pollution control
Designed to find ways to combat the problem of pollution and resultant health burden on the poor, this initiative acknowledges the interlinkages between water and sanitation strategies. It focuses on research and evidence-based advocacy on decentralised wastewater management technologies to make them affordable and sustainable.

Policy guidelines for moving towards sustainable rural sanitation
This will involve researching and reporting on, and documentation of, best practices on rural sanitation, so that water and waste management strategies work for livelihood and health.

↘ 2015-16: THE YEAR IN REVIEW

BUILDING CAPACITY

In India — **17 training programmes, over 400 trainees.** CSE's water-wastewater programme builds capacities of public institutions, city authorities and practitioners to address challenges in rural and urban water supply. As a Centre of Excellence of the Union ministry of urban development, these trainings have helped build capacities of 443 (17 trainings) participants on wat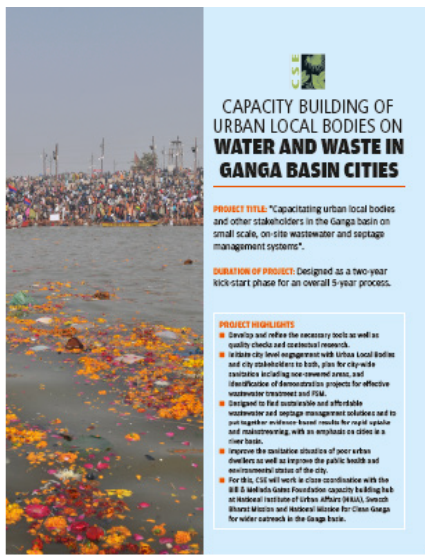er-sensitive design and planning (RWH and urban lake management) and decentralised wastewater treatment (septage management, city sanitation planning and creating city-specific faecal flow diagrams, or SFDs).

The programme's capacity building activities will be significantly scaled up with the empanelment of CSE by the ministry's flagship AMRUT programme on urban renewal (2015-2019). Under it, CSE will be training urban local bodies and elected city representatives from Delhi, Jharkhand, Andhra Pradesh and Goa on sustainable water and wastewater management.

Expanding reach. In Africa, CSE trainings have focused on designing RWH and decentralised wastewater treatment (DWWT) systems in Rwanda; DWWTs and local wastewater reuse in Ghana; and sustainable water management in Kenya. CSE has also provided implementation support to the Government of Rwanda for preparing its national RWH strategy. As part of the Global Faecal Sludge Management (FSM) e-Learning Alliance, CSE has anchored an e-course on FSM, attracting an enrollment of 40 participants from India, South Asia and Africa.

CSE is taking its expertise in rainwater harvesting to the larger community of the global South

URBAN WATER AND WASTEWATER MANAGEMENT

Septage planning for cities of the Ganga basin. A key area of intervention has been on septage management in cities, including on faecal sludge management to deal with the daunting challenge of on-site sanitation. As a part of this effort, the programme has focused on the rapidly urbanising Ganga River Basin, which accounts for close to 40 per cent of India's population, and where about 40 per cent of the towns continue to be dependent on on-site sanitation. CSE has worked closely with municipal authorities and elected representatives across 12 cities on city-wide septage planning and preparation of city sanitation plans.

Preparing 'shit flow diagrams' (SFDs) for 11 Indian cities. As the lead Indian partner of the GIZ-led global consortia on

INDIA'S FIRST FAECAL SLUDGE MANAGEMENT (FSM) LAB

CSE is setting up a state-of-art, independent resource and referral environmental monitoring laboratory with the capability to test for a range of biological and chemical contaminants in water and wastewater. The Lab will be capable of developing testing protocols, input-output analysis and method validation to testing wastewater and faecal sludge. As the first of its kind in India, the Lab will validate various water and wastewater technologies and practices, suitable for the global South.

As part of its mandate under the 'Ganga Monitoring Plan', the Lab will regularly monitor key pollution parameters from targeted sites in the Ganga Basin, including testing effluent quality of treated wastewater from industries, institutions, apartments and municipal wastewater treatment plants and some selected river sites. The Lab will help train a wide range of stakeholders—urban local bodies, jal boards, water and wastewater utilities, PHED engineers, regulatory agencies and city development authorities, among others

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SFD Tiruchirappalli: A shit flow diagram (SFD) is a tool to readily understand and communicate how excreta physically flows through a city or town. An accompanying report describes the service delivery context of the place.
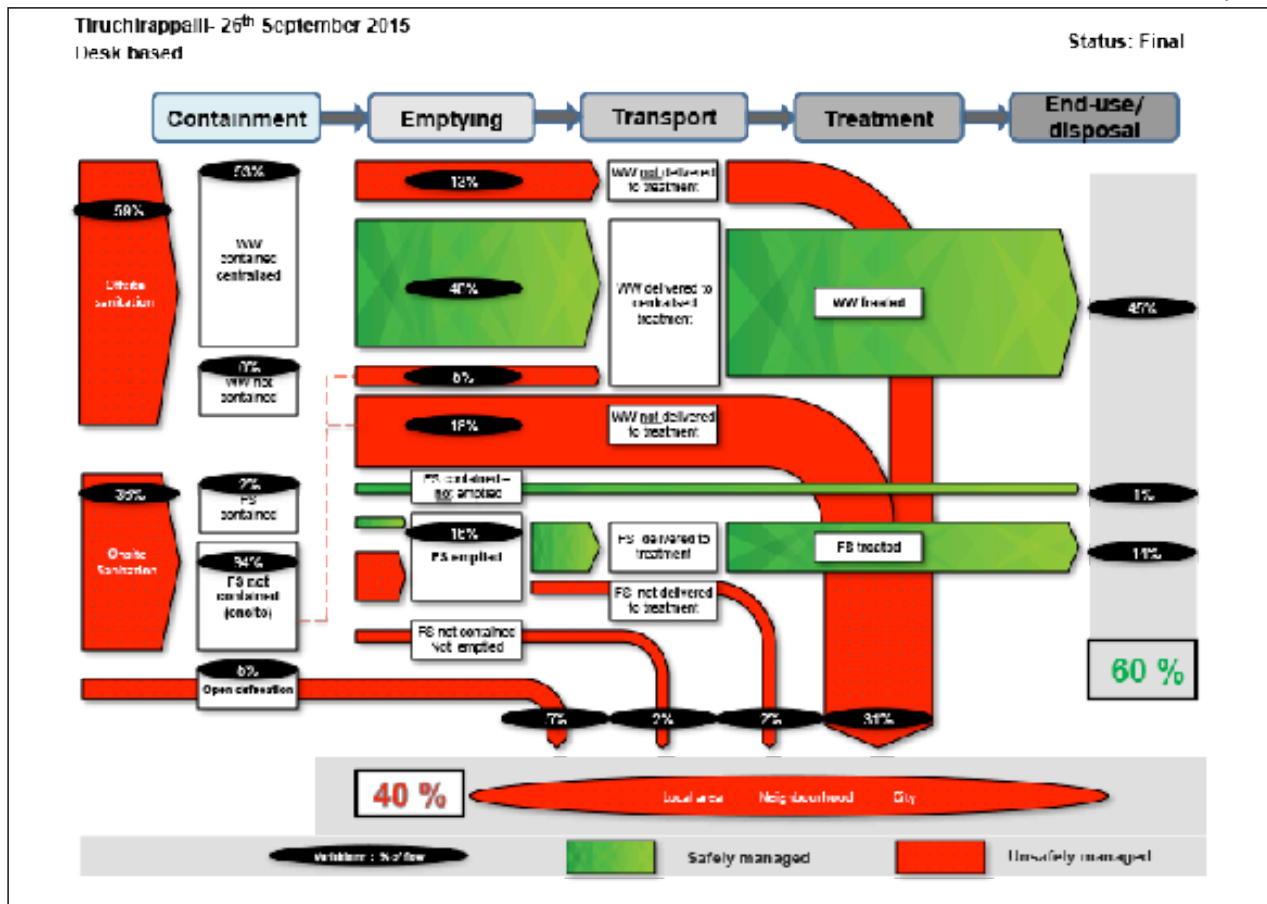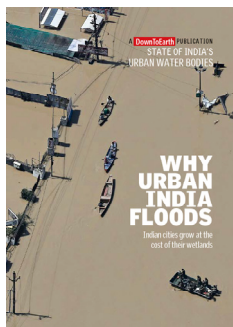
WHY URBAN INDIA FLOODS?

Released in 2016, this is a first of its kind e-book analysing how faulty urban planning in different urban centres of India is leading to regular floods. The book has compiled cases of urban flood events from 10 states of India which have faced repeated floods in the last decade. An analysis of these cases has shown that wetlands are rarely recorded under municipal land laws; therefore, nobody knows about them. Planners see only land, not water, and builders take over. The book gives guidelines for strong legislations to protect these sponges of our cities.

The book was released in Puducherry in association with the non-profit PondyCAN, at a workshop organised by 'All for WATER for all'.

AAETI: A WATER-POSITIVE AND ZERO-WASTE FACILITY

The Anil Agarwal Environment Training Institute, which is scheduled to become operational soon in Nimli, near Alwar (in Rajasthan—about three hours' drive from Delhi), is being designed as a water-positive and zero-waste facility. This new training facility, spread over 11 acres in the Aravali ranges, will be a learning, innovation and demonstration centre on resource efficiency. The entire campus is designed to capture rainwater and use it to recharge groundwater or store it in tanks. The buildings are fitted with water-efficient fixtures, and the campus includes three decentralised wastewater treatment technologies—soil biotechnology,improved septic tanks and decentralised wastewater treatment using aerobic and anaerobic processes to promote on-site treatment.

creating innovative SFDs to map excreta 'flows' across 50 global cities to aid credible sanitation mapping, planning and implementation in them, CSE is preparing data-driven SFDs for 11 cities in India. Of these, four SFDs have already been created. In the next phase of the project, the programme will upscale its work on SFDs in South Asia (Bangladesh) and Africa (Ghana). In the coming year, CSE will guide cities to incorporate the SFD tool in their sanitation strategies, as part of city sanitation plans.

Model projects. Water and sanitation solutions will require guided implementation. In order to catalyse public and policy interest on RWH, decentralised wastewater management and septage management, CSE has led several model / demonstration projects to showcase best practices at the residential, neighborhood and institutional scale in several cities of India and South Asia. In 2015-16, CSE constructed or supervised the implementation of some high-visibility and high-impact model projects, including a 20-KLD decentralised wastewater treatment system at the headquarters of Delhi's water utility, Jal Board. Work has also commenced on a model system in the headquarters of NITI Aayog, the Government of India's premier policy guidance think tank.

GLOBAL PARTNERSHIPS

In 2015-16, CSE forged partnerships with organisations and agencies in Kenya, Rwanda, South Africa, Ghana, Egypt, Thailand, Sri Lanka, Nepal and Bangladesh; alliances also came up with institutions and universities in the UK and the US. The programme is today plugged into various national and international networks on water and sanitation, including the India Sanitation Coalition; a GIZ-led consortia on that creates innovative tools to help cities plan and implement sanitation projects; and the worldwide network of technical and research institutions supported by the Bill & Melinda Gates Foundation. A partnership between CSE and Water Research Commission, South Africa helps mainstream sustainable urban water management with special focus on water-sensitive design and planning. These networks allow and encourage exchanges of information, technical know-how a well as offer learning opportunities.

SUSTAINABLE INDUSTRIALISATION

To improve corporate governance, help industry internalise resource efficiency and point it to the path of low carbon development; also, to 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 industry struggling to deal with newer pollutants, to the high costs of pollution control and the challenge of mitigating emissions for low-carbon growth.

The programme seeks 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. The programme is geared to help industry become more resource efficient, socially acceptable and environmentally responsible.

↘ 2015-16: THE YEAR IN REVIEW

RESOURCE EFFICIENCY

The programme theme is designed to help reduce the carbon-intensity of the industrial sector and improve resource efficiency in India and in select emerging economies in Africa and Asia. It rides on the opportunity presented by delayed economic growth that can pave the way to cleaner pathways with

THE PROGRAMME INITIATIVES

- Resource efficiency in industry
- Waste management
- Environmental assessments and compliance assurance
- Forestry for livelihoods
- Industrial accountability
- Community support

less polluting and more resource-efficient technologies.

A cornerstone of the programme is the Green Ratings Project (GRP), a national-level rating of highly polluting and resource intensive sectors of the economy. GRP follows the life-cycle assessment approach and makes its ratings public, serving as an alternative model of civil society governance on pollution control and resource efficiency.

GRP is today focused on coal-based thermal power sector in India and in select emerging economies in Asia and Africa, given that fact that coal will continue to dominate the energy mix in the South to meet the energy needs of the poor. Resource efficiency remains a chief concern of this sector, where it finds resonance with the energy security debate at the national level and with 'clean coal' and debates around the climate-

energy nexus at the global level.

Results

- **International conference on 'Future of Coal':** Held in New Delhi, the event saw the participation of more than 300 representatives drawn from key government agencies, research institutions, industry bodies and international think tanks from India, China, Indonesia, Germany, South Africa, and the UK. The event, the first of its kind in India, discussed technological, resource and environmental challenges of coal-based thermal power plants to transition to cleaner technologies especially in emerging economies.

- **Research synergies in China, Indonesia and South Africa on thermal power plants:** Exploratory research helped map national actions on tightening standards in the face of massive expansion plans, and offered a platform to explore the new generation of technologies, especially in China.

- **Continuous Emissions Monitoring Systems:** Exploratory research to push for a new generation of industrial regulation to support strict standards with online and continuous monitoring

ENVIRONMENTAL ASSESSMENTS AND COMPLIANCE ASSURANCE

The focus of this programme theme is to build capacities of regulators and catalyse institutional reform to strengthen regulatory practices on environmental governance, with focus on environmental assessments (EIA and SIA), monitoring, compliance assurance & enforcement.

Its legacy of engagement with pollution control agencies in south Asia and Africa and its extensive exposure to global best practices on environmental governance systems offer a valuable template for emerging economies to strengthen policy and implementation regimes on pollution control and regulation. As a 'Centre of Excellence' on environmental governance, the programme promotes South-South cooperation among the community of environment and pollution regulators and acts as a learning and innovation centre engaged in sharing of knowledge and best practices in environmental regulation.

Results

■ CSE's focus on promoting South-South cooperation on environmental governance hinged on building capacities of environmental regulatory agencies and public institutions on environmental assessment, monitoring, compliance and enforcement across a host of industry and mining sectors in Africa. More than 700 participants, including 250 regulators drawn from 15 countries were engaged in 2015-16. There is much interest in training and providing sector-specific support, and in the coming year, the programme will address demand expressed by eight countries in Africa and south Asia to help build capacities of key regulatory agencies.

■ Following the previous year's scoping research on environmental assessment and compliance assurance procedures, especially in the industrial and mining sectors, the programme helped strengthen capacities of lead regulatory agencies in Tanzania and Ethiopia on EIA, mining and on compliance and enforcement. In Ethiopia, the programme created policy frameworks on compliance and enforcement as well as on EIA; while in Tanzania, capacity building was also supplemented by creating policy frameworks on the mining sector and on robust compliance and enforcement mechanisms.

■ At the Pan-Africa level, the scoping workshop in Nairobi on compliance and enforcement drew the participation of government and environmental

LANDMARK EMISSIONS STANDARDS FOR THE COAL-BASED THERMAL POWER SECTOR IN INDIA

CSE's research on the poor environmental record and efficiency of the coal-based thermal power sector in India led to landmark decision in December 2015 by the ministry of environment, forests and climate change, Government of India, in tightening standards for emissions for the thermal power sector. The standards, revised after over two decades, represent among the world's best pollution and resource efficiency benchmarks, will have major local, national and global impacts in reducing carbon dioxide emissions and local pollution. The new standards include reduced particulate matter by 25 per cent, sulphur dioxide by 90 per cent, nitrogen oxide by 70 per cent and mercury by 75 per cent, as compared with existing plants.
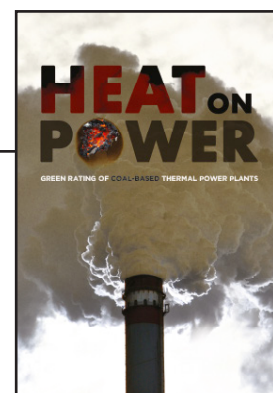
In 2015-16, the revision in standards for Indian coal-based thermal power plants will be used to build dialogue with other coal-dependent countries, in particular Indonesia and China, while the focus in India will be to work on protocols on how to operationalize the advanced pollution monitoring and enforcement of the sector, for instance on online monitoring and reporting of key data parameters.

regulatory agencies from nine countries; the programme will address demand for strengthening compliance and enforcement mechanisms by designing sector-specific Standard Operating Procedures (SOPs) in Nigeria, Ghana, Namibia and Zanzibar in the coming year.

INDUSTRIAL ACCOUNTABILITY AND COMMUNITY SUPPORT

Growth with poor regulatory practices and weak accountability regimes is alienating the poor from resources, often leading to conflicts —over land and mining, sharing of resources, over pollution, water, contaminated industrial sites – conflicts over development. The programme addresses the industry-community interface, with particular focus on making the mining sector environmentally and socially responsible.

A key intervention in 2015-16 was the programme's intervention in helping frame a

JHARKHAND

District Mineral Foundation

The right of people to benefit from the mineral-rich lands they live on

A CONCLAVE ON WASTE MANAGEMENT

A key highlight the year was the South-South Conclave on Waste Management jointly organised with the Central Environmental Authority (CEA) of Sri Lanka. The conclave drew the participation of 11 African countries and Nepal, Sri Lanka and India; sowed the seeds for a Southern network on waste management; and catalyzed cross-country learning on the challenges and issues concerning waste management in Africa and south Asia. The Conclave recognised the need to reinvent waste management and to acknowledge the role of the informal sector that provides livelihoods options to millions in the informal economies of the global South. Lead agencies from Malawi, Swaziland, Uganda, Zanzibar (Tanzania) and Namibia have called for joint efforts on solid waste management in their respective countries.

model regulatory framework, based on the District Mineral Foundation (Trust) Rules, 2015. The Mines and Minerals (Development and Regulation) Amendment Act, 2015 is a landmark legislation that has mandated the sharing of mineral wealth with communities, and established District Mineral Foundations (DMFs) in all mining districts in the country to distribute mining benefits with mining affected communities. DMFs have huge potential for improving the lives and livelihoods of some of the poorest communities of India.

Results

■ **CSE's model regulatory framework for District Mineral Foundation (Trust) Rules, 2015 finds takers among the state governments:** Government of Jharkhand invites CSE to advise on and develop the state's DMF rules; many of CSE's recommendations have been mainstreamed into the state's DMF rules and policy. Specific requests also received from Telangana, Andhra Pradesh, Karnataka and Rajasthan.

■ **Framework guides the Pradhan Mantri Khanij Kshetra Kalyan Yojana:** CSE's framework helped guide the provisions of the landmark scheme rolled out by the central government in September 2015 to implement development/welfare programmes for mining-affected communities, by using funds generated by DMFs.

WASTE MANAGEMENT

This initiative is geared to address the management, available technologies and approaches as well as regulation required to deal with the massive generation of waste that has followed the growing affluence and resource-intensive consumption in India and across many of the cities in the developing world. It explores institutional structures of waste management, treatment and disposal; helps build build regulatory, technical and waste management capacities of urban local bodies, and highlights the role of the informal sector.

Interventions include strengthening regulatory practices, exposure to best

practices on waste handling and disposal (municipal, hazardous, e-waste and biomedical waste), creating handy toolkits to simplify waste handling and management, including creating standard operating procedures (SOPs) on effective compliance, monitoring and enforcement for waste handling, processing and disposal.

Results

■ **Study on Moradabad's informal e-waste recyclers:** On a request from a Parliamentary body, CSE studied this sector, which led to the area being declared 'critically polluted', with widespread misuse of acid baths and other hazardous practices. CSE's research was corroborated by a team from the Central Pollution Control Board (CPCB).

■ **Member of committee on e-waste:** CSE was invited to be a member of a committee constituted by India's ministry of environment to deliberate on the draft e-waste rules.

■ **Capacity building of officials of Central Environment Authority of Sri Lanka:** Trainings on management of e-waste and municipal hazardous waste, and documentation of the country's innovative recycling of CFL, South Asia's only CFL recycling facility.

FUMBLING WITH FORESTS
Why we should not handover forests to the private sector

FORESTRY FOR LIVELIHOODS

The programme seeks to mainstream community-led conservation into official forest management and governance, and explore opportunities to make optimum use of forest financial instruments such as the 'compensatory afforestation' mechanisms. Research is also geared to tap into global resources for channelizing benefit to forests in India, especially the REDD+ scheme under the UNFCCC process. It rides on intervention opportunities presented by policy, legislative and judicial initiatives that have the potential to change the forests governance landscape of India remarkably, directly addressing biodiversity concerns and impacting the livelihoods options of close to 275 million poor forest-dependent people.

Results

■ **Policy watchdog role with respect to forest regulations:** The programme engaged with the Compensatory Afforestation Fund Bill, 2015 (CAMPA Bill). This has emerged as a key focus area, as the government is set to unlock the huge coffers of the CAMPA fund—Rs 42,000 crore collected over the years as compensation for the diversion of forest land for industrial projects, with Rs 6000 cr. accumulating each year – which, if deployed prudently, is potentially transformative for forest-dependent communities and will increase the ability of forest-rich states to work for poverty alleviation, conservation, as well as climate change mitigation/adaptation.

■ **New publication—Fumbling with forests:** The publication argues for farm forestry rather than the proposed privatisation of degraded forests. The privatisation move has been stalled for now.
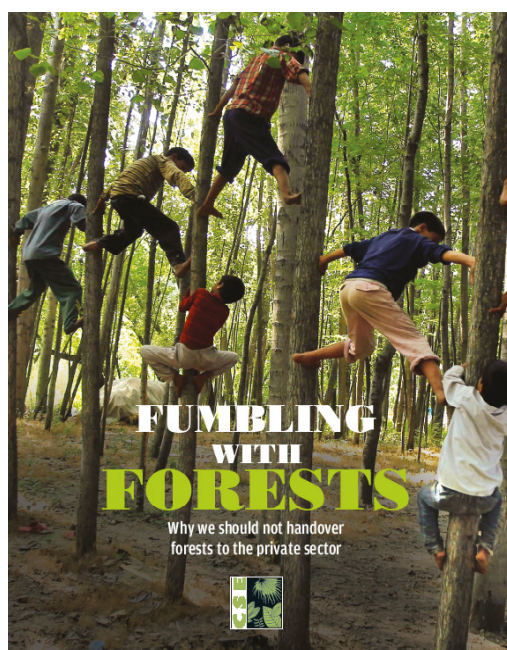
CLIMATE CHANGE

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

CSE has advocated an ambitious and equitable global deal in which the developed world takes the lead in cutting its emissions and supports developing countries to move towards a low carbon growth path. These include pushing for cuts in emissions in coal-based power plants for resource efficiency goals in the industrial sector; to efforts to make buildings more energy-efficient to prevent the lock-in of carbon and efforts to promote energy access for the poor through clean energy sources, and pushing air quality measures to meet local health and mobility goals and climate co-benefit in terms of reduced CO_2 and black carbon emissions for climate mitigation. As a global climate mitigation effort, CSE engages with global processes to phase out HFCs. But mitigation is not going to be sufficient; there is need to mainstream climate adaptation into developmental plans and policies: agriculture, water, forests, fisheries, urban infrastructure, etc. Prudent natural resource management in the country is a key institutional tool to combat climate change.

CSE has consistently tracked climate change negotiations and co-hosted side events at CoPs with the government of India; reported on climate change impacts on cities, economy and rural areas; built knowledge and interest of journalists from developing countries on global climate science and politics; engaged the youth in south Asia on climate politics, policies, and practices; established a comprehensive climate change information repository of research and policy documents, best practice documentation, news & features; participated in leading global networks to vociferously demand the equity principle in global climate politics.

THE PROGRAMME INITIATIVES

Adapting to climate impacts and loss and damage

Good adaptation to climate change is all about good development, delivered urgently, and at scale. This initiative works with the premise that to be effective, adaptation measures require proper implementation and synergy with delivery of existing government development programmes to build climate resilience at the grassroots. This feeds into global negotiations on finance and technology support for developing countries to adapt to climate change — in particular, to design a regime on loss and damage based on liability for apportioning costs of climate change.

Research and advocacy for a climate deal based on equity

Activities are focused on global climate change negotiations and their results. The research offers a critique of the existing global framework and the 'ambition gap' in mitigation plans of rich countries, and focuses on how to operationalise equity.

Global campaign on phase-down of hydrofluorocarbons (HFCs)

This initiative will focus on getting a global deal on phasing out of HFCs in a manner that is equitable and ambitious and takes into account the perspectives of the global South. CSE's research and campaign focus on enabling the global South to leapfrog directly to climate-friendly alternatives to HFCs, and not go through the chemical route promoted by vested corporate interests.

Build knowledge and capacity of stakeholders for ambitious and equitable climate deal and climate resilience

As a crosscutting effort between various teams at CSE, this initiative targets a wide range of actors—from scientists and journalists to negotiators and diplomats.

↘ 2015-16: THE YEAR IN REVIEW

ADAPTATION

National consultation on crop loss estimation, relief and compensation due to variable climate events: Following the jettisoning of 'liability' and 'compensation' in the Paris Agreement, the programme component turned its focus on 'loss and damage' due to extreme weather events in India and south Asia, with emphasis on risk management in the agricultural sector, including crop loss estimation and universal and subsidised coverage of agricultural insurance. This work will now be up-scaled to developing countries of Asia and Africa. CSE will work on a global mechanism to support universal crop and livestock insurance in developing countries as part of the loss and damage mechanism under the UNFCCC.

National consultation on crop loss estimation, relief and compensation due to variable climate events: As the focus of dealing with climate change shifts on adaptation and mitigation, insuring agriculture and livestock is going to gain prominence

Climate change and food security policy mapping: Research on best practices in adaptation in the south Asian region, was followed by training and sensitization of grassroots-level NGOs from Bangladesh, Nepal and Myanmar on climate-proofing agriculture for livelihoods security.

Documentation, reportage and information dissemination. The team produced factsheets and articles; created a knowledge-sharing platform called the South Asia Vulnerability and Adaptation Forum; documented climate change adaptation, food, nutrition and livelihoods security and poverty in Nepal and Bangladesh; and participated in global processes to present Southern priorities.

EQUITY IN GLOBAL CLIMATE DEAL

Strong presence at COP21 in Paris: CSE organised side events, press briefings and presentations, articulating Southern perspectives on issues related to renewable energy and energy access, India's dependence on coal, equity and global

carbon budget. CSE's participation in a side event, along with Friends of the Earth International and What Next Forum, jointly endorsed the GREEAT programme (see section on Renewable Energy, below) and underscored the importance of affordability (decentralised distributed and renewable systems) in the future energy system. CSE underscored the hypocrisy of developed countries in branding India as the villain in climate negotiations for its dependence on coal, despite efforts the country was making on instituting strict environmental standards for coal-based power, carbon tax and ambitious renewable energy targets.

Proposal on Global Carbon Budget based on equity: At a side event at COP21, conducted with the Indian government's ministry of environment, forests and climate change, CSE presented its proposal on the global carbon budget, which addresses equity as well as climate justice by linking human development index with the carbon space left for the developing world. Calling for a fair distribution of the world's remaining carbon budget, the proposal pushes for an operational mechanism to allocate the carbon budget under the Paris Agreement that adopts the principles of historical responsibility, socio-economic capability, potential to mitigate, and vulnerability to climate impacts.
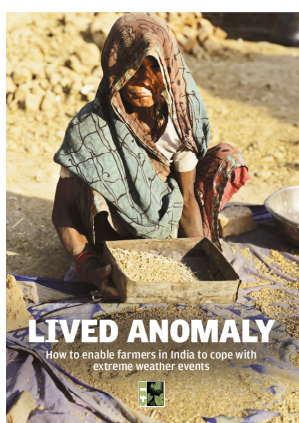
LIVED ANOMALY How to enable farmers in India to cope with extreme weather events

The report is an assessment, largely told in the words of farmers themselves, of the impact of the unseasonal rainfall and hailstorms in February-April 2015 on agriculture in India, the third consecutive year when the rabi growing season was thrown out of kilter across 15 states in India by deviant weather that damaged 18.23 million ha of crops. Lived anomaly offers a peek into the future— what to expect in a warming climate.

The report underscores how climate impacts are aggravating the agrarian

crisis, exacerbated by a chaotic and politicized 'relief' scenario, the poor health of agricultural insurance and safety nets for farmers, and the lack of institutional credit that particularly impacts small and marginal farmers that comprise 57.8 per cent of the total estimated rural households in India. It suggests the use of technology for accurate and speedy crop damage assessment and farmer-friendly crop insurance schemes, and institutional reform in the manner in which relief is estimated and delivered.

CAPITAN AMERICA
US climate goals: A reckoning

In a first study of its kind from a Southern think tank, CSE's research dissects the much vaunted US climate policy and finds it nothing but business-as-usual. It is a severe indictment of the US climate action plan—submitted to UNFCCC as 'Intended Nationally Determined Contributions, INDCs—as being 'unambitious' and 'inequitous'.

The study uncovers evidence to show that the world's most powerful economy is doing very little to combat climate change. It finds that the US energy system would remain fossil fuel heavy with 76 per cent of total primary energy coming from fossil fuels in 2030. The contribution of renewable energy would just be 15 per cent by 2030. The country has also done little to change its mobility pattern -- 86 per cent people drive, and trips made on public transport are reducing. Energy efficiency norms for buildings in the US are voluntary and weak, even as Americans are building bigger houses and buying more appliances, negating any gains in efficiency improvements.

Energy and emissions have reduced in the industry sector, but this is because the US has outsourced emissions—60 per cent of the value of goods consumed are imported. The study found no evidence of a policy-driven downward trend in GHG emissions, which are on the upswing again after a dip in 2007-08 caused by recession. The business-as-usual approach shifts the burden of tackling climate change to countries like India, where erratic weather is becoming the new normal, affecting the poorest and the most vulnerable.

THE ISSUE OF HFCS

As part of a climate-sensitive growth strategy, CSE engages with global processes to find cost-effective and climate-friendly solutions for the developing South. This programme component targets the global agreement to the phase down of hydrofluorocarbons (HFCs), a gas used predominantly in the refrigerant industry with much higher global warming potential than carbon dioxide. This phase-down is being negotiated under the Montreal Protocol.

HFC use is very high in developed countries, where it was introduced to replace ozone-depleting substances. The same countries are now under pressure to phase down HFCs. Developing nations, where HFC use is still low, have the opportunity to make the one-time transition (avoiding HFCs) — but only if supported with cleaner technology and fiscal strategies to facilitate this transition. The science, technology and finance questions around this issue will require global and multilateral efforts.

CSE's role
• CSE's efforts have helped build confidence in India to agree to negotiate the HFC phase-down under the Montreal Protocol. At the global stage, the campaign participates actively in international negotiations, where it has contributed to building consensus for a globally acceptable HFC phase-down amendment that is based on the parameters of energy efficiency and the privileging of natural refrigerants.
• A key result in 2015-16 was at the Open Ended Working Group meeting in Dubai in November 2015, where the campaign successfully pushed for a roadmap for HFC phase-down modelled on CSE's own 'proposal' (the only one submitted by a non-governmental organization), which is based on its analysis of four proposals submitted earlier at a side event organised at the OEWG in Paris in June 2015. The 'Dubai roadmap' articulates the need for an ambitious amendment and outlines the challenges that may be faced during the transition away from HFCs. The solutions to almost all the challenges were agreed upon at the recent OEWG in Vienna. All parties today agree that Montreal Protocol should incentivise improvements in energy efficiency along with HFC phase-down.
• CSE is also working closely with the Bureau of Indian Standards for instituting safety standards for natural refrigerants.
• The programme provides research and knowledge support to developing countries that are parties to the Montreal Protocol – including Intellectual Property Rights, analysis of amendment proposals, energy efficiency and safety standards for natural refrigerants, among others.

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 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 Renewable Energy programme's policy research centers on promoting decentralised renewable energy (distributed, grid-interactive mini-grids) to enable energy access for the poor. Programme research supports the need for robust regulatory and fiscal mechanisms to ensure large-scale adoption and viability. It also plays an important role for policy and regulatory oversight. CSE's approach brings together the energy access agenda often associated with conventional energy, with the renewable energy agenda that has climate benefits, to help catalyse a transition to clean energy.

Despite being the sixth largest producer of electricity in the world, India has managed to electrify only 44 per cent of its rural households. However, there are policy opportunities to upscale the programme in India and in energy starved countries of the developing world. India's Prime Minister has announced the target of 175 GW of electricity through renewable energy by 2022, as part of India's INDCs. During COP21, the Prime Minister also pledged India's support for the 'international solar alliance'.

THE PROGRAMME INITIATIVES

Energy access through renewable energy: With its focus on decentralised, distributed and grid-interactive mini-grids, the programme will use lessons from across the world to push for a national policy and a framework for the global South.

Global feed-in tariff: The initiative will contribute to a global feed-in tariff model to make clean, decentralised energy more affordable for the poor in the target countries and enable a rapid uptake of clean energy across the developing world. The effort will be to build a strong coalition to develop a common framework on global feed-in tariff regime and advocate for a global deal.

Energy transition to renewable energy: Influence national-level policies and regulatory practices to mainstream wind and solar rooftop technologies for an affordable and sustainable transition to renewable energy. Research and advocacy address current barriers for viable wind and solar plants – from off-grid to grid-interactive rooftop solar plants with net metering options based on viable feed-in tariffs.

↘ 2015-16: THE YEAR IN REVIEW

India's first mini-grid policy for rural electrification using renewable energy: CSE worked with the ministry of new and renewable energy to help shape the policy.
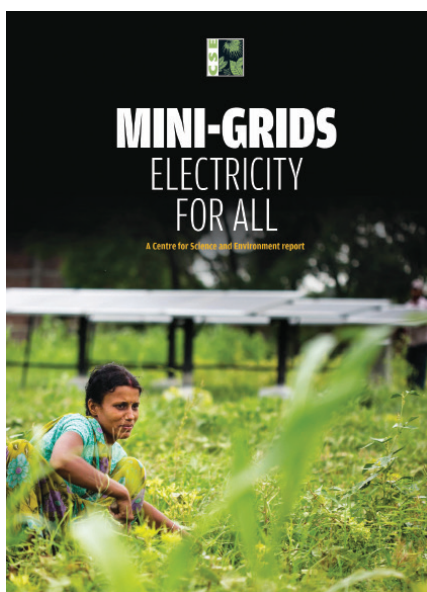

Draft Renewable Energy Act. A member of the executive committee; CSE's recommendations are part of the draft legislation. The draft Renewable Energy Act, announced in July 2015, incorporates most of CSE's recommendations.

Participation in global forums to push the Global Renewable Energy and Energy Access Transformation (GREEAT) proposal: CSE's proposal, GREEAT is now widely recognised as a transformative programme. Research and advocacy and active participation in global forums have firmly plugged CSE's proposal in global discussions – from side events organised jointly with the ministry of new and renewable energy at COP21 in Paris, to convening joint press conference with Friends of the Earth International (FoEi) and What Next Forum at COP21, to the side event at the Bonn climate conference in June 2015 and the Pan-Africa meeting convened by CSE in Nairobi.
Contributions to India's INDCs: India's Intended Nationally Determined Contributions (INDCs) submitted to the UNFCCC speak of attaining decarbonisation of the electricity supply with the help of technology transfer and low cost international climate finance—something that the GREEAT document has advocated (see more in Box: The GREEAT proposal).

Support for Africa Renewable Energy Initiative (AREI): CSE also worked closely with the African lead negotiator to support AREI -- a proposal on energy access based on renewable energy for African countries

PROGRAMME FOR
Global Renewable Energy and Energy Access Transformation (GREEAT)

what next?
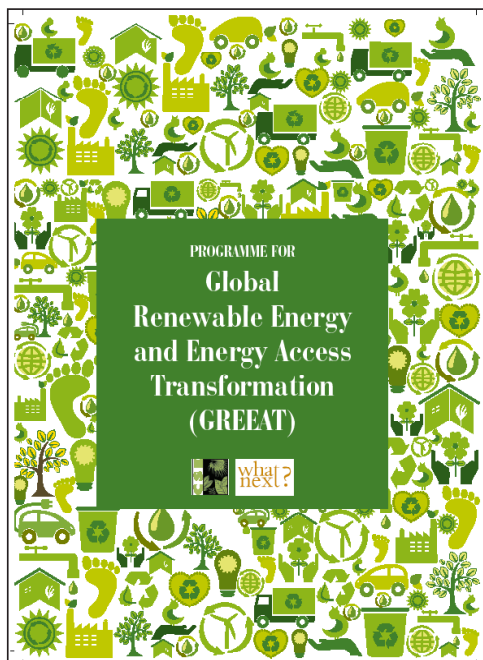
THE GREEAT PROPOSAL

The global South is facing chronic energy poverty—two-thirds of the world's nearly 1.3 billion energy poor are in 10 countries, including India. Growing economies of the global South demand more power—an opportunity to design a new global energy future.

Widely recognised as a key solution to the climate conundrum, renewable energy is, as yet, too expensive for a rapid uptake by these countries. In this context, CSE's efforts in India to mainstream renewable energy through mini-grids to give the poor access to energy from clean energy sources can be scaled to the global South.

A globally funded feed-in-tariff regime is a promising mechanism through which poor countries can mainstream and subsidise this clean energy source, and make energy more affordable. CSE's efforts center on building a strong coalition to develop a common framework on this regime and to push for a 'global deal' on renewable energy.

At the heart of CSE's proposal is the Global Renewable Energy and Energy Access Transformation (GREEAT) proposal. GREEAT is geared to help design a distributed and decentralised energy model with broad-based community participation, which integrates energy efforts with planning and local development. Given the high costs of transitioning to such a model, the proposal calls for international climate finance support—such as the Clean Energy Fund. It also calls for funding for capacity building and development of domestic manufacturing capacity.

Lending expertise and learning from the global experience. Brainstorming session in Sri Lanka on the country's ambitious '100 per cent renewable energy' plan.

that is based on GREEAT -- at the Bonn climate change conference in June 2015. CSE also engaged with Indian negotiators to support the African proposal. Many countries have pledged financial support for AREI.

Engagement with stakeholders in Sri Lanka and Tanzania. A meeting in Sri Lanka brainstormed on the country's ambitious '100 per cent renewable energy' plan. The government of Tanzania has requested CSE to help put together a draft policy for scaling up renewable energy electricity access.

FOOD SAFETY AND TOXINS

To influence the food business to align with societal objectives of nutrition, livelihood and safety

To reach its objective, the programme strategy of Food Safety and Toxins adopts a range of measures and approaches, from laboratory tests on food, toxins and nutrition to research, surveys and policy analyses, advocacy and campaign targeted at schools, health professionals, food policy makers, health regulatory and food certification agencies and the general public. It addresses new challenges on environment and health and responds to growing concerns in the themes highlighted in its programme initiatives.

↘ 2015-16: THE YEAR IN REVIEW

ADVOCACY AGAINST ANTIBIOTIC USE IN FOOD ANIMALS AND RISK OF ANTIBIOTIC RESISTANCE IN HUMANS

Across the globe, antibiotic resistance is a growing public health concern. In 2014, CSE's lab study had found residues of antibiotics in chicken, indicating the rampant use of multiple antibiotics in the poultry industry. In 2015-16, the CSE study was used to advocate for stringent guidelines and standards, leading to the following government action:
■ The Department of Animal Husbandry Dairying & Fisheries (DADF), Union ministry of agriculture issued advisory to states to disallow antibiotic growth promoters, tracing antibiotics and ensuring veterinary supervision

■ The Food Safety Standards Authority of India (FSSAI) proposed draft standards (CSE is providing its inputs in this process) for antibiotic residues in chicken, eggs, milk and proposes to amend national-level regulation on contaminants and toxins

THE PROGRAMME INITIATIVES

Antibiotics in food animals and risk of antibiotic resistance in humans: This programme theme uses data from laboratory-based tests and research to establish evidence on the widespread misuse of antibiotics in food animals to advocate and influence for a national policy to contain the widespread abuse of antibiotics.

Junk foods and non-communicable diseases (NCDs): Comprises research and an advocacy campaign against 'junk foods', characterised by highly processed energy-dense, calorie-empty foods with high salt, sugar, and fat.

Campaign for safe pesticide use policy: This theme pushes for reform in the regulation of pesticides for reduced public health risks. It addresses a key challenge of food, livelihoods and nutrition—the need for growth and productivity that also secures health and nutrition security, and has minimal impact on small producers.

'Good Food' Campaign: Its focus is on food safety connected to livelihoods of food producers and nutrition for all.

which also includes antibiotic standards on honey and fish. It has also geared up to create a residue monitoring framework, and has started training regulators on setting maximum residue levels (MRLs).

■ The Bureau of Indian Standards (BIS) is working to amend the poultry feed standards to check for antibiotic growth promoter use through feed.

■ The programme is also engaged with the committee formed to finalise the draft amendments to the Drugs and Cosmetics Act.

■ CSE serves as member of a committee on Livestock Feeds, Equipment and Systems (BIS FAD 5) of the BIS, set up to ban antibiotics in animal feed and help set stringent standards for the sector.

■ Questions in both houses of Parliament

■ CSE is a member of Antibiotic Resistance Coalition (ARC) and is a key contributor representing views from the global South on antimicrobial resistance from animals.

■ CSE has contributed to the World Health Organization's (WHO) national action plan for India to contain antimicrobial resistance, which feeds into a global action plan. CSE served as lead discussant in WHO-NGO

CSE continues its commitment to ensuring that common food items are healthy and free from deadly chemicals and anitibiotics: CSE serves as member of a committee on Livestock Feeds, Equipment and Systems of the BIS, set up to ban antibiotics in animal feed and help set stringent standards for the sector.

dialogues on possible technical and financial barriers faced by developing countries in achieving measurable milestones in addressing antibiotic microbial resistance.

CAMPAIGN AGAINST JUNK FOODS AND NON-COMMUNICABLE DISEASES (NCDS):

In 2015-16, advocacy on junk food brought much media attention on CSE's work and on the broader issue of food safety, particularly

during the episode when the popular instant noodles brand, Maggi, was found to have traces of lead above the prescribed standards. The highlights were:

■ CSE's initiative on junk foods built upon the previous year's efforts, particularly on trans-fats. Following CSE's study on trans-fats (2012) and continued advocacy for stringent standards, FSSAI issued standards for 5 per cent trans-fats in processed foods.

■ Ministry of women and child development (MWCD) issued guidelines on food and drinks high in fat, salt or sugar (HFSS); these guidelines were in line with CSE's recommendations on junk foods. FSSAI has issued a draft policy aimed to limit consumption of HFSS food among school children.

■ Central Board of Secondary Education (CBSE) issued a circular to schools, which was based on the MWCD guidelines, cautioning them against the availability of junk foods in school canteens. The Directorate of Education, Delhi, has asked schools to consider banning junk foods in schools, and the Government of Odisha also issued a caution to schools in the state.

■ The food authority requested details on CSE's research and studies on energy drinks, on recommendations on food labeling, and on junk foods. Measures taken by the authority, such as the withdrawal of a 'no objection certificate' to several energy drinks, the constitution of an expert committee on salt, sugar and fat, are in line with CSE's campaign.

CAMPAIGN FOR SAFE PESTICIDE USE POLICY

CSE's Pollution Monitoring Laboratory has made a singular contribution to bring issues of food safety and toxins to public knowledge in India, and has catalysed research to drive policy and practice change. Over many decades, CSE lab-based studies on toxins and pesticides in packaged drinking water, carbonated beverages, in the blood of farmers in Punjab, among other tests, have shown that the options are to

find leapfrog solutions.

■ In 2015-16, CSE's comments on FSSAI's revised framework to monitor residues helped set a more robust standards setting and monitoring framework for pesticides in the country.

■ CSE also actively participated in a committee set up by the Bureau of Indian Standards related to pesticide residues in drinks and carbonated beverages (BIS FAD 14).

■ CSE serves as a member on an expert panel on safety and hygiene conditions for packaged drinking water and natural mineral water.

'GOOD FOOD' CAMPAIGN

■ CSE has designed an online survey-based tool 'Know your diet', which seeks to find out what is India eating and also provide an instantaneous report on diet habits. The online tool, in Hindi and English, will be widely available on mobile and computer platforms and will be launched in 2016.

KNOW YOUR DIET

Tell us what you eat
Get your diet report
Join the Good Food movement!

TAKE THE SURVEY
An initiative by Centre for Science and Environment

www.knowyourdiet.org

SUSTAINABLE BUILDINGS AND HABITAT

To develop and facilitate implementation of policies, strategies and practices to gain resource efficiency in the building and construction sector, thereby contributing to 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 study curricula in architecture institutions.

↘ 2015-16: THE YEAR IN REVIEW

Meetings and workshops. Three were organised in the year – a workshop held in Pune on next generation reforms required in energy-efficiency codes for buildings; a meeting for educators on elements of sustainable habitat and how these can be incorporated into the educational courses; and a workshop on low-cost green technologies for urban habitat.
Training programmes. Seven training

THE PROGRAMME INITIATIVES

Persuade national governments to agree to develop and set resource performance targets and benchmarks for the design, operation and maintenance of building stock

Capacitate governments, regulatory agencies, educational institutions and professionals to deliver a resource-efficient built environment

Get governments and regulatory agencies to commit to greening of affordable housing

programmes were conducted for a diverse variety of target groups, including CPWD and NBCC officials and architecture students.

Policy paper to review the integration of green features in courses in architectural colleges and other institutions.

A 'Do it yourself' resource (including a digital manual and a five-part documentary series) to help house-owners improve energy efficiency and thermal comfort of their houses. The documentary series, titled New Vaastu, serves as a manual where architect Ashok B Lall demystifies building science for laypersons and gives tips on how to improve comfort and sustainability of a home cost-effectively.

Inputs provided to national regulations and laws: For the revised Energy Conservation Building Code (ECBC) and the National Building Code.

THE C&D WASTE CAMPAIGN

The programme has been instrumental in catalysing the setting up of the Bureau of Indian Standards (BIS) committee to revise standards for aggregates and concrete, to allow reuse of C&D (construction and demolition) waste in concrete mix. CSE also shared its research-based recommendations for handling and management of C&D waste in Indian cities with the ministry of environment, forest and climate change.

The results have been dramatic: India has got its first ever regulation on C&D waste, mandating recycling and reuse of C&D waste. CSE has also contributed towards development of standards by the BIS for recycled C&D products. Following this, the Delhi government has imposed penalty on the construction industry for violation of dust control measures.

National and international stakeholders have responded well to the campaign. The Indo-Italian Chamber of Commerce has invited CSE to be member of the EBTC supported review and technical committees for India's voluntary Eco Certification schemes for building materials, based on ISO 14020 series of standards. CSE is the only Indian civil society representative to be invited.

ENVIRONMENT 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"

CSE's Green Schools Programme (GSP) 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 societies, and on building education tools for environmental learning.

A cornerstone of the programme is the Green Schools Audit, which provides teachers and students the methodology and tools to audit the resource consumption practices and green infrastructure in schools and assess themselves as environmental managers. The audit helps plug the gaps that are identified, and supports select schools to transition to greener campuses and sustainability behaviour. The programme also helps build capacities of educators by designing educational toolkits and other pedagogical interventions in schools and colleges to teach this highly interdisciplinary subject.
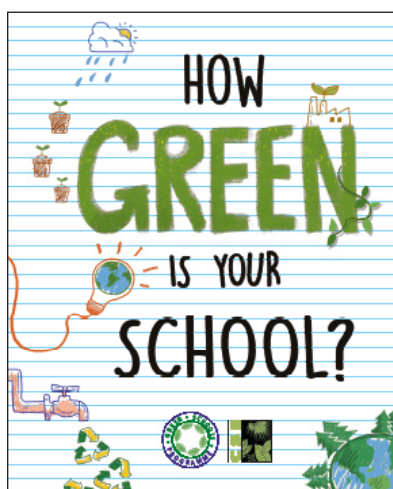
↘ 2015-16: THE YEAR IN REVIEW

GREEN SCHOOLS AUDIT

■ **1,431 schools** registered to conduct the Audit; 534 completed it.

■ **Formal partnerships with Delhi, Goa, Haryana, Himachal Pradesh, Odisha, Punjab, Sikkim and Chandigarh** —schools from 28 states and 2 Union Territories actively participate in the Audit.

■ **Formal partnerships with school boards and private foundations** – Kendriya Vidyalaya (329 schools registered with GSP), Zee Foundation (44 with GSP), Bharti Foundation (23 with GSP), Army Welfare Education Society (20 with GSP). High participation from rural schools (60 per cent schools in the GSP network).

■ **Training of master trainers** – 800 teachers and master trainers inducted into GSP, of which 657 participated in 11 audit-related trainings, while about 150 attended GSP outreach events.

■ **Online analytics platform installed to track project progress.** In this, data-driven indicators help participating schools track environmental values and understand their own impact within and outside school premises. About 1,500 schools have registered to use the platform.

■ **'GSP Gold' Schools programme instituted.** CSE will guide and mentor 10 schools in Delhi for implementing water conservation measures on their campuses and regularly monitor water consumption and conservation parameters. These 'Gold Schools' will be showcased as 'best practice' schools and can offer a valuable template.

THE COLLEGE PROGRAMME

■ **'Agenda for Survival'** – the interdisciplinary summer course for youth. This one-month-long course on sustainable development provides participants the opportunity to evaluate issues that lie at the interface of environment and development —poverty, democracy, equity and justice. In 2015-16, the course attracted 23 students from across the country and from diverse disciplinary fields. Participants produced the course magazine, Re Wild, in which articles drew from their field exposure visit to Chinoni in Uttarakhand.

GREEN SCHOOLS AWARDS - RECOGNISING THE GREENEST SCHOOLS IN INDIA

The results of the year-long extensive audit in schools were announced at a day-long Green Schools Award event in Delhi. The winners included schools from Noida, Delhi, Sikkim, Rajasthan, Rajasthan, Punjab and Himachal Pradesh. More than 500 students from across the country participated in the event. The top prize went to Father Agnel School, Greater Noida; the second to Queen's Valley School, Dwarka (Delhi); and the third to Government Senior Secondary School, Devnagar (Shimla). Awards were also given for criteria such as for states that reported the highest submissions (Punjab with 122 submissions), for recycling (Salwan Public School, Ghaziabad), and for water-efficiency (Shri Ram School, Moulsari, Gurgaon).

> Children, we believe, can be instrumental in deciding what families eat. Gobar Times, a Down To Earth supplement targeted at children and their families, has carried extensive coverage of good food in its editions.

■ **Knowledge Conclave for Environment Educators –** 106 faculty members representing 69 colleges and universities from 27 states came together to discuss ways to make the teaching of Environmental Studies in colleges more effective. Green Educators Network formally launched, which will serve as a platform on environmental teaching, sharing and learning.

THE 'GOOD FOOD' INITIATIVE

■ **Workshop on 'Good Food' in schools**. Ten schools from Delhi-NCR attended the workshop, which helped create menus for school canteens. Schools pledged to include traditional seasonal produce as part of their menus; posters and activity sheets on the topic were distributed. A component of 'good food' was added to the Green Schools Audit which served to audit the foods being served / made available in school canteens.

■ **Farmers markets to promote local foods.** Three Farmers' Markets were organised by the programme targeted at schools and a general audience. The events

incorporated talks by organic farmers, chefs, nutritionists and public health experts on a range of topics, including composting, urban gardening, dairy products, links between organic produce, nutrition and the food cycle, practical tips on growing organic produce in a range of urban spaces (rooftop, verandah, kitchen gardens) etc.

Given the Supreme Court of India's direction to make 'Environmental Studies' a compulsory core subject in college-level curricula, there is an urgent need to build capacities and understanding of college / university faculty on sustainable development and environmental practices, given the fact that faculty to teach this are typically drawn from unrelated disciplines. Similarly, there is urgent need to also build a perspectives of college students on the holistic and interdisciplinary approaches to the environment-development debate.

CROSS-CUTTING INITIATIVES—OUTREACH

To leverage all existing communication mediums, communities and methods for effective outreach on the issues and principles we work on

Two key cross-cutting outreach initiatives of CSE are our continuing conversations with the media across Asia and Africa on issues of environment and development through the Media Resource Centre (MRC), and our portals, websites and newsletters, specifically the India Environment Portal (IEP) of the Environmental Intelligence Services.

THE PROGRAMME INITIATIVES - MRC

- Build capacities of global media on environmental challenges
- Southern media network on environment and climate change
- Information outreach in support of environmental advocacy

↘ **2015-16: THE YEAR IN REVIEW**

BUILDING CAPACITY OF GLOBAL MEDIA

The key activities in this space have been our Global Media Fellowships and the Annual Media Briefing on Climate Change held in New Delhi. These have been open to journalists from Asia and Africa, and have contributed towards demystifying environmental and climate change issues for them.

■ **Global media fellowships programme:** We initiated this programme for African journalists last year, with the focus on water and air. Ten fellowships were awarded to journalists from a diverse range of media (news dailies, online media, radio etc). This year we have also launched the second global fellowships on the subject of REDD+.

ANNUAL CLIMATE MEDIA BRIEFING

This is a cross-cutting effort among the media, climate change and other teams at CSE to build knowledge and capacity of stakeholders for ambitious and equitable climate deal and climate resilience.

As a flagship media event of CSE, the two-day Annual Media Briefing on Climate Change for journalists of the global South (November 2015), was designed to better prepare the media from the global South on the upcoming COP-21 in Paris. The briefing is designed to introduce journalists to a wide range of actors in the climate discourse — scientists, negotiators and diplomats.

The briefing covered a wide gamut of topics, including the state of climate negotiations, extreme weather events and disaster preparedness, and a panel discussion on what to expect in Paris, including the positions of various countries/negotiating blocks. Day 2 focused on specific themes, including steps the global South needs to take to take to ensure energy access through renewable energy sources. Speakers included thought leaders heads of relevant Government of India departments, the Ambassador of France to India, senior functionaries of multilateral agencies as well as academics and researchers from India, Sri Lanka, Indonesia, Kenya and Switzerland.

Of a total of 84 outstation journalists attending the workshop, 24 were drawn from 12 countries, including six from Africa (Ethiopia, Uganda, Botswana, Kenya, South Africa and Cameroon), and six from Asia/south Asian countries (Indonesia, Sri Lanka, Nepal, Bhutan, Afghanistan and Bangladesh). A side event, an exhibition, 'Backs to the Wall', comprising photos by the 10 finalists of CSE's photo-journalist fellowships, highlighted the plight of vulnerable communities dealing with the harsh reality of climate change such as floods, advancing oceans, unyielding land and poor living conditions

■ **Annual media briefing on climate change:** The seventh annual media briefing on climate change saw a congregation of over 100 journalists from Asia and Africa coming together to be briefed on current issues related to the subject. The 8th edition of the briefings will be organised this year in December.

SOUTHERN MEDIA NETWORK ON CLIMATE CHANGE

The effort under this initiative is to build a strong formal/informal network of well-informed and active journalists and communicators with enhanced understanding of climate change science, politics and policies, leading to more accurate and holistic reportage that helps shape public opinion on pro-poor climate perspectives. This is done through media support for CSE's participation in global processes, and through briefings and fellowship programmes.

■ **Fellowships on good food:** Thirteen journalists from India awarded these fellowships to write on the subject.

■ **Media briefings:** The team ensured media participation in a number of regional briefings on a wide range of issues held across the country—Bilaspur (Chhattisgarh), Ranchi (Jharkhand), Pune (Maharashtra), Panaji (Goa), Dehradun (Uttarakhand) etc.

INFORMATION OUTREACH

Through a combination of tools including weekly press releases, media alerts, newsletters, press conferences on key issues, webinars and social media posts, CSE's media team facilitates wider discussions and public debates on environment and development-related issues from pro-poor perspectives. In the year in question, close to 100 press releases have gone out from CSE on a wide variety of subjects; a newsletter reaches out to about five lakh subscribers (including media people), and social media has served to vastly multiply the numbers and the resultant impacts.

ENVIRONMENTAL INTELLIGENCE SERVICES

This service documents news on environment covering Africa and the south Asian region from more than 75 international newspapers, magazines and news websites. It tracks information services such as news bulletins and information digests comprising curated/aggregated information and data on the India Environment Portal. This includes news, research/reports/studies, government policies/regulations, court cases/orders, Parliament updates and industry/environment updates. It also produces and disseminates infographics / interactive stories on environment/development, and conducts trainings on new media / information management / development communication for civil society groups, journalists etc.

As an environment research and data services provider of the global South, it organises, packages, visualises and delivers relevant, cross-tagged, timely and contextual information and data on environment and development research, news, features and audio-visual content to a global audience.

ANIL AGARWAL ENVIRONMENT TRAINING INSTITUTE (AAETI)

To find appropriate and affordable solutions to some of the most pressing problems faced by developing countries

The Anil Agarwal Environment Training Institute – AAETI – is an initiative of Centre for Science and Environment (CSE), one of India's leading independent public research, communication and advocacy institutions. The Institute has been named after the late Anil Agarwal, CSE's founder-director and a leading figure in India's environmental movement.

AAETI is a learning, training and innovation centre that is designed to find appropriate and affordable solutions to some of the most pressing problems faced by developing countries, from climate change, air pollution and urban mobility to water and waste management, sustainable industrialisation, urban growth and environmental degradation.

The Institute's state-of-the-art training programmes bring together expertise, knowledge, cutting-edge research and innovative learning tools from across India to build capacities of a range of audiences – regulators, lawmakers, communicators, professionals, students, civil society members and administrators.

AAETI currently functions from its temporary facilities in New Delhi, where CSE – its parent body – is based. The Institute's new campus, which will become operational this year (2016), is located in Alwar district of Rajasthan, a mere two-three hours' drive away from the national capital.
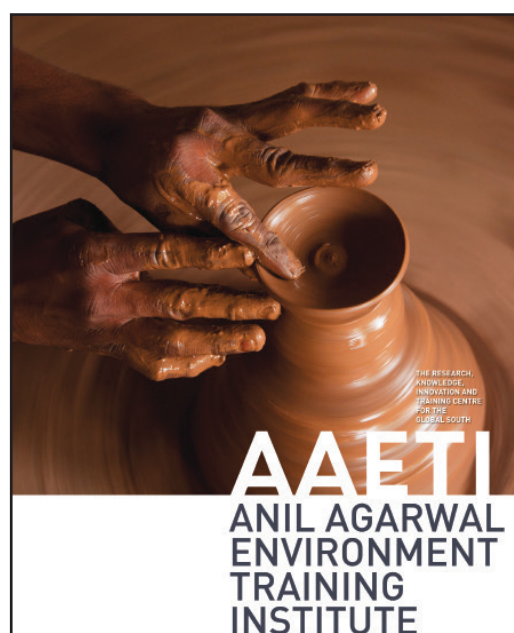
BUILDING ON A STRONG FOUNDATION

AAETI has extensive experience — the Institute has already been operational since 2005 from a temporary campus in Delhi. For more than a decade, it has been building capacity of key change-makers — pollution regulators, policy makers, industrial managers, school and college students, teachers and journalists, among others. Trainings have been conducted on a wide variety of subjects, ranging from a one-month-long induction training for state pollution control board probationers on compliance and enforcement, to a three-day-long course on climate change for Indian Foreign Service (IFS) probationers. A very popular course is a 15-day training programme for environment managers from industries.

AAETI also runs a 10-day course conducted in Stockholm (Sweden) every year in association with the Swedish Environment Protection Agency (Sw-EPA) on best practices of industrial pollution management. The course is targeted at environment regulators and pollution control managers from India.

THE NEW CAMPUS

AAETI's new 'green' campus is coming up on a beautiful 11-acre wooded area in the foothills of the Aravallis in Tijara, Alwar (Rajasthan), just a little over two hours' drive from Delhi. The campus is expected to become functional later this year (2016).

The new campus has been designed to demonstrate that it is possible to build one of the country's 'greenest' campuses without extravagant spending, by using innovative but cost-effective technologies, minimising wastage and optimising the use of available resources.

CORE AREAS OF INTERVENTION

Capacitate and support public institutions, such as regulatory agencies in the frontline of enforcing environmental rules, monitoring, enforcement and compliance. Work closely with urban planners, municipal engineers and urban local bodies to help them tackle the effects of a rapid scale-up of urban infrastructure—water, solid waste, river pollution, sanitation and housing.

Strengthen the abilities of environment managers by working with public and private sector enterprises and industry bodies to influence them on making correct choices and pushing sustainable practices.

Build powerful multipliers in society; work with influential change agents in society such as NGOs and CBOs to build local know-how and to explore viable, cost-effective solutions to help communities tackle pressing challenges.

Create a future-ready cadre of change agents — engage with students, teachers and the youth to promote holistic understanding of sustainable practices and wise environmental decision-making and prepare them to intervene effectively in the decision-making process.

Build effective communication agents to present reason and analysis to influence the public agenda on sustainability, and to integrate the vital concerns that affect the lives and livelihoods of millions into the national debate

THE SIX SCHOOLS

■ **School of environmental governance:** To train environment regulators on pollution management, monitoring and compliance; help industry adopt resource-efficient and pollution prevention technologies and practices

■ **Southern centre on climate change:** To promote low carbon growth strategies, mainstream climate co-benefits, and build resilience of the poor to better cope with climate change

■ **School of sustainable urbanisation:** Designed to help address the growing demands of urbanisation and to address the challenge of building cities for the 21st century that are low carbon, resource- efficient, accessible,

and affordable for all

■ **School of water and waste management:** To push water literacy, establish policy principles and affordable, sustainable and innovative technologies for a less wasteful and water- prudent society

■ **Green community college:** To provide practical, hands-on skills to create a future-ready workforce for green jobs

■ **School of environmental communications:** To capacitate communication professionals to build informed public opinion to influence change

The Institute will conduct its courses on this campus through six Schools of Learning. The faculty which will lead these Schools will comprise of some of the foremost experts in their fields — from India and other countries. AAETI will have adequate capacity to conduct a maximum of three full-fledged training programmes at any given point of time.

AAETI's new campus has been supported by reputed national and international organisations. The Department of Science and Technology, Government of India has provided funds to make AAETI a model project for water and waste management. Other organisations such as HSBC Bank (India) have provided capital support to build the infrastructure.

FACILITIES

■ 3 state-of-the-art training rooms to host 100 trainees at a time

■ A 200-seater conference hall

■ Residential campus with 25 double and 22 single rooms to accommodate about 70 trainees at a time

■ Housing facility for 20 teaching and research staff

■ Housing facility for 18 support staff
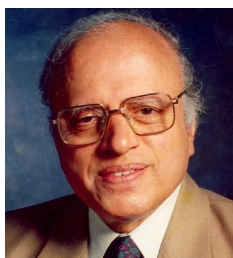
■ A canteen to serve 100 people at a time

■ India's first referral lab on septage management

■ A water interpretation centre

INSTITUTIONAL
DEVELOPMENT

THE CSE
GOVERNING BOARD

↘ THE BOARD

CHAIRPERSON
M S Swaminathan
One of India's foremost agricultural scientists. A pioneering voice in the fields of agriculture and food security. Recipient of Padma Vibhushan, Magsaysay Award and the World Food Prize, among many other national and international recognitions. Has held positions such as director general of the Indian Council of Agricultural Research and the International Rice Research Institute.

MEMBERS

A K Shivakumar
A development economist and academic. Associated with Harvard University, Indian School of Business and the Young India Fellowship. Has been a member of India's National Advisory Council.

B D Dikshit
A founder member of CSE. Has served as chairman and managing director of Union Bank of India and deputy managing director of State Bank of India. Has served with a number of other financial institutions in India and abroad.

Bharati Chaturvedi
Environmentalist and writer. Founder-director of Chintan Environmental Research and Action Group. Has served on various committees of the government of India.

Chandra Bhushan
Deputy director
general of CSE. His
fields of specialisation
include natural
resource management,
environmental geo-politics
and industrial pollution.

G N Gupta
An Indian Revenue Service
officer, has held several key
positions in the revenue
department of India's
ministry of finance. Has
served as chairman of the
Central Board of Direct
Taxes and as a director in
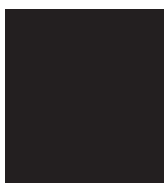the Planning Commission.

Jagdeep Gupta
— treasurer
One of CSE's two
Executive Directors.
Manages programme
implementation, human
resources, marketing and
other support services of
CSE.

Mahesh Krishnamurthy
A Masters degree holder
in computer sciences and
business administration.
Has worked for 18 years
in various industries in the
US, including as head of
corporate development at
Accelrys, the software firm.

N C Saxena
A career bureaucrat.
Has served as secretary,
Planning Commission;
secretary, rural
development; and director
of the National Academy
of Administration in
Mussoorie. On behalf of
the Supreme Court of
India, monitors food-based
programmes in the country.

N J Rao
An engineer and academic.
Associated with IIT
Roorkee and the University
of Roorkee. Has served
as director of the Institute
of Paper Technology.
Currently, holds the post of
Vice Chancellor of Jaypee
University of Engineering
and Technology, Madhya
Pradesh.

Sunita Narain
Environmentalist, writer
and researcher. Director
general of CSE. Recipient
of several awards including
the Padma Shri and the
World Water Prize. Listed
by TIME magazine as one
of the world's 100 most
influential people.

William Bissell
Managing director of
FabIndia. Deeply interested
in issues of environment
and sustainable
development.

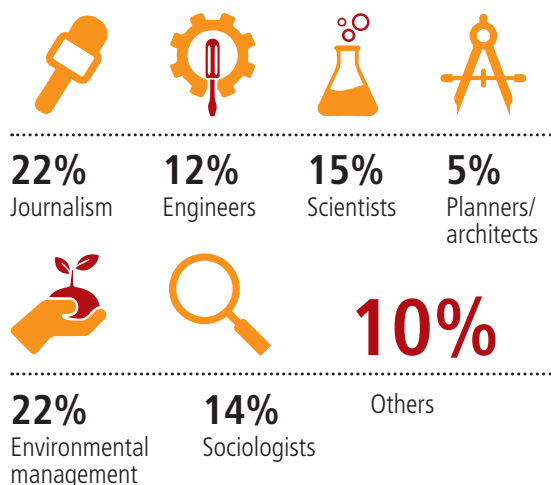# HUMAN RESOURCES

↘ RECRUITMENT

In 2015-16, CSE recruited 42 new staff members, 69 per cent of whom held post-graduate degrees. A majority of these had a professional experience of one to five years; 67 per cent of the new staff was below the age of 30. This staff profile helps build a future cadre of knowledgeable, passionate and committed environmental researchers, communicators and activists.
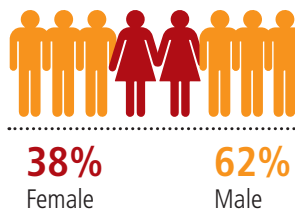
↘ CSE STAFF: A PROFILE

CSE today has a staff strength of 146 members. The following graphs provide a glimpse of some of the key aspects of CSE's staff.
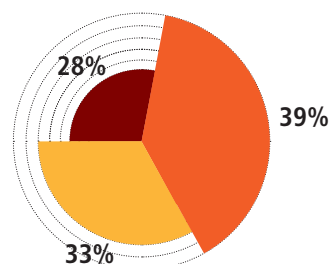
GENDER RATIO

38%
Female

62%
Male

EDUCATIONAL PROFILE OF RESEARCH STAFF

22%
Journalism

12%
Engineers

15%
Scientists

5%
Planners/architects

22%
Environmental management

14%
Sociologists

10%
Others

AGEING OF CSE

28%

39%

33%

CSE has always had maximum candidates in the lower age group but this year we see that the percentage is higher in the middle age group. This also reflects some stability factor in terms of years of service, as it is the younger lot who have stayed long enough to make the middle age category more

Total 146 members
■ Within 30 years
■ 31-40 years
■ 46 years and above

VOLUNTEERS AND INTERNS PROGRAMME: BUILDING AN ENVIRONMENTAL CADRE

In 2015-16, 96 interns and volunteers drawn from across the country as well as from around the world were attached to various CSE programme, research, support and communication units. These included 12 international students and 35 candidates from across India. Their contribution has helped in reducing the cost of human resources substantially, equivalent in human days to 15 regular staff members in the year. Interns and volunteers also serve as a recruitment pool; five interns were recruited as researchers in various CSE programmes in the year.

Student-interns have been drawn from leading Indian and international Universities and research institutions. These include, among others, Yale University; Kings College; University of London; University of Nottingham; London School of Economics; Oxford University; Indian Institute of Technology (IITs); National Law Schools; Banaras Hindu University; Indian School of Mines-Dhanbad; Delhi Technological University; and Tata Institute of Social Sciences.

The pool of student-interns and volunteers – some of them senior professionals -- have been placed in various CSE programmes, and have contributed to research, database building, organizing events and training programmes, as well as reporting for Down To Earth magazine. In addition, CSE continues to host students from exchange / study abroad programmes, as well as research scholars (including several Fulbright scholars), and who have helped bring in international perspective and learning and have helped the institution's visibility worldwide.

↘ STAFF DEVELOPMENT

CSE is developing independent units and creating a strong cadre of middle managers in order to institutionalise leadership role at all levels. Mid-level managers are key to expansion of our work, and opportunities are being created to catalyse their growth. The engagement of senior management will be focused more on planning, periodic review, strategic inputs and guidance.

This year, CSE worked with a professional consultant to help review performance systems and to draw up a competency framework for its staff. Based on the review, some staff members were upgraded to handle programmes independently.

To help build skills, CSE has instituted a series of on-site training programmes for staff to improve productivity and to gain sector expertise. Additional topics for building team capacities are now routinely discussed during the all-staff quarterly meetings.