

The (R)evolutionary Road

Year in Review
2019-20

The measure of a think tank

At CEEW, sustainability is not a choice. It is an imperative. It is behind every research question. It informs every product we innovate, every policy we design, every institution we reform, and every negotiation we attend. This is why we work with governments, industry, academia, and civil society to pave new paths to jobs, growth and sustainability.

But what is the metric with which you decide that you are having impact? Or that you are being innovative or have ideas that cannot be stopped? What is the unit of analysis, or time period? Are you focusing on quantity of output or quality? Are you prioritising research or convening? Are you informing media or social media? Are you counting web traffic or downloads? Are you increasing total output or per capita output? Are you valuing independence or impact at any cost? There are not always right answers. But there is always a right way.

When we set up CEEW, we were conscious that we couldn't compromise on what seemed like an impossible trinity for think tanks: **Publishing quality research, delivering timely advice, and remaining independent.** Ultimately, the measure of a think tank is not in its outputs alone. It is to a large part in the outcomes. But it is most substantially reflected in its values.

ARUNABHA GHOSH

CEO, Council on Energy, Environment and Water



INTEGRATED | INTERNATIONAL | INDEPENDENT

1st in India
(8 years in a row)
and 3rd in Asia
in our think tank
category

India's top
energy and
resource policy
think tank
three years in
a row

Top 100 in
the world in
8 categories
out of 11,000+
think tanks

[2020 Global Go To Think Tank Index]



Image: EmotiveLens



On Turning 10



My compliments to CEEW on completing a decade of public service. I am happy to see your growth into a fine think tank that has come up with a lot of pragmatic solutions for India as it transitions to becoming a world superpower and a nation that recognises and respects clean energy as a driver of that growth.

MINISTER PIYUSH GOYAL

Minister of Commerce & Industry and Minister of Railways

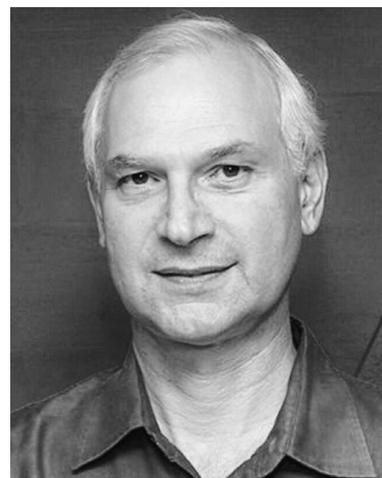
Government of India



I would like to congratulate Dr Arunabha Ghosh and CEEW for their achievements these past years. A lot of people in India and internationally are using your analysis and your advice. Every compliment coming your way for the work you are doing is very well-deserved.

FATIH BIROL

*Executive Director
International Energy Agency
(IEA)*



Here is an institution that is born in India and has made a name for itself globally. Our connections are critical.

JAMSHYD N. GODREJ

*Chairperson, CEEW
Chairman, Godrej & Boyce
Manufacturing Company
Limited*



The world is at the cusp of a major energy transition. And India, one of the fastest-growing economies as well as the third-largest consumer of energy globally, is embracing this energy transition. CEEW's annual flagship event, 'Energy Horizons' is, therefore, most apt and timely.

MINISTER DHARMENDRA PRADHAN

Cabinet Minister for Petroleum & Natural Gas and Steel

Government of India

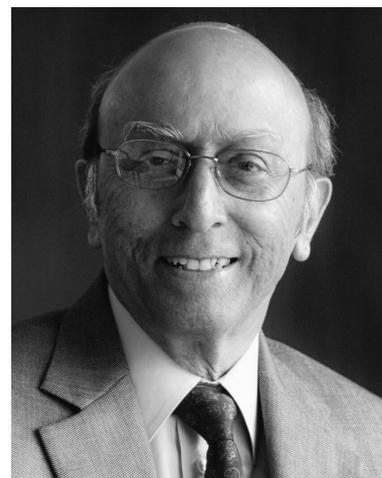


You have done a remarkable job in these 10 years. CEEW has grown to be recognised as one of the world's top think tanks in such a short time and with such limited resources. There is a lesson here not just for think tanks but for the world community at large. Your ability to manage and get the best outputs with the least resources is noteworthy.

SURESH P. PRABHU

Rajya Sabha MP & PM's Sherpa for G20 & G7

CEEW's first Chairperson



Build institution, leave legacy! The great thing about building an institution with young people is their energy, enthusiasm, and excitement. The experience will come. Stay young, no bureaucracy, no hierarchy. Stay young, in body and mind.

TARUN DAS

Founding Trustee, CEEW

Former Chief Mentor, Confederation of Indian Industry



I congratulate you on your 10 years of moving from strength to strength during a period that has demanded environmental attention from everyone. We, at UNEP, look forward to working with the Government of India, CEEW, and our other partners in India to help the world make the right choices.

INGER ANDERSEN

*Executive Director
United Nations Environment
Program*



The 'say:do' ratio is very important. Be in control of your 'say:do' ratio, if you want to grow and build credibility.

S. RAMADORAI

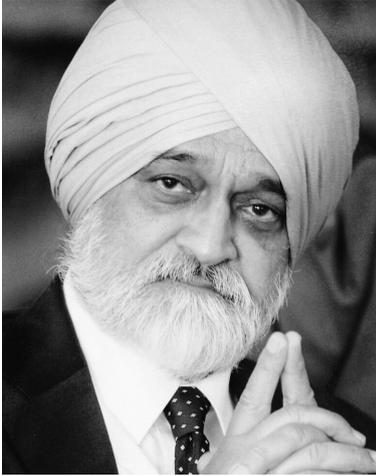
*Trustee, CEEW
Chairman, Tata Technologies Limited; Director, Piramal Enterprises Limited*



Credibility has to be 100%. You build it not just by agreeing all the time. Disagree. But don't be disagreeable while doing it.

DR ANIL KAKODKAR

*Trustee, CEEW
Former Chairman, Atomic Energy Commission*



It is impossible to think of a policy that will not have losers. But making people understand the big picture and their role in it is essential. This effort can be an end in itself. We need to do this for our future because the future is not voting yet.

**MONTEK SINGH
AHLUWALIA**

Trustee, CEEW

*Former Deputy Chairman,
Planning Commission of India*



For policy and impact the 'what' is less important than the 'how'. Growth also needs attention to rigour. When moving to new regions and cultures ask if you are replicating what you know or addressing unique local challenges. This will be the differentiator between having a presence and being accepted.

DR NAUSHAD FORBES

Trustee, CEEW

Co-Chairman, Forbes Marshall

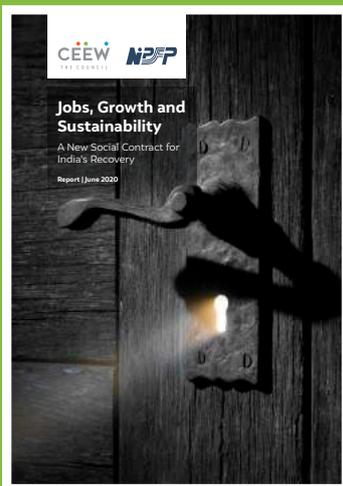


Jobs, Growth and Sustainability

#RecoveryResponse

#CEEWPRIDE

At the US Library of Congress



bit.ly/Jobs-Growth-Sustainability

The US Library of Congress has sought permission to stock in its archives, the CEEW-NIPFP report, *Jobs, Growth and Sustainability: A New Social Contract for India's Recovery*.

CEEW, together with the National Institute of Public Finance and Policy (NIPFP), published a 135-page report, *Jobs, Growth and Sustainability: A New Social Contract for India's Recovery*, in June 2020. It detailed a **roadmap for India to chart its way out of the pandemic through a new, economy-wide social contract**. A covenant between the state, the citizen and enterprise that rests on two pillars: a commitment to jobs, growth and sustainability; and building resilience against tail-end risks, which have low probability but devastating impacts. **The report reflects deeply on the need for structural reforms to build an AatmaNirbhar Bharat**. Its recommendations range from addressing the crisis of informal and migrant labour to building a stronger and more sustainable MSME sector; reducing environmental and public health risks; enhancing food, water and resource security; sustaining clean air in our cities; allocating subsidies equitably; strengthening the power sector while boosting the energy transition; encouraging shifts towards cleaner fossil fuels; deepening markets for renewables and distributed energy; and building the hard and soft infrastructure to handle disasters.

Key recommendations

Forex savings from reduced fossil fuel use

INR 45,210 crore

Reduction in annual oil import bill by 2030 if 30% of car sales were of electric cars

Energy subsidies and potential savings

INR 2.89 lakh crore

India's annual spend to subsidise consumption of energy and energy products

Renewable energy benefits

INR 7,500 crore

Possible forex savings per year if half the required solar modules (of 10 GW per year) are made in India

4,650 MtCO₂-eq

Reduced emissions during 2020-30 if India achieves 28% power generation from solar and wind by 2030

Clean cooking energy benefits

1,363 MtCO₂-eq

Reduced household emissions during 2020-30 given a switch from LPG to PNG in a shorter five-year timeframe

Food security for the urban poor

60,000

Canteens can serve three meals a day to about 30 million urban poor workers

INR 26,500 crore

Capital investment required to set up 60,000 canteens and 8200 kitchens

1.2 million

Potential jobs, with each canteen employing 20 people to serve 500 beneficiaries



"I would like to congratulate CEEW and NIPFP for putting together this important report. India needs to create a new social contract which prioritises jobs, growth and sustainability. The focus has to be on the agricultural, rural, and tribal areas in aspirational districts. This will help to create the much-needed jobs and opportunities in the rural clusters and decongest India's major cities."

MINISTER NITIN GADKARI

Union Minister of MSMEs and Minister of Road Transport and Highways, Govt of India at the launch of the *Jobs, Growth and Sustainability* report. June 2020.

MSME growth

- **Identify micro, small and medium enterprises and their workers** to target financial and in-kind relief measures to them through a nationwide, Aadhaar-linked, digital platform, **MISHRII**: MSME Information System for Holistic and Real-time Identification, Incentives and Support.
- **Develop a vulnerability assessment framework of MSME sectors** to efficiently target the most vulnerable first, enabling a more effective use of government resources.
- **Increase capacity of the SAMADHAAN system** to expeditiously clear government dues.
- **Improve creditworthiness of small businesses** by mandating lenders to introduce a mechanism to track the fund utilisation and financial health of the borrowers, and intervene at the first signs of distress.



Image: iStock



INR 12,000 - 18,000 crore
potential savings from decommissioning thermal power plants aged over 25 years by 2024



45 MT
potential reduction of coal if India produces power from the most efficient plants



INR 14,260 crore
cost for retrofitting older thermal power plants with Pollution Control Technologies (PCT), which would ultimately be passed on to the consumers

Source: CEEW analysis, 2020

Renewable energy

- **Build investor confidence & market deepening measures:** Create a real-time **National RE Database** with plant level renewable energy performance data, which is verified by the Central Electricity Authority. **Bifurcate renewables from the overall power sector exposure** to allow more credit flow to the sector, and a more accurate credit rating of the renewable energy portfolios. Enable RE projects to access money from the bond market.
- **Promote solar manufacturing.**
- Invest in distributed renewable energy.



INR 76,000 crore
bond market flows estimated through a credit enhancement subsidy of INR 4,600 crore over 5 years



110,000
potential new utility-scale solar and wind sector jobs from enhanced credit flow

Source: CEEW analysis, 2020

In the news



'60k govt canteens should be set up to feed 30 m urban migrants'

FE BUREAU
New Delhi, June 11

THE NATIONAL INSTITUTE of Public Finance and Policy (NIPFP), a centre for research in public economics and policies, has suggested deployment of around 60,000 state-sup-

kitchens," NIPFP said in a study prepared in association with the Council on Energy, Environment and Water (CEEW).

The CEEW-NIPFP study on 'Jobs, Growth and Sustainability: A New Social Contract for India's Recovery', has estimated that operating expenses of these

Urban decongestion, sustainable jobs and innovation, the way forward: Gadkari

IN REVATHY
Contributors, June 12
Innovations, decongestion of cities, and creation of sustainable jobs would be the way forward as India charts its way out of the pandemic. And none of these are impossible, said Nitin Gadkari, Union Minister for Micro, Small and Medium Enterprises and Minister of Road Transport.

At the launch of a study on 'Jobs, Growth and Sustainability: A New Social Contract for India's Recovery' by the Council on Energy, Environment and Water (CEEW) and the National Institute of Public Finance and Policy (NIPFP), Gadkari said, "While (our) huge population is our strength, it can also be a liability; our demographic dividend is our strength, for, the youth are very talented," he said.

Minister said there were 15 aspirational districts that were educationally and economically backward. "The focus should be on the agricultural, rural and tribal populace in

these districts. "We have surplus rice and wheat for the next three years. It is a problem of plenty without adequate storage space. Further, there is a vast difference in the international price of agricultural commodities, the market price and the Minimum Support Price. The MSP is higher than the market / international price," he said, adding "this is a political problem".

Reverting to sugar, he said, "But we need to find a way out, an alternative to improve the economy," he said, and hinted at commissioning a project report to address the crux of the issue.

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Union Minister for Road Transport and Highways Nitin Gadkari

change the crop pattern, but also find a way to increase the edible oil production in the country," Gadkari said.

Innovations He said, "The sugar mills in Maharashtra were given special licence to manufacture sanitisers in the early days of the pandemic outbreak. This not only helped bring down the cost of sanitisers but also slashed our import dependence. We need innovations in

aviation fuel, converting waste to wealth, as in making bio-ethanol from municipal sewage and bring down our import dependence on oil. "There is huge potential in agriculture and manufacturing sectors," he said stressing the need to focus on the MSME sector.

Gadkari said, "Linking of rivers should ease and make water available in plenty across the different regions in the country."

Such Initiatives would help decongest India's cities, help in the promotion of industrial clusters, and add to growth. But for all this, we will need foreign direct investment (FDI).

"Funds are available, but we need to attract the flow. For this, we will need to upgrade technology, most liberal policy, come up with time-bound technology and above all, make the system transparent and corruption-free," inviting the participants to be part of this collaborative approach.



'Need urgent steps to decongest big cities'

Nitin Gadkari suggests shifting leather cluster from Dharavi to Thane district

SPECIAL CORRESPONDENT
MUMBAI

India needs urgent steps to decongest its big cities like Mumbai, Union Minister Nitin Gadkari said on Thursday, stressing that the worst kind of living conditions in places like Dharavi, Asia's largest slum, can be improved by sprucing up infrastructure elsewhere, and relocating some businesses.

"What type of a problem are we facing now in Mumbai... It is surrounded by the sea from three sides and

there's nowhere to expand. I met the leather industry from Dharavi yesterday who have an annual turnover of ₹1.45 lakh crore of which ₹85,000 crore is from the domestic market," said Mr. Gadkari, the Minister for Road Transport, Highways and Shipping, as well as Micro, Small and Medium Enterprises.

"I suggested to them we can shift the leather cluster from Dharavi to Thane district, help people shift out of Dharavi into better housing

options. That can improve the situation in Dharavi as well," he pointed out.

"People are already fed up... Wipro chairman Azim Premji was talking about people requiring two and a half hours to get to work and another two and a half hours to come back," Mr. Gadkari said after unveiling a report on 'Jobs, Growth and Sustainability: A New Social Contract for India's Post-COVID-19 Economic Recovery' produced by the Council on Energy, Environment and

Water and the National Institute of Public Finance and Policy.

The government is working to complete a Mumbai-Delhi expressway in three years that will make it possible for cars and trucks to traverse the distance in 12 hours and 26 hours, respectively, he said. Many businesses can relocate to places along the corridor that can offer a better quality of life, the minister said.



#SocialResponse

Institutional contribution

CEEW is proud to have delivered full body PPE kits, N95 face masks, hand sanitisers, latex gloves and other safety equipment to the North Delhi Municipal Corporation as well as the King George's Memorial Hospital, Lucknow for their sanitation and medical teams, who were working round-the-clock during the lockdown, to contain COVID-19.

INR 1,00,000
Institutional cash contribution made to PM CARES fund



CEEW's PADARABINDA SAMAL supervising the delivery of the kits. April 2020.

Supporting micro-enterprises during the pandemic

Assisting India's recovery from the pandemic, 'Powering Livelihoods', an enterprise-support initiative from CEEW and Villgro Innovations Foundation, offered a cumulative emergency funding of INR 1 crore to six Indian enterprises working on clean energy-based livelihoods solutions. The fund has helped enterprises to strengthen their resilience and tide over the current crises caused by COVID-19. The six enterprises currently manufacture a wide variety of solar-powered livelihood solutions from water pumps and multipurpose food processors to commercial refrigerators to reeling, spinning and weaving machinery in the textile sector.



CEEW's WASE KHALID on the field, visiting micro-enterprises.

Public service videos to thank and destigmatise COVID-19 warriors

We launched a #SupportYourSuperheroes campaign through video clips shot from our homes to acknowledge and thank courageous workers and institutions who were responding to the health and civic crisis to save lives.

See the films here
bit.ly/CEEWSupportYourSuperheroes1
bit.ly/SupportYourSuperheroes2



Team-led voluntary contributions

To support NGOs working with migrants, the urban poor, children with disabilities, sex workers and health care professionals, **CEEW** donated **INR 4.4 lakh** collected through the voluntary contributions of **30 team members**, to Goonj, CARE India, CRY Foundation, Apne Aap Worldwide Trust, and Swami Sivananda Memorial Institute.



Images: Care India

Colleagues leading by example

WASE KHALID, affected by the sight of homeless and destitute families struggling for food during the pandemic, began organising food packets for them. By late June 2020, he had arranged provisions (including flour, salt, cooking oil, rice, daal and spices) to last a week for 250 people.



▲ **GYANARANJAN SAMAL**, after recovering from COVID-19 at his village in Jajpur, Odisha, got his village pond desilted and cleaned with support from his family and neighbours. It is flush with water now and is once again the watering hole of the village. He also initiated a tree plantation drive to line the road to his village where mature trees had been felled to make the connecting road.



▲ **ANAS C. REHMAN** volunteered with the Raipur administration's COVID-19 emergency response team, helping conduct surveys and managing the helpline. He still continues with relief and recovery tasks as and when needed.

Key Highlights

September 2019 - August 2020

#ClimateAction

At the **UN Secretary General's Climate Action Summit in New York, September 2019**, we presented three key research-backed messages to act on climate.

- The techno-economic possibilities for industrial decarbonisation;
- New ways to think about climate and clean energy finance and business models; and
- Building the capacity of developing countries to increase transparency for climate action.



Image: UNDP

- ▲ CEEW's **ARUNABHA GHOSH** with **ACHIM STEINER**, UNDP Administrator, on a panel for 'Climate Change and Human Development,' a side event at UNCCD COP14. September 2019.



Sustainable Manufacturing for India's Low-Carbon Transition

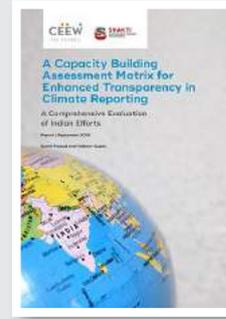
Four Bets for Hard-to-Abate Sectors

Issue Brief | September 2019



Greening New Pastures for Green Investments

Issue Brief | September 2019



A Capacity Building Assessment Matrix for Enhanced Transparency in Climate Reporting

A Comprehensive Evaluation of Indian Efforts
Report | September 2019

CEEW's **SUMIT PRASAD** was a delegate at the 'Asia-Pacific Climate Week 2019' where he presented CEEW's capacity building matrix for developing countries to build transparency in climate reporting.



Image: Shikha Bhasin/CEEW



Image: Ananta Centre

▲ CEEW's **ARUNABHA GHOSH** at the 9th Indo-US track II dialogue on 'Energy and Climate Change.' February 2020.

#MainstreamingSustainability

In the first of a series of high-level webinars organised as part of our 10th-anniversary celebrations, CEEW kick-started the journey with a discussion on 'Shifting Sustainability from the Margin to the Mainstream', with **INGER ANDERSEN**, Executive Director, UNEP; **JAMSHYD N. GODREJ**, CEEW Chairperson; **BAHAR DUTT**, environment journalist and Associate Professor, Shiv Nadar University; **MINIYA CHATTERJI**, CEO, Sustain Labs Paris, and Founding Director, Anant Fellowship for Climate Action; and **ARCHANA SORENG**, Member, UN Secretary General's Youth Advisory Group on Climate Change.



"Sustainability is not an accidental headline. It is our best bet to minimise the risks and impacts of crises such as COVID-19. It must be at the heart of our recovery. I am delighted to join CEEW's discussion on a sustainable future."

INGER ANDERSEN
Executive Director
United Nations Environment
Programme (UNEP)



Re-energising India after the pandemic: building resilience and future pathways



SURESH P. PRABHU at a CEEW fireside chat with **ARUNABHA GHOSH** on re-energising India after the pandemic. May 2020.

74% India's CO₂ emissions

are from the manufacture of iron & steel, cement, ammonia, and chemicals (primarily petrochemicals)



0.54 million jobs by 2050

can be created by transitioning domestic manufacturing towards low-carbon cement



INR 25,000 per annum

increase in income experienced by tailoring enterprises after solarising their sewing machines



CEEW analysis, 2019-20

#MitigationInstruments

CEEW and the Environmental Defense Fund (EDF) constituted a Working Group on Mitigation Instruments (WGMI) comprising academic, policy, and industry experts, who published a multi-sectoral framework to compare and recommend mitigation instruments for India's transition to a low-carbon economy.



Image: CEEW

▲ Launch of the CEEW-EDF white paper authored by the WGMI. October 2019.



"This white paper describing the basic framework and tenets to be adopted in India's journey on a low-carbon pathway would play a pivotal role in realising the country's climate aspirations. The steel industry will further make efforts to move towards a circular economy to achieve India's climate development goals."

CHANAKYA CHAUDHARY

Vice President (Corporate Services), TATA Steel Ltd



Mitigation Instruments for Achieving India's Climate and Development Goals

White Paper | October 2019

#EnergyTransition

COVID-19 was an eye-opener for India's solar sector, which depended on China for 80 per cent of its module imports. Our analysis recommended steps to protect and revive the sector along with the need to localise solar components manufacturing to limit the impact of such shocks. And while emerging economies in Asia have high RE deployment ambitions, many countries like Indonesia and Sri Lanka have not been able to attract investments at the scale envisioned. Our studies found a range of regulatory and market-related challenges constraining investments in RE and also offered recommendations and learnings from India to overcome these.

~20% basic customs duty required
 on solar cells and modules until 2027 to ramp up India's domestic solar manufacturing

Source: CEEW-CEF analysis, 2020

Scaling up Solar Manufacturing in India
 To Enhance India's Energy Security
 Report | August 2020

Cheaper Finance is Key to Lowering RE Tariffs in Indonesia
 Issue Brief | July 2020

#PoweringLivelihoods

CEEW's INR 22 crore initiative with Villgro—Powering Livelihoods—was launched to provide capital and technical support to help scale-up enterprises. The first cohort comprises enterprises that are deploying green clean-tech innovations including solar-powered water pumps, multipurpose food processors, commercial refrigerators, and textile machinery (reeling, spinning and weaving) and fodder growing stations.

"Powering Livelihoods and the CEEW-Villgro partnership will go a long way in bringing out innovative solutions. Your initiative should look to leverage modern technologies and power villages at scale."

MINISTER PIYUSH GOYAL
 at the launch of the CEEW-Villgro 'Powering Livelihoods' initiative.
 August 2020.

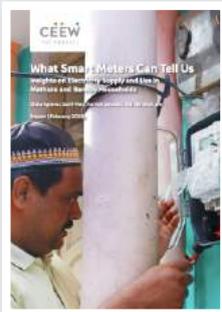
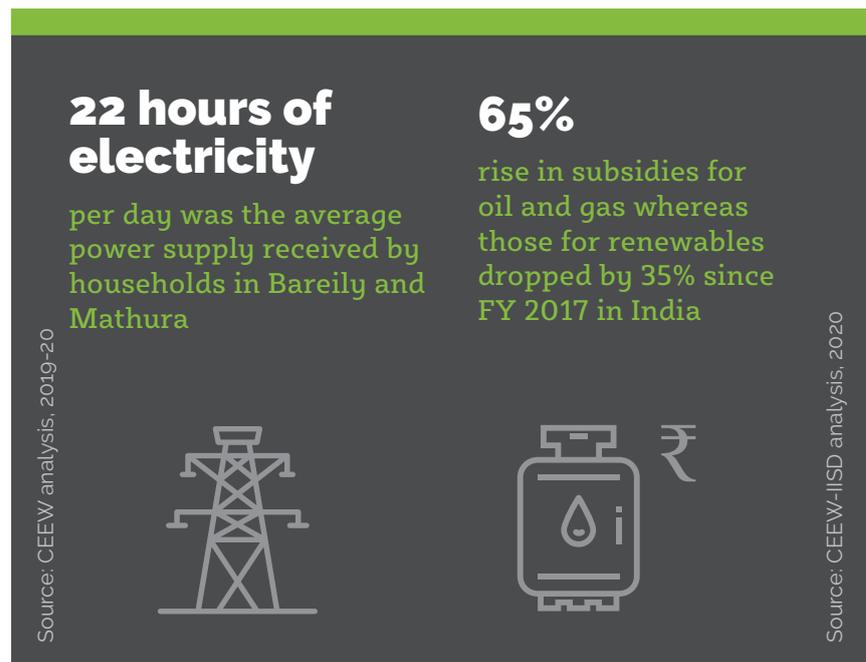


#PowerReforms

A series of CEEW studies on the power sector underscored several new opportunities to strengthen the sector through long-term structural reforms and the redesigning of the day-ahead markets to reduce power purchase costs.

Our smart meter pilot study highlighted the critical role of these meters to help discoms improve billing and revenue collection, especially during the pandemic.

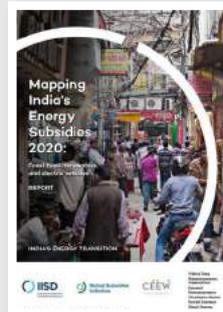
Our study with IISD recommended that Indian policymakers should rein in specific fossil fuel subsidies while creating more fiscal room for promoting renewables and other welfare schemes.



What Smart Meters Can Tell Us

Insights on Electricity Supply and Use in Mathura and Bareilly Households

Report | February 2020



Mapping India's Energy Subsidies 2020

Fossil Fuels, Renewables, Electric Vehicles

Report | April 2020

Improving discom billing and collection efficiency post the pandemic



In June 2020, as part of the fifth edition of the 'CEEW Energy Access Dialogues', senior discom officials from Rajasthan, Uttar Pradesh, Bihar, and Gujarat discussed best practices to improve billing and collection efficiency on a sustained basis with CEEW researchers.

India's largest survey on energy access and consumption conducted in 2019-20

Across 300 days, six researchers at CEEW, along with a team of 154 enumerators, conducted the India Residential Energy Survey (IRES) in collaboration with ISEP. It is the largest survey on energy access and consumption patterns in Indian households.

The survey covered 14,850 households from 152 districts in the 21 most populous states. The surveyed states together account for 97 per cent of the Indian population.



Images: CEEW/MarketXcel

#Mobility

How does India juggle the need to meet basic transport needs and infrastructure for its population while accommodating clean and shared mobility paradigms gaining traction globally? CEEW published two studies on mobility to map how urban India moved and what it would take for India to transition to electric vehicles.

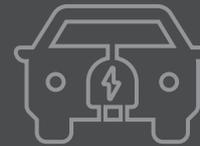
>50% of urban India walks

(more than 500 metres) for their weekly needs, followed by the use of personal motorbikes and public transport

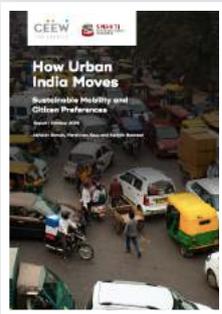


2-16 % lower CO₂ emissions per electric car

in 2030 depending on renewable energy penetration in the grid



Source: CEEW analysis, 2019



How Urban India Moves

Sustainable Mobility and Citizen Preferences
Report | October 2019



India's Electric Vehicle Transition

Impact on Auto Industry and Building the EV Ecosystem
Report | October 2019

"My long-term aim is for India to become a leader in 2-3 wheelers and compact electric vehicle manufacturing."

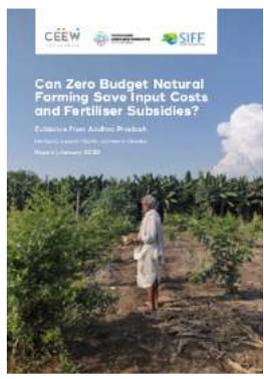
AMITABH KANT

CEO, NITI Aayog at the CEEW-Shakti dialogue on 'Urban Mobility and India's EV Transition,' October 2019.



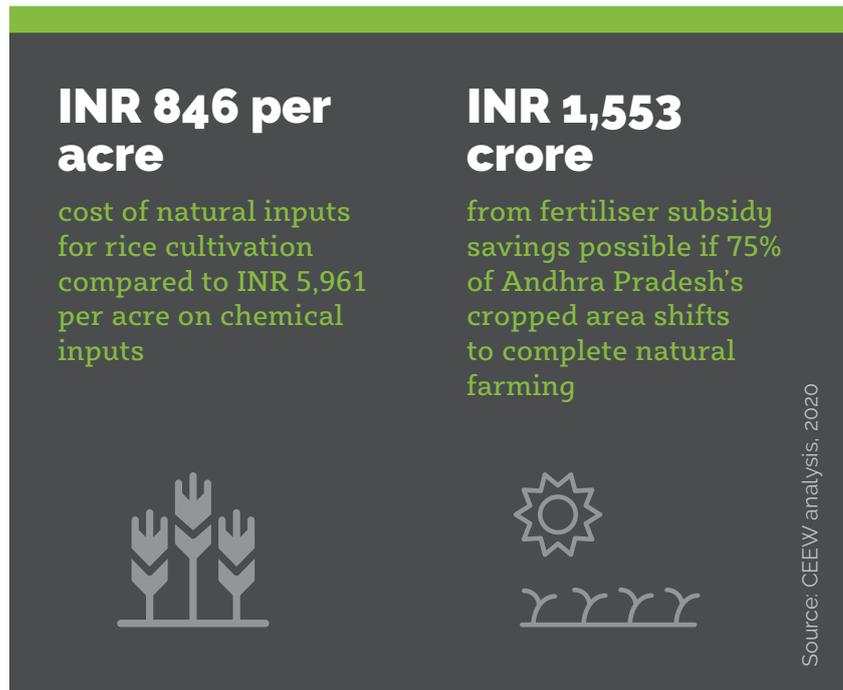
#SustainableFarming

India's rural economy needs an agriculture revival, and the adoption of Indian Natural Farming practices could lead to substantial fiscal savings. Our study, *Can Zero Budget Natural Farming Save Input Costs and Fertiliser Subsidies?* points out that Andhra Pradesh can save up to INR 2100 crore (~USD 292 million) annually with a complete shift to Indian Natural Farming practices.



Can Zero Budget Natural Farming Save Input Costs and Fertiliser Subsidies

Evidence from Andhra Pradesh
Report | January 2020



#SustainableCooling

The growing body of work at CEEW on the HFC phase-down and the transition to sustainable thermal comfort this year focused on the AC servicing sector goals as encapsulated in the *India Cooling Action Plan*. Our studies detailed how institutionalising AC servicing certification systems could enable job security and safety for technicians, optimise energy efficiency, and facilitate a smoother transition towards alternative refrigerant technologies in keeping with India's Kigali commitments.

"Skilling and certification in the AC servicing sector allows us to have benefits both in terms of environmental protection and livelihood enhancement. When we talk about formalisation of this sector, in addition to training and skilling, we need to ensure access to finance for service technicians. This will help them become entrepreneurs and acquire adequate tools for their work. The studies by CEEW on standardisation of training and universal certification system are extremely important and topical, and will help us pursue the stated goals."

DR AMIT LOVE

Scientist E, Hazardous Substance Management Division, and former Joint Director, Ozone Cell, MoEFCC



Safety, Upskilling, and Good Servicing Practices for Cooling

Standardising Training for Refrigeration and Air-Conditioning Technicians
Issue Brief | July 2020

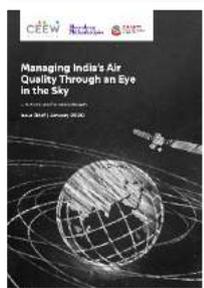


A Universal Certification System for India's Refrigeration and Air-Conditioning Servicing Sector

Issue Brief | July 2020

#AirQuality

Blue skies over Delhi and the Indo-Gangetic plains during the lockdown were certainly an indicator that it is not too late to rescue and rejuvenate our planet. Our analysis on monitoring air quality through remote sensing, assessing city clean air plans and public smog towers indicated that curtailing pollution at its source, with stringent emission norms and enforcement, will help cities breathe easier.



Managing India's Air Quality Through an Eye in the Sky

Issue Brief |
January 2020



How Robust are Urban India's Clean Air Plans?

An Assessment of
102 Cities
Report |
June 2020

"Crackers have to be banned. We have to control the causes and the sources of Delhi's air pollution. Scientific studies need to address this. Haryana identified stubble burning hotspots and managed to reduce it by 40% in 2019."

S. NARYANAN

Member Secretary, Haryana State
Pollution Control Board

75%

of city clean air plans do not contain information on emission sources



0 cities

have a legal mandate to implement their clean air plans (apart from Delhi's clean air plan, which the Supreme Court partially notified for implementation in January 2018)



Source: CEEW analysis, 2020

'On air': creating a democratic demand for clean air

CEEW's second edition of 'On Air' held on 28 November 2019, discussed how officials, industry, and citizen action and engagement could combat air pollution in our cities. We heard from Delhi's resident welfare association representatives, school principals, students, environmental lawyers, and journalists, on their understanding of the air pollution crisis and actions needed to solve for it.



Image: CEEW

▲ L to R: **APARNA DUTT SHARMA**, Secretary General, Cement Manufacturers Association; **S. NARYANAN**, Member Secretary, Haryana State Pollution Control Board; **VARSHA JOSHI** Commissioner, North Delhi Municipal Corporation; and CEEW's **KARTHIK GANESAN**, at the CEEW 'On Air' dialogue. November 2019.

Convening experts on urban India's clean air plans



▲ DR ASHOK KUMAR GHOSH, Bihar State Pollution Control Board; DR SARATH GUTTIKUNDA, Urban Emissions; DR MUKESH SHARMA, IIT Kanpur; and VINUTA GOPAL, Asar Social Advisors, in a session moderated by DR ARUNABHA GHOSH, discussed how different stakeholders, pollution control boards, municipal corporations, civil society representatives, citizens and the state and central governments, can work together to ensure execution of clean air plans and make blue skies permanent. June 2020.

#CleanCookingEnergy

CEEW in partnership with the Sustainable Energy for All (SEforALL), Overseas Development Institute (ODI) and the Catholic Agency for Overseas Development (CAFOD) published the *Energy Safety Nets: India Case Study*, a first-of-its-kind evaluation on how India's energy policies are providing social assistance to protect very poor, vulnerable and marginalised people.

CEEW also developed a *Clean Cooking Energy Roadmap for India*, with the NITI Aayog and GIZ. It envisions replacing traditional cooking fuels that cause household air pollution in India with cleaner fuels by 2025.



Image: iStock

**~90% of
India's
non-poor
population**

still receive the LPG subsidy,
leaving limited resources to
subsidise poorer households

Source: CEEW analysis, 2020

An aerial photograph of a dense, green forest. A winding road with white lane markings snakes through the trees. Overlaid on the center of the image is a large, white, sans-serif number '10'. The '1' is a simple vertical bar with a short horizontal base. The '0' is a large, rounded oval shape. The background image is in grayscale, with the road and the number '10' in white.

10

YEARS

10 tales from the (R)evolutionary road

Measuring impact in public policy is fraught with the risk of overstating one's influence. Several players can claim (and rightfully so) to have had a role. We claim no monopoly of ideas. Even in cases where we have led the generation of a proposal, we have had to work with partners within and outside government to see through its advent, execution or evaluation.

In this spirit of co-ownership and collaboration for public service, we look back on our work dedicated to the people and the planet.

1 Putting People at the Centre of World-Class Research

#PeopleFirst@CEEW

400 million people

indirectly impacted through CEEW research and outreach to improve the *Ujjwala* scheme for clean cooking fuel



125 million lives

impacted through our direct research and engagement with the government that led to the development of the *Saubhagya* scheme for achieving universal household electrification



CEEW analysis, 2020

Leveraging data for universal energy access

CEEW has co-created one of the world's largest panel datasets on energy access, which includes over 5 million data points.

Image: Abhishek Jain/CEEW



ACCESS 2015 & 2018

First conducted in 2015, the Access to Clean Cooking Energy and Electricity: Survey of States (ACCESS) is India's largest energy access survey, covering more than 9,000 rural households, across India's most energy-access deprived states. Bihar, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh, and West Bengal.

In 2018, during phase-2 of the survey, these households were revisited to record changes in their state of energy access.

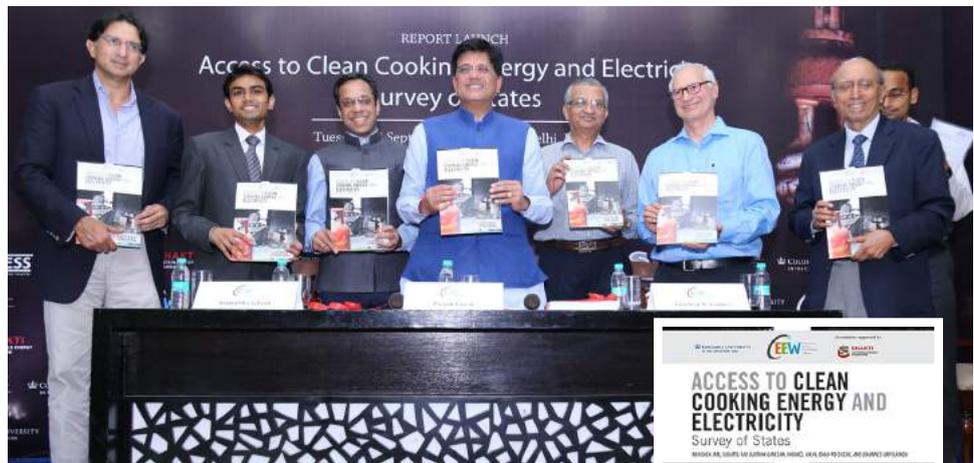


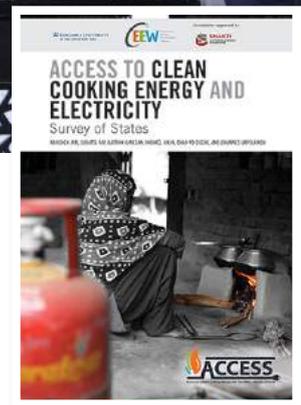
Image: CEEW

"CEEW's ACCESS study provides a holistic approach to analyse the deep distress in rural India due to poor electricity and cooking energy access and could be the handbook in all future discussion on this topic."

MINISTER PIYUSH GOYAL

(then) Minister of State (IC) for Power, Coal, New and Renewable Energy, and Mines

Source: CEEW Annual Review 2015-16



Access to Clean Cooking Energy and Electricity
Survey of States

Report | September 2015

"(ACCESS 2018)...excellent initiative. The findings will provide valuable feedback to policymakers and implementers on field-level issues. My compliments to CEEW."

ASHUTOSH JINDAL

(then) Joint Secretary, Ministry of Petroleum and Natural Gas. November 2018



Image: CEEW

Access to Clean Cooking Energy and Electricity
Survey of States 2018

Report | November 2018



"My ministry had requested CEEW to independently and objectively analyse our energy subsidy reform measures and I am thankful to them for their analysis. CEEW's research would help us improve our government's schemes."

MINISTER DHARMENDRA PRADHAN

(then) Minister of State (IC) for Petroleum and Natural Gas

Source: CEEW Annual Review 2015-16

INR 2,400 crore per annum

saved through CEEW's policy inputs on the *Direct Benefit Transfer (DBT)* scheme and the Give-it-up campaign that directed LPG subsidies to most deserving households



Identifying the job potential in the clean energy sector

With the ongoing pandemic and global uncertainty, India has to turn even more to its domestic economy to create jobs. The energy transition, our studies find, offers one of the best bets for new jobs in a slowing economy.

Image: Vikram Solar



“CEEW and NRDC's report captures a new dimension in accurately assessing manpower requirements in the solar and wind domains. It builds on earlier studies on the subject, considering national objectives to meet INDC commitments. It makes the path of the Skill Council for Green Jobs more clear and visible in terms of capturing the opportunity of employability in the solar and wind domains.”



DR PRAVEEN SAXENA

Chief Executive Officer, Skill Council for Green Jobs

Source: CEEW Annual Review 2016-17

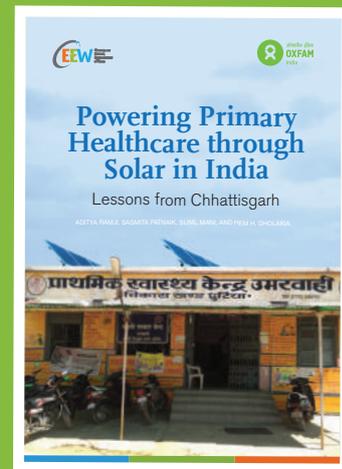
50,000 new jobs

potentially created through CEEW's rooftop solar research. Our work influenced the Delhi Net Metering Guidelines and the central government's Grid-Connected Solar Rooftop Programme



CEEW analysis, 2020

Recognition for CEEW's study



The CEEW study, *Powering Primary Healthcare through Solar in India: Lessons from Chhattisgarh* was ranked, 2nd in the 'International Energy' category by the Prospect Think Tank Awards in 2018.

#CEEW/PRIDE

2 Predicting the Future by Shaping it

#FutureForward@CEEW

USD 140-160 billion

investment required to achieve the target of installing 100 GW of solar power by 2021-2022

CEEW analysis, 2014



73 countries

have signed and ratified the International Solar Alliance (ISA) framework agreement. ISA is the first inter-governmental organisation co-founded by and housed in India



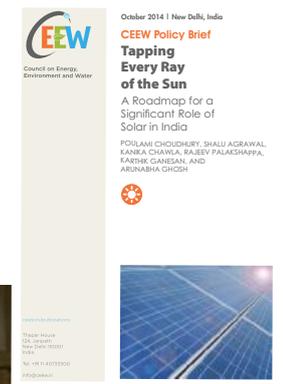
Image: freepik.com

Scaling India's RE targets

Our research for the Prime Minister's Office and assistance to draft the Cabinet note directly resulted in scaling up India's renewable energy (RE) targets to 175 GW of renewables by 2022.

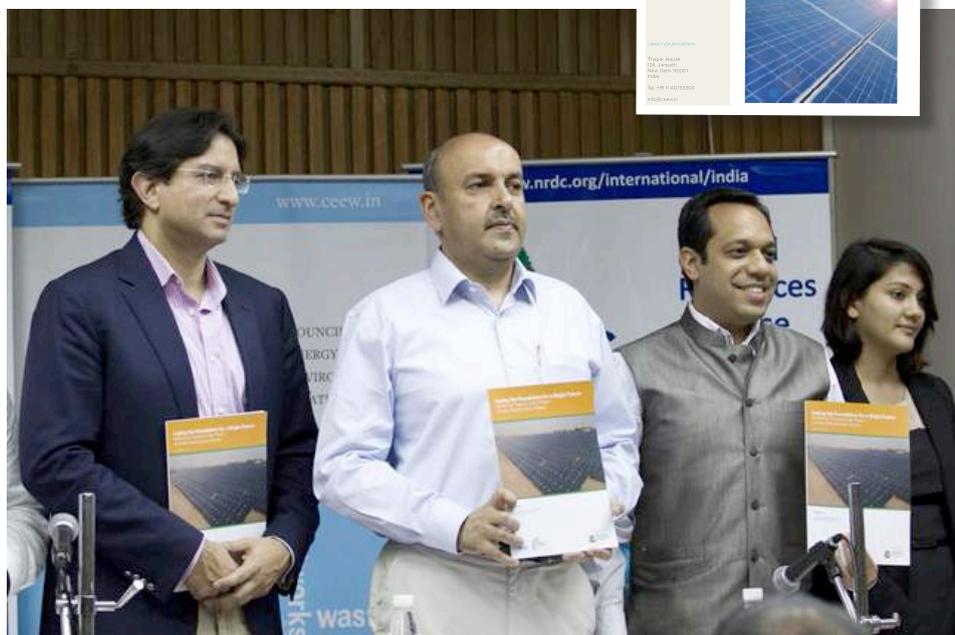
Tapping Every Ray of the Sun
A Roadmap for a Significant Role of Solar in India

Policy Brief | October 2014



Assessing the National Solar Mission

We conducted the first independent assessment of the *National Solar Mission* with the Natural Resources Defence Council (NRDC). It was formally launched by **TARUN KAPOOR**, the (then) Joint Secretary, 2012.



Images: CEEW

▲ CEEW promoted the USD 125 million India-U.S Joint Clean Energy R&D Center to spur game-changing research and development in energy-efficient buildings, solar energy, and second-generation biofuels, in collaboration with the NRDC and the Administrative Staff College of India.



CEEW hosted **DR ERNEST MONIZ**, (then) US Energy Secretary, for a roundtable on 'Scaling Decentralised Clean Energy in India'. March 2014.

BETH URBANAS (then) Deputy Assistant Secretary for Asia and the Americas at the Office of International Affairs, U.S. Department of Energy, at CEEW's roundtable discussion on 'India - U.S. Energy Partnership'. April 2017.



"CEEW is working with us as a strategic knowledge partner as we work to unleash attractive finance to meet India's ambitious renewable energy target."

K. S. POPLI
Chairman, IREDA

Source: CEEW Annual Review 2015-16



CEEW's **NEERAJ KULDEEP** shepherding our research on renewables at the CEEW 'RE Dialogue'. June 2018.

Images: CEEW

Showcasing India's energy transition story with David Letterman



CEEW's **ARUNABHA GHOSH** with **DAVID LETTERMAN** on National Geographic Channel's *Years of Living Dangerously*, telling India's energy transition story. 2017.

[See more here](#)

Envisioning the International Solar Alliance



Images: CEEW

CEEW was part of conceptualising and developing the strategy for the International Solar Alliance (ISA). ISA is mandated to foresee and create conditions for cooperative energy security as emerging and developing economies undergo their respective energy transitions. ISA was officially announced in Paris during COP21 and formally launched in India in March 2018.

Recognised as one of 2015's most influential commentaries

Arunabha Ghosh and Karthik Ganesan's commentary 'Rethink India's energy strategy' published in May was picked as one of 2015's most influential expert opinions by *Nature's* editorial team.



#CEEWPRIDE

3 Transforming Markets for Good

#Bias4Action@CEEW

~56% of the difference in selling price

between Indian and Chinese PV modules (at the same capacity utilisation levels) may be attributed to higher raw material costs



4% of Gol's power & RE budget

allocated over five years to subsidise credit enhancement is all it will take to debt finance a doubling of India's utility-scale solar capacity



CEEW-CEF analysis, 2020

Image: pixabay.com

CEEW Centre for Energy Finance

has been deepening markets, increasing transparency, and attracting capital to clean energy sectors in emerging economies since its inception in 2019.



▲ The CEEW-CEF team celebrated their 1st anniversary on 17 July 2020.



◀ CEEW's **RISHABH JAIN** moderating periodic meetings with stakeholders to map and discuss policy trends and market developments in the RE sector.

Image: CEEW

"Developing financial mechanisms to support the large-scale deployment of clean energy is of critical importance in India, and globally. This is also an area in which the CEEW and the IEA have a strong history of cooperation."

FATIH BIROL

Executive Director, International Energy Agency (IEA)



Image: Emotivlens

Powering Rural Livelihoods

'Powering Livelihoods' is a CEEW-Villgro initiative launched in 2020 to revitalise India's rural economy by deploying decentralised, clean energy-powered livelihood appliances to boost rural incomes.

Image: Abhishek Jain/CEEW



Image: Emotivelens

◀ CEEW's **ABHISHEK JAIN** at a 'Powering Livelihoods' jury session engaging with applicants from micro-enterprises. March 2019.

"Powering Livelihoods should create business models that work not just for India but has lessons for countries in Africa to create global entrepreneurs."

DAMILOLA OGUNBIYI

CEO and Special Representative of the UN Secretary-General for Sustainable Energy for All and Co-Chair of UN-Energy

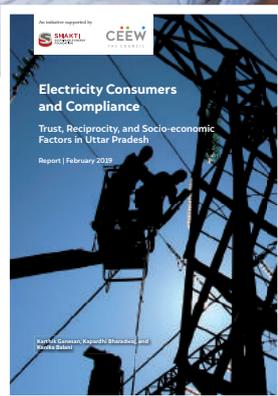


Enabling power reforms in Uttar Pradesh

Our studies on metering and citizen engagement have informed better billing and collection practices and supported smart meter installations. Scaled up, such interventions could increase consumer willingness to pay for electricity and deepen the market.



Image: Bharat Sharma/CEEW



Electricity Consumers and Compliance
Trust, Reciprocity, and Socio-Economic Factors in Uttar Pradesh

Report | February 2019



Image: CEEW

CEEW researchers with senior officials from Uttar Pradesh Power Corporation Limited (UPPCL), Madhyanchal Vidyut Vitran Nigam Limited (MVVNL), and Uttar Pradesh Electricity Regulatory Commission (UPERC) at the launch of our consumer perception study in Lucknow. February 2019.



"CEEW's power sector team is working towards building a formal, institutionalised approach to bring consumer perspectives, outlooks and interventions into the governance of the sector. It is appreciable that CEEW involved all the stakeholders in each and every step of their study."

VIKAS CHANDRA AGARWAL

Director (Distribution), UPERC

Source: CEEW annual review 2017-18

7.2 million domestic consumers

will benefit from UP's billing and collection efficiency improvements based on CEEW recommendations

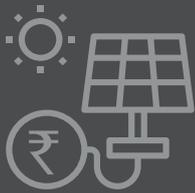


CEEW analysis, 2020

Designing the Common Risk Mitigation Mechanism to unlock finances for renewables

CEEW, together with the Confederation of Indian Industry (CII), the Currency Exchange Fund (TCX), and the Terrawatt Initiative (TWI) designed a multilateral platform, the Common Risk Mitigation Mechanism (CRMM) to deepen solar markets and unlock finance for solar projects in developing economies. The CRMM, endorsed by 16+ countries, is currently being operationalised by the World Bank.

USD 15 billion investments are being potentially leveraged through a USD 1 billion guarantee to set up ~20 GW of solar PV capacity in more than 20 countries through the CRMM



CEEW analysis, 2017-18



Image: CEEW

CEEW's ARUNABHA GHOSH building a case for CLEAN in 2014.

Setting up the Clean Energy Access Network (CLEAN)

CEEW helped set up CLEAN in 2014, to support, unify and grow clean energy enterprises in India. CLEAN today focusses primarily on “rural and underprivileged communities where reliable, affordable and clean energy plays a unique role in accelerating social, environmental and economic development.”



Common Risk Mitigation Mechanism
Feasibility Study
November 2017

#CEEWPRIDE

200+ decentralised renewable energy enterprises supported unlocking > USD 3 million in value through CLEAN



4 Looking Over-the-Horizon at Technology

#Tech4Ward@CEEW

~5-9 gigatonnes of CO₂-equivalent of emissions per year

could be avoided by the end of the century if India were to phase down HFCs in refrigerants



INR 400 crore

estimated cost of training and certifying 2 million AC servicing technicians over the next 15-18 years



CEEW analysis, 2020

Image: pixabay.com

Pioneering work on phasing down HFCs in India

Our analysis on phasing down HFCs could help avoid up to 0.4°C of global warming by the end of the century. Our studies on training service technicians have evolved into a joint programme of the Ministries of Environment and Skill Development. And our recommendations on investments in R&D to lead innovations in cooling technologies could be another big bet for a hot country like ours.

Image: iStock



"I would like to appreciate CEEW's efforts for the commendable analysis they have done on India's long-term HFC emissions. I hope that more civil society organisations in India bring out such independent research."

SUSHEEL KUMAR

(then) Additional Secretary, MoEFCC

Source: CEEW annual review 2014-15



Image: AEEE

◀ CEEW's **SHIKHA BHASIN** and **VAIBHAV CHATURVEDI** adjacent to Minister **HARSH VARDHAN** together with co-authors from TERI and AEEE with **ANIL KUMAR JAIN** (former) Special Secretary, MoEFCC, current Secretary, Ministry of Coal; **GEETA MENON**, Joint Secretary, MoEFCC; and **DR AMIT LOVE**, (then) Joint Director, Ozone Cell, MoEFCC, at the launch of the India Cooling Action Plan. March 2019.

Informing governance of climate engineering technologies

CEEW has dedicated 10 years of study on how climate-engineering research and technologies can be governed. Since 2011 our growing list of partners includes the Solar Radiation Management Governance Initiative (SRMGI), Institute for Science, Innovation and Society (InSIS), the Academy of Sciences of the Developing World, the Environmental Defense Fund (EDF), Canada's Centre for International Governance Innovation (CIGI), the Carnegie Centre for Geoengineering Governance (C2G2) and the Forum for Climate Engineering Assessment.



Principles for Thinking about Carbon Dioxide Removal in Just Climate Policy

Journal Paper | August 2020



Geoengineering Our Climate? Ethics, Politics, and Governance

Book Chapter | September 2018



Geoengineering: The Need for Governance

Journal Paper | February 2019



▲ CEEW's **ARUNABHA GHOSH** speaking on promises and challenges associated with public engagements in climate engineering, at the 'Climate Engineering Conference-2017', Berlin.



"I thank the CEEW for mainstreaming technology in India's policy statements."

ANIL JAIN
(then) Advisor (Energy), NITI Aayog
Source: CEEW annual review 2015-16



SURESH P. PRABHU at the CEEW-InSIS Oxford conference on 'Climate Geoengineering Governance'. June 2014. ▲

Scaling solar-powered irrigation

CEEW's studies have encouraged the adoption of solar-powered irrigation across the country but with equity, environmental and fiscal prudence in deployment strategies.



▲ CEEW's **SHALU AGRAWAL** discussing solar for irrigation with farmers of Uttar Pradesh.

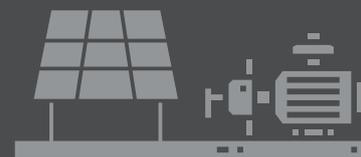


"I congratulate CEEW and Shakti Sustainable Energy Foundation on the release of the solar for irrigation studies. These are policy-pertinent research studies and present actionable recommendations."

AMITABH KANT
CEO, NITI Aayog, at CEEW-SDC-Shakti 'National Dialogue on Solar for Irrigation'. January 2018.

41% of farmers

surveyed in UP in 2018 were interested in adopting solar pumps



CEEW analysis



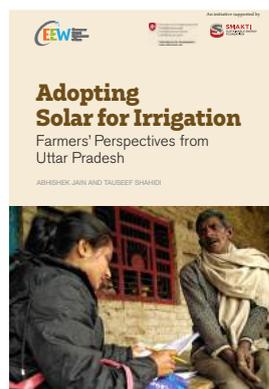
Solar Pumps for Sustainable Irrigation: A Budget Neutral Opportunity

Policy Brief | August 2015



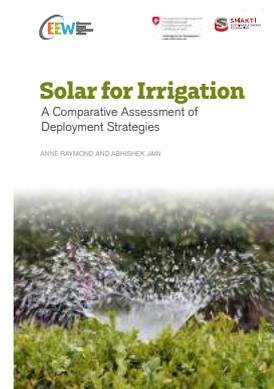
Sustainability of Solar-based Irrigation in India: Key Determinants, Challenges, and Solutions

Working Paper | December 2016



Adopting Solar for Irrigation: Farmers' Perspectives from Uttar Pradesh

Report | January 2018



Solar for Irrigation: A Comparative Assessment of Deployment Strategies

Report | January 2018

Examining the potential of natural farming

CEEW has published studies to evaluate the potential of natural farming in improving yields, ensuring food security and withstanding climate change.



Image: Atul Loke for Panos Pictures/Food and Land Use Coalition

CEEW's **ARUNABHA GHOSH**, with **ERIK SOLHEIM**, (then) Executive Director, UN Environment; **CHANDRABABU NAIDU**, (then) Chief Minister of Andhra Pradesh; and **SATYA SUNDAR TRIPATHI**, (then) Chairperson, Sustainable India Finance Facility (SIFF) at the release of the CEEW-SIFF, Zero Budget Natural Farming, issue brief at the World Economic Forum, Davos, January 2018.



"To take the current research on *Bhartiya Prakrutik Krishi Paddhati* (Indian natural farming practices) further, we need more organisations and partners to conduct comprehensive and multi-faceted studies. Research across different agro-climatic zones in the country to look at overall cost reduction, yields, climate change, water-use, price realisation, will further help understand the prospects better."

DR RAJIV KUMAR
Vice Chairman, NITI Aayog

INR 2,100 crore savings

in fertiliser subsidies for Andhra Pradesh if it were to scale up natural farming to all six million farm families in the state by 2024

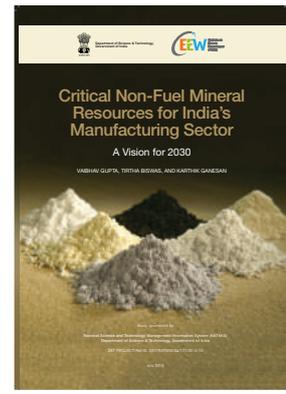


CEEW analysis, 2020



Identifying critical non-fuel minerals to boost *Make in India*

CEEW has been studying resources strategic to nation-building and security and recommends mineral recycling, trade agreements and innovation to confront its high import dependency for critical minerals.



Critical Non-Fuel Mineral Resources for India's Manufacturing Sector: A Vision for 2030

Report | July 2016



◀ **BALVINDER KUMAR**, (then) Secretary, Ministry of Mines with CEEW's **TIRTHA BISWAS**, **KARTHIK GANESAN**, **ARUNABHA GHOSH** and former colleague **VAIBHAV GUPTA** together with senior officials from the Department of Science and Technology (GoI) launched the first-of-its-kind assesment of minerals critical to boost manufacturing. July 2016.

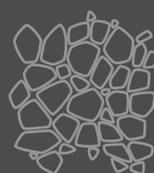


"The CEEW study on critical minerals will assist policymakers and captains of industry to draw up plans to secure India's needs of identified critical minerals in pursuit of sustainable industrial growth."

PROF. ASHUTOSH SHARMA
(then) Secretary, Department of Science and Technology
Source: CEEW Annual Review 2015-16

12 non-fuel minerals

including cobalt, graphite, lithium, and phosphate identified as critical for India's manufacturing



CEEW analysis, 2016

India Cooling Action Plan

CEEW is proud to be a co-author on India's seminal policy on cooling, the *India Cooling Action Plan*, authoring chapters on building R&D platforms and skilling and formalising AC-service technicians.



#CEEW/PRIDE

5 Preparing for the Worst While Hoping for the Best

#Derisking@CEEW

200 billion USD

estimated cost of crops that will be lost in India by 2050 due to global warming

CEEW analysis, 2015



~1.7 billion people

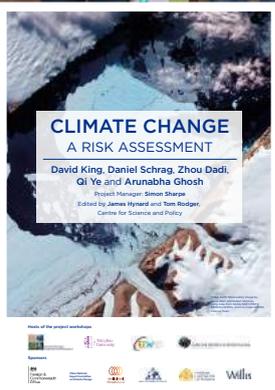
in South Asia will be faced with the risk of extreme water shortage by 2050

CEEW-University of Cambridge-Harvard University Center for the Environment-Tsinghua University analysis, 2015



Forewarning climate risks at a global, national and city-level

Our research has focussed on recommending global climate risk assessments, making cities climate-resilient, evaluating impact of heat stress on human health, and climate adaptation finance. We are working on a detailed climate risk assessment for India, building on the idea of a climate risk atlas.



Climate Change: A Risk Assessment

Report | July 2015

"I congratulate CEEW for their efforts and hope this report on climate risk will trigger a public debate and help business investors, national security personnel, and other policymakers, begin a process of continuous risk assessment."

S. RAMADORAI

Source: CEEW annual review 2015-16

CEEW, Harvard University, Tsinghua University, and Cambridge University released an independent, multi-country assessment of the risks of climate change, at the Bombay Stock Exchange, in the presence of S. RAMADORAI. July 2015.



Applying risk assessment principles from finance and national security to evaluate climate risks



CEEW moderated a conference on 'Risks of Climate Change to Global Economic Development and Security', which included national security policy makers, diplomats, defence leaders, and academics, from different countries, including India, China, the European Union, and the United States. March 2015.

#CEEWPRIDE

Environment of Peace



CEEW's Arunabha Ghosh has been appointed as one of the six members to a high-level panel of the Environment of Peace initiative chaired by Margot Wallström, who served as Sweden's Deputy Prime Minister and Minister for Foreign Affairs until 2019.

The Environment of Peace initiative will focus international attention on practical steps to address the negative impact of today's environmental crises, so as to improve tomorrow's prospects for peace and security.

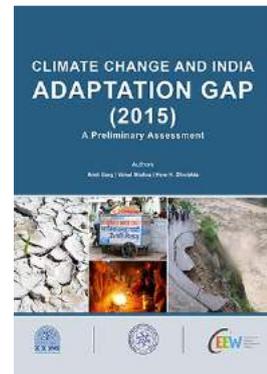


Images: CEEW



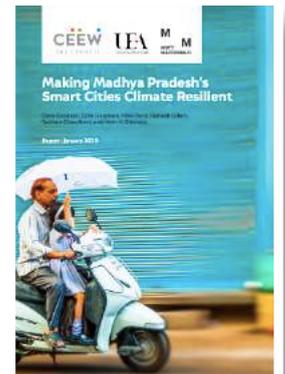
The Costs of Climate Change Impacts for India
A Preliminary Analysis

Working Paper | March 2015



Climate Change and India Adaptation Gap (2015)
A Preliminary Assessment

Report | November 2015



Making Madhya Pradesh's Smart Cities Climate Resilient

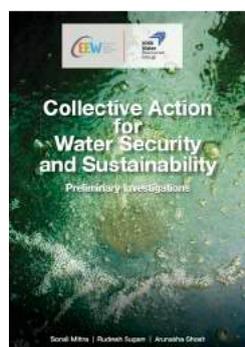
Report | February 2020

Focus on water as our weakest link and the cost of inaction

Our studies on water governance have informed irrigation reform for Bihar; *Swachh Bharat*; and India's *National Water Mission*. We have modelled the water-energy nexus and evaluated gains from the circular economy of water and participatory irrigation management in South Asia. We are forecasting domestic water conflicts, modelling decision-making at the basin-level, and supporting multi-stakeholder initiatives for urban water management.

We worked closely with the Government of Bihar to restructure the minor water resources department—given 96 per cent of Bihar's farmers were small and marginal farmers—to achieve its irrigation intensity targets during the 12th and 13th Five Year Plan periods (2012-22).

Image: CEEW



Collective Action for Water Security and Sustainability
Preliminary Investigations
Report | August 2014

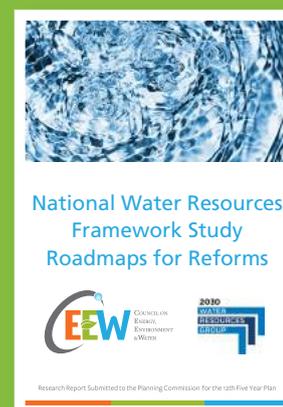


The Perfect Storm
Pathways to Managing India's Water Sector Sustainably
White Paper | June 2018

The National Water Resources Framework Study

Almost a decade ago, the study was undertaken on the request from the erstwhile Planning Commission for detailed roadmaps to reform institutions for managing and governing India's water resources. We submitted a 584-page report on the National Water Resources Framework as part of the 12th Five Year Plan.

- CEEW was also tasked to prepare roadmaps for reforms for the 12th, 13th and 14th Five Year Plans. **We received a letter of appreciation from the Deputy Chairman of the Planning Commission referring to the opening chapter as “an excellent tabulation of accumulated wisdom”.**
- The study was ranked among the world's top policy studies produced by a think tank by the 2013 Global Go To Think Tank Index.



#CEEWPRIIDE

6 Creating a Democratic Demand for Clean Air

#Mission-80-80-80@CEEW

90% of the 102

city clean air plans have no budgetary allocation required to execute the listed actions

CEEW - Urban Emissions analysis, 2020



69/122 cities

that don't meet the national ambient air quality standards do not have real-time air quality monitors



CEEW analysis, 2021

Mission 80-80-80 in action

CEEW has been pivotal in creating a democratic demand for clean air by envisioning 'Mission 80-80-80'. The mission aims to reduce air pollution by 80 per cent in 80 cities by 2027, when India will turn 80 as an independent nation. The demand is for a year-round focus on the quality of lives and livelihoods of the 80 per cent of Indians who are breathing unhealthy air.



Image: TED India

▲ CEEW's **ARUNABHA GHOSH** at TED Talks India, where he outlined 'Mission 80-80-80' to put India on the path to cleaner, safer air. May 2019.



Farmers from Punjab, students, homemakers, officials from the Department of Agriculture, Punjab, as well as lead officials from industry associations, participating at CEEW's 'On Air' dialogue on improving India's ambient air quality.

Images: CEEW

CEEW's **KARTHIK GANESAN**, moderating a session at 'On Air'. November 2019.



▲ CEEW's **L.S. KURINJI** at the Ambient Air Quality Monitoring Station, Aurobindo Marg, New Delhi, to ground-truth satellite readings on pollution activity with on ground readings. 2019.



▲ CEEW's **TANUSHREE GANGULY** at the 'On Air' webinars conducted with city-based civil society organisations in Chandrapur, Pune and Lucknow, to discuss city-wise findings and progress on the deployment of their states' Clean Air Plans. 2020.

Can smog towers fix Delhi's air? CEEW's explainer film



2.5 million smog towers

like the one at Delhi's Lajpat Nagar needed to curb city's air pollution



CEEW analysis, 2020

See the film here <https://www.youtube.com/watch?v=P1WKL8AJUw8>

Co-Chair, Clean Air Council, WEF



CEEW's Arunabha Ghosh has been invited to be **Co-Chair of the Global Future Council on Clean Air** set up in 2020 by the World Economic Forum.

#CEEWPRIDE

7 Plotting India's Low-Carbon Growth Pathways

#Decarbonise@CEEW

48%

estimated decline in energy sector's CO₂ emissions intensity between 2005 and 2030, driven by energy efficiency



4.5% per annum

is the quantum of CO₂ emission cuts India needs post 2030, to be consistent with the 2°C target



CEEW analysis, 2018

CEEW has led the way in plotting 222 low-carbon pathway scenarios for India. Our research has informed India's Mid-Century Strategy under the Paris Agreement, including the potential ratcheting up of India's Nationally Determined Contributions.



Image: iStock



◀ CEEW's **VAIBHAV CHATURVEDI** moderating a session at the CEEW-AU conference, 'Road to the IPCC Sixth Assessment Report: Fostering Deeper Engagement with Industry, Finance and Civil Society'. January 2019.

Images: CEEW



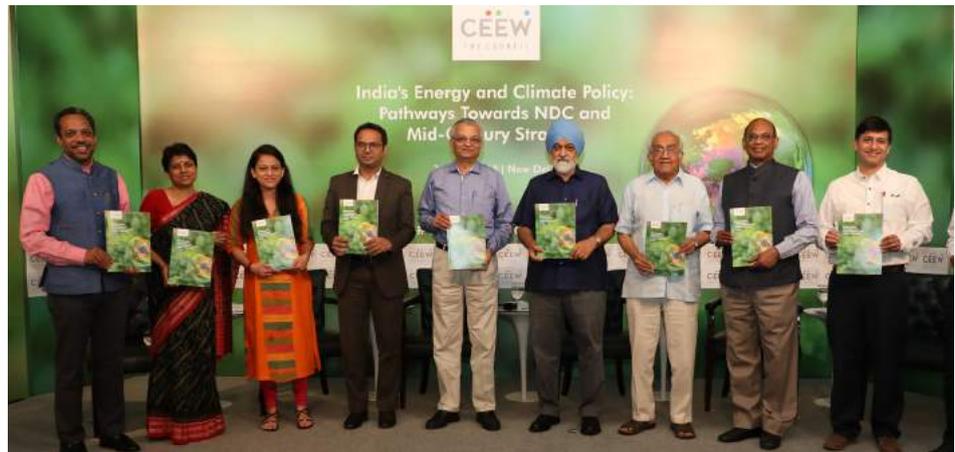
“While there has been international research on the cost of the integration of renewables in the power generation mix, CEEW’s research is the first credible study in the Indian scenario.”

AMIT KULSHRESHTHA

Additional General Manager, NTPC
Source: CEEW Annual Review 2017-18



Sustainable Development, Uncertainties, and India's Climate Policy
Pathways towards Nationally Determined Contribution and Mid-Century Strategy
Report | April 2018



▲ Launch of the CEEW study, *Sustainable Development, Uncertainties, and India's Climate Policy: Pathways Towards Nationally Determined Contribution and Mid-Century Strategy*. CEEW trustees, **DR ANIL KAKODKAR**, and **MONTEK SINGH AHLUWALIA**, delivered key addresses. April 2018.

Recommending mitigation instruments to achieve India's climate and development goals

CEEW and EDF convened a working group comprising multi-sectoral experts to collaboratively develop a framework for choosing appropriate GHG mitigation instruments in the Indian context.



Images: CEEW

Creating India's largest database on industrial GHG emissions

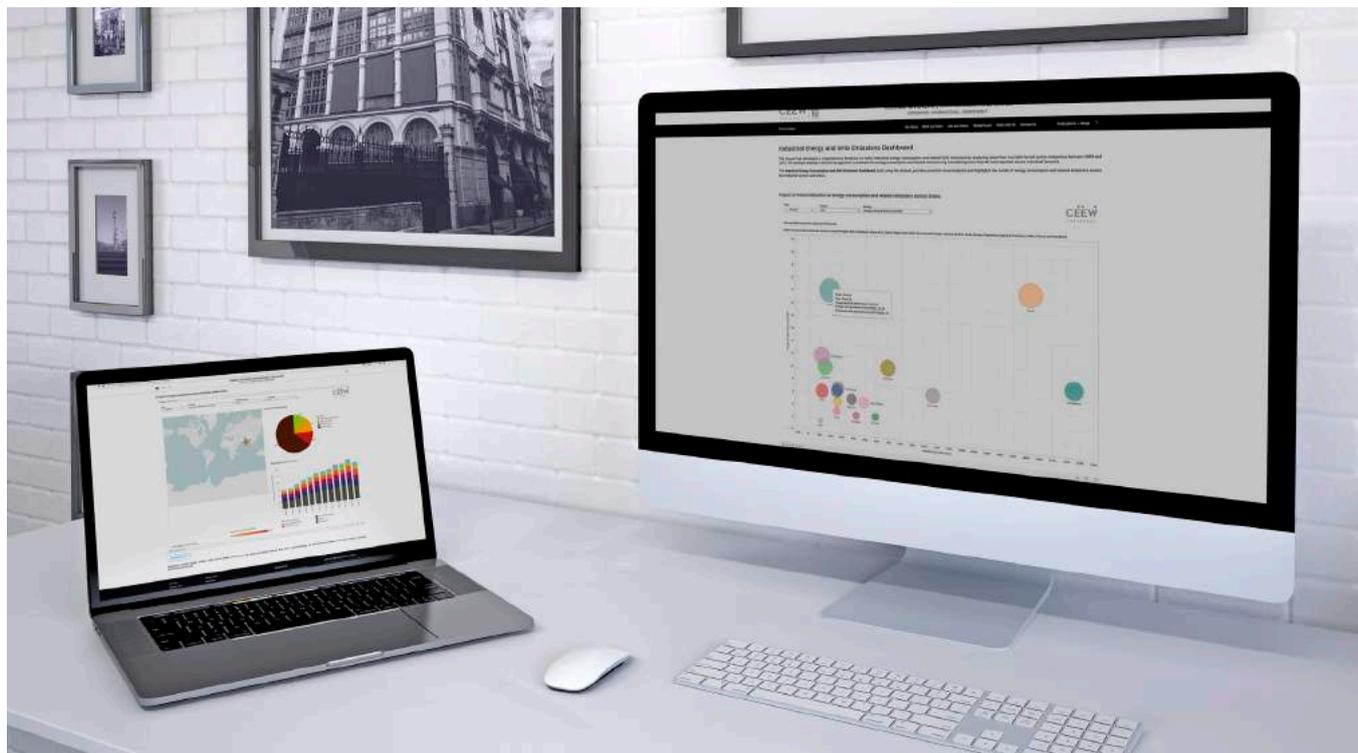
CEEW's estimates of industrial energy-use and emissions led to a peer review of India's official GHG inventory and contribution to the *Biennial Update Reports*, with robust estimates for 635 million tonnes of emissions from the industrial sector – about 27 per cent of national emissions. Sub-national estimates are underway.



Image: iStock

CEEW's open access industrial-energy-emissions dashboard

Using our comprehensive database on industrial energy use and GHG emissions, we developed an online dashboard tracking the energy consumption of more than 80 fuels reported across individual factories, and related emissions across 200,000 formal Indian manufacturing units.



Explore the dashboard: <https://www.ceew.in/data/industrial-energy-emissions-dashboard>

Pioneering green-hydrogen-led decarbonisation

Our pioneering studies on green hydrogen in partnership with the IEA have laid the foundation to drive low-carbon industrialisation. In 2019, we set out the opportunities in green industrialisation, particularly heavy industries such as iron and steel, cement, fertilisers and petrochemicals at the UN Secretary-General's Climate Action Summit. We are working with Indian corporates to explore technologies to lower their carbon footprint. And from mid 2020, we have been advising the Ministry of New and Renewable Energy (MNRE) on hydrogen and drafting portions of the *National Hydrogen Mission* document.

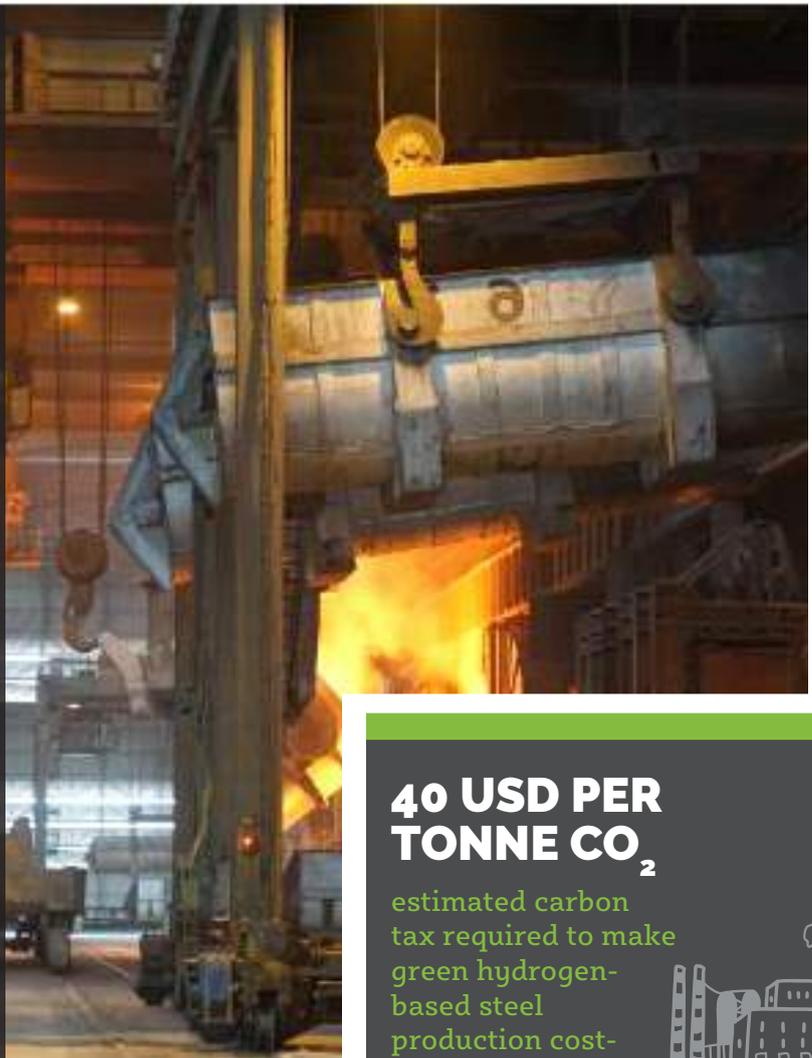


Image: Tirtha Biswas/CEEW

40 USD PER TONNE CO₂

estimated carbon tax required to make green hydrogen-based steel production cost-competitive with conventional blast furnace processes by 2030



CEEW-IEA analysis 2019



Image: CEEW

▲ CEEW's **TIRTHA BISWAS**, moderating a discussion at the CEEW-IEA workshop, 'Renewable Hydrogen for Industry and Beyond'. November 2018.



CEEW's Arunabha Ghosh is the only Indian nominated by the UN Secretary-General to the prestigious United Nations Committee for Development Policy in 2019.

#CEEWPride

8 Getting Many Deals

#Climate@CEEW



Empowering India's climate leadership for 2015 and after

The concept note for CEEW was written two months after the failed climate summit in Copenhagen, December 2009.

Grasping the risks and opportunities of a changing climate—natural, economic, financial, political and diplomatic—since then has been the underlying driver of CEEW's work in climate negotiations for the annual Conference of Parties (COP) and meetings for the Montreal Protocol.

Our efforts can be traced back to years of building trust between governments while contributing deep analytical insights that helped shape the Paris Agreement and now its transparency framework, the Kigali Amendment to the Montreal Protocol, and the aviation emissions deal at the International Civil Aviation Organization.



▲ CEEW's **ARUNABHA GHOSH**, former colleague **KANIKA CHAWLA** and **VAIBHAV CHATURVEDI** at the COP21 in Paris. November-December 2015.



▲ CEEW hosted the first public session on India's INDCs, 'Negotiating the Climate Cliff: India's Climate Policy and Intended Nationally Determined Contributions'. Minister **PRAKASH JAVADEKAR**, (then) Minister of State (IC) for Environment, Forests and Climate Change, delivered the keynote address at this conference. February 2015.

CEEW together with the WWF, hosted the (then) President of Iceland, **ÓLAFUR RAGNAR GRÍMSSON**, at the lecture, 'The AHA Moment: India and our Ice-Covered World,' which included discussions on India's role in the governing of the Arctic. 2013.



Images: CEEW

Convening international leaders in the run up to COP21



▲ CEEW hosted **MACIEJ H. GRABOWSKI**, (then) Environment Minister, Republic of Poland. February 2015.



▲ CEEW hosted **KEVIN RUDD**, President of the Asia Society Policy Institute and former Prime Minister of Australia, for a dialogue on 'India's Energy, Environment and Climate concerns'. March 2015.

Contributing to the Kigali Amendment to the Montreal Protocol

Having pioneered business engagement and extensive analytics on hydrofluorocarbons (HFCs), it was our privilege to support the successful and historic conclusion of many years of negotiations to phase down HFCs, leading to the Kigali Amendment. While for most developing countries, the baseline for freezing HCF was set as 2024, India secured a later baseline of 2028. India demonstrated willingness to be a part of the multilateral deal but secured a differentiated outcome in line with its development priorities.



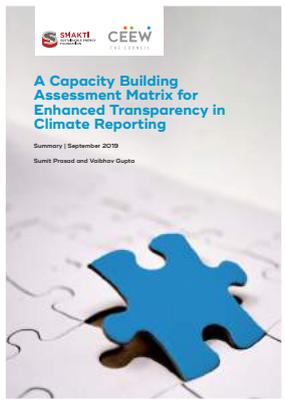
▲ **MANOJ KUMAR SINGH** from the Ministry of Environment and Forest Change at the CEEW high-level roundtable, 'Phasing Down HFCs in the Context of India's Proposed Amendment to Montreal Protocol.' March 2016.



▲ CEEW's **SHIKHA BHASIN** at the CEEW-NEA roundtable, 'Regulating HFCs in India: Challenges and Ways Forward'. October 2018.

Images: CEEW

Informing UNFCCC's Transparency Framework



A Capacity Building Assessment Matrix for Enhanced Transparency in Climate Reporting

Issue Brief | September 2019



Enhanced Transparency Framework in the Paris Agreement Perspective of Parties

Issue Brief | May 2017

UNFCCC recognition



CEEW's Capacity Building Assessment Matrix (CBAM) has been recognised by the UNFCCC as a useful tool that provides a clearer sense of a country's needs to enhance its climate transparency. CEEW along with UNFCCC and UNEP-DTU, is conceptualising the second-phase of CBAM to strengthen the tool and pilot it on other countries.

#CEEWPRIDE

Safeguarding Indian interests in regulating international aviation emissions

In 2016, CEEW published India-specific analysis on how the International Civil Aviation Organisation's (ICAO) global market-based measures (GMBM) to offset international civil aviation emissions would impact India's civil aviation policy targets. This led to India's demand for autonomy to set the criteria on the eligibility of emissions units as well as for a greater balance between offsets and other approaches, at the negotiations.



Can India's Developmental Flight Take Off?

What the ICAO Global Market Based Scheme Means for India

Policy Brief | August 2016



Image: iStock

9 Partnerships at Our Core



As we celebrate CEEW's 10th anniversary, we thank all our partners, across governments, industry, national and international organisations, academia, civil society and media, who have formed the core of our work and success.

There is a story worth telling and people worth acknowledging linked to each of the names we list with pride here. Thank you for being a friend of CEEW and in helping us get to where we are @10.

2030 Water Resources Group (WRG)	British High Commission, New Delhi	Centre for International Governance Innovation (CIGI), Canada
Adaptation Watch Group	Brookings Institution / Centre for Social and Economic Progress (CESP)	Centre for Policy Research (CPR)
Administrative Staff College of India (ASCI)	Brown University	Centre for Study of Science, Technology and Policy (CSTEP)
Ahmedabad University (AU)	BSES Rajdhani Power Limited (BRPL)	Ceylon Electricity Board
Alliance for an Energy Efficient Economy (AEEE)	BSES Yamuna Power Limited (BYPL)	Chhattisgarh Renewable Energy Development Agency (CREDA)
American University, USA	Bureau of Energy Efficiency (BEE)	Children's Investment Fund Foundation (CIFF)*
Ananta Aspen Centre	Cairn Energy	Citizen Consumer and Civic Action Group (CAG)*
Asar	Cambridge Centre for Environment, Energy and Natural Resource Governance (C-EENRG)	City of Cape Town
Asia Society Policy Institute	Cambridge University Centre for the Study of Existential Risk	Clean Energy Access Network (CLEAN)
Asian Development Bank (ADB)	CAN Corporation, USA	Climate Advisers
Asian Development Bank Institute (ADBI)	Caribbean Community Climate Change Centre (CCCCC)	Climate and Development Knowledge Network (CDKN)
Asian Infrastructure Investment Bank (AIIB)	Caspian	Climate Bonds initiative (CBI)
Association of Renewable Energy Agencies of States (AREAS)	Catholic Agency For Overseas Development (CAFOD)	Climate Policy Institute (CPI)
Atlantic Council	Central Electricity Authority (CEA)	Climate Technology Centre & Network (CTCN)
Australian Centre for International Agricultural Research (ACIAR)	Centre for American Progress	Collation for Disaster Resilient Infrastructure (CDRI)
Basque Centre for Climate Change (BC3), Spain	Centre for Battery Engineering and Electric Vehicles (CBEEV)	Collaborative Labeling and Appliance Standards Program (CLASP)
Bihar Agriculture Management & Extension Training Institute (BAMETI)	Centre for Environment and Energy Development (CEED)	Columbia University
Bihar State Power Holding Company Ltd (BSPHCL)	Centre for Environmental Planning and Technology (CEPT) University	Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Bloom Energy Corporation	Centre for European Policy Studies, Belgium	
Borlaug Institute for South Asia (BISA)		

Confederation of Indian Industry (CII)	Farms and Farmers (FnF)	Indian Institute of Science (IISc)
Council of Philanthropies for Climate Action*	Foreign, Commonwealth & Development Office (FCDO), UK	Indian Institute of Technology Bombay (IIT Bombay)
Delegation of the European Union in India	Forum for Climate Engineering Assessment	Indian Institute of Technology Gandhinagar (IIT Gn)
Department of Development of North Eastern Region (DoNER), Government of India (GoI)	Forum for the Future	Indian Institute of Technology Madras (IIT Madras)
Department of Science and Technology (DST), GoI	French Alternative Energies and Atomic Energy Commission (CEA)	Indian Lead Zinc Development Association (ILZDA)
Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) European Union	German Development Institute (DIE)	Indian Renewable Energy Development Agency Limited (IREDA)
Doen Foundation	German Society for International Cooperation (GIZ)*	Indian Renewable Energy Federation (IREF)
Doha Forum	Godrej Prima	Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE)
Embassy of India, Jakarta, Indonesia	Good Energies Foundation*	Indian Space Research Organisation (ISRO)-National Remote Sensing Centre
Edelgive Foundation*	Greenhouse Gas Management Institute (GHGMI)	Inspire Network for Environment (UNDP/INSPIRE/MoEFCC)
e-DRV	Harvard University Center for the Environment	Initiative for Sustainable Energy Policy (ISEP)
Electronics Sector Skill Council of India (ESSCI)	High Commission of India, Colombo	Institute for Advanced Sustainability Studies, (IASS) Germany
Embassy of France in India	High Commission of the Republic of Fiji, New Delhi	Institute for Defence Studies and Analyses (IDSA)
Embassy of the United States in India	Hindustan Unilever Foundation	Institute for Energy Economics and Financial Analysis (IEEFA)
Energy Policy Institute at the University of Chicago (EPIC) – India	ICLEI South Asia	Institute for Global Environmental Strategies (IGES)
Environmental Defense Fund (EDF), USA	IFFCO Foundation	Institute for Governance and Sustainable Development (IGSD)
Environmental Design Solutions (EDS) Global	IKEA Foundation*	Institute for Science, Innovation and Society (INSIS), Oxford
EU-India Clean Energy and Climate Partnership (CECP-EU)	India Climate Collaborative (ICC)	Institute for Social and Economic Research and Policy (ISERP), Columbia University
European Business and Technology Centre (EBTC)	India Climate Dialogue	Institute for Sustainable Communities
European Roundtable on Climate Change and Sustainable Transition (ERCST)	India Energy Storage Alliance (IESA)	
European Union (EU) Commission, Delhi	Indian Council for Research on International Economic Relations (ICRIER)	
ExxonMobil Research and Engineering Company*	Indian Council of Medical Research (ICMR)*	
	Indian Institute of Management Ahmedabad (IIMA)	
	Indian Institute of Management, Sambalpur	
	Indian Institute of Public Health - Gandhinagar (IIPHG)	

Integrated Action and Research for Development (IRADe)

International Centre for Climate Change and Development (ICCCD)

International Centre for Trade and Sustainable Development (ICTSD), Switzerland

International Energy Agency (IEA)

International Finance Corporation (IFC)

International Growth Centre (IGC)

International Institute for Sustainable Development (IISD), Switzerland*

International Institute of Applied Systems Analysis (IIASA), Austria

International Maize and Wheat Improvement Center (CIMMYT)

International Renewable Energy Agency (IRENA)

International Solar Alliance (ISA)

Jagriti Sewa Sansthan

Joint Global Change Research Institute, USA

Lawrence Berkeley National Laboratory (LBNL)

LBJ School at the University of Texas

Lee Kuan Yew School of Public Policy, National University of Singapore

Lighthaus BV*

Maanveeya Development & Finance Private Limited

John D. and Catherine T. MacArthur Foundation*

Madhya Pradesh's Environmental Planning and Coordination organisation

Madhyanchal Vidyut Vitaran Nigam Ltd. (MVVNL)

Massachusetts Institute of Technology (MIT)

Ministry of Civil Aviation, Government of India, GoI

Ministry of Energy and Mineral Resources, Government of Indonesia

Ministry of Environment, Forest and Climate Change (MoEFCC), GoI

Ministry of External Affairs (MEA), GoI

Ministry of Foreign Affairs and International Development, France

Ministry of Health and Family Welfare (MoHFW), GoI

Ministry of Mines, GoI

Ministry of New and Renewable Energy (MNRE), GoI

Ministry of Petroleum and Natural Gas (MoPNG), GoI

Ministry of Power (MoP), GoI

Ministry of Railways (MoR), GoI

Ministry of Water Resources, River Development and Ganga Rejuvenation, GoI

MIT Energy Initiative (MITEI)

Mott Macdonald, UK

National Centre for Disease Control (NCDC)

National Institute of Public Finance and Policy (NIPFP)

National Solar Energy Federation of India (NSEFI)

Natural Resources Defense Council (NRDC)*

Neer Foundation

New York University School of Law

NITI Aayog, GoI

Norwegian Embassy, Delhi

Norwegian Environment Agency (NEA)

Norwegian Ministry of Foreign Affairs

NTPC School of Business

Oak Foundation*

Observer Research Foundation (ORF)

Ola Mobility Institute

Overseas Development Institute (ODI)

Oxfam International

Ozone Cell, MoEFCC, GoI

Pacific Northwest National Laboratory (PNNL), USA

Paris Committee on Capacity Building (PCCB)

Pierre Mendes-France University, France

Planning Commission, GoI

PowerForAll, USA

Prayas (Energy Group)

Pricewaterhouse Coopers (PWC)

Princeton University

Professional Development Associates

Public Health Foundation of India (PHFI)

Public Utilities Commission of Sri Lanka

Pure Earth (formerly known as the Blacksmith Institute)

PV Diagnostics

RAL Consumer Products Ltd.

REConnect Energy

RedSeer Centre for Research Excellence (RedCore)

Refrigeration and Air-conditioning
Manufacturers Association (RAMA)

Refrigeration and Air-conditioning
Servicing Sector Society (RASSS)

Reliance Industries Limited

Renewable Energy Policy Network
for the 21st Century (REN21)

Reuters

Ricardo AEA, UK

Rocky Mountain Institute (RMI)

Royal Norwegian Embassy, New
Delhi

Royal Society, UK

Rythu Sadhikara Samstha (RySS)

SED Fund*

SELCO Foundation

Shakti Sustainable Energy
Foundation*

Shell Foundation*

Shell International

SINTEF, Norway

Skill Council for Green Jobs (SCCJ)

Skolkovo Foundation, Russia

Skoll Global Threats Fund

Society of Manufacturers of Electric
Vehicles (SMEV)

Solar Energy Corporation of India
(SECI)

Solar Radiation Management
Governance Initiative (SRMGI)

Stimson Centre

Stockholm Environment Institute
(SEI)

Sustainable Energy For All
(SEforALL)

Sustainable India Finance Facility
(SIFF)

Swiss Agency for Development and
Cooperation (SDC)

TalentNomics

Tata Power Delhi Distribution Ltd

Tata Steel

Technology Information, Forecasting
and Assessment Council (TIFAC),
GoI

Terrawatt Initiative, France

The Ashden India Renewable Energy
Collective (AIREC)

The Climate Group (TCG)

The Currency Exchange Fund (TCX)

The Energy and Resources Institute
(TERI)*

The Global Solutions Initiative (GSI)

The Nand and Jeet Khemka
Foundation

The Nature Conservancy

The Regents of the University of
California (LBNL)*

Tsinghua University, China

Tyndall Centre on Climate Change,
UK

United Nations Children's Fund
(UNICEF)

United Nations Development
Programme (UNDP)

United Nations Educational,
Scientific and Cultural Organization
(UNESCO)

United Nations Environment
Programme (UNEP)

UNEP-Danish Technicall University
Partnership (UNEP-DTU)

United Nations Foundation

United Nations Foundation: Global
Alliance for Clean Cookstoves

United Nations Framework
Convention on Climate Change
(UNFCCC)

United Nations India

United Nations Office for Disaster
Risk Reduction, Bangkok

United States Agency for
International Development (USAID)

University of East Anglia, UK

University of Grenoble, France

University of Mumbai

University of Oxford (Green
Ammonia Technology Research
Group - OXGATE)

University of South Australia
(UniSA)

University of Texas

Upaya Social Ventures

Urban Emissions

US Department of State - Bureau of
Energy Resources

Uttar Pradesh Power Corporation
Limited (UPPCL)

Vasudha Foundation

Veolia Water India

Vijayavahini Charitable Foundation
(supported by TATA TRUSTS)

Vijnana Bharati

Villgro Innovations Foundation

Waatavaran

The William and Flora Hewlett
Foundation*

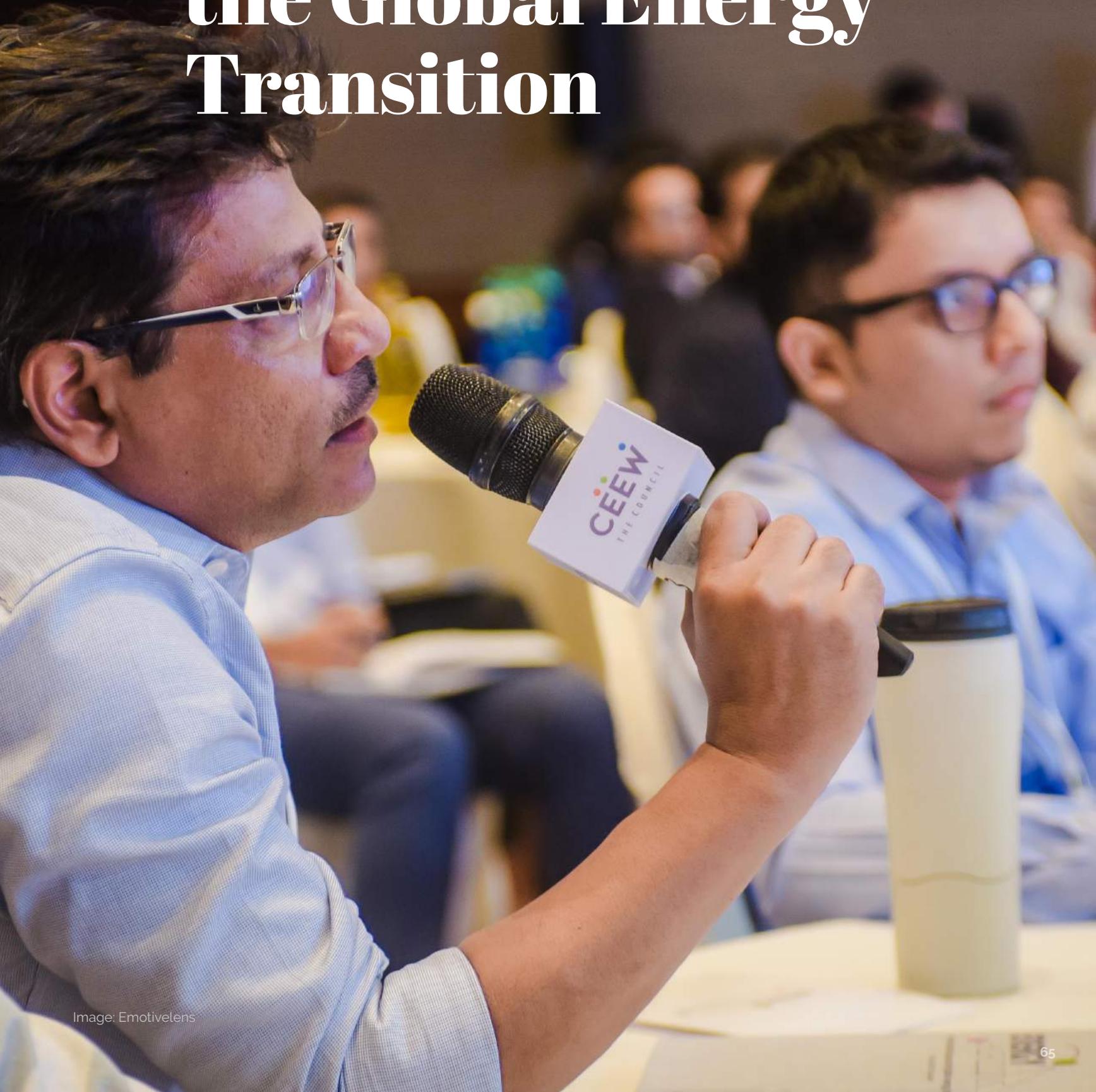
World Bank

World Economic Forum

World Resources Institute (WRI)
India*

* Donors as of 31 December 2020

10 Where Emerging Economies Discuss the Global Energy Transition





Our annual flagship conference, 'Energy Horizons', was held on 17-18 July in partnership with MNRE, IEA, IRENA, REN21, ISA, Shakti Sustainable Energy Foundation, and UN Environment. *The conference is India's premier platform for thought and action leadership on the energy transition in emerging economies.* It comprised several high-level discussions, masterclasses, and solution factory sessions covering a range of issues, including power systems of the future, financing and business model innovations, and next-generation technologies.

- ▶ Solution Factory
- ▶ Masterclass
- ▶ Townhall
- ▶ CEO's Debate
- ▶ Hi-level Plenaries



"I was very impressed. Indeed, deeply so, with Energy Horizons. I hope to help all of you to make it stronger."

TARUN DAS

Founding Trustee, CEEW





We had **60+** hand-picked speakers, **550+** participants, and nearly **200** media mentions over the two days.



Images: EmotiveLens

Informing Public Opinion

Opinion editorials by CEEW researchers

 **FINANCIAL EXPRESS**
Read to Lead

Can we settle the unsettled state of Indian climate resilience?

ABINASH MOHANTY &
HEMANT MALLYA
July 2020

Energy Review

Building a hydrogen-ready natural gas infrastructure

HEMANT MALLYA
& TIRTHA BISWAS
September 2020

One Earth

Air pollution is solvable

L. S. KURINJI
February 2020

live **mint**

India's challenge of scaling Europe's carbon wall

KARTHIK GANESAN
August 2020



THE TIMES OF INDIA

Mission 80-80-80: A five-step roadmap for cutting pollution

ARUNABHA GHOSH
December 2019

hindustantimes

Environment Day: create a new social contract

ARUNABHA GHOSH
June 2020

Since January 2019, Arunabha Ghosh has been writing a monthly column, 'Over the Horizon', for Hindustan Times, one of India's leading mainstream dailies.

Business Standard

Needed: Global Risk Pooling Reserves Fund

ARUNABHA GHOSH
May 2020

Business Standard

Natural farming for fiscal prudence?

ARUNABHA GHOSH &
NITI GUPTA
January 2020

THE HINDU
BusinessLine

How to achieve self-reliance in solar manufacturing

RISHABH JAIN
September 2020

Business Standard

Taxing or trading our environmental sins?

ARUNABHA GHOSH &
VAIBHAV CHATURVEDI
October 2019

 **Energyworld.com**
From The Economic Times

Addressing the power sector's Achilles heel

KARTHIK GANESAN &
PRATEEK AGGARWAL
September 2020

 **FINANCIAL EXPRESS**
Read to Lead

Energy efficiency: the road to MSME recovery

HEMANT MALLYA,
ARUNABHA GHOSH
June 2020

 **FINANCIAL EXPRESS**
Read to Lead

How national renewable energy database will help policymakers and developers

GAGAN SIDHU
January 2020

 **Energyworld.com**
From The Economic Times

Rethinking India's energy subsidies needed during uncertain times

KARTHIK GANESAN
April 2020



Smart Metres can make your electricity bills safe. New survey in UP shows

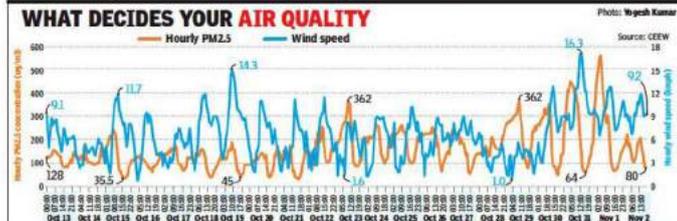
SHALU AGGARWAL,
SUNIL MANI
April 2020

20mn people in city at risk due to cyclones, rise in sea level: Study

Badri Chatterjee
MUMBAI: The threat of increasing cyclonic events, storm surges and sea-level rise could paralyze the financial capital, affecting the lives of more than 20 million people, a study has revealed. The study further warned that coastal cities with higher infrastructure density and delicate infrastructure were left with no more than 10 years to act against the impacts of climate change.

Pray for stronger winds if you want to breathe easier

Jaiveer Gandhi
New Delhi: On Sunday the concentration of PM2.5 in Delhi's air crossed the mark of 500 micrograms per cubic metre in the morning.



OTHER METEOROLOGICAL FACTORS
Wind direction: Northwesterly winds bring pollution through stable burning directly towards the capital.
Mixing height: The higher the mixing height, the greater the chance there is for pollutants to disperse. If the height is low, pollutants will stay closer to surface.
Temperature: The lower the temperature, the more chances are that pollution level will rise due to a low boundary layer, trapping pollutants close to the surface.

Experts revealed that not only Delhi, but the entire Indo-Gangetic belt was largely impacted by meteorological conditions, with stagnant air trapping pollutants over the region. 'We've seen it happen in several years, and these conditions have influenced the dispersion of pollutants in any region. On November 1, the PM2.5 level crossed 500 micrograms per square metre for a couple of hours in the morning. The boundary layer rose due to the wind flow speeding up, the micro pollutant level had fallen by the evening.'

Why smog tower replica doesn't bring good news

New Delhi: To assess the possible impact of an anti-smog tower on the ambient air quality in its surroundings, an environmental organisation carried out an experiment with an air purifier in a balcony and measured readings within 12 feet of the device.

SMOG TOWER HOW IT MAY HELP
THE EXPERIMENT
An air purifier set up in a balcony to replicate a mini-prototype of the 'anti-smog tower', which will be erected at Connaught Place at a cost of Rs 30 crore soon.
Time when air purifier began 3.45pm
Distance measured Up to 12 ft
Ambient PM2.5 levels before the purifier began 80-89 micrograms per cubic metre (standard is 60 micrograms)

Karthik Ganesan, fellow at CE-FAW who conducted the experiment, said that PM2.5 readings of 80-89 per cubic metre to 56-65 per cubic metre, the readings were as high as 75 per cubic metre from the flow of air.

ई-वाहन लक्ष्य के लिए बड़े निवेश की दरकार

2030 के लिए विभिन्न प्रोडिक्ट वाहन लक्ष्य को तय करने के लिए 12.5 लाख करोड़ रुपये निवेश की आवश्यकता होगी
भा
रतार में कार, दोपहिया पर ब्रेक

चला शुद्ध हवा येऊ द्या; हवेच्या गुणत्तेचा दर्जा उंचाविण्यात राज्यातील १८ शहरांना अपयश

लोकमत
पर्यावरणात स्वच्छ
प्रदूषणाबाबत तज्ञांचे मत काय?
लोकमताने काढलेल्या अंदाजानुसार महाराष्ट्र प्रदूषण नियंत्रण मंडळाने राज्यातील 18 शहरांना अपयश देऊन शुद्ध हवा येऊ द्या अभियानात यश मिळविले आहे.

Punjab farm fires up 9x in Oct this year

Satellite Images Show 3 Times Increase In Haryana Too As Stubble Burning Starts Early
GAINS GO UP IN SMOKE?
Fire counts in districts of Punjab and Haryana (Oct 1 - Oct 11)

स्वच्छ हवेची जबाबदारी 9६ संस्थांवर!

उपाययोजनांची अंमलबजावणी करण्यात अडथळे
आराखडा आखण्यात आला आहे, या कुठी आराखडाच्या अंमलबजावणी या उपाययोजनांची केवळ १० टक्के जबाबदारी महाराष्ट्र प्रदूषण नियंत्रण मंडळाकडे असल्याचे समोर आले आहे.

संकट: 8 लाख सालां में पहली बार ग्रान हाऊस गैसों का लेवल उच्चतम स्तर पर पहुंचा

काऊंसिल ऑन एनर्जी, एनवायनमेंट एंड वाटर दिल्ली के सर्वेक्षण में सामने आए चौकाने वाले तथ्य
पर्यावरण में कार्बन डाईऑक्साइड पहले इतनी हाई कमी नहीं
सन् 1880 से अब तक 8 इंच बड़ा समुद्र में जलस्त

#InNews



TANUSHREE GANGULY

India Today TV

Smog Towers in Delhi

KARTHIK GANESAN
NDTV
Stubble Burning Not Only Reason For Delhi's Air Pollution, Says Data



ABINASH MOHANTY

Rajya Sabha TV

The Big Picture: Climate Change & India



NITI GUPTA
India Today TV
Sustainable Farming



Women in Sustainability

#GenderPositive@CEEW

CEEW's Women in Sustainability (WiS) is a network of individuals and institutions who want to promote greater participation, inclusiveness, and visibility of women at all levels of the sustainability public policy workforce. It was launched on World Environment Day, in 2017 in collaboration with the United Nations.



"There is abundant research and practical evidence that women can assist in building stronger, more resilient and environmentally-friendly communities that are better able to resist climatic impacts and seize opportunities for a transition to a greener, cleaner world. [I welcome CEEW's Women in Sustainability initiative and look forward to it flourishing in the years to come.](#)"

PATRICIA ESPINOSA

Executive Secretary, UNFCCC

Source: CEEW Annual Review 2016-17

From talks to readings, to conversations with inspirational women role models, CEEW's WiS has covered topics as diverse as plastic pollution to paternity leave to barriers in women's career growth to generating a climate and eco-system within organisations that enable women to prepare and aspire for leadership positions.



Images: CEEW

A WiS networking session with other professionals.



◀ De-stigmatising menstruation: building workplace sensitivities

SONAL JAIN, Co-Founder of Boondh, giving a talk on menstrual literacy, workplace sensitivities and sustainable menstrual products. February 2020.

Rethinking inclusion in the times of COVID-19

WiS convened a virtual discussion during the lockdown to identify existing inequities in the way women were disproportionately affected by the pandemic. Experts also brainstormed on social, economic and policy measures that could ensure everyone receives equitable recovery opportunities.



▲ L to r (top to bottom): former colleague **SASMITA PATNAIK**; **G.V. KRISHNAGOPAL**, ALC India; **SMITA MOHANTY**, PRADAN; **SANGEETA AGASTY**, Foundation for MSME Clusters; and **TANYA KOTHARI**, Shell Foundation at the webinar. May 2020.

Gender KPIs @ CEEW

CEEW formulated nine key performance indicators (KPIs) to track and promote gender inclusion within the institution in 2018. A look at our performance in Year 2 as presented to our governing board.

Year 1
As of Aug 2019

Year 2
As of Jul/Aug 2020

50:50 | **46:54***

The **proportion of women to men** in the organisation

34% | **44%**

Total salary disbursed to **women**

1/8 | **4/11****

Women team leads across leadership roles

0/7 | **1/8#**

Women on the CEEW governing board

31% | **29%**

Women as lead authors in research publications

30% | **32%****

Women speakers at CEEW panel discussions

12% | **45%****

Women in CEEW programmatic advisory groups

8% | **23%****

Number of times women researchers quoted in the press

18% | **50%****

Women as first authors in opinion editorials published

10% | **20%***

Women as second authors in opinion editorials published

Source: CEEW analysis

* As of 20 August 2020

** As of 31 July 2020

Our new board member formally joined in October 2020

Publications

1 September 2019 to 31 August 2020

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1. **Prasad, Sumit, and Vaibhav Gupta.** 2019. *A Capacity Building Assessment Matrix for Enhanced Transparency in Climate Reporting: An India Assessment.* New Delhi: Council on Energy, Environment and Water.
2. **Jha, Shaily, Sasmita Patnaik, and Abhishek Jain.** 2019. *Financing Solar-powered Livelihoods in India: Evidence from Micro Enterprises.* New Delhi: Council on Energy, Environment and Water.
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17. **Singh, Vaibhav, Arjun Dutt, and Gagan Sidhu.** 2020. *RE-Financing India's Energy Transition: Limited Period Subsidised Credit Enhancement for Domestic RE Bond Issuances.*

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18. **Jain, Rishabh, Arjun Dutt and Kanika Chawla**, 2020. *Scaling Up Solar Manufacturing to Enhance India's Energy Security*. New Delhi: Council on Energy, Environment and Water.

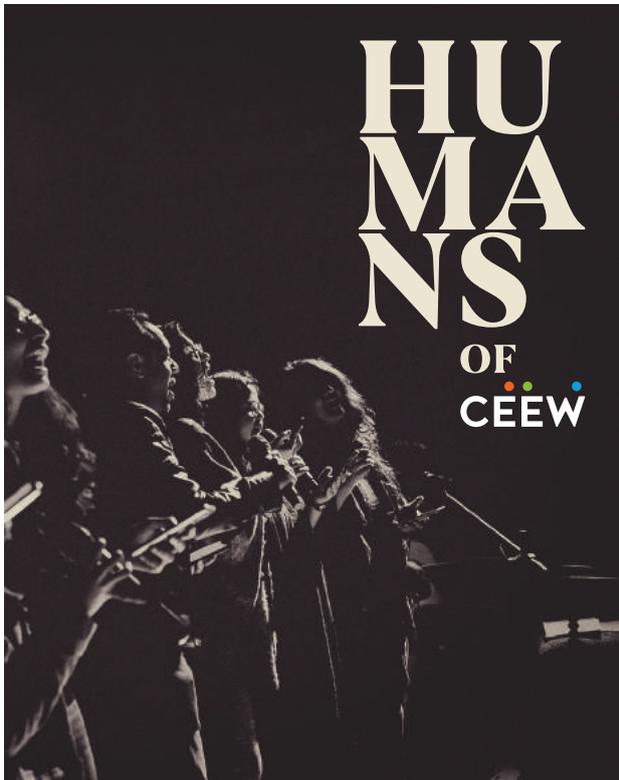
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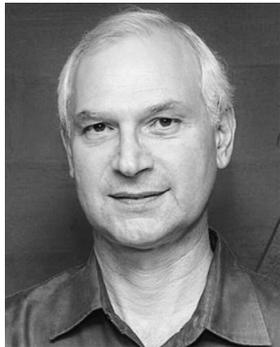
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 2. Access to cheap finance key to attainment of record-low tariffs. November 2019.
 3. Quantifying the unquantified costs of uncertainty propping up RE tariffs. November 2019.
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 9. CEEW-CEF's wish list for union budget 2020-21. January 2020.
 10. Deja vu 2018 – new duties and increased uncertainty. February 2020.
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- ## CEEW-CEF ANALYSIS
1. Net-metering the rooftop solar revolution. November 2019.





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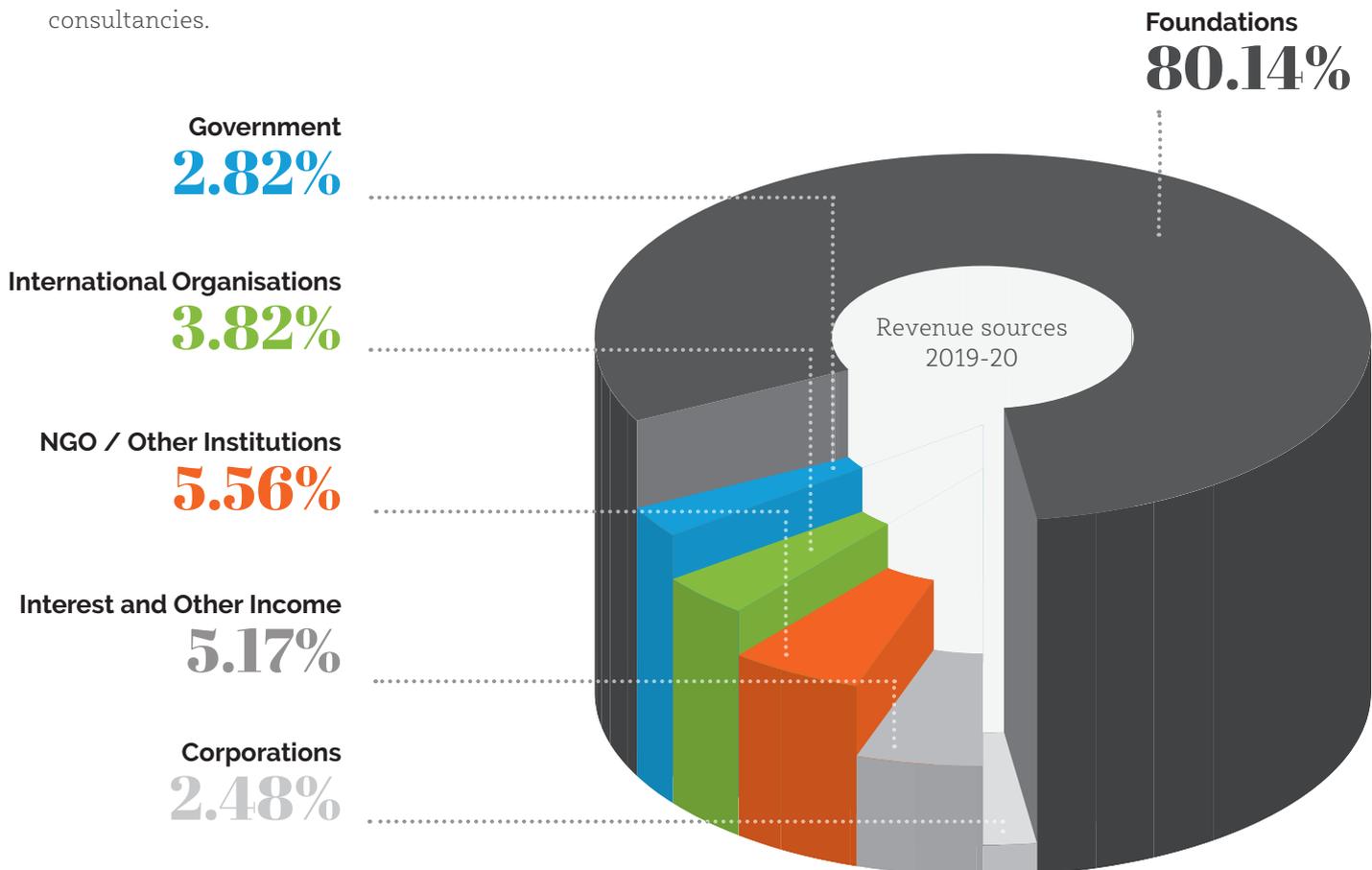
Funding

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Gratitude

If you noticed a dream and mentored a vision
and didn't dismiss me for a fool;
If you opened the door to an empty floor
with not a desk or scarcely a tool;
If you gave a chance when we barely got a glance
to prove what a tiny troupe could do;
If you took a bet but offered no safety net
I'd still be in debt to say, "Thank you!"

If you forfeited a job that was part of the mob
and chose the path for the few;
If you gave up time, picked not money but mind
to turn a needle or two;
If you used policy, capital, tech, behaviour
to chisel sturdy legs of the stool;
If your knowledge spoke eternal truth to power
I'd forever bow to your fortitude.

If you came from penury or the greatest of privilege
but devoted your life to build a bridge;
If you didn't just rest on high morals to preach
but acted with gumption for scale and reach;
If you charged at the citadels of the incumbents
faced fire and flak as walls you breached;
If you fought odds to create opportunity for others
I'd say a prayer to thank Almighty for thee.

If you carried us water, cleaned and guarded our stations
paid our dues, made us follow all norms;
If you helped another, training them with patience
building legacies that would carry on;
If you delivered before time, fulfilled expectations
urgent and important being all done;
If you stamped your character on your vocation
I'd worship the light that you have shone.

If you wished your strokes could paint a grander canvas
fill your palette, then, with colours of adventure;
If you deepened the roots or broadened the branches
erected them platforms but feared no failure;
If you strode solo or sprinted, on long lonely journeys
ran marathons that made you stronger to endure;
If you could trust your instincts to believe your partners
I'd walk with you to the ends of the Earth.

By Arunabha Ghosh

Penned for CEEW's 10th anniversary

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Sanskrit Bhawan, A-10, Qutab Institutional Area
Aruna Asaf Ali Marg, New Delhi - 110067, India

+91 11 40733300

info@ceew.in | ceew.in | [@CEEWIndia](#) | [ceewindia](#)