NITI Aayog

Azadi Ka Amrit Mahotsav

G20 भारत 2023 INDIA

THINKING FOR OUR PLANET

75 ideas to promote LiFE

LiFE Lifestyle for Environment

GLOBAL CALL FOR IDEAS AND PAPERS

75 ideas to promote LiFE

LiFE
Lifestyle for Environment

> "This word is LiFE, which means 'Lifestyle For Environment'. Today, there is a need for all of us to come together and take Lifestyle For Environment (LiFE) forward as a campaign. This can become a mass movement towards an environmentally conscious lifestyle."

Shri Narendra Modi
Prime Minister

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MESSAGE

It is heartening to learn about the publication of 'Thinking for our planet: 75 ideas to promote LiFE' on the occasion of World Environment Day.

Our culture says: ईशावास्यमिदं सर्वं, meaning the whole world is permeated by divinity. As a natural consequence, our ancestors maintained a harmonious relationship with nature. The result of this was the blooming of a number of sustainable lifestyle practices that are conscious of our impact on the environment. The concepts of Reduce, Reuse and Recycle are integral to our daily lives.

Mission LiFE - Lifestyle for Environment not only envisions learning from our past by documenting such practices but also encourages the adoption of sustainable lifestyle practices from across the world. NITI Aayog's endeavour to bring together global domain experts, practitioners and academicians in this regard is laudable.

I am glad to see the overwhelming response to my call for inviting ideas and papers on LiFE, with more than 2,500 ideas received from 67 nations. The compilation of the 75 best ideas contributes towards making Mission LiFE a truly global mass movement. These ideas may seem like small steps for each individual but at a global scale, they can have a massive impact.

Heartiest congratulations and greetings to NITI Aayog for bringing out this Compendium of 75 ideas and aiding the creation of a culture of sustainable, environment-conscious lifestyles across the world.

(Narendra Modi)

New Delhi
ज्येष्ठ 10, शक संवत् 1945
31st May, 2023

Abbreviations

ABC	Attitude, Behaviour, Conditions
ABCD	Awareness, Behaviour, Community, Development
AC	Air Conditioner
ADCRR	Adyar and Cooum Riverine Regions
ADF	Advanced Disposal Fee
AI	Artificial Intelligence
AIR	Awareness-Impact-Rewards
AMC	Advance Market Commitments
ANOVA	Analysis Of Variance
ARC	Advanced Recycling Charge
ASAL	Arid and Semi-arid lands
AWARE-Smartbins	Awareness of Waste Accounting and REcycling through Smartbins
BCC	Behaviour Change Communication
BCD	Behaviour Change Design
BLE	Bluetooth Low Energy
BSTC	Bangalore Social Travel Club
CAL	Climate Action for Life
CBSE	Central Board of Secondary Education
CBSM	Community-Based Social Marketing
CFLB	Compact Fluorescent Light Bulb
CFR	Code of Federal Regulation
CGWB	Central Ground Water Board
CLAP	Coordinating, Learning and Aggregating Platform
CNT	Carbon NanoTube
COP	Conference of Parties
CSE	Centre for Science and Environment
CSO	Civil Society Organisation
CT	Carbon Trace
DAFE	Department of Agriculture and Farmer Empowerment
DHAN	Development of Humane Action
EAST	Easy, Attractive, Social and Timely
EC	European Commission
ECBC	Energy Conservation Building Code
EDI-NET	Energy Data Innovation Network
ELM	Elaboration Likelihood Model
EPI	Energy Performance Indicators
EPR	Extended Producer Responsibility
EVs	Electric Vehicles
FAO	Food and Agriculture Organisation
FIRM	Fix It Right Mindset
FSM	Fecal Sludge Management

GCIP	Global Call for Ideas and Papers
GDA	Grocery Delivery Applicaiton
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GIS	Geographic Information System
GLP	Green Leaders Program
GPL	Green Premier League
GPS	Global Positioning System
GRSS	Green Rooftop Subsidy Scheme
HCHH/HC	High Energy Consuming Households
HEIs	Higher Educational Institutes
HIPAA	Health Insurance Portability and Accountability Act
ICT	Information, Communication and Technology
ILB	Incandescent Light Bulb
IoT	Internet of Things
IPCC	Intergovernmental Panel on Climate Change
IPDS	Integrated Power Development Scheme
IPL	Indian Premier Leagure
ISB	Indian School of Business
ITT	Intent-to-Treat
IVR	Interactive Voice Response
JJM	Jal Jeevan Mission
KPIs	Key Performance Indicators
LC	Low Energy Consuming Households
LiFE	Lifestyle for Environment
LMIC	Low - and Middle - Income Country
LPG	Liquefied Petroleum Gas
MEA	Millennium Ecosystem Assessment
MINDSPACE	Messenger, Incentives, Norms, Defaults, Salience, Priming, Affect, Commitments, and Ego
MOA	Motivation-Opportunity-Ability
MoEFCC	Ministry of Environment, Forest and Climate Change
N3	Nurture Nature Naturally
NCD	Non-Communicable Diseases
NDC	Nationally Determined Contribution
NEP	National Education Policy
NF	Nature Friendly
NGO	Non-Governmental Organisation
NR	Nature Recovery
NRT	Nicotine Replacement Therapy
NS	Nature Supply
OSS	On-site Sanitation System

P3	Pro-Planet People
PEB	Pro-Environmental Behaviours
PQA	Practice Quit Attempts
PxD	Precision Development
R&D	Research & Development
RCT	Randomised Control Trial
RWA	Residents Welfare Association
SCT	Social Cognitive Theory
SDG	Sustainable Development Goals
SDT	Self Determination Theory
SHC	Soil Health Card
SHG	Self Help Groups
SIP	Solar Irrigation Pumps
SKY	Suryashakti Kisan Yojana
SONA	Sustainable Organic Natural Art
SPINE	Sensitise, Prioritise, Incentivise, Normalise, Eternalise
SRI	System of Rice Intensification
SSPRVM	Solar Powered Smart Plastic Reverse Vending Machines
SWM	Solid Waste Management
TCM	Takakura Composting Method
TDM	Travel Demand Management
TIDE	Technology Informatics and Design Endeavor
TPB	Theory of Planned Behaviour
UDISE+	Unified District Information System for Education Plus
ULB	Urban Local Bodies
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations International Children's Emergency Fund
UNSD	United Nations Statistics Division
UNTWO	United Nations World Tourism Organisation
VGI	Vehicle Grid Integration
VTBC	Voluntary Travel Behaviour Change
WEEERA	Waste Electrical and Electronic Equipment Recycling Action
WHO	World Health Organisation
WIERD	Western Industrialised Educated Rich and Democratic
WRAP	Waste and Resources Action Programme
WTA	Willingness to Accept
WTP	Willingness to Pay

Our pursuit of ideas for global change

A Global Call for Ideas and Papers for LiFE

Introduced by the Prime Minister Shri Narendra Modi at COP26 in Glasgow in November 2021, LiFE emphasises the need to bring about behavioural change through social networks and the importance of a global network of Pro-Planet People to promote a pro-environment lifestyle.

Moving away from mindless throwaway culture and consumerism towards conscious consumption will reduce the pressures on our water bodies, land and soil, and improve our overall well being. Refining individual daily practices and imbibing circular economy approaches – reuse, reduce, recycle, repurpose, and redesign - will gradually minimise environmental costs. These individual actions backed by scientific, industrial and policy nudges, when aggregated at global scale, will ignite a legacy to act in the best interest of the planet.

According to the United Nations Environment Programme (UNEP), if 1 billion people out of the global population of 8 billion adopt eco-friendly behaviours in their daily lives, global carbon emissions will drop by approximately 20%. LiFE seeks to promote these individual 'LiFE actions' by making every person a trustee in fighting climate change and transforming 'planet first' into a personal value.

LiFE is our effort to integrate traditional wisdom and present-day scientific research to harness the best of the past and the present to tackle climate change and its cascading effects. India is the first country to include LiFE in its Nationally Determined Contributions (NDC).

> **The NDC states that**
>
> India will put forward and propagate a healthy and sustainable way of living based on its traditions and the values of conservation and moderation, including through a mass movement for LiFE, as a key to combating climate change.

This Indian offering to a global audience urges individuals, corporates, and governments to rethink our choices and redesign our needs to reduce the pressure on our planet. The urgency of this call to action is reiterated by the continuous emphasis the Prime Minister has placed on sustainable lifestyle, including at the UNSD Summit 2014, UNESCO 2015, World Sustainable Development Summit 2018, UN Champions of Earth Award 2018, G20 Riyadh 2020, LiFE Global Call for Ideas and Papers in June 2022, Global Launch of Mission LiFE in October 2022, G20 Summit at Bali in November 2022, and recently during a World Bank event in April 2023.

India looks to the world to partner on this journey and adopt Lifestyle for Environment. Together, we can all be Pro-Planet People.

The Call:
Gathering the Best Ideas
from Thought Leaders

June 5, 2022

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The LiFE Global Call for Ideas and Papers (GCIP) was announced by the Prime Minister of India, Shri Narendra Modi on June 5, 2022. The LiFE GCIP was attended by prominent personalities including Mr Bhupendra Yadav, Mr Bill Gates, Lord Nicholas Stern, Prof. Cass Sunstein, Ms Inger Andersen, Mr David Malpass, and others. The LiFE GCIP is a landmark initiative to nudge global citizens towards adoption of more environment-friendly lifestyles and placed India in the driver's seat of inspiring citizen action for climate change. Through the ideas and papers from scholars, researchers and practitioners from all around the world, India could create a repository of citizen action ideas that are replicable and adoptable worldwide. This novel endeavour has become a bridge between environment-friendly ideas and their implementation.

Launch of LiFE Global Call for Ideas and Papers, June 5, 2022

At the LiFE GCIP, the Prime Minister highlighted the urgency of addressing climate change through human-centric, collective efforts and robust action to achieve sustainable development. Drawing inspiration from Mahatma Gandhi's vision of a zero-carbon lifestyle, the Prime Minister urged citizens to follow the principles of reuse, reduce and recycle. The Prime Minister's call to action underscores the importance of measurable and scalable behaviour change solutions, which are essential to driving climate-friendly behaviours among individuals and communities, both locally and globally.

Bill Gates,
Co-Chairman of Bill & Melinda Gates Foundation:

The necessity for collective global action to address climate change has never been greater, and India's role and leadership are crucial in ensuring that we reach our climate goals.

Prof. Cass Sunstein,
Co-author of Nudge Theory:

Many of us are looking at India for inspiration and ideas.

Inger Andersen,
Executive Director of the UN Environment Programme:

With more than 1 billion people, and home to a thriving generation of innovation and entrepreneurship, India is central to global environmental action.

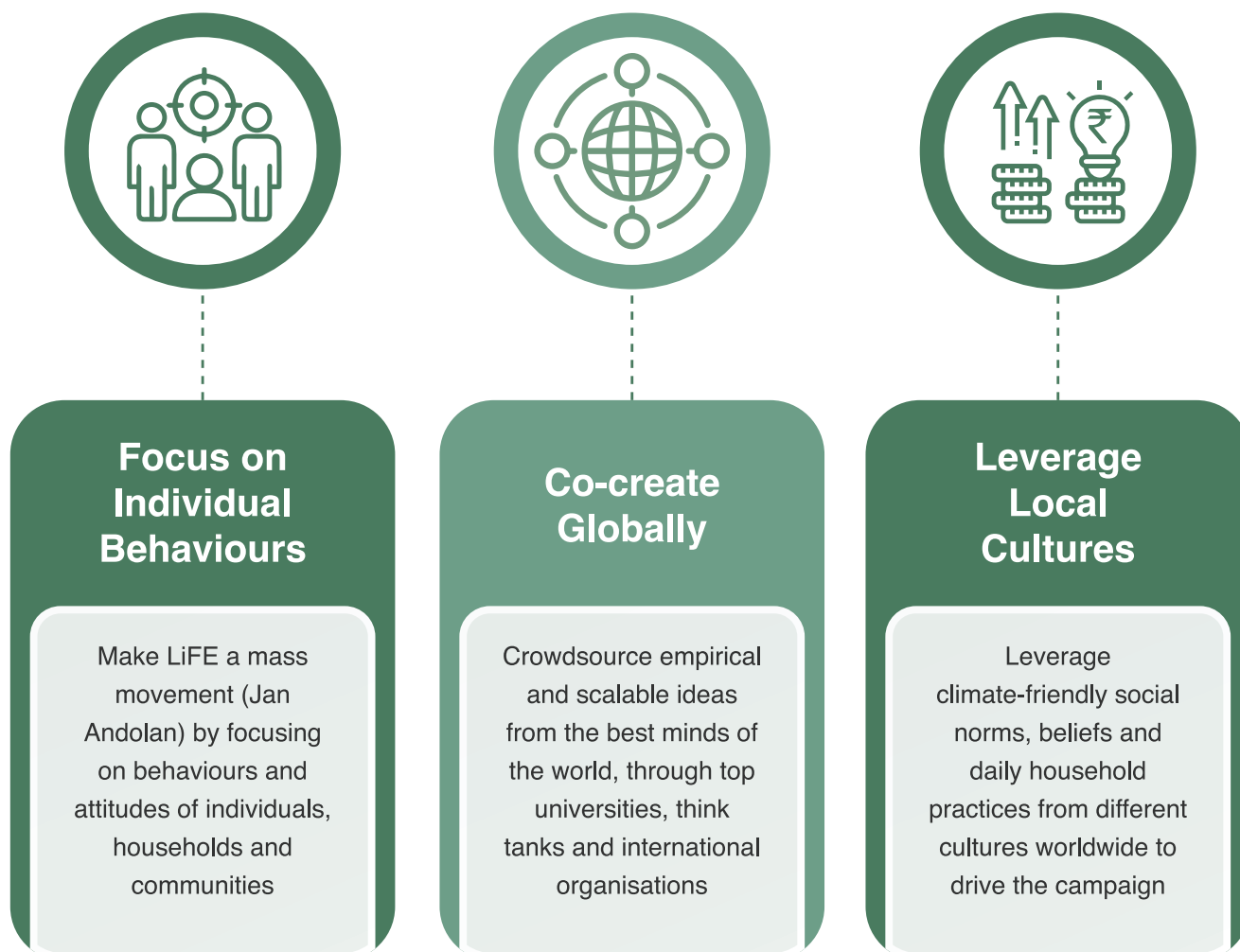**Achim Steiner,**
UNDP Administrator:

Countries like India are serving as kinetic energy behind the decisive climate action on the world stage. That includes its work through cutting edge initiatives like International Solar Alliance and Coalition for Disaster Resilient Infrastructure and One Sun One World One Grid.

Aniruddha Dasgupta,
President & CEO of World Resources Institute (WRI):

Thanks to the Prime Minister of India for a much-needed global movement and conversation on how we live, how we consume and how we take care of the planet.

Lord Nicholas Stern,
Climate Economist:

It would be the development and growth story of the 21st century, both in raising the living standards of the communities and saving the future of generations to comes.

The Global Call for Ideas and Papers was launched with three elements:

Focus on Individual Behaviours

Make LiFE a mass movement (Jan Andolan) by focusing on behaviours and attitudes of individuals, households and communities

Co-create Globally

Crowdsource empirical and scalable ideas from the best minds of the world, through top universities, think tanks and international organisations

Leverage Local Cultures

Leverage climate-friendly social norms, beliefs and daily household practices from different cultures worldwide to drive the campaign

The best five ideas will receive USD 25,000 for testing their ideas in India. By December 2022, 2,538 participants from 67 countries had submitted ideas for Phase I of the LiFE Global Call for Ideas and Papers. This included 2264 submissions from Asia, 115 submissions from North America, 88 submissions from Europe, 56 submissions from Africa and the remaining from South America and the Australian continent.

The Unveiling:
Global Launch of Mission LiFE

Gujarat, October 20, 2022

On October 20, 2022, Prime Minister Shri Narendra Modi launched Global Mission LiFE in the presence of the UN Secretary-General, António Guterres, and other dignitaries at the Statue of Unity, Ekta Nagar, Gujarat.
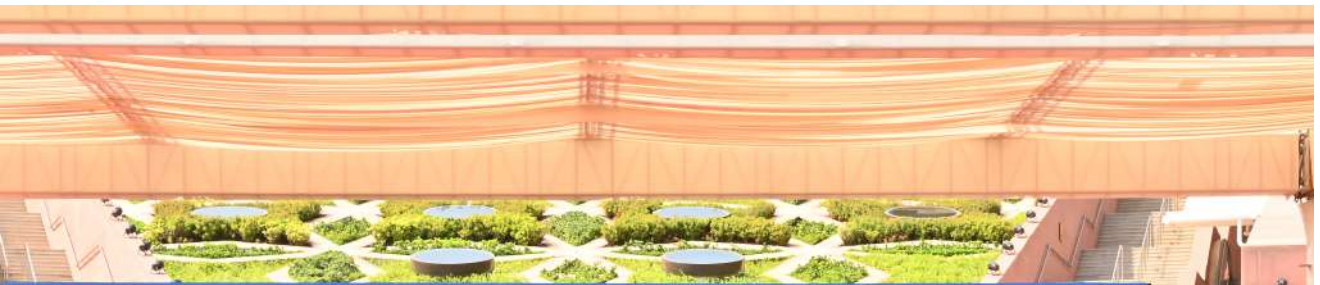
The Prime Minister and UN Secretary-General unveiled the LiFE logo and tagline, and released the Mission Document at the event[1]. Union Minister of External Affairs Dr. S. Jaishankar, Chief Minister of Gujarat Shri Bhupendra Patel, and more than 100 heads of the Indian Missions abroad were also present at the event. The launch of Global Mission LiFE was accompanied by congratulatory messages from the heads of 10 nations representing all geographical regions of the United Nations

The Prime Minister's vision for LiFE goes beyond just the fight against climate change - it is a democratic approach that empowers every individual to contribute towards a sustainable future. With the P3 model at its core, LiFE inspires and encourages Pro-Planet People to lead a lifestyle that is not just for the planet, but also by the planet. The Prime Minister emphasised that the principles of 'Reduce, Reuse and Recycle' and circular economy have been an integral part of Indian culture for thousands of years and need to be revived. His unwavering commitment to promoting sustainable living and preserving the planet for future generations has set an inspiring example of global leadership.

Please scan the QR code to listen to the Prime Minister's speech

[1]Link to Mission Document: https://www.niti.gov.in/sites/default/files/2022-10/Brochure-10-pages-op-2-print-file-20102022.pdf

LiFE at COP27

## *Sharm El Sheikh, Egypt, November 2022*

India's commitment to the global fight against climate change under the leadership of our Prime Minister was visible to the world at COP27, where India set up a pavilion on the theme of LiFE. The event was jointly hosted by India and the United Nations. Shri Bhupender Yadav, Union Minister for Environment, Forest and Climate Change; Ms. Inger Andersen, Executive Director of the UN Environment Programme; Mr. Ovais Sarmad, Deputy Executive Secretary, UNFCCC; Lord Nicholas Stern, IG Patel Chair of Economics and Government, London School of Economics; and other prominent dignitaries from across the world participated in the event.


LiFE pavilion at COP27

From Mindless Consumption to Mindful Utilisation

At the COP27 event, the MoEFCC-UNDP Compendium 'Prayaas Se Prabhaav Tak – From Mindless Consumption to Mindful Utilisation' was launched. The compendium highlights traditional best practices from India that embodies the ethos of LiFE in the following areas:
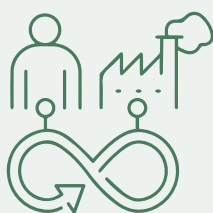
Responsible Consumption
By taking only as much as is needed, using products to the end of their lives, and repurposing or recycling whatever is left over;
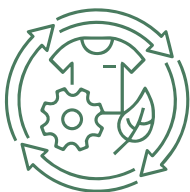
Circular Economy
To improve resource efficiency, minimise waste and emissions to reduce the carbon footprint and improve ecological handprint;
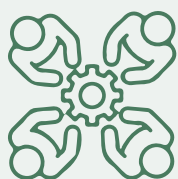
Living in Harmony with Nature
By practising the philosophy of 'Vasudhaiv Kutumbakam' (The World is One Family) and living a life with compassion for all living beings;

Sustainable Resource Management
Through mindful and deliberate utilisation of the available resources, and to reduce overconsumption and promote equitable access to resources; and

Coexistence and Cooperation
Among countries and communities through the promotion of science and innovation, knowledge exchange, dissemination of best practices, and conservation of traditional knowledge systems.

The Leadership: LiFE at India's G20 Presidency

India has played a pivotal role in advancing the global conversation on sustainable development and the fight against climate change. This commitment has only been strengthened this year, with India taking on the mantle of the G20 presidency. The motto of its presidency – "One Earth, One Planet, One Future" – encapsulates the essence of LiFE and Pro-Planet People. G20 accounts for 80% of global GDP as well as 80% of global greenhouse gas emissions. Given the transformative potential of LiFE for global wellness, India has placed sustainable lifestyle on the G20 agenda.
The Prime Minister, setting the tone, illuminated the significance of LiFE in his remarks at the G20 summit in Bali on November 15, 2022. "For the safe future of the planet, the sense of trusteeship is the solution. The LiFE campaign can make a big contribution to this. Its purpose is to make sustainable lifestyles a mass movement."

The LiFE event held during the first meeting of the G20 Development Working Group on December 14, 2022 further demonstrated the Prime Minister's commitment to driving multilateral action towards achieving the SDGs through LiFE. His involvement cemented the urgency of adopting a sustainable lifestyle, and reinforced India's role in driving transformative change towards global climate security. The event also featured two fireside discussions on LiFE's potential to materialise the SDGs and the means by which it can facilitate sustainable economic development. The discussion spotlighted how India's LiFE effort can spur multilateral action to achieve the SDGs[2].

Prime Minister at G20 Summit in Bali, Indonesia on November 15, 2022

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[2] Link to video of the event:
https://dwgg20.org/1st-dwg-meeting-side-events-indian-presidency/

The Response: A Global Reply

Phase I

The 2,538 submissions were screened by the LiFE Team at NITI Aayog. The authors of shortlisted submissions were then invited to submit detailed proposals in Phase II, and several webinars were conducted for the participants.
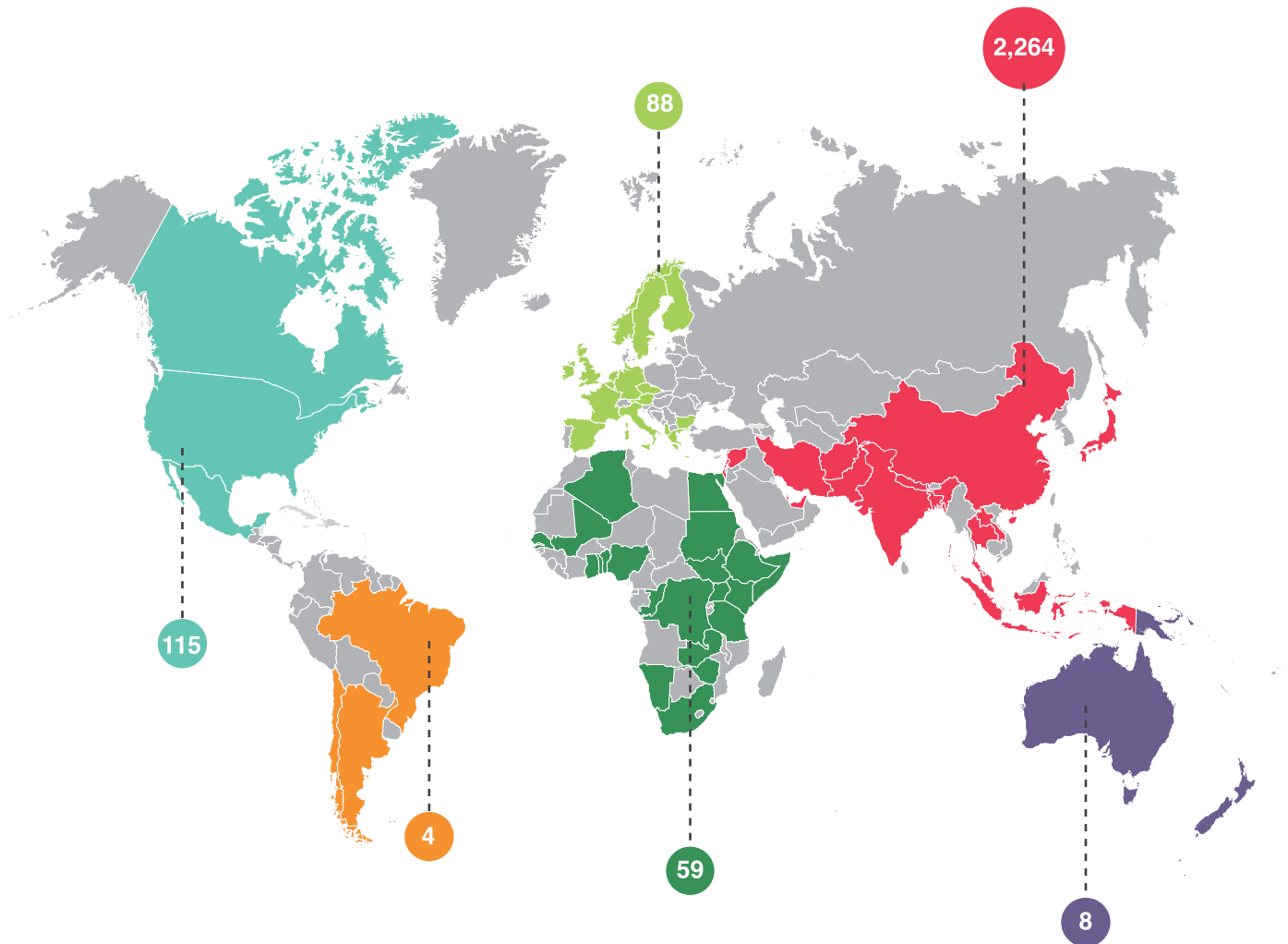
2,538 submissions

67 Countries

Figure 1: Count of total submissions received in Phase 1

18 Countries from Europe	**3** Countries from Australia	**4** Countries from South America
19 Countries from Asia	**20** Countries from Africa	**3** Countries from North America

Phase II

674 participants from 42 countries submitted their detailed proposals for Phase II of the LiFE GCIP by March 9, 2023. Participants in Phase II comprised a diverse community of authors, entrepreneurs, researchers, and students, all of whom shared detailed in-depth testable intervention designs for their suggested ideas. 278 of these teams were led by women, out of which 141 were all-women teams.
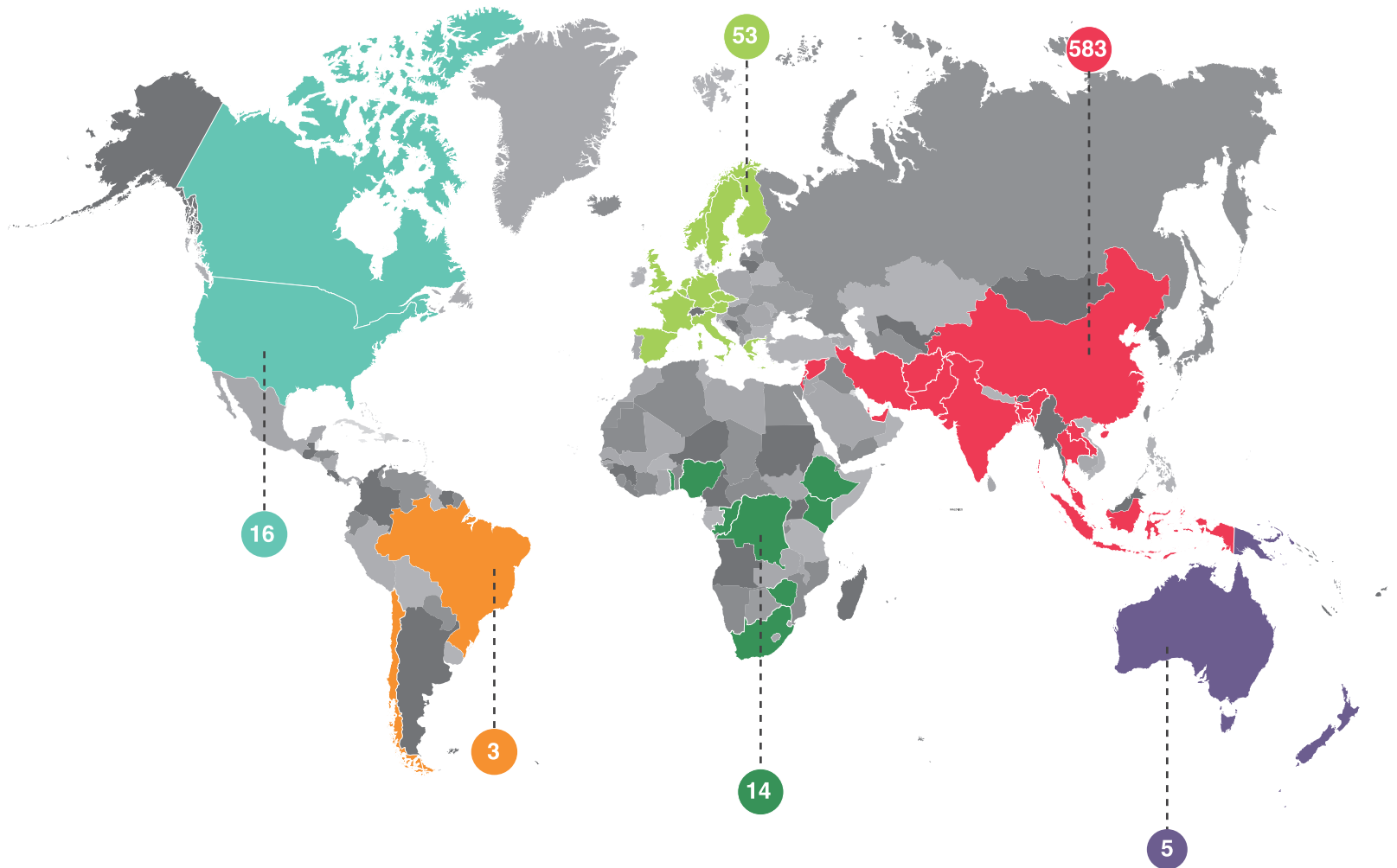
674
submissions

42
Countries

Figure 2: Count of total submissions received in Phase 2

14 Countries from Europe	**3** Countries from Australia	**2** Countries from South America
14 Countries from Asia	**7** Countries from Africa	**2** Countries from North America

The Outreach: LiFEathons

The LiFE Hackathons or "LiFEathons" were conducted by NITI Aayog in collaboration with the World Resources Institute and UNDP India to build momentum for the LiFE GCIP. Young people from around the world contributed ideas and innovations to promote sustainable living and climate-friendly behaviours. At the UNDP LiFEathon, the Vice-Chairperson, NITI Aayog and the UNDP Global Administrator discussed the vision of LiFE to create and nurture a global network of Pro-Planet People committed to adapting and promoting environment-friendly lifestyles.

"

Just like India has united the world with the power of Yoga, and now even Millets, we hope Mission LiFE will be another initiative that will bring together the world for a sustainable future. "

Shri Narendra Modi
Prime Minister

LiFEathons

The global youth community was urged to demonstrate leadership to tackle the climate emergency impacting millions of lives around the world. Through the LiFEathons, 247 idea submissions were received from the global community.
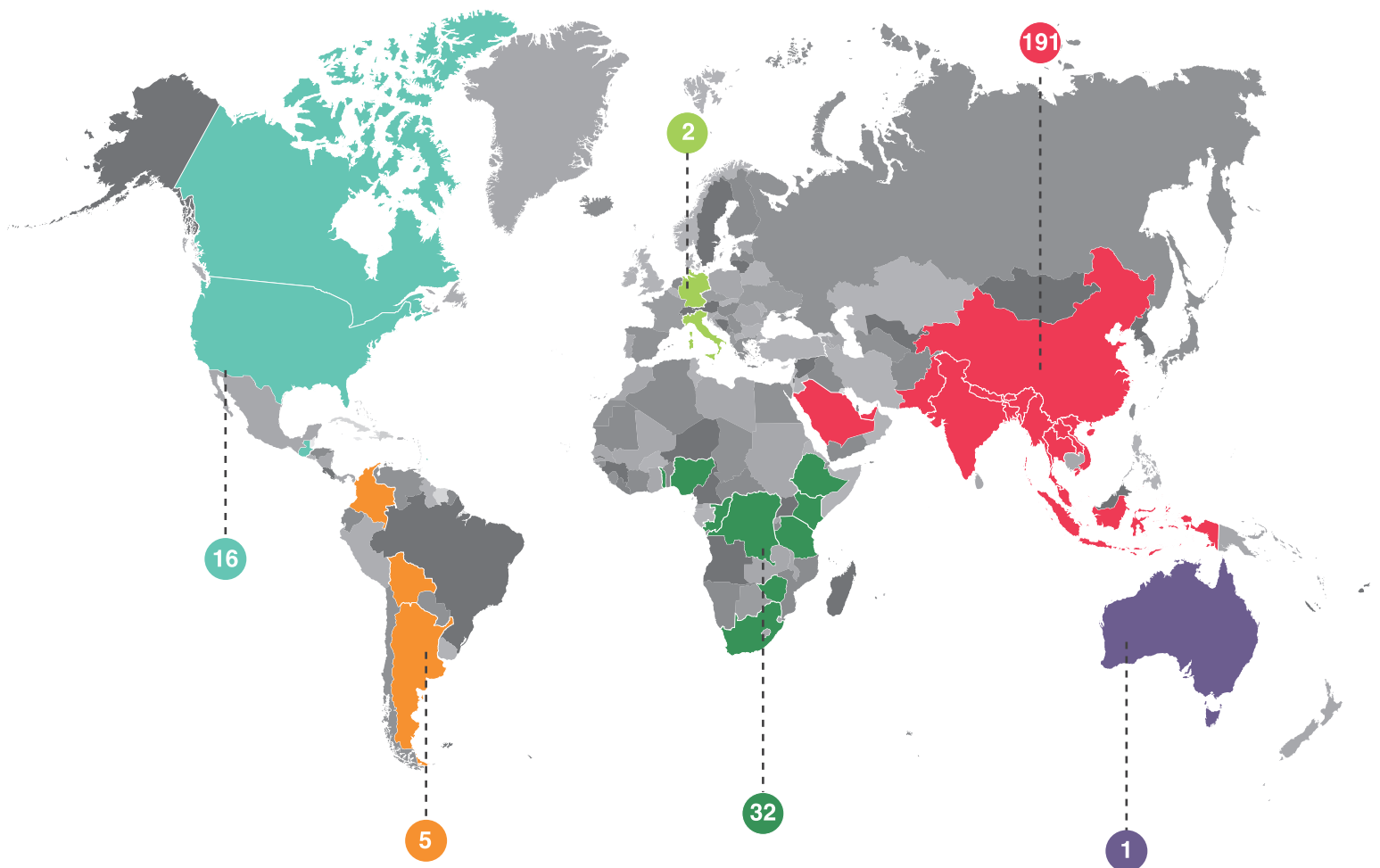
247 Submissions

33 Countries

Figure 3: Count of total submissions received in LiFEathons

2 Countries from Europe	**1** Countries from Australia	**3** Countries from South America
11 Countries from Asia	**12** Countries from Africa	**4** Countries from North America

The Selection:
Best Ideas from the World

NITI Aayog, India's leading think tank, constituted an Evaluation Committee of leading experts to review and select the winning innovations for LiFE that can be tested in India. The Evaluation Committee comprised of Subject Matter Experts across the domains of behaviour change and climate change. The Committee was convened several times to institute a rigorous and fair selection criteria and process, and to ensure all the ideas and papers were subjected to appropriate scrutiny to identify the very best innovations. This compendium has been envisaged as a remarkable repository of the best ideas and proposals for behavioural interventions needed for a sustainable lifestyle for our times.

> **"**
> Mission LiFE is about democratising the battle against climate change. **"**

Shri Narendra Modi
Prime Minister

Winning ideas to promote LiFE

Building A Digital Green Bank to Drive Sustainable Behaviours

Sustainability requires coordinated efforts from individuals and businesses alike to become a way of life. However, a large deterrent to the adoption of sustainability practices is the cost of transition (both behavioural and real-world). To encourage consistency and compliance, to facilitate the adoption of sustainability at scale, researchers have proposed the idea of a "Digital Green Bank" application. The Bank will work as an absorbent for the costs, and provide Green Credits for sustainable behaviours and actions. The credits will act as a fungible digital currency that can be utilised by consumers at local businesses that are affiliated with the Green Bank.

The "Green Bank" app, which would be compatible with Android and iOS devices, will be accessible for anyone to download. The Bank will also effortlessly link with Aadhaar and UPI Payments utilising a mobile phone number. All metropolitan government offices will have QR codes that will inform citizens about this app.

The Bank will absorb the transition costs by using norm nudges and monetary incentives, and users can redeem their earned points for government services, such as public transport. A measure of how much carbon offset is created by each conservation behaviour will be used to support the points. For each user, the points will move towards progressively more difficult goals. The intended audience for the application is the urban population and the initial focus areas of the Bank will be water, energy, and waste. But with the support of a central implementation agency, the model can be easily expanded to other sectors such as energy usage.

A green behavioural modification programme can encourage group efforts to achieve sustainability. It can foster a sense of community and inspire people to engage in conversation about their sustainable practices and experience. The application can assist people and communities in making more responsible decisions and assuming responsibility for their impact on the environment by promoting a culture of sustainability.

Saksham Singh

Saksham is a researcher in behaviour economics with research interests at the intersection of economics and psychology. He is currently pursuing his PhD at University of Wisconsin-Madison.

Deepansh Jagga

Deepansh Jagga is a software developer currently pursuing a Master of Science in Computer Science at the University of Wisconsin-Madison.

Trisha Nagpal

Trisha is pursuing a Master's in Behavioral and Decision Sciences at the University of Pennsylvania. She is interested in the intersection of Design, Behavioral Science and Interaction Technology.

*For more details on this proposal, please contact **trishanagpal9@gmail.com***

Sustainable Fashion Credit System and Tagging

As customers become more conscious of the social and environmental effects of their clothing choices, sustainable fashion is becoming increasingly fashionable. But it is challenging for customers to recognise and believe in sustainable fashion products due to the lack of standardised labelling or certification methods.

A system of sustainable fashion credit and tagging has been devised by researchers to increase the visibility and legitimacy of sustainable fashion products while fostering employment opportunities in the industry. The credit system works by giving fashion items points based on their effects on the environment and society. Sustainable practices including using organic materials, cutting waste, and promoting fair labour practices are how these credits are obtained. The products are then given sustainability ratings and tags, which can be displayed on labels, websites, and social media, using the credits.

The industry can gain from implementing a sustainable fashion credit system in several ways. Firstly, it offers a straightforward and impartial method for evaluating sustainability, which can support the development of consumer and brand confidence. Second, it can encourage businesses to invest in sustainability projects and adopt sustainable practices to gain more credits. Jobs in the manufacturing and supply chains of sustainable fashion may then become available as a result. Finally, it can boost sales of sustainable fashion items by increasing their visibility and customer appeal. The researchers seek to collaborate with private and government handloom stores to begin the process of scoring apparel. Currently, existing APIs do not have all the features required for this intervention, but the researchers will begin to develop an exclusive centralised scoring system for India.

To map the legitimacy of these garments, implementation would call for a clothing producer to be affiliated with any government outlet, such as a weaver, designer, or businessperson. The most essential thing is to use the platform to encourage the community to support handloom clothing as a sustainable fashion option worldwide. Instead of producing clothing, the goal is to assist designers and garment makers to be able to certify garments.

Purabee Purnasha Mishra

Purabee Purnasha Mishra is a research scholar at Berhampur University. Her areas of interest are sustainable fashion, startup management, and entrepreneurship.

Sasmita Panda

Sasmita Panda is a fashion merchandiser and buyer of handloom garments. Her expertise is in sourcing and garment production.

Om Debashree

Om Debashree is a software professional. Her areas of interest and expertise are networking and Odisha handloom promotion.

*For more details on this proposal, please contact **purabeepurnasha@gmail.com***

Reduce the Use of Energy in Hotel Rooms through Altered Choice Architecture

The study aims to reduce energy use in hotel rooms through a behavioural intervention. Energy derived from fossil fuels is associated with greenhouse gas emissions and pollution over its lifecycle. Even when renewable sources are used to derive energy, it has a high ecological footprint. The idea involves tweaking an existing practice of housekeeping in hotels to nudge guests to set the air conditioner (AC) at a higher temperature (which uses lower energy than setting it at a lower temperature).

Beds in hotel rooms typically have a warm, thick cover or quilt. This usually means that guests set the temperature of the AC at a low value to counteract the warmth. Thus the current mode of bed-making involves simultaneous warming and cooling, where the AC is set at a lower temperature. Guests may be resistant to thinking or acting about this, so instead of removing the quilt and setting the temperature high, they are influenced by status quo bias. Hence, it is necessary to tweak the choice architecture so that the burden of behaviour change is not placed on the guests.

The study proposes removing the quilt or replacing it with a cool cover to induce guests to set the AC temperature higher. The intended outcome is to change the prevalent norm of the AC temperature setting from 18-20 degrees to a much higher temperature (24-28 degrees). The success of the study would be measured through an assessment of electricity use before and after the intervention. This is expected to benefit all stakeholders. The hotels can benefit from lower energy costs while the guests can be made to feel like they have contributed to climate change mitigation while also leading to actual benefits to the environment.

Vivek

Vivek is an independent researcher in human behaviour and the environment. He is a PhD from the Centre for Public Policy at the Indian Institute of Management Bangalore.

Kanchan Mukherjee

Kanchan Mukherjee is a Professor and Chairperson of the Organisational Behavior Area at the Indian Institute of Management Bangalore. He did his B.Tech. from IIT Kanpur, MBA from IIM Calcutta and PhD in Decision Sciences from INSEAD, France.

Raising Awareness for Energy Efficient Construction through an Ice Box

The aim of this study is to share both theoretical and practical information on how to improve the thermal performance and energy efficiency level of buildings based on the Passive House concept. The concept postulates that with a certain amount of insulation, high-performance glazing and shading devices, better airtightness, less thermal bridges and a suitable ventilation strategy, the cooling and heating demand can be reduced by up to 80% while improving indoor air quality and comfort. This study aims to highlight that reducing internal and external heat sources and preventing unwanted heat and humidity from entering buildings can drastically reduce the cooling energy demand in cooling-dominated climates. Passive Housing is expensive, so individuals prefer to avoid investing in it.

Researchers of this study have proposed an 'Ice Box Challenge' to convey that construction materials are important in keeping buildings comfortably cool in hot climates. As part of this, they will design and construct two boxes – one modelled on ECBC standards and one of the Passive House design. Both boxes will be exposed over a 2–3-week period in the warmer months of the year. During these months, people will have an opportunity to witness firsthand how preventing unwanted heat from entering the Passive House box helps keep it cool for extended periods. At the beginning of the display period, the same quantity of ice will be loaded inside both boxes (usually 1m^3 or 1T of ice). Temperature monitoring devices, a time-lapse camera, and a light will be installed inside to provide accurate monitoring data, pictures and night-time viewing opportunities. These devices will help assess how both building envelopes perform during a heatwave. The cloud-based monitoring equipment used will provide real-time mass data, which can be useful for later analysis.

After the stipulated period, the remaining quantity of ice will be measured for each box. This result will demonstrate how well each ice box sustained the heat and thus, which box would have the lowest cooling demand to guarantee comfortable temperatures inside during the cooling period. Displaying the difference in the cooling capacity of two boxes with contrasting envelope quality makes an otherwise intangible concept engaging and accessible. The researchers hope that the Ice Box Challenge will prove that investing in a high-quality envelope is a viable method to reduce energy needs and to protect buildings from worsening climatic conditions.

Camille Sifferlen

A graduate in architecture, Camille Sifferlen runs her training and consulting company Passiv'Optim and is a member of the board of directors of La Maison du Passif. She is a certified Passive House Designer and PHPP Expert.

Jessica Grove-Smith

Jessica Grove-Smith is a senior scientist and joint managing director of the Passive House Institute in Darmstadt, Germany. A physicist by training, her areas of expertise include highly energy-efficient building solutions to the Passive House Standard around the world, and interrelations between efficiency and renewable energies.

For more details on this proposal, please contact **camille.sifferlen@passiv-optim.com**

Promoting Water Conservation in Restaurants:
Blue Star Rating

A large aspect of growth and modernisation in urban areas is the number of restaurants and food outlets that are a standard fixture in any metropolis. Delhi is no exception to the rule, with a robust number of dining-out options that are continuing to accelerate. However, a lack of set rules and standards for the consumption and use of water in these restaurants and a strong mechanism of implementation and accountability has led to an incredible amount of strain on water resources. There are numerous cases of misuse, overuse and illegal water and sewer connections.

Researchers have developed a two-pronged intervention to encourage water conservation in the restaurant sector. One aspect of this intervention is real implementation (plugging leakage), and the other is promoting behavioural change through a rating system which will allow for better management of water resources from all angles. By implementing this idea, restaurants would be able to receive ratings similar to those for energy efficiency (blue stars) based on how effectively they use water on their property. The steps of this project include comprehending the baseline of water use, taking initial steps with volunteer restaurants to plug leaks and serving customers with half a glass of water, and sensitising the key stakeholders (restaurant owners, associations, and consumers) on the significance of water conservation and various methods of undertaking water conservation. Following the pilot phase in Phase II, restaurants that wished to receive assistance would be given consulting services for climbing the star rating ladder.

Labelling and rating are effective methods that encourage behavioural change. Through these actions, restaurant owners, managers, and patrons will become more conscious of the need to conserve water and will adjust their behaviour to do so. Customers would be better equipped to choose water-sensitive restaurants if the rating were advertised on every platform available. This would result in greater revenue for the restaurants, which would, in turn, encourage them to keep up and increase their investment in water-efficient practices.

Sonia Grover

Sonia Grover is a PhD from TERI School of Advanced Studies with a specialisation in hydrology and climate change. She is working as a Fellow in the water division of TERI. Her areas of interest include integrated water resources management, water use efficiency, and water-energy nexus.

Shresth Tayal

Dr Shresth Tayal is working as a Senior Fellow in the Water Division of TERI and has over 20 years of experience. His areas of expertise include groundwater management, mountain water resources management, water-energy nexus, water and climate change. He has numerous publications to his credentials.

Anshuman

Anshuman is working as Associate Director of the Water Division of TERI. His areas of expertise include water use efficiency, water quality, wastewater management and policy advocacy.

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> Reuse, reduce & recycle are part of India's traditions and culture. We need to bring back these practices and work towards making sustainable choices.

Shri Narendra Modi
Prime Minister

Best ideas to promote LiFE

Artificial Intelligence (AI) Behavioural Tool for Reducing Household Electricity Consumption

This proposal advocates an Artificial Intelligence-based model and behavioural change principles to create a digital tool in the form of an app that can, in real-time, enable households to measure their energy consumption habits. It will also predict optimal consumption patterns and reduce excess consumption to an optimal level. The digital app will further have an intrinsic reward system to sustain behaviour change. The proposed tool can be scaled globally to reduce excess household consumption.

The theoretical underpinnings of the study emerge from increased incomes and economic growth to have led to a greater demand for energy services. In India, households account for 17 per cent of the total energy consumption. Thus, energy-efficient technologies and practices can help households save on their energy bills and reduce their carbon footprint. Behavioural interventions, including information feedback, social norms, goal setting, rewards and incentives, help households identify their effectiveness in reducing energy demand.

The behavioural tool will be based on an AI model trained on the consumption data and uncover patterns of average and ideal consumption, the range for wasteful consumption, and time and seasons leading to peak usage. Leveraging this model, an app will be created for households to optimise their consumption patterns. The behavioural tool will be developed using the Capability–Opportunity–Motivation Behavior (COM-B) model. The AI model and tool will be developed using an open source to enable customisations, improvement, and adaption from the global community.

The team will carry out the implementation in partnership with utility companies, power departments, and relevant government authorities. A pilot will be planned in Gurugram over 6 months. The first month will focus on collecting household consumption data. Second and the third month will involve creating AI models to derive consumption patterns and predict demand. In month four, the AI model will be integrated with behaviour change software. Months five and six will be used to initiate the pilot and scale it to other geographies.

The tool can bring in more research and innovation to tackle global challenges through behavioural change interventions coupled with accurate data and real-time user insights.

Shipra Dawar

Shipra Dawar is the Founder and CEO of IWill and ePsyClinic. Shipra is the Co-Founder of a policy think tank focused on AI, clean-climate technology, and health. Shipra completed MBA from Australian National University & won Pauline Griffin Prize for behaviour change applications.

Ashish Dwivedi

Ashish Dwivedi is the Co-founder and COO of IWill and Epsyclinic. He has expertise & interest in utilising AI technology for behavioural change. Ashish also founded Aryaman Impex previously, an Ayush Health & Products Startup. Ashish has a Post Graduate Diploma in International Business and a BSc (Hons.) in Mathematics.

Manya Chauhan

Manya Chauhan serves as a Project Manager at IWill. She also co-founded a policy think tank focused on AI, clean-climate technology, and health. She is currently pursuing a Post Graduate Diploma in Environment Law and Policy from National Law University, Delhi

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Using Behaviour Change Communication to Promote the Adoption of Millets in Daily Diet:
A Self-Help Group Level study

This proposal seeks to use Behaviour Change Communication (BCC) model to promote millet consumption in the diet through the channel of Self-Help Groups (SHGs). Millets are not only valuable for their health benefits, but their cultivation (as opposed to that of traditional food grains such as rice and wheat) is also associated with climate resilience and reduced need for fertilisers, pesticides, and water for irrigation. Millets are gaining popularity as a healthy substitute for rice and wheat in urban areas. Among lower-income households, popularising millets can bridge nutritional deficiencies arising from inadequate consumption of expensive food grains.

The proposal suggests using behavioural intervention techniques to encourage women in SHGs to adopt more millets in their diet. Women are the target group since they mostly manage the kitchen in Indian households. BCC techniques are cognitive and affective behaviour change interventions. The technique involves the identification of target behaviours, the identification of relevant cognitive and affective factors, and the development of effective strategies for addressing these factors. The effort is a collaboration between The Indian School of Business, Hyderabad, which will provide the academic expertise, and DHAN Foundation, Madurai, which works with SHGs. The team plans to assess SHG members' existing levels of awareness about millets, create BCC materials such as posters, videos, and millet recipes in vernacular language and set up awareness sessions with doctors and experts. The team will also set up a robust monitoring, evaluation, and learning framework, aided by digital technologies from both partners, to ensure the project's success. Increased adoption of millets through these interventions is expected to lead to higher cultivation of millets, thus aiding the livelihood of millet farmers. This idea has the potential for high scalability at low cost since SHGs are omnipresent in India.

D.V.R. Seshadri

D.V.R. Seshadri has taught a variety of courses in MBA, executive MBA, long-duration programs in public policy, and short-duration executive education programs. He is involved with several NGOs such as Aravind Eye Care Systems, Madurai, and DHAN Foundation, Madurai, and several top corporates.

Devidutta Mohanty

Devidutta comes with an eight-year of experience in Project Management and two years of experience in academic research. He has published case studies on Harvard Publishing covering areas like Sustainability, Marketing and Entrepreneurship.

P. Premanand

P. Premanand is the CEO of the Small Millet Foundation of DHAN Foundation. At DHAN Academy, he brings field knowledge and experience to the students during their Development Practice Segment. He has innovatively customised and used the Participatory Rural Appraisal (PRA) techniques in the Case Analysis Method for easy co-learning.

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Monetise the Monsters! – Circular Solutions for Non-Recyclable Dumped Plastics

Non-recyclable plastics such as single-use plastics, multilayer packaging, and plastic film are a significant challenge since they end up in landfills, water bodies or are consumed by stray animals. Despite segregation at a household level, packaging from food and wet items continues to be mixed with biowaste and gets incinerated. Researchers have created a series of circular solutions aimed at behaviour change towards the segregation of plastic film and multilayer waste generated in households and public places. The monetisation of non-recyclables through recycling technologies is used to nudge behavioural change.

The team has proposed five components to this intervention. First is the revision of the waste management infrastructure of collecting packaging plastic. They suggest solutions for households (wall hooks and easy removal mechanism), rural and low-income communities (local shops as collection centres) and cities and middle-income sectors (reverse vending machines). The second component is incentivisation offered to collectors and waste processors, and the third component is a tracking mechanism to measure the quantity of waste using the QR code of the collectors. The fourth component is a tracking mechanism for the plastic waste processors and product values. Finally, the fifth component is influencing behaviour change in young people through awards and certificates at the school and college level, for waste collection through kiosks and segregation.

Using a structural equation modelling analysis, the researchers have surmised that advertising focusing on moral obligations may be particularly successful in raising the participation rate in waste separation behaviours. An important aspect of the project is developing a smartphone app to help users track waste plastic and earn rewards. Another aspect is the development of a smart collection kiosk that will accept plastic film packaging waste.

Key elements of the projects aimed at changing behaviour are awareness campaigns and reporting methods. Children and adults must be made aware of the necessity to collect clean, dry packaging plastics and the reductions in carbon and water footprints that result from doing so.

Indumathi Nambi

Dr. Indumathi Nambi is a Professor at the Environment and Water Resources Division, Department of Civil Engineering, IIT Madras, Chennai. She has received her doctorate in Civil and Environmental Engineering from Clarkson University, Potsdam, NY.

Anitha Venkatesh

Anitha Venkatesh is a professionally qualified STEM teacher. She holds a Master's in Embedded Systems Technology. She is currently the STEM facilitator at American World School, Chennai.

Janani Venkitesh

Janani Venkitesh is an Environment and Solid Waste Management enthusiast. She started and is currently the secretary of ROKA (Residents Of Kasturba Nagar Association) with a primary focus on Solid Waste Management.

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External Adaptive Shading Systems for Energy Savings and Better Indoor Environment Quality in Residential Buildings

This study aims to make occupants aware of the indoor environment of their homes and improve the same by installing external adaptive shading systems. Their prevailing behaviour of using internal curtains for shading is to be replaced by desired behaviour of installing external adaptive shading systems such as bamboo mats, awnings, external curtains, or louvred shutters, depending on their expenditure capacity. This behaviour change not only improves the indoor environment but contributes towards reducing carbon emissions by reducing the need for air conditioning.

The study relies on the premise that the Indian residential sector is responsible for 24 per cent of energy consumption, majorly driven by the use of air conditioners. The occupant's behaviour significantly affects energy consumption, and the most ignored but crucial behaviour is the occupants' behaviour for shading the windows. The window area is responsible for major heat intake in indoor spaces. It is expected to reduce heat intake as high as 80 per cent - 85 per cent depending on the type of shade and room orientation. External Adaptive Shading is a key solution to keep indoor spaces cool. Thus, occupants' prevailing behaviour of using internal curtains for shading should be replaced by desired behaviour of installing external adaptive shadings.

For the pilot project, a sample size of 10 rooms with large, glazed window openings/balconies on East and West orientation will be selected. Both qualitative and quantitative data will be collected. Qualitative variables will be collected using a questionnaire to capture occupants' thermal and visual satisfaction. Quantitative variables on room temperature and daylight levels will be measured using instruments. The testing methodology will include identifying the apartments, selecting, providing and installing shading systems, educating occupants, recording occupants' experiences, analysing data, and spreading awareness by sharing interviews of occupants who benefited. Such systems can be incorporated in both existing buildings and new projects therefore; the entire residential sector can contribute towards energy savings.

Jyoti Luthra

Ar. Jyoti Luthra is an Associate Professor at Vastukala Academy. She completed graduation from Vastukala Academy and PGDM (Real Estate and Marketing) from NICMAR, Pune. Her strong interest in sustainable architecture led to a second master's degree (Energy Efficient and Sustainable Architecture) from NIT, Trichy.

A. Meenatchi Sundaram

Prof. (Dr) A. Meenatchi Sundaram is an Associate Professor at the National Institute of Technology, Tiruchirappalli, Tamil Nadu. He was a Fullbright Junior scholar who visited the University of Pennsylvania.

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Well Defined System of Water Credits to Incentivise Reduction in Water Usage

In India, a country with limited water resources, the water shortage has recently become a major problem due to climate change and population expansion. In comparison to the World Health Organisation's (WHO) daily recommendation of 70 litres for basic home needs, the average urban Indian uses about 135 litres of water daily. The proposal recommends a system of water credits as a potential solution to this issue. Water credits are a market-based mechanism that will incentivise households and communities to cut back on their water use. A certain daily water usage cap is imposed on homes and communities under this intervention. Any consumption that exceeds the daily cap will be very expensive. If they use less water than their allocated quantity, they acquire water credits that can be sold to people who can use them to offset their excess usage and make money in the process.

The municipality, government, smart city organisations, and policymakers would need to collaborate to operationalise this intervention. It is necessary to set a daily threshold use restriction that is equitable across populations and locations. The establishment of a differential pricing scale that will penalise usage above the threshold is necessary. Smart meters will be used to measure water usage. The development of a blockchain-based system for maintaining water credits will be followed by the establishment of an online marketplace for trading them.

The effectiveness of water credit programmes has proved to be a significant strategy for lowering water usage thanks to their widespread success. Households can monitor their water usage and get real-time feedback on their water consumption targets. This, along with the monetary incentive will encourage them to adopt water-saving habits and reduce their consumption. Water credits can play a crucial part in maintaining sustainable water use for future generations with the correct regulations, technical infrastructure, and community involvement.

Priya Agrawala

Priya Agrawala is an MBA and leads two organisations as women-owned innovative companies in the field of atmospheric water generators and software for supply chain solutions.

Kirit Goyal

Kirit Goyal is the director of Clean Water Generator. His interests are in water, software, mental health and kriya yoga

Palash Goyal

Palash Goyal is majoring in computer science and data science at University of Wisconsin, Madison. He is currently working on a solution for mental health.

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Crop Cultivation and Groundwater Depletion:
A Real-Time Cost-Benefit Approach

Given groundwater depletion and climate change-induced evapotranspiration, it is deemed necessary to transition from water-intensive crops like rice, to crops with high water efficiency especially in areas with lower rainfall and groundwater availability.

Although FAO has data on water-intensive food production, this might not be useful to inform policy in a country like India with large variations in crop production. Thus, localised data on well depths and surface water sources must guide cultivation decisions. The study has four major objectives. One is to develop an app to record well depths quarterly and update the CGWB (Central Ground Water Board) database in real time. Data on rainfall levels near the wells and variables reflecting surface water availability will also be included. Secondly, there is a need to restructure subsidies so that water-efficient crops are subsidised especially in water sparse areas. The third objective pertains to aquifer recharging through robotic technology and capturing water runoff in high rainfall or riverine regions. The final objective is to address crop residue burning through incentives such as subsidising crop waste delivery to local municipal sites.

The study will be undertaken in the top ten rice producing states in India. The team will first identify regions where regular measurements are not undertaken, develop strategies to increase data collection and check feasibility of sending data real time to CGWB database. They will develop the app to compute optimal proportions of areas that should be devoted to cultivating rice versus more water-efficient crops, and further use the app to determine districts in most need of groundwater recharge.

Alok Bhargava

Alok Bhargava is a professor at the University of Maryland. His areas of interest are econometrics, nutrition and health, climate mitigation, demography, psychology, and finance.

Subimal Ghosh

Subimal Ghosh is a professor at IIT-Bombay. His areas of interest are climate sciences, modelling, and engineering.

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Scrap to Advanced Materials by Guiding the Communities
(Mobile Application for Scrap Recycle/Reuse)

The project aims to change the behaviour pattern of communities to dispose of reusable commodities at recycling centres by guiding them through a mobile application. In the present scenario, the recycling of materials is essential for efficient energy utilisation and reducing environmental degradation. There needs to be more awareness of recycling materials, vendor details, economic benefits, and environmental impacts among common people. Moreover, there is also a need to encourage small and medium-scale industries to use scientifically proven recycling methods that are also profitable.

With the advancement in technology and smartphones, communities' dependence on mobile applications has been relatively high. The proposed mobile application will guide the community to connect with potential industries and vice versa. The mobile application will have consolidated details from various scientific studies related to materials recycling, data analysis, relevant recycling industries, and many more. The application will serve as a database connecting the larger community with the waste collection centres and the recycling units.

In addition, the application will be embedded with artificial intelligence (AI) to guide the individual to connect to relevant industries for better benefits. The application will have literature for effectively developing advanced materials from scraps by integrating experimental and computational tools, to help venture into the recycling domain. Further, this will serve as scientific proof for value-added materials for communities. In the long term, the application will bring behavioural changes in the community and establish a systemic and profitable model for recycling scrap.

Ajay Bhandari

Dr Ajay Bhandari is an Assistant Professor in the Department of Mechanical Engineering, at IIT(ISM) Dhanbad. He received his PhD and Master's in Mechanical Engineering from the Indian Institute of Technology (IIT) Kanpur, and his Bachelor's in Mechanical Engineering from the University Institute of Engineering and Technology, Panjab University.

Rahul M R

Dr Rahul M R is an Assistant Professor in the Department of Fuel, Minerals and Metallurgical Engineering, IIT (ISM) Dhanbad. He obtained a PhD degree from the Department of Metallurgical and Materials Engineering at IIT Madras.

Ashok K

Dr Ashok Kamaraj is an Assistant Professor in the Department of Materials Science and Metallurgical Engineering, at IIT Hyderabad. Ashok obtained his M.Tech. and PhD degrees from the Academy of Scientific and Innovative Research (AcSIR), CSIR-NML.

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Nudging by the Kilowatt:
Energy Efficient Consumption in Urban India

This proposal aims to understand the effectiveness of behavioural nudges on sustainable energy consumption through a segmented approach. Given that the power sector is the largest contributor to greenhouse gases in India, it is important to focus on reducing the increasing demand for electricity by households. This proposal aims to nudge high energy-consuming households (HC) to reduce electricity consumption based on feedback and low energy consuming households (LC) to shift to energy-efficient appliances. Feedback to households on electricity consumption is generally expected to reduce consumption. But LC households exhibit a boomerang effect, whereby information on energy savings leads them to be lax about electricity usage in the future, leading to an increase in consumption. Thus, the project proposes using feedback in the form of household energy reports (HERs) only for HC households. For LC households, the intervention proposed involves displaying graphical and easy-to-understand information on energy savings on electrical appliances.

The project team will first segment households into LC and HC based on administrative data acquired from an electricity provider partner in an Indian city. After this, two experiments will be conducted – one among LC households and the other among HC households. Among HC households, one random sample (intervention group) will be given HERs for 12 months, while the rest of the households (control group) will not receive them. Insights on differences between the two groups will be obtained from administrative data on electricity consumption and midline and end-line surveys. In the experiment among LC households, the team will partner with a market research agency and design company to display energy labels on appliances for a group of randomly assigned LC households. Their energy consumption patterns and purchase of appliances will be compared with those LC households who did not receive energy labels. Thus, using an approach of applying behavioural interventions in a segmented manner, the proposal seeks to reduce energy costs and mitigate adverse effects on the environment.

Anirudh Tagat
Anirudh Tagat is a Research Author at the Department of Economics at Monk Prayogshala, Mumbai. He received a joint PhD from IIT Bombay and Monash University Research Academy (IITB-Monash) and has completed his MSc in Economics from the University of Warwick, UK.

Twinkle Adhikari
Twinkle Adhikari is a Research Assistant at the Department of Economics at Monk Prayogshala, Mumbai. She is a final-year undergraduate student of economics at CHRIST (Deemed to be University), Bannerghatta Campus.

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Using Behavioural Economics to Reduce Electricity Consumption

Over the years, electricity consumption has continued to increase due to rapid electrification, technological development, and increasing household incomes. In India, electricity consumption by households rose from 4 per cent in 1971 to 24 per cent in 2015-16. It is possible to reduce wasteful consumption of electricity by adopting complex and expensive measures such as using energy-efficient appliances, smarter home energy management systems, and renewable energy sources like solar power. There are also more accessible and inexpensive ways to save electricity, such as switching off lights and fans when not in use, using daylight instead of electric lighting, avoiding using electric heaters and air conditioners, and unplugging electronic devices when not in use. While these measures may be practical, households may not act upon them due to behavioural biases including loss aversion, default bias, and present bias. It is necessary to devise government policies which consider these biases and create structures for households to overcome them.

This study proposes an energy conservation intervention called 'Green Leaders Program' (GLP) that considers households' behavioural biases and creates an incentive that makes it easier for individuals to overcome them. The approach is intuitive and promises to recognise and symbolically reward households that adopt electricity-saving measures. It combines the behavioural aspects of gamification, appeals to social norms, and provides recognition that will likely nudge households towards a more sustainable electricity consumption behaviour. Using a randomised control trial pursued in Gurugram, Haryana, the researchers will assign 50 per cent of the residential areas to the GLP program (treatment group). The remaining 50 per cent of residential areas will continue functioning as usual (control group) for six months. The researchers will conduct empirical analysis and share their findings on whether and how the intervention affected participating households.

Puneet Arora

Dr Puneet Arora is an Economics and Public Policy Assistant Professor at the Management Development Institute, Gurgaon. He is an economist with research interests in the area of behavioural and experimental economics.

Ishita Tripathi

Dr Ishita Tripathi is an Assistant Professor in the Amrut Mody School of Management at Ahmedabad University. Her research interests lie in applied microeconomics, focusing on behavioural and cultural economics. She studies how various socio-economic factors shape an individual's perception and behaviour.

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Mission LiFE is to bring together people with the mantra of -
Lifestyle of the planet, for the planet and by the planet.
This is the basis of being Pro Planet People. "

Shri Narendra Modi
Prime Minister

Community Water Watch: Empowering Citizens to Monitor Water Quality

Rivers form a crucial part of the planet's water distribution system. India is renowned for its famous rivers, which are prized for their heritage, clean water, and rich wildlife. However, large river stretches are highly polluted and contaminated due to the illegal waste dumping. There is a lack of a robust, consistent checking mechanism to curb river contamination in India. The pollution control board manually tests the water quality through yearly evaluations, which takes a lot of time and work. It is too late to identify the source of pollution by the time information reaches them in time for them to respond.

A user-friendly, crowd-sourced water pollution reporting system via a mobile application whereinIndividuals and communities can use the app to denote pollution hotspots in rivers, by uploading pictures, videos and geographical coordinates. This will enable authorities to dispatch a ground team for immediate investigation. The proposed application uses a community-based approach combined with technical solutions to evaluate the water quality in a specific river or lake, identify potential pollution causes, or track the efficiency of a wastewater treatment facility.

Some key components of the initiative include educating communities about the importance of wastewater monitoring, engaging the community via the monitoring process, and empowering the community to act with training on collecting wastewater samples. Apart from these, regular incentives and rewards and regular communication with communities, are also important aspects of the intervention.

The team seeks to implement this, community-based monitoring to help in environmental protection capacity and ownership, resulting in long-lasting behavioural change.

Neelam Sarmah

Neelam Sarmah is a PhD Scholar from Plaksha University. Her areas of expertise are wastewater treatment, chemistry, and nanomaterials.

Prashanth Suresh Kumar

Prashanth Suresh Kumar is Associate Director of the PhD Program at Plaksha University. His area of expertise is water technology.

Amruta R Behera

Dr Amruta R Behera is Assistant Professor at Plaksha University. Her areas of expertise are MEMS Technology and IOT systems.

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Changing Groundwater Usage Behaviour through Tech and Community Engagement

The two major causes of groundwater deterioration are pollution and depletion. With the aim of addressing these issues, the study proposes a solution that focuses on bringing about a change in behaviour among people by deploying IoT (Internet of Things) and non-IoT devices for monitoring groundwater levels and water quality in urban and rural areas respectively. These devices would collect information on groundwater and send it to a central system for analysis, which would then provide recommendations on sustainable groundwater usage, rainwater harvesting techniques, types of crops that may be suitable, and the improvement of water quality.

Additionally, the study will also create a live groundwater map to assist in future groundwater trade. In case there is continued depletion because of climate change, it may also help the government to implement a groundwater tax in future. To ensure the success of the solution, the interventions will include incorporating community outreach and education, collaborating with local governments, encouraging the implementation of sustainable water practices, and expanding the solution to other regions.

The success of the solution will be tested by involving a combination of surveys, interviews, and field visits to collect data on the variables listed. Upon successful implementation, this study will pose as a practical and data-driven solution to the critical issue of groundwater management.

Ashutosh

Ashutosh is currently serving as the Project Officer for the Investment Readiness Program at UN SDSN youth. He holds an integrated Bachelors's and Master of Science degree in Exploration Geophysics from IIT Kharagpur and a postgraduate certificate in Artificial Intelligence from Plaksha Tech Leaders Fellowship.

Jos C Raphael

Dr Jos C Raphael is the esteemed Director of Mazhapolima, the District Rainwater Harvesting Mission in Kerala, India. He holds a master's degree in Social Policy from the London School of Economics.

Kedar Bramhe

Kedar's professional and academic affiliation includes a Bachelor's Degree focused on Information Technology from Rajiv Gandhi Prodyogiki Vishwavidyalaya, complemented by a postgraduate certificate in Artificial Intelligence from Plaksha Tech Leaders Fellowship.

Inculcating Energy Consumption Consciousness in Individuals and Communities by Bringing Energy Metering Infrastructure to the Sight of Visibility, i.e.Living Rooms and Kitchens

Global warming is the catchphrase of the day, with people worldwide becoming aware that climate change is severely impacting long-term weather patterns. However, the larger infrastructure of plans, policies and actions has been restricted to governments, policymakers, think tanks and intelligentsia. At a grassroots level, citizens are still lamenting about their inability to make a significant impact towards meeting this challenge. Researchers suggest that a behavioural nudge towards conscious energy consumption will influence the community collectively towards less wasteful energy practices. This will significantly impact the long-term mitigation of climate change.

The suggested intervention is a simple and cost-effective energy monitoring device that will be installed within residential premises. It will have an analytics-based display, that utilises minimum energy, and can be viewed on a simple Android mobile app. While analysing the existing infrastructure for electricity and gas consumption monitoring in India, the researchers found numerous limitations. These monitoring systems in India are only metres that provide consumption data in the form of monthly bills. They are also usually located in spaces that are not immediately visible or accessible and are usually outside the residential area owing to safety concerns.

By implementing 'Choice Architecture', the researchers seek to develop a safe monitoring device in a way where it can be installed within the living room. They suggest a visible monitoring system will actively reinforce conscious energy consumption since individuals are price sensitive. Using a pilot testing phase, the researchers will assess the impact of this device in 30 carefully selected households. This idea can also be similarly implemented in both water and gas metering systems and further contribute to significant decarbonisation of the energy delivery system.

G M Sharat Chandra

G M Sharat Chandra is currently Chief Manager at National Load Despatch Centre (NLDC), Grid Controller of India Limited, a CPSE under the Ministry of Power, Govt of India. He is an Electrical Engineering Graduate from Acharya Nagarjuna University.

Hamsha Naidu

Hamsha Naidu holds Master's and Bachelor's degrees in Business Management and Computer Science from Andhra University and JNTU, Kakinada, respectively. She is currently associated with an emerging startup in delivering cutting-edge technology solutions.

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Evaluating the Impact of Carbon Labelling Food Products on Consumer Behaviour

According to the Centre for Climate and Energy Solutions, gas and electricity used by the food industry are the major contributors to greenhouse gas emissions in India, while agriculture is the second largest source. Encouraging consumers to choose environment-friendly and sustainable food products is essential for lowering carbon emissions in India.

A research team proposes a methodological approach that involves qualitative research to understand the target population. They will then design an intervention to create various versions of the carbon labels and an experimental online shopping environment where the labels will be trialled. There exists a large body of literature around carbon labelling food products. However, a noticeable gap in this research is that the majority of this research takes place within the context of Western societies. The proposed intervention will close this gap by generating carbon labels that speak to the values and/or norms of the target customer and designing and carrying out a carbon labelling impact trial, especially with a sample of Indian participants.

Participants will be given a fixed budget to spend on food products and asked to choose between different categories based on personal preferences. Products available will be similar to what is available in the market and include options from both the high-end and low-end types to enable the researchers to understand how labelling affects different product types. After the trial, five questions about 'willingness to pay' will be included to assess the labels' value, stated attitudes towards carbon labelling, and acquire low-carbon food goods.

A fully prepared report with feedback will present the findings. One limitation of this experiment is the inability to evaluate consumer responses to carbon-labelled food products in a physical retail environment, given the challenges and expenses of implementing field trials. However, the researchers believe that the online experiment will be an actionable starting point towards yielding insights about carbon labelling vis-à-vis consumer behaviour.

Filippo Muzi Falconi

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A Multifaceted Intervention for Studying Adoption of Environment Friendly Leaf Plates in Rural Bihar

India has had a long-standing tradition of serving food in leaf plates and utensils. This practice has several cultural, religious, medicinal and socioeconomic significance. However, over time these leaf plates and utensils have been replaced by plastic and plastic-coated paper plates that are single-use and terrible for the environment. Researchers have proposed a behavioural change intervention to promote the adoption of leaf plates and utensils. These leaf utensils are cost-effective to manufacture, inexpensive, durable, eco-friendly and biodegradable.

The research team seeks to implement this initiative in rural Bihar, in collaboration with a local network of community-based programmes, the Government of Bihar, and the World Bank. The first step of the initiative will be information campaigns to raise awareness about the benefits of utilising leaf plates. Considering that the product is not completely new, they anticipate limited resistance to making the shift. They also suggest incentivising the self-help groups to keep a local supply/production of these leaf utensils available.

The proposed intervention will have a significant environmental impact by reducing the use of single-use plastic and reducing land pollution and agricultural product pollution. It will also encourage local entrepreneurship and rural industry and increase women's participation in the leaf industry thereby empowering them. The team will run a randomised field experiment that entails multiple interventions. One set of interventions will target demand, using information campaigns to encourage the use of leaf plates. The other set will focus on supply, to enable the local self-help groups to acquire leaf plates at a subsidised rate and stock them.

Based on the success of the intervention, it can be expanded to the rest of the country and significantly contribute to the reduction in usage of single-use plastics, reducing land pollution and contributing to local job creation and economy.

Mausumi Das

Dr Mausumi Das is currently a Professor at the Department of Economics, Delhi School of Economics, DSE. She received her Ph.D. from the Jawaharlal Nehru University. Her area of specialisation is economic growth and development.

Sourav Sarkar

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Naveen Kumar

Naveen Kumar is a PhD candidate in Economics at Delhi School of Economics, University of Delhi, India. Naveen holds an MA in Economics from Delhi School of Economics and a BA (Hons) in Economics from University of Delhi.

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Promoting Behaviour Change for Waste Segregation at Source in School Children of Delhi NCR region

India generates a large quantity of waste, and effective waste management is the need of the hour through the adoption of a circular economy. An important aspect of a circular economy is the segregation of waste at source, which requires behavioural change and is only possible when it is practised at the household and community level.

Connecting with children is an important way to bring about any change in a community. Schools play an important role in shaping a child's behaviour with respect to the environment and helping them engage in environment-friendly behaviour. Environmental education focuses on imparting knowledge to students as it is believed that this knowledge will lead to a change in attitude, which will lead to the individual behaving in an environmentally friendly manner.

This proposal aims at nudging school children to engage in pro-environmental behaviour and make them segregate waste at source. The intervention will be focused on the specific behaviour of plastic recycling. The plastic waste collected by students in their houses, by practising source segregation, will be brought back to their schools and recycled into benches that will be given back to the schools for use, hence, demonstrating circularity. The replacement of wood with plastic waste in the making of furniture sets an example to promote green infrastructure and helps prevent deforestation as well.

The proposal aims to explore and understand the role of nudges in promoting pro-environmental behaviour in children, the role of the school principal, and the influence of the teachers' attitude on the knowledge-attitude-behaviour relationship of the students. The proposal also wishes to understand how best to influence parents through children to manage the problem of waste segregation in India. The findings of the proposal will also help provide important inputs to policymakers on the role of schools in promoting pro-environment behaviour in school students.

Harsh Mehrotra

Harsh Mehrotra is an IIM - Lucknow alumnus. Currently serving as CEO and co-founder of Blue Planet Skills, he heads the Blue Nudge initiative, with a goal to inspire 10 million youth to adopt pro-planet behaviour.

Anushka Chauhan

Anushka is a program manager at Blue Nudge. She is a graduate in Social Work from the Tata Institute of Social Sciences and holds a master's in International Relations from the University of Bristol, United Kingdom.

Gurpreet Kaur Mehdiratta

Dr Gurpreet Kaur Mehdiratta is an Associate Professor at Jindal Global Business School, O.P. Jindal Global University. Gurpreet holds PhD in Business Sustainability and MBA in Marketing from IIM, Lucknow.

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SCRAPIFY -
Online Bidding Platform for Waste Items

The proposal aims to create an online marketplace/aggregator called Scrapify, which connects buyers and sellers of waste without the need for multiple intermediaries, allowing price discovery and promoting carbon trading through rewarding carbon credits to sellers. It supports both B2C and B2B commerce. It uses geo-tagging and machine learning to help buyers identify nearby sellers and offer buyers a bidding system to bid on waste items listed by sellers. The aim is to change the behaviour of improper waste management by promoting waste segregation at the source.

The underlying premise of the intervention is that absence of proper waste management and segregation results in environmental pollution, health hazards, and loss of valuable resources. According to the Central Pollution Control Board, India generates approximately 62 million tons (MT) of solid waste annually, of which only 19% is treated. The rest is dumped in landfills/open areas.

The intervention will be implemented by Scrapify's team, who will develop and maintain the online platform. The use of geo-tagging and machine learning will identify sellers' and buyers' locations and optimise the route for better connectivity. It will also use blockchain technology and artificial intelligence to forecast waste generation and improve traceability. The behavioural principle will be the concept of incentivising waste management practices, such as carbon trading and waste segregation at the source. Partnerships with government authorities, corporations, municipalities, and local bodies will help create awareness and informational programs, as well as develop intelligence around modelling market dynamics in real time.

A pilot will be tested at the ward level in one district. The variables tested will include the following:

• Usability of the Scrapify platform for buyers and sellers
• Effectiveness of the bidding system for waste selling and buying
• Impact of carbon credit reward system on the seller behaviour
• User satisfaction with the platform

The proposal could create a more efficient and transparent market for waste trading, which could lead to better price discovery and incentivise waste segregation at source by the masses.

Azhagu Pandia Raja M P

Azhagu has a software engineering background and is currently a founder of a startup called Scrapify which works on waste management.

Yogesh Pandian R

Yogesh Pandian R is pursuing his Master's in Electrical Engineering at Politecnico di Milano University in Milan, Italy. His research interests include Green Energy systems, Blockchain, Web 3.0, waste management, and sustainability.

V. Vignesh

Vignesh Venkitasamy holds a Bachelor's in Computer Science and Engineering and is a full-stack application developer professionally.

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Transforming Grocery Deliveries into a Circular System and Reducing Food Waste: A Virtual Pantry Solution

Quick Commerce has transformed the grocery shopping experiences for consumers in India and around the world. The COVID-19 pandemic and increased digital awareness and use have widely accelerated the use of Grocery Delivery Applications (GDAs). Convenience aside, online grocery shopping unfortunately also leads to increased food waste due to reduced consumer perceptions of purchase effort.

Studies have been carried out to explore the impact of a Virtual-Pantry Plugin solution that can be integrated with existing GDAs, to reduce food wastage. The study will consult previously published works on consumer purchasing habits and food waste management. It will collect data through a qualitative study that employs convenience and snowball sampling techniques. The Virtual-Pantry Plugin feature is an AI-powered system that serves as a virtual assistant for customers to organise and track their shopping on cell phones. It provides information about expiration dates, recipes, and a storage knowledge guide, and also tracks and analyses purchase and eating habits and patterns. The pilot implementation of the solution will be done in Bengaluru and will include market research, a multi-channel launch, partnerships with influencers and integration with GDAs.

The study investigates how real-time knowledge about food availability might affect consumer behaviour and decision-making, ultimately resulting in decreased food waste. The findings will highlight the solution's potential to decrease food waste at the Indian household level, offer financial advantages to customers and GDAs, and raise environmental consciousness. The research findings will also contribute to more general conversations about the circular economy and the application of cutting-edge technologies, such as artificial intelligence, to reduce food waste.

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Ashwini Janardhanan

Ashwini is currently an Associate Director - People Operations at Yellow.ai. Her unrelenting drive for the third P of the Triple Bottom Line, Planet, led her to found Bimbli, a textile upcycling firm empowering women artisans.

Pratik Shanbhag

Pratik is currently working as Asst. Manager - Social Media Marketing, Yellow.ai. With prior experience in waste management, leading sustainability initiatives, and using technology for good, Pratik is driven to bring about a behavioural change in people's mindset towards waste.

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Sustainable Sanitation with Bio-Toilets: An Attempt to Impose Behavioural Change within Individuals to Switch from Conventional Toilets to Bio-Toilets

Between 2015 and 2019, 525 million Indians received 105 million home toilets thanks to the Swachh Bharat Mission. The subsequent challenge lies in ensuring that these restrooms are properly maintained, particularly considering India's growing urbanisation pace. Sustainable urban growth and the modernisation of crucial urban infrastructure, such as water supply, sanitation and sewage systems, require a strategic plan. Researchers have proposed the development of bio-toilets in India towards satisfying the sanitation requirements of the nation's expanding population. By using microbial activity to turn human waste into water and gas and eliminate odours, bio-toilets are an environmentally friendly alternative that improves the sustainability and efficiency of sanitation systems.

The intervention will employ a top-down strategy to simplify the switch from conventional toilets to bio-toilets. Townships, schools, colleges, eateries along the highway, gardens, factories, malls, recently built structures, airports, trains, public restrooms, tourist sites, and temples are some of the locations this effort will target. The success of the project will be evaluated by looking at key performance indicators such as the reduction of offensive odour, effluent quality, faeces in the tank, maintenance costs, insect infestation, and digester obstruction. The variables that will be examined include attitudes towards sanitation, sanitation awareness, the acceptance rate for installing bio-toilets, and the usage rate for bio-toilets installed in cities, industrial development regions, and states.

This intervention will benefit urban local government entities, contractors, the general public, shareholders, and so on. Behavioural principles of discrimination, shaping, chaining, and modelling will be utilised in the approach. Highlighted government initiatives such as the Smart Cities, Swatch Bharat, Industrial Development Areas, and Amrut initiatives can be used to encourage the installation of toilets and enhance community sanitation. People will be more aware of the value of cleanliness if bio-toilets are installed in public spaces such as parks, schools, and community centres. Furthermore, it will curtail water use and encourage improved hygiene among citizens.

Shyam M. Kodape

Shyam Kodape is an assistant professor. He is currently pursuing Master of Arts in Development Studies from IGNOU and has already completed his PhD in Chemical Technology from Amravati University.

Shrayanti B. Korwate

Shrayanti Korwate is an MBA student in her second year at the prestigious Indian Institute of Management, Ahmedabad. She graduated from the Indian Institute of Technology, Indore, with a Bachelor's in Electrical Engineering.

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Sustainable Household Consumption via Climate Sensitisation in Schools

The paper proposes to encourage conservation behaviour in the domestic household use of water and electricity by using children as the conduit of behaviour change. There are four clear advantages of this approach:

1) schools provide useful aggregation points for behavioural interventions;
2) children of the house provide the impetus for behaviour change, and are likely to have a greater impact than other sources of change;
3) intervention through schools are more scalable, thereby achieving a wider reach compared to other methods; and
4) the proposed intervention is consistent with the philosophy of the New Education Policy (NEP), designed to guide the future of education in India.

To evaluate the effectiveness of this idea, the paper proposes to test it through sets of randomised control trials. The sample will consist of sixth or seventh-grade children in a set of appropriately chosen schools with one school as the control group where there will be no intervention during the period of data collection. Electricity and water consumption data can be collected from the households in the treatment group, for pre-and post-intervention periods. A difference-in-difference data analysis methodology can be used to assess the impact of the intervention.

Scalable interventions that create awareness about climate change and its impact through early self-regulation in middle and high schools is a promising opportunity to instil eco-friendly and climate-friendly behaviour in children. If successful, this intervention can be scaled up across the country and the world, thus providing a critical mechanism to bring about large-scale behavioural change in communities across the world to conserve water and electricity. The intervention design can be carried out as an extension to the regular environmental study class, in a regular classroom set-up and it only requires training of teachers.

Haritha Saranga

Dr Haritha Saranga is a professor of Operations Management at Indian Institute of Management (IIM) Bangalore. She currently chairs the Sustainability Taskforce at IIM Bangalore. Haritha Saranga is a Fellow of MIRCE Akademy, Exeter, UK.

Satyajit Roy

Satyajit Roy is a PhD research scholar in Production and Operations Management area at IIM Bangalore. He graduated as a Mechanical Engineer from NIT Durgapur and completed his MBA from IIM Kozhikode.

Kanchan Mukherjee

Dr Kanchan Mukherjee is a professor of the Organisational Behavior Area at the Indian Institute of Management, Bangalore. He did his B.Tech. from IIT Kanpur, MBA from IIM Calcutta and PhD from INSEAD, France.

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Green Coin for Grassroot Behaviour Transformation:
Pro-Environment Crowd-Actions and Improvement of National Quality of Life

Increasing energy demand and use of fossil fuels have caused ecological catastrophes throughout the world. With India's economy growing at a rapid pace, it is imperative to conserve energy, requiring people to modify their consumption behaviour at the grassroot level. This project focuses on adopting technology and reinforcing pro-energy conservation behaviour through implementation of the concept of Green Coins. In particular, the focus is on pollution control to preserve the environment as well as cleanliness to control diseases and decay in one's living environment. The researchers' recommendation, Green Coins, is a generic incentive-based model. At the individual level, the approach targets preservation of the environment through controlling energy consumption, measured through electricity bills as well as consumption of automobile fuel. Green Coins are automatically computed when certain behaviours are practised, and the authors hope to create an ecosystem whereby communities can reap the benefits of Green Coins with equivalent financial payouts. Available at the individual, business and community level, Green Coins will help make pro-environment positive behaviour the norm.

At the community level, cleanliness is the targeted pro-environment behaviour. This need to keep surroundings clean and garbage-free is a challenge facing the country of 1.4 billion people. The study proposes an automated system of drones and artificial intelligence-driven image analysis system combined with the Green Coins concept to incentivise the people to adopt cleanliness as a way of life in their daily activities. Through this strategy, landowners and business owners can be rewarded through Green Coins for maintaining or improving their physical environment. By combining technology with the incentivisation structure of Green Coins in a pilot study in Indore, Madhya Pradesh, India, the study hopes to develop a holistic ecosystem of incentives, develop a commercially sustainable business model, and collect feedback on the viability of a nationwide rollout of this solution.

Sanjram Premjit Khanganba

Dr Sanjram Premjit Khanganba works as a human factors research practitioner. His scientific research revolves around the application of human factors principles in system development, design, and evaluation.

Sudhir Dixit

Sudhir Dixit is a Co-Founder and COO at the Basic Internet Foundation in Oslo, Norway, and heads its US operations. He is also a VAJRA Professor at the IISc Bangalore. He received his PhD from the University of Strathclyde, Glasgow, UK and MBA from Florida Institute of Technology, USA.

Vimal Bhatia

Vimal Bhatia is currently working as a Professor at IIT Indore and is an adjunct faculty at IIT Delhi. He received a PhD from Institute for Digital Communications at The University of Edinburgh, U.K.

Benchmarking and Demonstrating Paths for Reducing Electricity Footprint in Urban Apartment Complexes

This study aims to establish the electricity consumption baseline in urban apartment complexes, along with recommendations to reduce consumption to promote sustainability. Building energy demands have increased by around 4 per cent from 2020 – the largest increase in the last 10 years. A significant majority of the household carbon footprint today is caused by electricity consumption in apartments and flats. This places an obligation on Indian urban communities to adopt a low-carbon lifestyle to allow for equitable access to resources necessary for development.

The intervention in this study will be done by the Bangalore-based NGO Technology Informatics Design Endeavour (TIDE). TIDE will bring its subject matter expertise and grassroots implementation expertise to carry out the pilot. A sampling plan will be drawn to ensure different apartment typologies are covered and the Energy Performance Indicators (EPI) can emerge from the study. Implementing organisations will have a buy-in from apartment federations to prepare a long list of apartments and approach them for enlisting for the study.

The intended results of the study are that participating apartment associations understand electricity use in common areas and are able to bring it down through no-cost, low cost and high-cost interventions. By bringing down the electricity usage among high users, it will release the crucial energy required for the aspiring population. This would not only release electricity for productive purposes but contribute directly to India's goals on GHG/carbon footprint reduction and upping renewable energy generation. Insights from the study could be shared with ECBC, strengthening and filling gaps in the residential sector. Policies could be formulated to incentivise such behaviours and make it a norm rather than an exception. The study would also attract market players to invest in providing technology and service to the segment through innovative offerings.

Sumathy Krishnan

Sumathy Krishnan is a technocrat. She currently mentors TIDE – a Bangalore based science & Technology NGO. She completed her M. Tech. from IIT Delhi.

Ravichandran K

Ravichandran K is a sustainability professional. He has a B.E in Electronics and Communication from MNREC Allahabad and a Master's in development with specialisation in sustainability from Azim Premji University Bangalore.

Deepak Krishnan

Deepak is the Associate Director for WRI India's Energy Program and leads work on Clean Energy Initiatives (Renewable Energy & Energy Efficiency) for different consumer categories; Clean Energy Transitions and Water-Energy nexus. He is an electrical engineering graduate with a master's in electric power systems.

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"
Individuals making
the right decisions
for our planet are
key in the battle
for our planet.
This is the core of
Mission LiFE. **"**

Shri Narendra Modi
Prime Minister

Farming Communities Switch from Traditional Cropping Pattern to Diversified Cropping Pattern in Drought Prone Marathwada Region of Maharashtra

As a result of their reliance on rainfed agriculture, farming communities in Maharashtra's Marathwada region are particularly susceptible to risks associated with the climate, such as droughts. This deems the conventional cropping scheme in this region inappropriate. The current farming system has led to resource depletion, nutritional deficiencies, a drop in the water table, and risk to income growth. Promoting crop diversity and resource sustainability in this area requires training and community involvement.

Researchers state that the diversity of crops can be increased through a comprehensive strategy that incorporates geospatial technology, multidisciplinary knowledge, and community involvement. Through the use of site-specific factors and GIS technologies, they will test a pilot project in the region to assess the compatibility of the existing cropping pattern and the suitability of the land.

Crop management capacity will increase with community participation. To provide information regarding rainfall and temperature forecasts, a mobile application will be created that combines climatic factors with cloud-based data. Additionally, this information will be used to calculate the rates of evaporation and moisture in agricultural areas. The intervention might aid in reducing the impact of a changing climate on agriculture.

The efficiency and viability of the concept will be assessed by contrasting the input-to-output ratio of conventional crops with the newly introduced crops. To determine the new cropping pattern's viability, the socio-economic effects will be examined. Farmer training, expert workshops, and focus group discussions will be conducted for capacity-building. The Intervention will enable researchers to develop a thorough strategy to encourage crop diversification. The pilot test will also enable researchers to assess the plan's viability and effectiveness and formulate effective adaptation and mitigation strategies.

Haroon Sajjad

Dr Haroon Sajjad is a professor in the Department of Geography, Faculty of Natural Sciences, Jamia Millia Islamia, New Delhi. His research interests include climate change impact assessment, vulnerability and adaptation analysis, environmental management, sustainable development, watershed management, and remote sensing and GIS applications.

Md Masroor

Dr. Md Masroor holds PhD from Jamia Millia Islamia. He is specialised in climate change, drought monitoring, remote sensing & GIS and hydrological studies.

Md Hibjur Rahaman

Md Hibjur Rahaman obtained his undergraduate and postgraduate degrees in Geography from the Aligarh Muslim University. He is pursuing a PhD in Geography at the Jamia Millia Islamia, focusing on climate variability assessment and water resource management.

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We Save Our Loving Earth (WeSOLE) by Transforming Trash to Treasure: Empowering Youth to Make Eco-Friendly Cleaners from Citrus Peels

Chemical-based cleaning solutions include dangerous substances that can lead to cancer, skin rashes, and respiratory issues in people. Additionally, they affect both aquatic and terrestrial fauna and have negative environmental consequences, such as air and water pollution. By guiding schools and young people in India to manufacture bio-enzyme-based cleaning products from citrus fruit peel waste as a more sustainable and ecologically friendly alternative, researchers hope to lessen the negative effects of chemical-based cleaning products on the environment and human health.

By using a peer-based education strategy and a waste management education curriculum to demonstrate how the project enhances social and environmental health, a group of educators and college students will engage with 1000 kids in 20 schools in New Delhi, India. The project's effects on the students, families, schools, and community will be assessed. The initiative will also strengthen participants' advocacy and communication abilities, assisting them in comprehending the fundamental causes of people's resistance to change and how to get beyond these obstacles. In addition to offering hands-on activities that let students create and apply the cleaning solutions themselves, the team will provide instruction and tools to assist students comprehend the science underlying eco-friendly cleaning techniques.

The program is based on Bandura's Social Cognitive Theory and an empowerment education approach. A three-step peer-led leadership process is used in the programme, where university students receive training as WeSOLE educators and mentor class 9 students to become WeSOLE peer champions. These peer advocates then instruct class 7 pupils in four courses on waste management, bio enzyme production, creating healthy environments using bio enzymes, and the WeSOLE action plan for the school. The researchers will conduct surveys, events and interviews to evaluate the intervention's impact on attitudes and behaviours. To promote social and environmental health, the proposal also seeks to foster a sense of community and shared responsibility.

Kritika Jain

Dr Kritika Jain is Dentist and Preventative Health Officer in Australia. She holds a postgraduate degree in Public Health from Torrens University, Sydney, and graduate degree from Rajasthan University of Health Sciences, Jaipur.

Vibhor Dudhraj

Dr Vibhor Dudhraj is a Research Associate at the National Programme on Antimicrobial Resistance Containment in India. He has completed Post Graduation in Public Health from Delhi Pharmaceuticals Science and Research University and graduation from the Rajasthan University of Health Sciences.

Ankush Dugar

Ankush is currently pursuing his studies in Mechatronics and Computer Science at Curtin University.

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Can Electricity Demand Management Drive the Transition to Clean and Affordable Energy?

Most developing countries today rely primarily on fossil fuels to meet their rapidly growing energy demand. On average, coal-fired power plants meet 70 per cent of India's annual energy demand. These power plants are inefficiently ramped up or down throughout the day depending on changing demand and output from non-fossil fuel sources. Further, energy supplied by fossil fuels generates large-scale environmental externalities, with the effects being most pronounced in low- and middle-income countries. This study seeks to understand how the rapid deployment of smart meters can accelerate the clean energy transition by enabling dynamic retail pricing of electricity, which could incentivise consumers to use electricity when it is generated from clean sources.

The researchers will undertake a randomised control trial in partnership with one of the electric distribution companies. As part of this, participating customers will be offered simple IoT-enabled automation devices that generate switch-off events, enabling load shifting. Participants will be rewarded for each kWh of energy saved during these events. Under a data access agreement, electric distribution companywill also share secondary data on half-hourly electricity consumption, customer locations, bills, and outage events for approximately 2,00,000 residential smart meter users for five years, allowing the researchers to conduct two studies in addition to the IoT trial. First, examine how household electricity consumption, particularly for heating and cooling, responds to hourly changes in weather conditions. Second, examine how smart meter installations affect household electricity consumption and bill payment behaviour. Based on the results of this study, the estimated maximum willingness to pay to avoid one kWh of lost electricity consumption will inform how policymakers in developing countries design markets that can both meet the demand for electricity at a particular hour of the day, while cost-effectively decarbonising the energy system.

Shefali Khanna

Dr Shefali Khanna is a Research Associate in Energy and Environmental Economics in the Department of Economics and Public Policy at Imperial College London. She earned a Ph.D. in Public Policy from Harvard University and B.A. in Economics with Departmental Honours from the University of Maryland, College Park.

Mirabelle Muûls

Dr Mirabelle Muûls is an Assistant Professor in Economics at Imperial College Business School and the co-Director of the Hitachi-Imperial Centre for Decarbonisation and Natural Climate Solutions. Mirabelle studied economics at the FUSL and Université Catholique de Louvain in Belgium and holds an MSc in Politics of the World Economy and a PhD in Economics from the London School of Economics.

Ralf Martin

Dr Ralf Martin is an Associate Professor of Economics at Imperial College Business School. He holds MSc in Econometrics and Mathematical Economics and PhD in Economics from London School of Economics.

Promoting Frequent Emptying of On-Site Sanitation Containments to Minimise Greenhouse Gas Emissions

Safe sanitation plays an important role in maintaining public health, reducing greenhouse gas (GHG) emissions and preventing water source contamination. However, the emptying of latrines and septic tanks in urban and peri-urban areas in India is severely inadequate and this increases the risk of contamination from flooding, seepage and leaks. Another issue is the release of methane, nitrous oxide and carbon dioxide during decomposition leading to increased GHG emissions. Understanding current practices and community barriers is essential for designing and implementing successful behaviour change communication (BCC) programmes that aim to alter attitudes related to emptying containments. In India, attitudes towards handling waste, ideas of "purity," and perceptions of the affordability and safety of latrines all have an impact on sanitation practices. A team of researchers have proposed a detailed study that will develop a behaviour change program to increase the use of emptying services for (on-site sanitation system) OSS at regular intervals.

The pilot test intervention will be formulated based on formative research into behaviours and barriers associated with latrine emptying. The research will also look into the motivating factors that influence the adoption or non-adoption of emptying practice. The impact of the intervention on GHG emissions and groundwater quality will also be evaluated by the team. The study will be conducted in communities around Nagpur, Maharashtra in households that meet certain criteria. The households are required to own and use an on-site sanitation system, the containment tank must be accessible for emptying, and there should be access to faecal sludge management (FSM) services etc. Additionally, the team will collaborate with FSM service providers to guarantee that participating households receive an emptying schedule regularly. To enable routine emptying, each residence will be connected to an FSM service provider. The testing plan will include ethical approval, formative research, participant selection via community leaders and influential members, design and delivery of the BCC campaign using social and mass media, nudges via routine text programming, endline measurement and data analysis. If successful, this approach can be scaled up to reach the 760 per cent of the urban demographic in India that rely on OSS, thereby protecting public health, and groundwater quality and reducing emissions.

Guy Howard

Professor Howard is the Director of Cabot Institute for the Environment at the University of Bristol and a Professor of Infrastructure and Environmental Resilience in the Department of Civil Engineering. He set up the DFID South Asia Research Hub in Delhi.

Anisha Nijhawan

Anisha Nijhawan is a Senior Research Associate at the University of Bristol. Anisha did her Master's in Environmental Engineering from Carnegie Mellon University and a PhD in Environmental Engineering from the University of Oklahoma.

Pawan Labhasetwar

Dr Labhasetwar holds a Doctorate in Environmental Engineering and a degree in Civil Engineering. He is Chairman of the Committee of developing standards for "Point-of-use Water Treatment Systems" and Head of the World Health Organisation's Collaborating Centre for Water and Sanitation.

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The LiFE Coolkit for Neighbourhood Greening

The impact of climate change in India includes rising frequency and intensity of heat waves, droughts, various types of flooding, food shortages, and rising food and energy costs, among others. Evidence from satellite photography, such as Google Maps, demonstrates that many urban neighbourhoods in India, including the proposed pilot location, already have poor canopy cover and highly impervious areas, making them vulnerable to the effects of climate change. Small-scale neighbourhood greening initiatives can address issues like cooling, energy use and carbon emissions (including air conditioning powered by coal), stormwater runoff and flooding, carbon sequestration, rewilding and biodiversity, access to green space for all, and physical and mental anxiety.

The authors propose the LiFE Coolkit programme, which aims to collectively modify community inhabitants' behaviours to implement useful nature-based solutions through little acts of greening yards, gardens, and streets. The greening acts include tree-planting with native or adaptive species, de-paving and revegetating landscapes, local food production, ongoing stewardship to manage, water and fertilise vegetation and collective social action to include the entire community in these activities.

The "Do it yourself" Coolkit for neighbourhood greening can be utilised by anyone and tailored for other areas, languages, or traditional practices. With assistance from neighbourhood councils, social networks, and community organisations, the pilot programme will be trialled in a few Coimbatore neighbourhoods. The programme makes use of a tried-and-true methodology as well as cutting-edge tools from the Citizens Coolkit, a visual manual for promoting local greening and climate stewardship. Utilising practical, enjoyable activities, the intervention assists locals in comprehending and putting into practice climate solutions where they live. The five-step process includes discussions with climate walks, mapping vulnerabilities, rating sustainability, visualising solutions and creating local Climate Action Plans.

The LiFE Coolkit programme is anticipated to empower a network of local climate champions to mobilise grassroots action, boost vegetation in communities, and encourage a cultural shift towards the care of green infrastructure.

Stephen Richard John Sheppard

Dr Sheppard is Professor Emeritus in UBC's Urban Forestry program. He directs CALP, an action research group that promotes local climate change solutions. He has developed fun visual learning tools and training programs for empowering climate champions through initiatives such as the Oak Bay Coolkit, Cool Hood Champs, etc.

Mita Nangia Goswami

Mita is the Director of Environmental Education for the Worldwide Fund for Nature (India). She has a Certificate in Advanced Education for Sustainable Development, & advised UNESCO & Mongolia's Education for Sustainable Development program.

Rajat Gupta

Dr Gupta directs the Oxford Institute for Sustainable Development & Low-Carbon Building Research Group and is a Senior Professor in sustainable architecture and climate change. He leads the RESIDE project on home-energy demand in India.

Barriers to the Adoption of Low Carbon Rice Cultivation

The production of rice contributes significantly to world emissions, making up 1.5 per cent of all greenhouse gas emissions, or almost the same as the global aviation sector. This is particularly significant in India where rice is a primary crop. The majority of these emissions are caused by the continuous flooding of paddy fields during conventional rice farming. With additional emissions produced by burning and cleaning fields after harvest, methane-emitting bacteria can flourish in these flooded fields.

With minimal water, fertiliser, manpower, and seed use, the System of Rice Intensification (SRI) is an alternative agricultural technique that increases yields. This practice cuts emissions by 30–50 per cent without harming yield, according to studies from Vietnam and India. SRI may be a substantial and simple-to-implement practice that can help India achieve sustainable development by considerably reducing its emissions. However, SRI is not widely used in India, despite the significant environmental and private benefits it offers.

To investigate the obstacles to farmers adopting SRI, the authors propose a randomised control experiment (RCT) with a specific focus on how the choice to embrace SRI is influenced by knowledge, supplier access, and financial constraints. The findings may help shape future policies to encourage the implementation of SRI and, ultimately, increase the viability of the Indian economy. The RCT will be conducted with a sample size of 5000 farmers.

The RCT setup would allow the researchers to look at and quantify how three barriers—knowledge of SRI, access to the required inputs, and credit constraints—affect the adoption of SRI. This will be the first investigation of its kind to look at the impact of multiple barriers on the adoption of SRI, even though there has been extensive research on the advantages of adopting SRI on profits and emissions as well as a substantial body of work on the under adoption of technologies that appear to be beneficial in developing countries.

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Reducing Food Waste by Street Vendors in Selected Food Hotspots of Delhi by Providing Behavioural Change Solutions

This study aims to focus on behavioural initiatives to strengthen the quality of food waste management. The goal is to reduce food waste in the food consumption segment by changing the behaviour of street vendors. It would impact two causes of food wastage, i.e., unsold items (linked with food surplus) and purchased but uneaten items. An impact analysis will be done by educating vendors, promoting sustainable marketing solutions, and conducting controlled and experimental group meetings to understand factors influencing food wastage. Involving key stakeholders such as government organisations, NGOs, civil society organisations (CSOs), and startups will help understand factors influencing food wastage and identify footfall levels. Fiscal incentives to street vendors will promote the concept of Pro Planet People and circularity (reduce, reuse, and recycle) in the food value chain.

Pre-implementation engagement with various government organisations will help identify footfall levels of the selected three hotspots and gather a street vendors list. Partnership with NGOs, CSOs and startups will help develop pre- and post-intervention survey questionnaires, training and capacity development modules, and identify impact variables and measurement methodology.

The pilot will begin with a pre-intervention survey of the selected 100 street vendors to understand their current food waste generation and waste management practices. Further training, awareness programmes, and consumer-targeted messaging ideas will be provided to reduce wastage and efficiently re-direct generated waste to value-adding activities. A potential financial incentive will help reduce overall food waste generation and management, enabling a circular economy. A post-intervention survey and impact measurement will be done after one month, to assess behaviour change. Based on these, a set of recommendations will be developed for scaling up the program to the city.

Anil Markandya

Professor Markandya is a Distinguished Ikerbasque Professor at the Basque Centre for Climate Change, Spain and an Honorary Professor of Economics at the University of Bath. He was a lead author for the numerous IPCC Assessment Reports on Climate Change and a contributing author for the special report on 1.5°C.

Kanika Kalia

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Ride the Green Wave: Advancing Sustainable Transport in the Workplace

According to the World Health Organisation, air pollution is responsible for over seven million premature deaths worldwide annually. India is the fifth most polluted country out of 117 countries. In addition to the impact on human health, the transportation sector is responsible for a significant proportion of greenhouse gas emissions, and is a major contributor to climate change. As cities continue to grow and more people rely on personal vehicles for transportation, the need for sustainable transportation options has become increasingly urgent.

The proposed solution to these challenges is the sustainable transportation app, EcoCommute, which has been designed to promote and incentivise the use of eco-friendly modes of transportation among employees of an organisation. The app seeks to provide a one-stop solution for employees to plan their daily commute and choose sustainable transportation options such as walking, cycling, public transportation, carpooling, and bike sharing. With a user-friendly interface, the app uses GPS tracking, mobile sensors, and transportation APIs to identify and track the mode of transportation used by the employees. Based on these, the app will provide various features to help users plan their routes, view real-time transit information, find carpool or bike share partners, and track their carbon footprint. Users can earn rewards and incentives for using sustainable modes of transportation and track their progress toward achieving personal sustainability goals.

EcoCommute will benefit the environment and improve physical and mental health by encouraging physical activity and reducing stress levels associated with traffic congestion. The app has been rigorously tested using various testing methods such as unit testing, integration testing, functional testing, user acceptance testing, performance testing, security testing, and regression testing, ensuring a seamless and secure experience for the users. Overall, the goal with EcoCommute is to create a more sustainable future by encouraging individuals and organisations to make conscious choices that prioritise the health of the planet and the people living on it.

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Yash Jariwala is pursuing my MTech in Energy Systems Engineering at IIT Bombay. He has completed graduation in Chemical Engineering from M. S. University, Vadodara, Gujarat.

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Sangam: An Integrated Approach towards Sustainable Living

Global awareness around carbon emissions and their severe consequences on world climate is at an all-time high. Despite this awareness and the increasing number of government, business and individual-led initiatives, high carbon emissions are not reducing at a rate suitable to combat its negative effects. This is due to the imbalance between initiatives and the awareness and access around them. Specifically in rural communities, a lack of efficient and accessible channels prevents them from connecting with climate change mitigation programs and schemes from the government. Researchers have developed a user-friendly mobile application that blends technology and behaviour change to enable individuals to take control of their carbon footprint.

The Sangam app will calculate and optimise the users' carbon footprint and suggest ways to reduce it. It will promote sustainable behaviour and enable rural communities to access government programs and schemes around sustainable behaviour and climate change. Users acquire LiFE credits as incentives for sustainable behaviour, which can be redeemed for products and services. Existing research has proved that carbon footprint calculators can have a positive impact on people's awareness of reducing their carbon emissions.

The app will capture crucial details such as Aadhar number, electricity bill number, water bill number etc, to evaluate the consumers' carbon footprint, which is displayed on the dashboard. The app will also provide suggestions on ways to reduce emissions. The app has both a user interface and a business interface and will prioritise privacy, transparency, and accessibility for all users (urban, rural and business). The credit exchange system offered by the app motivates consumers by rewarding sustainable practices. It also targets a diverse demographic, creating a conscious community committed to mitigating climate change.

Amol Kapoor

Amol is serving as an executive at the Confederation of Indian Industry. He holds an MSc from Tata Institute of Social Sciences.

gCommerce: A Comprehensive Economic Ecosystem for "Green Commerce" that Breathes A.I.R. [Awareness, Impact, Rewards] into LiFE [Lifestyle for Environment]

The earth is not even close to achieving its stated climate goals, despite 30 years of persistent efforts through policy, legislation, conferences, and conventions. India has pledged to lower its GDP emissions by 45 per cent from 2005 levels by 2030, a goal that has so far only been reached to a partial extent (24 per cent). The primary cause of this is the lack of a comprehensive, unified, and recognised movement that brings Awareness, Impact, and Rewards to the general public while tackling the climate change issue from an individual level.

The project proposes a unique concept to encourage behavioural change towards sustainable practices amongst all stakeholders. gCommerce is a unique and all-encompassing solution that can assist India in achieving its lofty goals and offer a straightforward, scalable way to make the fight against climate change winnable. It is a distinct, technologically advanced, and scientifically sound ecosystem that unites organisations/institutions, private persons, and emissions sequestrators under a unified, sustainability-driven framework. The "Reward Expectancy Theory" will be activated by gCommerce's creation of a unified, holistic, structured ecosystem that rewards environmentally beneficial behaviour.

People will receive a "gCommerce Green Card" that will keep track of all of their efforts linked to reducing emissions and store their "gCommerce Green Points." They will be encouraged to accumulate these "gCommerce Green Points" by participating in the numerous specified activities that reward ecologically responsible conduct. When people practise sustainable behaviour, the "Reward Expectancy" behaviour is triggered in them. When institutions, businesses, and sequestrators engage in actions that reduce emissions, the same behaviour is induced. Pune, Maharashtra, will serve as the study location, and the pilot research phase is anticipated to last 6 months.

Millions of cardholders and organisations may join gCommerce through a scaled-back national roll-out using the existing governmental infrastructure, including the railways, banks, and other institutions, which would also make it easier for India to fulfil its NDCs.

Gautam Shiknis

Gautam Shiknis is the founder and chairman of NettZero Environmental Advisory Technologies. An MBA from NMIMS, Gautam is a serial innovator with a track record of launching successful ventures in sunrise sectors.

Vidhi Gaur

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Nudge based Randomised Control Trials:
A Comprehensive Intervention on School Children to Optimise Community Electricity Conservation

The proposed intervention aims at nudging households towards lowering their excess and unnecessary electricity consumption by ingraining a sense of altruism in the conscience of their school-going children while encouraging the parents to envisage their children as Samaritans in society by restoring the environment. Interventions will be based on behavioural economics principles that nudge participants towards sustainable energy behaviour. It has the potential benefits of scalability with minimum economic dependence.

The underlying premise of the intervention is based upon the fact that India's expanding population has an increased energy demand which can lay undue stress on environmental health and climate sustainability. While the major sectors that depend extensively on electricity are industry, transportation, and residential, it is household consumption that can be nudged towards sustainable consumption. Focus on energy conservation takes over energy efficiency because the government so far has focused only on policies promoting efficiency, and energy-efficient devices are expensive. Several studies on energy conservation through behaviour change have yet to include the socio-cultural aspects resulting in limited applicability and scalability at global, national, or regional levels.

The intervention will begin with schools mediated through school children with the help of school administration and finally influencing households using behavioural economic principles. A total of seven (7) schools will be randomly selected in each of the cities of Bihar and Delhi NCR. Probability Proportional to Size sampling will be done to select approximately 700 students from grades 6 to 8. Socio-economic and energy profiling of households will be done through questionnaires. This will lead to stratification, inclusion, and exclusion criteria for households. Treatment and control groups will be defined for intervention to take place. Results will be compared periodically, and finally, after six months appropriate conclusions will be drawn based on the pattern of results.

Thus, the study proposes to nudge households mediated through school children and has the potential benefits of scalability with minimum economic dependence. Also, it can imbibe an environment-friendly culture in the upcoming generation for the future of sustainability.

Pratap Chandra Mohanty

Dr Pratap Mohanty is presently an Associate Professor in Economics at IIT Roorkee. He has been working on various socio-economic issues in India, such as healthcare challenges, medical pluralism, and inequalities.

Priyandu M Bajpayee

Priyandu M Bajpayee is a research fellow at the Department of Humanities and Social Sciences, IIT-Roorkee. His other areas of research interest include health economics, especially maternal and child health. He also has expertise in handling econometric and statistical software like STATA and E-Views.

Pragya Taneja

Pragya Taneja is a senior research fellow in the Department of Humanities and Social Sciences, IIT-Roorkee. Her areas of interest include public policy and development economics. She is also an expert in handling large-scale survey data.

Rethinking our Habits: Innovative Approaches to Encourage Sustainable Behaviours

Environmental sustainability has been studied and debated for many years. The topic of sustainable habits in various contexts, such as homes, organisations, and communities, has been discussed in several studies. However, one area of specificity within the context of sustainable behaviour is that of college students residing in hostels. They tend to contribute significantly to environmental issues owing to large amounts of food wastage, high electricity and water consumption, and excessive use of single-use plastics.

Researchers have created a tailored set of approaches that include governmental laws and regulations, gamification, cooperation and partnerships, personalised message, education and awareness campaigns, role modelling and social impact, marketing and branding, and collaboration and partnerships.

The intervention is a digital platform that allows students to pre-order meals and choose how much food they wish to eat. The platform will also provide an estimate of the selected meal's total calories and nutritional content. The platform will also give the students feedback based on their prior meal orders, such as how much food they wasted in comparison to how much they consumed. Students will also be incentivised via a discount reward system. For electricity consumption, the researchers have a variety of initiatives. These include the installation of smart electricity meters in hostel common areas, a digital dashboard that displays real-time energy consumption, and a rewards-based gamified app to enable competition among students for energy savings. For water, they have developed the Green Tap intervention, where smart taps will measure and display the amount of water used. Single-use plastics can be tackled via the Plastic Swap Station, where various re-usable items can be exchanged for single-use plastic items.

These practical, energy-efficient approaches can help set a precedent in encouraging sustainable behaviours among students and staff in colleges. Colleges can potentially lead the battle against climate change and contribute to the development of a more sustainable future by cooperating and committing to sustainable practices.

Rudra Narayan Barik

Rudra Narayan Barik is a second-year chemical engineering student at NIT Rourkela, pursuing a B.Tech and M.Tech Dual Degree. He is keenly interested in Fluid Dynamics, Computational Fluid Dynamics, and Sustainable and Renewable Energy.

Amritanshu Saraswat

Amritanshu Saraswat is a Chemical Engineering Undergraduate with a passion for Research work. He is currently pursuing a dual degree from National Institute of Technology, Rourkela.

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Satyaranjan Sahoo is a second-year Chemical Engineering student at NIT Rourkela. He has an interest in sustainable and renewable energy research.

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"Food for Thought" How to Reduce Food Waste from Hotel Restaurant Buffets?

Education and environmental awareness alone cannot 'guarantee' a change in individual, household or community behaviour. When individuals go on vacation or travel for other reasons, sustainable habits seem to largely be forgotten or ignored. The hospitality industry usually engages guest collaboration in matters of sustainability through requests for energy savings (electricity, heat), to reduce water and detergent consumption, to reduce and separate waste etc. Food waste is a rather "novel" subject that needs education and behavioural guidelines without detracting from the perception of the hotels' overall quality and value for money.

However, studies in the recent past have encouraging results with reduced edible plate waste through targeted campaigns or nudges. Extending these findings, researchers are developing an intervention within the Indian cultural context of travel (holiday or business). The objective is to create three to four distinct communication tools and objectively evaluate their efficacy in the unique cultural setting of India. As a result, hospitality companies will receive appropriate communication strategies as well as recommendations for the tools that can be used effectively to inform and communicate sustainability to various customer groups. The established frameworks of the Theory of Reasoned Action and the Theory of Planned Behaviour serve as the foundation for the anticipated change in attitudes and conduct.

The tools of information, signals, and nudges have the potential to help businesses improve their sustainability balance. Additionally, the idea of "sustainable nutrition" will be effectively ingrained in visitors' minds. This could influence how visitors behave generally and help overall sustainability efforts. Effective sustainability communication may also improve brand perception, brand loyalty, pluralism, and visitors' likelihood to return.

This intervention aims to address Indian contexts for both leisure and business travel. Results should be sufficiently apparent to be rephrased into simple guidelines for hotel management and employee training.

Andreas H. Zins

Andreas H. Zins is the Director of the Regenerative Living Lab for Sustainable Tourism, Sarawak, and previously Dean of the Faculty of Business at Curtin University Malaysia. He served as Program Director for Business Administration study programs at WU Wien.

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Arrangements Matter: Nudging Consumption in Retail Stores

The study proposes a novel approach to nudge consumers to reduce food waste and promote healthier choices in retail stores. The approach capitalises on using cognitive biases related to a spatial arrangement to nudge consumers. The SNARC effect, which is the tendency to associate smaller numbers with the left and larger numbers with the right, can be utilised to arrange products with earlier expiration dates on the left and later dates on the right. Additionally, the past-left and future-right bias can be used to arrange time-sensitive products in a way that promotes the purchase of earlier stock. Effective labelling can also be used to steer customers towards healthier options.

The theoretical underpinnings of the study emerge from the fact that a product's location on a shelf in retail outlets can influence consumers' perception of its quality. Inefficient arrangement strategies can put certain product units at a disadvantage, resulting in wastage. Food waste is a significant issue, with retail being the second-largest contributor and thus a challenge for sustainable growth. Previous research says people tend to assume items are arranged in increasing numerical order from left to right based on the SNARC effect. Additionally, products with a time-sensitive component evoke a past-left and future-right bias. Therefore, consumers can be nudged to pick a product closer to expiration just by placing it towards the right end of the shelf.

Researchers would select 5 to 10 products in 8 to 12 stores. With 200-250 participants per product, the number of buyers expected is 75,000. The sample stores will be randomly assigned to intervention or control groups. Pre and post-intervention data on the purchased quantity of healthy or close-to-expiration products will be collected from both groups. Comparison will help evaluate the effectiveness of the intervention and its potential impact on sales.

This nudging strategy's scalability in retail management is highly feasible due to its low cost and ease of implementation.

Abhishek Kumar Jha

Abhishek Kumar Jha is a Fellow at IIM Indore. His areas of interest are behavioural science, behavioural artificial intelligence, and consumer psychology.

Sanjeev Tripathi

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"
People of India have done a
lot in the last few years in the
matter of mass movements
and behaviour transformation. **"**

Shri Narendra Modi
Prime Minister

Awareness Campaign for Inspiring Action Towards Reducing Food Waste by Encouraging Surplus Food Redistribution to Food Banks

Food waste and food insecurity are opposite ends of the same spectrum. A whopping one-third or more of all the food produced is wasted annually around the world, causing severe social, economic and environmental consequences. The reduction of food waste can have multiple positive benefits including food security, mitigating climate change, reducing economic and resource stress, and burdens on waste management systems.

A team of researchers have proposed an initiative for the redistribution of surplus food to food banks. This intervention will work closely with food banks to identify behaviours and practices, to reduce wastage and influence the community to shift towards diverting surplus food rather than wasting it. By using the MOA (motivation-opportunity-ability) framework, the team will develop a transmedia communication campaign that will target select demographics. The researchers specifically seek to build awareness of the large-scale impact of food wastage and streamline actionable behaviours towards waste. The pilot test will involve three food banks and a target demographic in the Delhi NCR area.

The concept of "social role modelling," one of the most successful edutainment approaches utilised for education through mass media, will be applied in all the media forms that will be developed and used in this proposed project to communicate. The strategy primarily entails creating compelling stories and narratives with uplifting and transitional characters that serve as carriers of the "key messages" in a subtly entertaining fashion. The proposed project would divert food that would otherwise go to waste and give it to people in need, thereby reducing food insecurity. It would encourage the redistribution of surplus food to food banks. As consumers and food service providers who currently donate their excess food to food banks may encourage others to do the same, this project proposal has the potential to have a domino effect. This project has the potential to escalate into a wider regional culture of food waste reduction and redistribution.

Ruchika Singh

Dr Ruchika Singh is Director - Sustainable Landscapes and Restoration at World Resources Institute India. Her research delves into intricate systemic problems of food systems, land use, landscape restoration, food loss, sustainable agriculture, and their interplay with people, nature, climate, poverty reduction, and livelihood improvement.

Nitya Sharma

Dr Nitya Sharma is Program Manager - Food Loss and Waste, WRI India. She is passionate about promoting sustainable and equitable food systems and is committed to identifying evidence-based interventions and innovative solutions to tackle food loss and food waste across the supply chain.

Shweta Lamba

Shweta Lamba is Senior Project Associate for Sustainable Landscapes and Restoration in WRI India. She holds a master's degree in forestry management from the Indian Institute of Forest Management and a Bachelor's in commerce from the University of Delhi.

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Reducing Household Electricity Consumption Through Behaviourally Informed Nudges in Electricity Bills

Climate action is not merely a 'technical' challenge. It requires societal and normative change at an individual level. Electricity consumption in households is the largest contributor to their carbon footprint. Higher-income households typically account for seven times more emissions than lower-income households.

Researchers have developed an intervention incorporating behavioural nudges in electricity bills to reduce consumption in higher-income households. Five categories of nudges will be tested for efficacy via an online experiment. One is signed commitments to conserve energy, two is setting electricity consumption goals, three is information provision, four is feedback, and five is rewards. Spanning five stages, the project will focus on individual household members aged 25-45 from middle- and high-income households in Indian cities who are e primary decision-makers and key influencers within their households The first phase of the pilot will take place in Delhi and Mumbai.

The first of the five stages will involve the design of eight different nudges under the five broad intervention areas to reduce electricity consumption. The next stage will be an online experiment to understand the effectiveness of these nudges in the target groups and which underlying behaviours are easy to change. The third stage will be implementing the pilot with the most promising nudges, and the fourth will be reefing the interventions based on feedback from the pilot test. Finally, the researchers will create an expansion plan for wider reach. This study's main goal is to encourage reflection among high-income households in India, whose carbon impact is comparable to per capita emissions in developed countries. With increasing incomes and changing lifestyles, embracing low-carbon practices is crucial for both India and the rest of the globe.

Vikrom Mathur

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Pooja Haldea

Pooja Haldea is part of the founding team and a Senior Advisor with the Centre for Social and Behaviour Change at Ashoka University. She holds an MBA from IIM Bangalore and studied Mathematics at St. Stephen's College.

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Muskan Jain is a Research Associate at the Centre for Social and Behaviour Change. She holds a Master's in Behavioural Sciences from CHRIST (Deemed-to-be University), Bangalore, and an under-graduation degree in Commerce from Hansraj College, Delhi University.

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Digitising Waste Management in India: Using Network Effects and Behaviour Change to Improve Waste Collection and Recycling

This research explores the potential of digital solutions to improve waste management in India. It aims to do so by formalising waste collection and recycling by creating a one-stop app for all household-level waste solutions. Using network effects and behaviour change techniques, the intervention seeks to create synergies between different stakeholders involved in waste management, formalise waste collection and recycling, and test the viability of encouraging citizens to adopt environmentally conscious waste disposal habits.. The research focuses on waste management in India, with a particular emphasis on formalising the informal waste sector and addressing the challenges associated with the current fragmented and inefficient waste management system. The app also intends to utilise incentive schemes and community-building and sharing exercises to effectively formalise and improve the existing waste management system.

The scope of the research is limited to a pilot study in Ahmedabad, Gujarat, which is to be scaled up to other cities in India. The study adopts a mixed-methods approach, combining qualitative and quantitative data to assess the feasibility and effectiveness of the app. This will be implemented through surveys, one-on-one interviews, focus group discussions and data collected through the app from waste collectors and citizens to understand their behaviour, attitudes, and motivations towards waste management.

Overall, the study aims to prove that digital solutions can significantly benefit waste management in India. While the aim of inculcating better waste management practices could seemingly affect profit generation through the generation of waste, the project's overarching goal is to bring India to the forefront of climate action and sustainable development.

Tejashree Murugan

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Rushil Saini is an MBA student at the Indian Institute of Management Ahmedabad. She is a gold medallist from the Indian Institute of Mass Communication and has completed her bachelor's from Lady Shri Ram College for Women.

Malvika Swarup

Malvika Swarup is pursuing an MBA from IIM Ahmedabad. She holds master's in Development Studies and has majored in English Literature from Lady Shri Ram College, Delhi University. Her interests lie in social marketing, sustainable development and ESG initiatives.

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'Bangalore's Social Travel Club': Encouraging Sustainable Modes of Transport Among College-going Students

India has the world's largest two-wheeler market, with two-wheelers being the principal form of transportation for about 50% of Indian households. Affordability, low maintenance costs, convenience, shortened travel time, and ease of navigation through traffic contribute to their popularity, especially with the country's youth, specifically college students. In addition to harming the environment through traffic congestion, increased air pollution, and carbon emissions, excessive two-wheeler use also contributes to the public health problem due to poor air quality and a higher chance of fatal and major injury accidents. Researchers have developed a study which will include research and intervention through an incentive-based social club among college students in Bangalore, India.

Bangalore has the second-highest number of two-wheelers in the nation. Interestingly, it is also the second-most crowded city in the world, with annual CO2 emissions from congestion amounting to 275 kg. The Bangalore Social Travel Club (BSTC) challenge will incentivise students among select city colleges to utilise public transport services for four weeks. The student's transport behaviour will be assessed to test the impact of behavioural science elements such as persuasive messaging, social support, and incentives during and post the interventions.

Students who use two-wheelers will be invited to participate in the one-month challenge and divided into groups that will receive information about the challenge and messaging based on behavioural science principles. The challenge will also be advertised within the college campuses, using various means of mass media (such as posters and monitors) and on social media with appropriate hashtags. The college with the highest increase in public transport trips and the highest reduction in two-wheeler usage will receive a title prize and gift vouchers for participating students. Post-challenge qualitative and quantitative data collected will be analysed and measured.

The BSTC study and intervention serve as an initial step towards a bigger objective and as a standard for other cities, contexts (such as workplaces), and nations around the world to implement comparable interventions.

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Ramya Rao

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Ashish Verma

Prof. Ashish Verma is a Professor of Transportation Systems Engineering at the Department of civil engineering, Indian Institute of Science (IISc), Bangalore. He is also the Convenor of IISc Sustainable Transportation Lab. He holds a PhD from IIT Bombay.

Meghna Verma

Dr Meghna Verma is an Associate Professor at Ramaiah Institute of Management, Bangalore. She is also the Head of the Department of Marketing and International Business and also the head of Centre for Sustainability. She holds PhD in airport purchase behaviour from Department of Management Studies, Indian Institute of Science IISc, Bangalore.

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An Eco-Centric Framework towards Self-Sustainable Waste Management Practices in Urban Centres

In the last few decades, rapid migration from villages has led to unprecedented growth in urban centres, which has aggravated waste management problems. During the process, communities have lost sight of the sustainable eco-centric approaches which were culturally ingrained in the behaviour of rural communities, particularly for managing household waste, especially vegetable waste (such as vegetable and fruit peels, leftover food, unused raw vegetables, and so on)

To address the issue of urban waste collection and management, municipal agencies adopted a door-to-door collection system, which was initially successful. However, this led to most of the waste reaching landfills, putting more stress on existing waste management facilities.

In response, the government has spent significant sums of money on building waste management infrastructure in urban centres. Several startups have emerged at various levels of the waste supply chain. However, research suggests that environmental problems, especially waste management, cannot be solved through infrastructure alone.

In this paper, the researchers propose a two-layer mechanism that involves initially adopting incentive-based models to instil behavioural change toward the segregation of vegetable waste while creating awareness campaigns in primary education . These campaigns in schools will span seven sessions and include content on household waste and its impact, individual action to reduce this waste, and exposure to startups creating value from waste.

The authors plan to run a pilot in IIT Kanpur to create a use case for a sustainable and easy-to-adopt zero-waste community. The intended impact includes 25-30 per cent reduction in the waste burden in the supply chain, reducing greenhouse gas emissions and saving municipal budgets.

Utsav Mishra

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Harshit Mishra

Dr Harshit Mishra is the founder and CEO of EHM Consultancy private limited. He received a master's and a doctorate in environmental science and engineering from IIT Bombay.

Amit Trivedi

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One Week, One Earth

Although the Earth's intricate, linked systems have developed over billions of years, the impact of humans on the environment puts them in danger of collapsing. Given the complicated times we live in, humans' responses to the existential crises caused by climate change are muted and inconsistent due to numerous reasons.

Researchers are seeking to channel the effectiveness of nudge theory and the latest research around it, to influence behavioural changes at the individual, household and community levels towards sustainable behaviour. They propose to create Individual SDGs to enable adoption of environment-friendly behaviours by people. To enable the integration of these Individual SDGs into daily lifestyles, the researchers have created a One Week, One Earth calendar, where each day of the week focuses on a particular environmental theme. Themes, where individuals can make the maximum impact, are reducing meat consumption, planting more trees, reducing water wastage and consumption, using sustainable transportation, reducing food and solid waste and protecting our water bodies.

The calendar is dynamic and stakeholders can modify nudge messages and create new versions that are linked to the overarching theme of the One Week, One Earth calendar. The calendar can be easily translated into different languages, and each day can also be promoted individually as a concept. Combining multiple nudging techniques into a single framework, the researchers have created a three-tier structure of influence that includes awareness, sensitization and action. The offline implementation will be targeted at schools (Principals, Teachers and Students), and the initial pilot will take place in Delhi. A digital version of the calendar and a repository of multimedia messages about environmental responsibility will be created under the banner of an information application. A website created specifically for this intervention will also allow for wider dissemination and reach. The One Week, One Earth calendar has the power to bring about a radical shift in how people, civil society, governments, the media, and all other stakeholders perceive and approach the issue of preventing environmental collapse.

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Kinchit Bihani

Kinchit Bihani is the author of Homo Unus: Successor to Homo Sapiens. He specializes in S&T policy and has worked with various institutions, including government agencies (EU, UK, and India), industry, civil society and the scientific community. He is an alumnus of University of Cambridge, UK.

Ankita Bihani

Ankita Bihani's experience spans several fields: creative editor, recruiter, and health professional. She has degrees in biotechnology, management and creative writing. She works as an independent consultant.

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PlastiTAG
(Plastic Tag trAck & Gestion/Management)

Given the rising population in India, the number and rate at which consumer products are used are consequently growing exponentially. Since practically all consumer goods today, including food, clothing, and other items, come in plastic packaging, growing consumption is leading to an increase in plastic waste. The two most popular ways to dispose of plastics right now are burial on land and sewage-based ocean dumping. Traditional plastic typically degrades after 4.6–5000 years when buried on land and after 3.4–1200 years when submerged in water.

The authors propose to create a sustainable system that includes the efficient and risk-free collection and recycling of plastic garbage. The suggested system has a two-way collection mechanism that encourages buyers and sellers to place their used plastics at designated collection stations. To facilitate precise tracking, the plastic packaging will feature a special barcode or QR code encoding information on the manufacture date, the batch number, and the total number of units in the batch. To enable data gathering and analysis and provide a platform for rewarding buyers and sellers while retaining complete transparency, an IT infrastructure made up of scanning codes, data entry, cloud storage, a data analytics dashboard, and mobile applications will be developed.

To ensure that the plastic waste is recycled in a low-risk and non-hazardous manner, alliances and partnerships will also be created with significant companies in the plastic recycling market. The suggested intervention intends to develop a self-sustaining ecosystem, which entails government bodies taking ownership of the entire system and serving as supervisors to locate and fix problems detected after studying the waste-collecting data saved in the cloud server.

The proposed intervention combines technological, financial, and social innovation to revolutionise plastic waste management in India and produce a more hygienic and sustainable environment for future generations.

Asutosh Nayak

Asutosh Nayak is currently serving as CEO of Koel Fresh Private Limited. He has a Bachelor's in Mechanical Engineering from NIT Rourkela and a Master's in Energy and Environment Management in Developing Countries from the University of Flensburg, Germany.

Shamick Lahiri

Shamick Lahiri is a Senior Consultant at Koel Fresh Pvt Ltd. Along with a Bachelor's in Chemical Engineering from BITS Pilani, he holds a Master's in Energy & Environmental Engineering from IMT-Mines Albi France and a Post Graduate Certificate in General Management from IIM-Tiruchirappalli.

Deepak Kumar Tudu

Deepak Kumar Tudu currently serves as General Manager (Technical Services) at Koel Fresh. Deepak holds a Bachelor's degree in Electronics and Instrumentation Engineering from NIT Rourkela and completed a certificate course in Artificial Intelligence & Machine Learning.

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Planting for the Future:
The Innovative Vertical Home Garden Kit

Home gardening has significant potential to support food security and sustainability. However, it is markedly absent in urban settings. This results in a high dependence on the commercial food production system, instigating several environmental issues such as carbon emissions, resource and energy consumption, and pollution. The intervention suggests using a vertical home gardening kit that is sustainable and affordable to create a source of healthy and fresh food that is easily available to households.

The product will allow households to easily produce vegetables, herbs, and fruits in spaces like balconies and backyards. The kit includes bamboo stands, framework and structure, recycled plastic pots, bamboo tools, high-quality organic seeds, appropriate soil types for different climates and instructional guides for growing and harvesting.

It will examine the adoption rates of home gardening with and without using the vertical home garden growing kit by conducting a randomised controlled experiment with a sample size of 384 households. The number of productive gardens established, the variety and calibre of the produce gathered, and the self-reported levels of food security and environmental sustainability are this study's key performance indicators (KPIs). To evaluate the performance of the kit, the research will use both quantitative and qualitative methods. Surveys and focus groups will be used to evaluate plant yield, cost-effectiveness, and user experience.

This study may help reduce reliance on outside food sources while increasing consumption of fresh vegetables grown at home by promoting sustainable home gardening techniques. Utilising recycled and sustainable resources, as well as giving rural craftsmen jobs, may have positive benefits on the economy and ecology. This study's results could significantly impact how we address issues like food security, environmental sustainability, and rural employment creation.

Sanya Khandale

Sanya Khandale is a final year Bachelor of Business Administration student at Ness Wadia College of Commerce, Savitribai Phule Pune University. Her interests lie in agribusiness, business analysis, sustainability, environment.

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A Field Experiment for Improving Grid-Connected Solar Irrigation using Financial Incentives and Behavioural Nudges

Climate change increases the demand for resources such as water for irrigation and energy for cooling. Agriculture sectors in rural agrarian economies are often neglected in the debate about sustainable lifestyles, but they are the largest driving factor in addressing environmental concerns. More than 70 per cent of groundwater consumption in India is for irrigation, and carbon emission from pumping groundwater is 8-11 per cent of total carbon emission in India, equivalent to carbon emissions from passenger cars in India.

Behavioural responses to both financial and social incentives in rural communities/farmers provide significant insight into cost-effective solutions for promoting sustainable resource management. The proposal intends to leverage both financial and social incentives to reduce energy used for groundwater pumping in a randomised field experiment among participants in the *Suryashakti Kisan Yojna* (SKY) scheme in Gujarat. The SKY scheme is an early state-level policy that is part of a broader promotion of Solar Irrigation Pumps (SIPs). SKY is one type of SIP policy where farmers install solar panels that are connected to the grid. This not only reduces greenhouse gas emissions, but also creates an "opportunity cost" for conserving otherwise free/highly subsidised irrigation energy access. This scheme enables the implementation of politically viable and cost-effective intrinsic and extrinsic incentives for groundwater conservation.

Through the SKY, this proposal will help optimise groundwater irrigation by farmers with access to SIPs, reduce groundwater over-exploitation, and enhance water, food, and energy security. The two treatments of the RCT include 1) increasing the marginal incentive to conserve groundwater by offering a per-unit subsidy for selling solar electricity back to the grid, 2) providing two social comparisons with different framings for groundwater and electricity conservation.

Farmers with SIPs who reduce groundwater extraction sell carbon-free energy to the grid, decrease carbon emissions, and contribute to India reaching its Nationally Determined Contributions. This proposal addresses both carbon mitigation and groundwater scarcity and provides insights into the broader implementation of SIPs in India.

Daniel Brent

Daniel is an associate professor in the Department of Agricultural Economics, Sociology, & Education (AESE) at The Pennsylvania State University, specialising in environmental and natural resource economics. His research focuses on ecological policies' intended/unintended consequences on sustainable development in resource-crunched economies.

Praharsh Patel

Praharsh Patel is pursuing a PhD in Energy, Environmental, and Food Economics at Pennsylvania State University with a specialisation in environmental and natural resource economics. He holds a Bachelor's in Physical Sciences from St. Stephen's College and a Master's in Mathematics from the Indian Institute of Technology Kanpur.

Christopher Scott

Christopher Scott is a professor and Maurice K. Goddard Chair in the Department of Ecosystem Science and Management at Pennsylvania State University.

Sustainable Disposal Methods for Personal Hygiene Products

Disposable personal hygiene products such as sanitary napkins and diapers have increased comfort and convenience for users. However, the safe and ecologically sound disposal of these products remains a challenge. Given the taboo around menstruation, the social factors influencing the lack of awareness are also high. These disposable hygiene products are currently burned or thrown in the open in the surrounding areas, which releases fumes into the atmosphere that contain dioxins, carcinogens, and other harmful contaminants. The ones that have been left out in the open are at the mercy of the stray animal and rodent population and cause unpleasant odours and inconvenience.

Researchers suggest a behavioural intervention to create awareness and install specific collection units for 'adsorbent hygiene products'. These collection units will ensure that these hygiene products are segregated from other solid waste and bio-waste. The person dropping off the personal hygiene items will receive rewards from these collection units as a thank you. Online coupons for travel, shopping, and other activities are just a few examples of these incentives, along with customer-spendable cash or gift cards. Thus, segregated wastes may be collected more efficiently and then transported to the incinerator for ash generation or energy production.

The team also suggests awareness campaigns via social and other online media and residential community workshops to increase individual knowledge and responsibility. They further suggest that non-governmental organisations (NGOs) can start raising awareness of the intervention and implementing it. It can then be maintained with the aid of residential administration and monitored by the appropriate NGOs. The ultimate objective of the suggested proposal is to create a population that is conscious of its role in waste management. This would moreover result in a healthy and safe lifestyle for the nation's residents and a sustainable environment for future generations.

Almeenu Rasheed

Almeenu Rasheed is a PhD scholar at IIT Delhi in the Department of Civil Engineering under the supervision of Dr. Sovik Das. Her areas of interest lie in wastewater treatment, microplastic pollution's ill effects and valuable waste recovery.

Sovik Das

Dr Sovik Das is presently an Assistant Professor in the Environmental Engineering section of the Department of Civil Engineering, IIT Delhi. His current research involves looking into green hydrogen production from waste and removing emerging contaminants from the water matrix.

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Night Mode in room Air Conditioners/Heat Pumps Saves Significant Energy During Night Usage

The global usage of air conditioners (ACs) and/or heat pumps (HPs) is increasing steadily every year. In India, 10 million new ACs are added each year, resulting in a minimum daily increase in electricity demand of 10 million units during the summer. In cold countries, heat pumps replace dependence on natural gas but put a huge load on the grid. To ensure energy savings to help reduce global warming, researchers have proposed the Night Mode operation for ACs and HPs.

A unique airflow control system, through partitioned pipes, will directly cool or heat the surface area above the bed, reducing compressor power consumption by about 75 per cent. Night Mode can be implemented in numerous simple, cost-effective ways and requires no modifications to the AC unit. However, to control the flow rate and compressor speed, this system can be utilised only on an inverter-based AC or HP.

A partitioned pipe that is fixed to the upper side of the AC unit is connected to a cover assembly. This pipe is movable and handles both cool air and return air. When the cover assembly closes the front side of the unit, the air flows through the cut-outs in the partitioned pipe, and the cover is turned 90 degrees to revert to normal mode.

The team will perform proof of concept testing over 6 months, with the mode being tested in peak summer months for ACs and peak winter months for HPs. Manufacturer support is a key prerequisite for reducing the compressor's speed in the testing units.

The researchers seek to implement the Night Mode feature in all standard ACs and HPs, and encourage manufacturers to include this mode within new units. This will educate consumers about the energy-saving capacities of the Night Mode and significantly reduce electricity costs, as well as the load on the grid.

Vijay Vasant Deshpande

Dr Vijay Deshpande, a retired Technology Specialist from Honeywell India, is an esteemed member of IEEE. He holds a PhD in Power Electronics from IIT Kanpur.

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Achieving Circular Economy Transition in Waste Management through People's Participation for Sustainable Lifestyles and Practices

One of India's largest problems is inadequate waste management, which causes several environmental and public health challenges. A large amount of plastic waste is burned in open-air, leading to the release of carcinogens. Indian metropolises, including Chennai, struggle to cope with the per day waste generated, due to municipal inadequacies and a general lack of awareness. Tamil Nadu is the third-highest generator of plastic waste.

A participatory model is devised to improve waste management, by enhancing awareness and capability sets to reduce waste at source. The proposed project will also provide the waste management industry with a sustainable, expandable, community-led, and locally-driven business model. To support the Swachh Bharat Mission through enhanced recycling methods, and balancing the generation and re-use of plastics.

The sustainable waste management strategy within this proposed model will be implemented in the Adyar and Cooum Riverine Regions (ADCRR) in Tamil Nadu and Swachh Bharat Adopted villages in the suburbs of the region. The target community will play a significant role in the development and execution of the suggested activities.

The four phases of the proposed project will begin with participatory assessments before implementation and enhancement of capacities through awareness generation, strategic development programs. This will be followed by the development of the participatory pilot model in collaboration with all stakeholders and dissemination of the results for replication to achieve large-scale impacts in waste management and the transition to the circular economy.

Paromita Chakraborty

Dr Paromita Chakraborty is a professor and Head of the Center for Research in Environment, Sustainability Advocacy and Climate Change (REACH) at SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu.

Girija K Bharat

Dr Girija Bharat is the Managing Director of Mu Gamma Consultants. She has a PhD in Chemistry and is a Presidential Scholar at George Mason University, USA. She is an Advisor to CSIR-NEERI, Govt of Odisha.

Eirik H. Steindal

Eirik H. Steindal is a Sr Research Scientist at the Norwegian Institute for Water Research. He is a biologist by training and has been working in plastic and chemical pollution management.

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" Mission LiFE will encompass every lifestyle related to the conservation of nature, which our ancestors adopted, and that can be made a part of our lifestyle today. "

Shri Narendra Modi
Prime Minister

Packaging as a Tech Enabled Return for Reuse Service

Among the three Rs of waste management principles (Reduce, Reuse, Recycle), reuse is one of the best methods that consumers can practise, given the significant amount of consumption in the world today. The rise of online shopping has led to increased single-use packaging waste. Researchers suggest that bringing packaging back into the supply chain for reuse multiple times can help control the amount of waste generated via consumerism. This intervention aims to treat post-consumer packaging as a resource instead of waste by giving it value even after it has served its intended purpose and incentivising consumers and businesses to participate in packaging circularity for reuse.

Through research and review, the team hopes to measure changes in consumer behaviour around packaging that is assigned a value post-consumption. These changes will be measured via specific tests and methods, and convenience of return is a key factor that will be addressed by the researchers. To this end, researchers propose a technology-enabled solution that will provide statistics on the number of customers signed up, the amount of packaging reused, the amount of trash creation reduced, and the corresponding decrease in carbon footprint. The prerequisites to implement this intervention include the need for a public awareness campaign on the value of recycling and refilling packaging to reduce waste, the consumers' willingness and consent to assist a change in the environment, support for the whole deployment process, including tech platform, dry waste collection tools, and cleaning equipment.

The researchers seek to change the negative connotations around the word "waste" and suggest changing the narrative with the use of terms such as "dry resources", or "compost raw material". A synergetic relationship between the various stakeholders in this reverse supply loop will ensure a smooth and efficient process without inconvenience to the consumer. This intervention will be piloted in 500 households to test efficacy. The test plan's results will confirm whether the convenience and incentivisation aspects selected as motivational variables are successful in changing consumer behaviour.

Gayatri Joshi

Gayatri Joshi is working as the founder of ecoSansar, a zero-waste marketplace that retails sustainable products and brings back all packaging for reuse/refill. Currently, Gayatri is being incubated at IIM B as part of their Impact Orbit - Circular Economy program and is being mentored by Ervaring.

Ranjith Rao

Ranjith Rao is the founder of Ervaring. He holds Bachelor's Degree in Electronics Engineering and a Master's in Psychology. He is an NLP Certified Business Practitioner and an alumnus of IIM Bangalore, having done his General Management Program from there.

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Changing Perceptions and Creating Social Acceptance:
Using treated Wastewater for Agricultural Irrigation in Rural Communities in India and the Developing World

This proposal aims to research local perceptions of using treated wastewater for irrigation in rural India and identify the educational tools required to change public perceptions and promote social acceptance of the practice. The objective is to change community behaviours by educating them on the potential uses of treated wastewater for non-consumptive use, particularly in agriculture. Through this, the proposal aspires to address the problem of limited freshwater availability for consumption in water-scarce areas, where agriculture accounts for 72 per cent of water use. It further recommends policymakers approve wastewater treatment projects, hold operators to a high-quality standard, and incentivise farmers to purchase the treated product.

The intervention design for this project focuses on engaging communities with lower levels of education and providing them with disruptive technologies and education on treated wastewater. The goal is to shift the behaviour of water users to value treated wastewater as a productive resource rather than treat it as something to be disposed of. The project also aims to work with policymakers to promote the regulation and compliance of treated wastewater standards for reuse.

To ensure effective implementation, the project will first assess the area to understand what is locally known about sewage and treated wastewater, including any sewage infrastructure in place and cultural attitudes towards defecation. The educational curriculum will address stigmas around using treated wastewater for irrigation, tailored to the local context, based on formative research through in-depth interviews with local officials and farmers and surveys of the public on gender, climate, socioeconomic, and religious aspects that could affect perception. The project will provide educational materials, capacity building, and tools to help end users leverage treated wastewater sustainably.

The proposal highlights the importance of behaviour change among water users, education, incentivisation to farmers, and assuring the public of the safety of recycled water. It is critical in achieving Sustainable Development Goal 6 and is strongly recommended by the United Nations. Successful implementation will require open-mindedness from farmers and local officials, supportive policies and infrastructure, and further research and exploration.

Clive Lipchin

Clive serves as the director of the Arava Institute for Environmental Studies' Center for Transboundary Water Management. Clive is the CEO of Laguna Innovation and has been instrumental in developing an innovative off-grid and onsite wastewater treatment and reuse technology.

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Behavioural Investigation into Adoption of Crowd-Logistics in Last Mile-Delivery

The primary objective of the study is to propose a crowd logistics-based model in last-mile city logistics. The phenomenon of collaborative consumption in logistics is widely known as crowd logistics. The researchers will investigate the shipper and consumers behaviour on collaborative consumption of existing logistics infrastructure in cities to identify the influencing factors and some inhibitors. While the inhibitors will be mitigated, the influencing factors will be included in the business model with the help of technology and business strategy.

The key underpinnings of the study emerge from the environmental, economic, and social benefits of shift in behaviour from individual logistics consumption to collaborative logistic consumption. Less consumption of natural resources and reduced emission of harmful gases due to less burning of petroleum are the direct environmental benefits. The economic benefits will be due to the improved efficiency of last-mile city logistics due to the use of available infrastructure. The social benefits will be due to improvement in the lifestyle of people in the cities. Due to the reduction in the delivery of vehicles on the road, cities will have lesser traffic, saving people's time on the road and improving safety. It is in this context that crowd logistics is proposed as a viable model to address the environmental, economic, and social shortcomings of last-mile delivery.

The demand stakeholders in crowd logistics include e-commerce company hubs, supermarkets, restaurants, and individual shippers. The supply stakeholders include autos, cabs, delivery bikers, and private vehicle owners. The operations management is handled by an IT enabled platform provider. To implement the proposed model, the researchers will use theory of planned behaviour and principles of socio-technological transition. The idea will be tested in two phases. In phase 1, behaviour of stakeholders towards the adopting crowd logistics will be assessed. In phase 2, the operational model using the case study approach will be assessed. A case study with one potential stakeholder from each demand and supply side will identify the operational hurdles.

The idea is a step towards achieving Sustainable Development Goal (SDG) 11 on sustainable cities and communities and SDG 13 on climate action.

Satyendra Kumar Sharma

Dr. Satyendra Kumar Sharma is an Associate Professor in the Department of Management, BITS Pilani. He also heads the Centre for Innovation, Incubation and Entrepreneurship (CIIE). He holds BE and MBA degrees from MNIT Jaipur and a PhD from BITS Pilani.

Rajkumar

Rajkumar is a BTech from BK Birla Institute of Engineering and Technology Pilani in Mechanical Engineering, an MTech from BITS Pilani in Quality management, and pursuing his PhD from BITS Pilani in Operations management.

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Carbon Offsetting Platform to Encourage Individuals and Communities to Adopt more Sustainable Practices and Behaviours that Reduce their Greenhouse Gas Emissions and Support the Transition to a Low-Carbon Economy

India is the fourth-largest producer of CO2 globally, and to keep global warming to 1.5°C, the nation must reduce its emissions by 33–55 per cent by 2030. Despite a rising understanding of the environmental and climate crisis, many people and communities in India cannot find accessible and practical strategies to reduce their carbon footprint. Researchers are developing a blockchain-based platform, where users can track and lessen their carbon footprint while also assisting verified carbon offset projects. Via the platform's transparency and independent verification, both individuals and businesses can keep track of how much they are doing to cut emissions. They can also support renewable energy initiatives, and safeguard biodiversity and ecosystems.

The suggested platform will be user-friendly, accessible and have a clear user interface. Blockchain technology will facilitate transparency and security in carbon offsetting, and make participation more efficient and convenient for individuals and communities. A sample size of 1000 individuals and households, 100 small and medium-sized businesses and 10 large corporations will be surveyed. Testing will be conducted in two phases: usability testing and impact testing. Accessibility, transparency, and ease are some of the behavioural characteristics that will guide the concept's development.

The platform's carbon price, data and analytics, carbon footprint reduction tools, and ability to build partnerships and collaborations allow it to be integrated with other climate change mitigation and adaptation projects. The platform can conduct impact assessments, promote sustainable practices, engage with local communities, support biodiversity conservation, ensure supply chain sustainability, foster transparency and accountability, and conduct impact assessments to make sure it contributes to sustainable development without harming local communities and biodiversity. By offering data and resources, interactive tools, community engagement, integrating with educational institutions, and working with organisations, the platform can also be used as a teaching tool. These initiatives can greatly contribute to educating people and communities about reducing emissions, carbon offsetting, and low-carbon investing.

Asheer Rahman

Asheer Rahman is a Project Lead at Mark Labs and is also the co-founder of Karbonic, a carbon credit trading platform. Ashneer has a background in mechanical engineering and project management. His expertise lies in ESG regulations and sustainability strategy for banks and insurance companies.

Arif Rahman

Arif Rahman is the co-founder of Karbonic. Via his endeavours for the environment and youth empowerment, Arif leverages his expertise in venture building and delivering entrepreneurial programmes where he equips young people with invaluable insights to launch their sustainable businesses.

Nitin Agarwal

Nitin is a software engineer and business professional. He is also the founder and CEO of two tech startups. Nitin holds a Master's degree from the University of Minnesota and a business degree from the London Business School.

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Reimagining Slum from the Lens of Urban Agriculture

Cities have become hotspots of modern civilisation. Today, cities parasitically depend on rural areas for food and need sustainable and resilient urban food systems that fulfil their pressing environmental and nutritional needs. This paper aims to propose an evidence-based model for an urban food system made of community-led indoor and outdoor farms in homes, buildings, and open community spaces. This study focuses on unregulated urban colonies (slums) where agricultural and seasonal migrants often settle and who may have pre-existing skills and an economic need to practise urban agriculture as an additional source of income. The researchers will explore the feasibility of creating such a community-led urban farm by launching a scalable pilot program called "Ugaao Slum" in Bhopal, India, focusing on specific localities, and nudging households to embrace agriculture through participative designed household- and community-level bottom-up interventions. At the household level, the researchers will provide households with urban agriculture kick-starting kits of locally sustainable and economically viable plants that can grow cost-effectively in constrained urban spaces. The kit will accompany a layman's pictorial handbook that households can easily use to get nudged into urban agriculture. At the community level, the researchers will conduct awareness programs and use immersive urban design techniques to co-develop community-led urban agriculture commons.

The study also adopts a comparative evidence-based approach to test the viability of interventions, collecting quantitative and qualitative data. It will analyse the before and after conditions of the urban spaces in varied combinations of intervention and location types, such as when households in the slum or non-slum areas receive the urban agriculture kick-starting kits with or without the community-level intervention. This could be through analysing changes in factors such as household income, and observing the visual landscape and community satisfaction in the target areas.

Vikram Kohli

Vikram Kohli is an urban designer, an architect and a young academic. He is Affiliated with COA and IUDI and currently teaches in the School of Planning and Architecture, Bhopal as an Assistant Professor.

Prateek Raj

Prateek is an Assistant Professor in Strategy at the Indian Institute of Management Bangalore. He earned his B.Tech. from Indian Institute of Technology Delhi and his PhD from University College London.

Kush Sethi

Kush Sethi is formally trained in Green Chemistry and transitioned to urban ecology through field research in Delhi Ridge. He has consulted on community-focused sustainability projects for Arts and Culture institutes like Deutsches Museum Munich, Site Gallery Sheffield, KultureForum Witten and Übersee-Museum.

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Imbibing Habit of Heritage Food to Reduce Nutrients Deficiency and Reduce Carbon Footprint

This pilot study aims to promote nutrition-rich locally-grown food consumption amongst primary school students through a mid-day meal scheme in Uttarakhand. A behavioural intervention will be made during the six-month study through a framework called MINDSPACE. It focuses on information dissemination via two key messengers – local farmers and nutrition experts. The intervention will encourage a transition from the current consumption of low-quality processed food to high nutrition of indigenously grown food.

The study draws from the high consumption of nutrition-deficient processed food and non-consumption of local produce by school students, resulting in anaemia, malnutrition, obesity, and stunted growth adversely impacting their cognitive and physical growth. Owing to the low demand for local food, the local farmers have switched to the production of cash crops, a practice detrimental to the local ecology. Thus, a rise in demand for locally grown food will encourage farmers to resume production, thereby improving the local ecology, reducing carbon footprint, and ensuring a positive climate change.

The behavioural intervention will be piloted in a group of schools through Randomised Control Test (RCT) with one control group and one treatment group. While the control group will not receive any information, the treatment group will undergo a behaviour intervention through the MINDSPACE framework. As messengers, farmers will discuss the growing method of crops and hardships involved, and nutritionists will highlight the health benefits of consuming nutrient-rich local produce. The Self Determination Theory (SDT) will generate intrinsic motivation among students. They will enjoy the 'autonomy' to make an informed food choice after acquiring the 'competence' to do so.

The impact of the intervention will be decided by the uptake of local food consumption among students in both groups. Data will be gathered over six months in three stages – baseline, midline, and endline. Success will be upscaled in newer locations after considering key contexts, such as the class of students, support from government and teachers, and culinary skills of the person cooking mid-day meals.

Ashish Thapliyal

Ashish Thapliyal is an Inclusion and Diversity Project Manager at Nokia and a student of Executive MSc in Behavioral Science at the London School of Economics.

Vinita Thapliyal

Vinita Thapliyal is a Sports Nutritionist at Round Glass Punjab. Vinita holds a PhD in Human Nutrition from Amity University and has completed Post Graduate certification courses from the National Institute of Nutrition, Hyderabad, and St. John Hospital Bangalore.

Sangeeta Thapliyal

Sangeeta Thapliyal is Assistant Teacher in a Primary School. She holds a B.Sc. in Zoology, Chemistry, and Botany, an M.A. in Psychology, and a B.Ed degree.

A Unified Supply Chain Linking Residents to Recyclers

The study aims to address the challenges faced in solid waste management in India. The problems affect a large group of stakeholders, including households, waste collectors, recyclers and institutions involved in the system. The paper identifies several issues within the waste management process that can be mitigated through multi-level and collective action from all stakeholders. Complex waste disposal practices, absence of adequate incentives for waste management practices, lack of knowledge, lack of institutional structures and inefficiencies in the process are some of the issues discussed in detail in this paper. The paper also aims to hold institutions such as Urban Local Bodies (ULB) accountable and increase awareness about proper waste disposal. The study is divided into four major sections. The first section identifies the challenges in waste management and citizen participation. The second section proposes a digital revolution in waste management to bridge the gap between waste management and citizen engagement. The third section discusses the creation of an entirely digital ecosystem for waste management, from the household to the recycler. The fourth section focuses on citizen engagement and how the digital infrastructure can be used to incentivise positive impact and capture behavioural shifts.

The study proposes a digital ecosystem for waste management in India. This proposed idea could potentially solve the challenges faced by urban local bodies in waste management and increase citizen engagement in the process. This solution has a two-pronged approach that aims to connect the supply chain for waste management as well as improve the responsiveness of citizens to waste management through behavioural tools. The scope of the study is proposed to be a pilot study working with a single ULB covering multiple municipal wards in tier 1 or 2 cities in the country. The study concludes by discussing the power of digitisation and its potential to create multiple levers of citizen engagement in waste management. The study also references other policies around waste management under the Swachh Bharat Mission and NITI Aayog's papers on segregation and waste-wise cities. The proposed digital ecosystem for waste management and citizen engagement could potentially lead to a culture of recycling and ethical disposal in India. This, coupled with incentivisation of positive impact and behavioural shifts, could have positive impacts on the environment, society and economy of the country.

Abhinav Mukherjee

Abhinav Mukherjee is the founder of Recyclink and an alumnus of the Indian School of Business. His areas of interest are innovation and product strategy, climate action and climate finance.

Daryl Dsouza

Daryl Dsouza is the co-founder of Recyclink. Her interest lies in building business models deployable at scale.

Priti Dsouza

Priti Dsouza is the co-founder of Recyclink. Her areas of interest and expertise are process optimization, and building businesses with sustainability at the core.

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Community Driven Participatory Climate Change Communication using Accessible Voice-Based Technologies for Behavioural Change

Climate change communication is often called a wicked problem because it is a complex, multifaceted issue that is difficult to define, understand, and solve. This has resulted in communication having limited engagement with people, and with few systematic attempts at public engagement with the science of climate change. Moreover, the approach is, in most cases, top-down without actively engaging target communities. There is a need to enable people, who are the most vulnerable to climate change, to engage with climate science and its associated risks, and be given the opportunity to also contribute to the dissemination of knowledge and practices around climate change.

Community-driven participatory climate change communication using accessible voice-based technologies can enable behavioural change by providing a platform for people to engage in discussions and share information about climate change in a way that is easily accessible and understandable. Voice-based technologies overcome the technology access barrier due to low text-literacy among the target audience. It facilitates two-way communication and allows for exchange of ideas between communities and climate change experts. By involving communities in the conversation and empowering them with knowledge and resources, community-driven participatory climate change communication can create a sense of ownership and responsibility around climate change. When people feel that they have a stake in the issue, they are more likely to act to address it.

The research methods are largely derived from Participatory Action Research, Participatory Appraisal and Human Centred Design. The development component of the proposal involves the generation of an integrated content based on climate science and peoples' lived experiences to enable top down and bottom up generation of knowledge that speaks to each other. The research component will feed into and strengthen the development component. This proposal will enable behavioural change through participatory climate change communication by achieving the following:

- Top-Down and Bottom-Up approach for Climate Science content creation

- Climate science communication aimed at vulnerable populations

- Development of people centred Information, Communication and Technology (ICT) and Interactive Voice Response (IVR) tools to cut across the various Digital Divides

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Community-Led Climate Action to Reduce Climate Change Impact In India

Individual travellers' lack of understanding and conscientious behaviour can have a substantial negative influence on the environment, local communities, and the whole tourist sector. On a worldwide scale, the tourist sector contributes significantly to greenhouse gas emissions, making up around 8% of all carbon emissions. Transportation, lodging, and other tourism-related activities all contribute to these emissions.

Researchers have proposed the idea of a Carbon Trace (CT). To address, mitigate, and offset emissions brought on by travel or tourism in India, Carbon Trace is developing a travel footprint calculator. This will help to encourage environmentally friendly travel habits and lessen the industry's negative effects on the environment.

Through several benchmarked factors, the tool will map and quantify each traveller's carbon footprint, delivering a straightforward figure represented in kg CO2e that can be contrasted with a baseline case. With the aid of Carbon Trace, travellers can be encouraged to adopt more environmentally friendly travel habits. The tool will be implemented through an intuitive web interface with reporting and awareness generation to promote transparency. It will incentivize people to share their carbon rating points on social media and other networking platforms, to change the behaviour of both individual travellers and the tourism industry. By using climate-resilient, green practices, the intervention aims to increase the revenue from ecotourism while minimising the environmental and GHG impact of homestays and conventional hospitality units in India's remote northeastern region. The CT-developed CFP model is objectively verifiable, and the homestays' GHG emission reductions could be compensated through the carbon market.

The concept of Carbon Trace not only addresses how tourism affects the environment but also has the potential to have a good influence on the indigenous populations of North-East India, which are particularly susceptible to the consequences of climate change. Carbon Trace can support a more just and sustainable future for everybody by encouraging eco-friendly travel habits and investing in carbon offset initiatives that directly benefit these areas.

Ratan Kumar Ghimire

Ratan Kumar is the Founder and CEO of Encamp Adventures. He is a postgraduate in Business Administration from Amity University.

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Nudging Menstrual Cup Adoption for a Sustainable Future

While promoting disposable sanitary napkins has significantly worked to end period poverty and promote menstrual hygiene, it has also contributed to a massive amount of plastic in landfills. Disposable pads are largely made of plastic and cause microplastic pollution in soil and water.

The paper proposes a two-pronged nudge experiment to promote the use of menstrual cups in young women between the ages of 14-25. By engaging the individual and the community via information-sharing sessions and focus groups to discuss the experience of using menstrual cups, the researchers aim to bring awareness about the harmful effects of disposable sanitary pads on the environment and the benefits of the cups.

Trained menstrual health professionals will also guide the use and maintenance of the cups and encourage interactive doubt-clearing sessions. To address social norms and taboos around the topic of menstruation and the use of the cup, the team will lead community-based interventions to educate the mothers and guardians of the participants. The proposed intervention is based on the results of the studies conducted by the researchers for a particular geographical area of Guwahati, Assam. The research intervention will include a baseline survey, implementation among the test group, post-intervention survey, and data analysis. The proposed research study attempts to comprehend the variables influencing the use of menstrual cups for managing menstrual hygiene. The study tries to comprehend how the proposed intervention will affect the uptake of menstruation cups.

The findings from this study will contribute towards understanding menstruation behaviour and policy-making around health and hygiene within the context of the 2030 Sustainable Development Agenda.

Nandini Borah

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We Segregate - Co-creating a Model Neighbourhood for Sustainable Waste Management Behaviour

Indian cities are grappling with massive solid waste management (SWM) challenges. Segregation at source in our cities is minimal or inadequate and a large portion of recyclable, reusable and compostable waste ends up in the landfills. These landfills across global cities have drastic consequences for the surrounding environment and the community, including greenhouse emissions, groundwater contamination, plastic pollution, and public health risks. In Chennai, approximately 5400 tons of waste is produced per day, nearly 47 per cent of which is biodegradable, according to the Greater Chennai Corporation in 2021. Yet, the low rate of source segregation makes composting, recycling, and sustainable waste management challenging.

To tackle this problem, this project team will undertake a participatory action-research in Kasturbanagar neighbourhood in Chennai to experiment with different types of interventions and examine how to foster a habit of at source segregation among middle-income residents and what sort of interventions bring effective and sustained behaviour change. This project will target approximately 2000 households of the neighbourhood and will introduce different interventions in a phased manner, such as a door-to-door awareness campaign, information brochures, a database on recyclers, lane composters, community-level competitions, and a collection drive. The impact of these interventions will be monitored at regular intervals to understand how effective they are in strengthening residents' capabilities, opportunities, and motivations to segregate waste.

Learnings from such participatory action research will not only offer critical inputs for policy makers to prioritise effective interventions for encouraging segregation at source, but also help transform a neighbourhood to become a model for others to learn from, and contribute to filling the gap in literature by presenting an empirical case study focused on source segregation behaviour and interventions from an Indian city.

Parama Roy

Parama Roy is Executive Director at Okapi Research & Advisory and an adjunct faculty at IIT-Madras. She completed her PhD in Urban Geography from the University of Wisconsin-Milwaukee.

Janani Venkitesh

Janani Venkitesh is an Environment and Solid Waste Management enthusiast. She started and is currently the secretary of ROKA (Residents Of Kasturba Nagar Association) with a primary focus on Solid Waste Management.

Krishnamohan Ramachandran

Krishnamohan Ramachandran was Chief Resilience Officer and led the development of Chennai's Resilience Strategy. He currently leads the Chennai Resilience Centre, a unit of Care Earth Trust, fostered by the Adrienne Arsht-Rockefeller Foundation Resilience Centre (AARFRC) and the Resilient Cities Network (RCN).

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Green Mechanic Movement - Fix it Right Mindset (F.I.R.M) for Environment

There are approximately 5 lakh mechanics in the unorganised automotive aftermarket in India – a number that is increasing at the rate of 12 per cent per annum. However, they are not equipped with the correct methods to fix the vehicle, and also lack awareness about the importance of their work and its impact on the environment and economy. With the right mindset, upskilling and knowledge, mechanics can act as an influencer and persuade vehicle owners to follow timely service procedures that are environmentally clean and green.

The proposal aims to introduce the Fix-It-Right Mindset i.e. F.I.R.M. amongst the local mechanics, garage owners and vehicle owners to sensitise them about the importance of efficient automotive servicing and repairs, and their impact on the environment and circular economy.

By forming communities with local mechanics and garages across India, the researchers plan for advocacy, awareness, and upskilling of community members by educating them about green practices. Advocacy will be carried out in vernacular languages, using videos and mobile applications, flyers, posters, games and nudging complacent behaviour towards the right service procedures. Registered mechanics or garages will be closely monitored, feedback collected from the vehicle owners and mechanics through our mobile application, direct feedback from mechanics on the knowledge disseminated to them and one to one interaction with them quarterly.

The green mechanic movement revolves around the idea of bringing about behavioural change in the mechanics/garage owners in the unorganised sector in India and the vehicle owners to move towards correct, economically efficient, and environmentally clean service and maintenance processes. Once equipped with correct knowledge, skills, and Fix It Right Mindset, these mechanics will play the roles of influencer and encourage the customer to follow the right maintenance practices.

Abdul Kadir M. Poonawala

Abdul Kadir M Poonawala is Head of Research at Auto Institute and Lecturer in the Mechanical Engineering Department at M.H. Saboo Siddik Polytechnic, Mumbai. He holds M.Tech in Thermal & Fluids Engineering and is pursuing PhD from the Indian Institute of Technology, Bombay.

Patanwala Mustafa Z.

Dr Patanwala M Z is Co-Founder and Director of AutoInstitute. His areas of interest are skill development in Industry 4.0, climate action, and sustainable business solution for the automotive, smart building and energy sectors.

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Small efforts of an individual and the society can bring major results by changing the lifestyle. 🙶🙶

Shri Narendra Modi
Prime Minister

Inventing a Complementary Currency for Human World Transactions to Conserve Nature

Conspicuous overconsumption has dangerous consequences for global resources, pollution and the environment. Despite a historical cultural heritage of symbiotic connections with Mother Earth, the current trend in India is that of increased consumerism. An ever-expanding list of irresponsible consumer behaviours includes overeating, amassing waste from single-use items, indiscriminate use of beauty products, and untimely and unnecessary replacement of devices and clothing in the rush to follow the latest trends.

A behaviour modification programme called S.P.I.N.E. (Sensitise, Prioritise, Incentivise, Normalise, Eternalise) aims to influence consumer attitudes by establishing a complementary currency that takes into consideration the expenditure of natural resources. The initial goal of the multi-layered S.P.I.N.E. campaign is to educate customers about their current behaviours. Then, to prioritise and encourage sustainable living, practical and easy-to-implement behaviour change strategies will be discussed. The new consumer viewpoint will be gradually normalised and eternalised to create a culture that will remain.

Researchers conducted a detailed study to understand the principles behind large-scale and long-lasting behaviour change campaigns. They arrived at three key theories that will propel the SPINE intervention. First, attitudes and beliefs need to be shifted before behaviour change can occur. Second, negative messaging can be less impactful, positive framing is more effective. Third, the researchers curated a list of measurable indicators to ensure effective communication throughout the intervention. The target market for this campaign will be individuals, with adults between the ages of 17 and 65 making up the first phase.

The intervention includes pre- and post-campaign surveys, interactive sessions, a YouTube chat show, and sustainability champions. Consumers will be urged to view natural resources through the same prism as they do financial assets. The goal is to establish a strong relationship between money and natural resources so that they eventually coexist in each person's monthly budget. Customers will be empowered by S.P.I.N.E. to understand the important part they can play in preventing human activity from overstepping planetary boundaries and re-establishing equilibrium on Earth.

Navjot Kaur

Dr Navjot Kaur is an Assistant Professor at Plaksha University, Mohali, Punjab. She received her PhD from IISc Bangalore. She is closely associated with the Biosystems Engineering Majors at Plaksha University and teaches courses on Biomimicry, Molecular Biology, Biosensing and Research Communication.

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Practising Sustainable Lifestyles and Service Among Youth in a University Ecosystem

Over the last thirty years, India has seen increased urbanisation, rising income levels and the movement of many households from poverty to the middle class. Changing urban lifestyles has led to increased resource consumption and generated untreated solid waste leading to environmental issues in the cities of India. A narrow focus on demand-led consumption and economic activity at the cost of the environment and society has decreased the quality of life in cities, impacting Sustainable Development Goals (SDGs) that India aims to achieve. The project team intends to increase awareness and inculcate a sustainable lifestyle among university students through this project.

Previous literature has highlighted the importance of higher educational institutions and universities in sustainability education and developing green behaviours and attitudes among future workforces. Using technology tools, the project aims to develop sustainable lifestyle behaviours and attitudes among students in a university ecosystem.

The intervention proposed in the project will provide a theoretical foundation, practical field visits, insights into sustainable lifestyles, and the development of a digital portal where sustainable lifestyles can be defined, practised, and scored for university students. The project idea targets the reuse and sharing of resources, leading sustainable lifestyles and community service behaviours among university students using the theory of planned behaviour, stating that an individual is likely to behave in a manner so that the behaviour being performed benefits the individual.

The project will allow youth studying at Amity University Noida campus to develop sustainable behaviours and lifestyles, contribute towards SDGs and make a difference for the nation and the planet. The test results will be accessed and further reported for scaling the project to the university level. The project aims to contribute towards India's Sustainable Development Goals and make India a global leader in sustainable lifestyle over the coming years.

Saurabh Verma

Dr. Saurabh Verma is a management faculty at RICS School of Built Environment, Amity University Noida. He holds PhD in "Green Value Inferences of rated green buildings in Indian Cities".

Deepak Bajaj

Prof. (Dr) Deepak Bajaj is the Director and Head of the Institution for RICS School of Built Environment, Amity University, Noida. He has been a Fellow of the Royal Institution of Chartered Surveyors for the past 12 years and chairs the Assessment Panel in India & UK at RICS.

Bharat Tank

Bharat Kumar Tank is working in domains of higher education, training, manufacturing, pharma retail, microfinance, financial inclusion, and airport cargo. His qualifications and certifications include M.Sc. IT, MBA IT, PMP, ITIL4 foundation, Certified in Cybersecurity, AWS CPE, etc.

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Nudging Individuals Towards Sustainable Consumption for Reducing Food Waste within Higher Education Institutions of India

While technological advancements and rise in the Gross Domestic Product (GDP) of economies worldwide have led to the growth of urban centres in both developed and developing countries, it has also resulted in increased consumerism and unsustainable lifestyles. The increase in waste generation has been synonymous with urbanisation, with limited collection, segregation and disposal capacities posing significant challenges in waste management, especially within cities of developing countries. Even though food waste is recognised as a major challenge faced by emerging economies like India and China, there are limited studies on quantifying food waste and exploring potential solutions.

This study looks at Higher Educational Institutions (HEIs), which, while being a major source of waste generation, could also serve as a potential solution for fostering food waste reduction. It attempts to tap this potential of Universities in India to simultaneously address the problem of food wastage and cultivate sustainable behaviours among students enrolled on higher education courses in the country. The focus of the study is to quantify the food and other organic wastes generated daily within hostel messes and campus canteens of universities.

The study also focuses on initiating small activities that are not legally binding on the students but would serve as 'behavioural nudges' and push students towards making responsible consumption choices leading to a reduction in on-campus food waste generation. Following successful implementation could contribute towards the propagation of sustainability at the national stratum, especially by helping attain the targets of Sustainable Development Goals (SDGs) 2 (zero hunger) and 12 (responsible consumption and production).

Priya Priyadarshini

Priya Priyadarshini is a Research Scholar at the Institute of Environment and Sustainable Development, Banaras Hindu University. Her work is interdisciplinary, focusing on attaining sustainability and responsible consumption within the sectors of Agri-food, Higher Education and Organic Waste Management.

Purushothaman Chirakkuzhyil Abhilash

Dr. P.C. Abhilash is presently working as a Senior Assistant Professor at the Institute of Environment and Sustainable Development, Banaras Hindu University. He is the Editor-in-Chief of Anthropocene Science (Springer Nature) and is associated with the Editorial Boards of several international journals.

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Personalised Sensor Feedback on Air Pollution Exposure: Nudging Behaviour Towards Adoption of Bike-Share Schemes in Chennai

This study investigates the behavioural economic motives underlying the adoption of sustainable urban transportation by households in India. The study specifically focuses on the case of bike-share schemes in Chennai, Tamil Nadu, with the aim of extending it to other cities. The project also aims to provide policy recommendations through unique insights to public and private stakeholders to foster the uptake of bike-share schemes. Shifting mobility habits towards sustainable transportation is challenging as it impinges not only on economic factors but also socio-psychological and demographic factors. Bike-share schemes may alleviate the environmental pressure on urban transportation, but the uptake has been limited in India.

The study applies behavioural economic theory and choice experiment techniques to understand the behavioural reasons behind the slow uptake of bike-share models, determine the individual and city's willingness to pay/accept (WTP/WTA) for using a city bike-share scheme, and provide public and private decision-makers with solutions on how to encourage greater engagement in city bike share schemes. The intervention proposed in the study will be a randomised control trial (RCT) pilot field experiment in the Chennai urban area. The intervention will investigate how the provision of personalised air pollution exposure information by sensors can alter individual transport habits towards more sustainable options. The target agents to enact this behavioural shift are the users of petrol and diesel vehicles in urban areas. The expected outcomes by the end of the six-month pilot study will include a policy-oriented report and dissemination material for seminars, conferences, and media presentations in Chennai and internationally, targeting various audiences. The study will also aid in the preparation of one academic paper. These results can inform researchers, commercial companies, universities, NGOs, and policymakers alike on the effectiveness and social impact of actions and policies to reduce pollution and mitigate climate change.

Laura Marsiliani

Laura Marsiliani (PhD) is an Associate Professor of Economics at Durham University Business School. She is a director of the Centre for Environmental and Energy Economics (CE3) and a fellow of the Durham Energy Institute and the Centre for Sustainable Development, Law and Policy at Durham University, UK.

Uwe Schlink

Uwe Schlink (PhD) is a Senior Researcher at the Helmholtz Centre for Environmental Research in Leipzig, Germany, and a Professor at the University of Leipzig, Institute of Meteorology. He is an adjunct faculty of the IITM in Chennai and a fellow of the Institute of Advanced Studies at Durham University, UK.

Lucy Naga

Lucy Naga is a doctoral researcher in Economics at Durham University. She received a bachelor's in Philosophy, Politics, and Economics from the University of Oxford and a Master's in Development Economics from the University of Sussex.

Tap the Elixir: Transforming the Way We Recycle Rainwater

With rapid urbanisation, the global water usage has increased multifold, more than it is currently available. As per the latest WHO and UNICEF studies, it is estimated that around 2.2 billion people lack access to safely managed drinking water services. Further, the UN World Water development report published in 2021 has not only addressed the acute water shortage but also emphasised the need of 'Valuing' water. This is an intangible measure to combat water scarcity as this can bring change in the behaviour and attitude towards water consumption. Throughout the globe, policy makers and activists have tried to make great strides in developing new approaches in addressing this pending crisis through traditional methods such as educational awareness campaigns and variable rate pricing. However, this hasn't fully curbed people's day to day water usage as expected.

The intended research is focussed on the preservation of rainwater to meet 60 per cent of the household requirements. This shall start by sharing details regarding the benefits of rainwater harvesting at household and community level to reduce dependency on potable water using Nudge as a tool which has been successfully applied in other environmental contexts such as reducing energy consumption. The proposal intends to bring the following collective change:

1. Create awareness regarding the importance of rainwater harvesting among communities.
2. Bring in Behavioural Nudge in increasing dependency on rainwater instead of Potable water.
3. Inculcate Community development and social awareness through bringing this change.

Further, the impact of this proposal can be assessed by quantifying the reduction of dependency on potable water by monitoring household water consumption data. The proposal has attempted to detail the application of the nudging techniques used at various scales along with a phase-wise implementation methodology to bring mass-driven behavioural change towards rainwater preservation/ conservation and use by all social and economic segments of the society. This change can have a large significant impact on the water consumption within our societies and can address the issue of 'water scarcity' towards which the world is heading.

Heera Mohan

Heera Mohan is an Architect/Urban Designer by Profession and a certified Project Management Professional from PMI, USA. She completed her Master's Program from CEPT University, Ahmedabad and her Bachelor's in Architecture from the College of Engineering, Trivandrum.
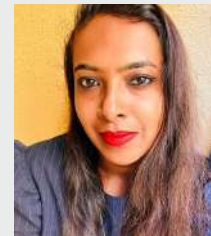
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Positive Nudges for Curbing Food Waste in a Circular Economy

Food waste is a major global problem with serious socio-economic and environmental costs to bear for humanity. It is estimated that about one-third of all food produced for human consumption is wasted annually, amounting to 1.3 billion tonnes. This wastage happens at various stages of the food supply chain, from production to distribution and final consumption. Developing a circular economy model for food can help devise a closed-loop system where the society actively pursues the reduce, recycle and repurpose principles to generate value for discarded food, by using discarded food for composting, energy generation or animal fodder. Additionally, the circular economy model can help promote sustainable production and consumption practices and enhance economic resilience. Increasing mindful consumption and reducing and repurposing food waste are essential for developing a food based circular economy.

As the consumption cycle of food is usually perceived on a linear scale, the practices and understanding of the circular economy in this sector are not well-developed. This proposal aims to seek a convergence of these issues for developing a circular food system. It intends to create a positive nudge and an incentive-based model at restaurants to trigger involuntary behavioural aspects of the consumers, which would lead them to order and consume food responsibly at restaurants. This will be done by relying on three behavioural aspects, namely positive nudges for inducing food-conscious choices, reward mechanism for responsible behaviour, and building a virtual community of these consumers. Additionally, the proposal also attempts to repurpose food waste at the domestic level through a community engagement platform, which will further help responsible food consumption at domestic level.

The methodology for testing the effectiveness of the proposal include a pre and post survey, observational study and a quasi-experiment involving a group of restaurants who are similar to the test group but do not receive the coupon and engagement program. The results of this proposal could help inform policy and practice related to reducing food waste in the restaurant industry and transitioning to a more circular food system. And finally, building communities for one kind of socially responsible behaviour can help sensitise people towards practising circular economy choices in other areas of consumption behaviour as well.

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Vedant Patil

Vedant Patil is a Mahatma Gandhi National Fellow under the Ministry of Skill Development & Entrepreneurship, Government of India. He is an advocate by profession and has completed his Bachelor in Law from ILS Law College, Pune and a Post Graduate Diploma in Urban Environmental Law and Management from NLU Delhi.

Reducing Waste Generation by Putting Caution Money to the Unusable Packaging of Products

The amount of solid waste generated annually is estimated to increase to 3.40 billion tonnes by 2050. Plastic waste remains the most harmful due to its non-degradable property. Despite the Solid Waste Management Rules of 2016 in India making it mandatory to segregate waste at the household level, the systems around segregation, collection, and processing remain haphazard. Plastic packaging in landfills accounts for 60-70 per cent of global packaged products and accumulates when not disposed of properly.

Researchers have conducted a study that suggests strategies for collecting used plastic packaging materials to be processed or reused by manufacturers. The concept of Extended Producer Responsibility (EPR) from the MoEFCC Plastic Garbage Rules 2018, which states that both producers and business owners are accountable for garbage collection, is highlighted in this study. The researchers suggest the inclusion of caution money to the cost of products. This caution money is specifically for plastic packaging and will remain constant at every level of distribution. The final consumer will also have to pay this caution money at the time of purchase. When the consumer returns the empty plastic packaging cleanly and completely, the caution money is refunded, and this action cascades up the chain for the retailer, wholesaler and manufacturer. The manufacturer will be responsible for the safe decomposition or recycling of the packaging. The condition of the package at the time of return determines the amount of caution money to be refunded. This intervention however requires the central government, manufacturers, wholesalers and retailers to play a crucial role in implementation.

This mechanism targets every stakeholder to carry equal responsibility for the used packaging, as the fear of loss of money will influence a behavioural change. Additionally, it will instil a sense of accountability in the producers to recycle or properly dispose of the plastic garbage they produce along with their goods. It will underline the need for packaging designers to seek out better packaging materials and explore plastic alternatives. People will strive to get more of their garbage recycled and will dump less waste in landfills.

Nirmoha Mandal

Nirmoha Mandal is currently working as an Urban Transport Planner in QRyde HBSS. He holds a bachelor's degree in architecture from NIT Raipur and post-graduate degrees in Urban Planning from the School of Planning and Architecture, Delhi.

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Awareness of Waste Accounting and Recycling through Smartbins (AWARE-Smartbins)

The most pervasive action that contributes to improper waste disposal is littering. It is a form of public behaviour that adversely impacts the environment, human health, and the aesthetics of any given place. The economic costs of cleaning up litter, its propensity to attract pests, and clogging drainage systems are also other drawbacks.

Researchers have devised an intervention that combines public appreciation and social reward to motivate individuals to contribute to clean public spaces. The idea details a smart bin with a complementary mobile application. The smart bin is designed to accept the litter along with the depositor's basic information into the cloud. This personal data will enable the generation of an electronic certificate that will showcase appreciation for the depositor's contribution to the Swachh Bharat Mission and the country. This certificate will also be displayed via a digital hoarding and shared with the depositor to share on their social media.

A well-planned awareness campaign will be launched alongside the installation of smart bins to encourage people to connect with the country's goal of maintaining cleanliness and using the bins. The support of local and governmental organisations is crucial to the implementation of this intervention. The frequency of use and rubbish bin filling are the only indicators of the idea's success. To learn more about the behavioural factors that influence how people use the smart trash can and the app, a survey will be developed. The suggested concept makes an effort to capitalise on several behavioural concepts that have been discussed in existing literature, including group identity, social proof, social currency, and instant gratification. It is anticipated that this intervention will spur behavioural change in our community, be advantageous, and fundamentally alter how the general public views trash in the future.

Krishna Malakar

Dr Krishna Malakar is an Assistant Professor (Climate Policy) in the Department of Humanities and Social Sciences, Indian Institute of Technology Madras. She is an ecological economist whose research focuses on examining the human dimensions of environmental change and sustainability. She earned her PhD from IIT Bombay.

Santosh Kumar Sahu

Dr Santosh Kumar Sahu is an Associate Professor of Economics at the Department of Humanities and Social Sciences, IIT Madras. He is an affiliated researcher at the Center for Technology and Policy at IIT Madras.

Sandeep Kumar Kujur

Dr Sandeep Kumar Kujur is an Assistant Professor of Economics at the Department of Humanities and Social Sciences, IIT Madras. He received his PhD from JNU New Delhi. His research interest lies in the cross-cutting domains of Industrial Economics, Economics of Technological Change, and Development Economics.

Instillation of Environmental Habits for Sustainable Life: A Subsidy-Driven Approach

This proposal intends to incentivise environmentally sustainable behaviours through institutional support. Specifically, the goal of the study is to encourage households to set up a kitchen garden to cultivate herbs and spices for cooking, medicinal plants and plants that can help meet the vitamin and mineral needs of the family. The project also aims to encourage composting of kitchen waste which can be used as natural fertilisers instead of buying chemical ones. Further, it proposes that a simple pipe and traditional filtering system be installed to filter used water from the kitchen, which could then be reused for watering plants. Household members will be motivated to wake up early, practice yoga and spend quality time in the kitchen garden.

The target audience for the study will be selected from Sonitpur district, Assam. The strategy involves giving sustainability know-how through workshops, providing raw materials and technology for cultivation and waste segregation for three months. The next three months would include data collection, surveys and analysis. The idea will be replicated on a larger sample based on the results of the short study.

The kitchen garden will help achieve self-sufficiency in nutritional and medicinal needs, reduce market dependency to meet simple needs, reduce demand for plastic shopping bags and save fuel for transportation. Along with the composting and filtering systems, it would also help reduce overall monetary and environmental costs. The garden would also yield benefits in terms of aesthetic value and help household members, especially younger children work with the soil and feel connected to nature. Finally, waking up early would encourage members to retire for the night early, reducing electricity consumption at night. Thus the study hopes to facilitate the inculcation of small habits conducive to sustainability and healthy lifestyle of participants.

Raza R. Hoque

Dr Raza R Hoque is currently Professor and Head of Environmental Science at Tezpur University, India. He holds a PhD in Environmental Science from Jawaharlal Nehru University.

Parijat Bharali

Parijat Bharali is a Research Scholar in the Department of Environmental Science at Tezpur University, Assam, India. She graduated from Miranda House, Delhi University and did her postgraduation in Natural Resource Management from Guru Gobind Singh Indraprastha University.

Amiya Kumar Das

Amiya Kumar Das is an Associate Professor at the Department of Sociology and coordinator of the Centre for Public Policy and Governance at Tezpur University, Assam. He is a collaborator in the Feeding City Lab project at the University of Toronto.

Indian Premier League (IPL) for 'Champs with a Green Heart': A School-Based Intervention to Raise Climate Consciousness of the Urban Communities in India

The environment is at serious risk due to the prevalent unsustainable economic model, coupled with the problem of a growing population. Individual behaviour, when combined, significantly impacts the environment. Significant lifestyle habits that affect the environment are instilled early in life and must be targeted at an early stage.

PCI India, an organisation driving sustainable interventions for complex social issues, has proposed "green nudges" as a solution to encourage simple everyday environmentally-friendly actions. These actions could help in reducing energy consumption, increasing recycling, and more. The initiative aims to target young and adolescent children who are quick learners and adopters of new practices, which in turn can influence their friends and families. The project will focus on students in classes 8, 9, and 11 in both private and government schools located in the South Delhi Municipal Corporation area.

To achieve its goals, PCI India will use a three-pronged strategy. First, they will connect with the Indian Premier League tournament, a popular event that can help them create awareness about sustainable behaviour at scale. Second, they will use Information-Education-Communication/Behaviour Change Communication messages targeted at urban school children through a volunteer-driven campaign to trigger multiple small behaviour changes that can have a momentous impact at an aggregate level. Lastly, PCI India will organise competitive events under the banner of Green Champs for school children culminating in a large event held in front of a live audience. These events would create a sense of community and competition while also enhancing the health and well-being of those involved.

As it is vital to address the environmental concerns, PCI India's approach is a step in the right direction. By targeting children, they are focusing on the generation that will inherit the earth and who are more likely to make long-lasting changes. The project's focus on multiple channels of engagement, including a popular sports event and community events, can help promote the initiative's message and build a sense of ownership among the community. The ultimate goal is to create a society that is conscious of its actions' environmental impact, thereby promoting a more sustainable world for future generations.

Sudipta Mondal

Sudipta Mondal is currently serving as Senior Director – Measurement, Learning, and Evaluation (MLE) at Project Concern International (PCI), India. Sudipta holds a Master's in economics from Kalyani University, West Bengal, and an M. Phil and PhD in Population Studies from International Institute for Population Sciences, Mumbai.

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Indrajit Chaudhuri is the CEO and Country Director of PCI India. He holds a postgraduate degree in Forest Management from the Indian Institute of Forest Management (IIFM), Bhopal and a B.Sc. in Chemistry (Hons.) from University of Calcutta.

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Reimagining 'Waste Management Planning'

'Waste to wealth' is not just a theoretical phrase. The potential for waste to be converted into wealth in alternate forms is immense, and can contribute to establishing a circular economy. Repurposing and reusing waste has huge ramifications for environmental protection and resource management factors, which can reduce climate change significantly.

The study suggests a systematic approach to waste management based on the 5R principles of waste hierarchy: Refuse, Reduce, Reuse, Repurpose, and Recycle and devised a continuously evolving waste management module using a standardised tool that can be replicated easily. Structured around the three core milestones of Develop, Execute and Replicate, the module targets waste management at the source. The first stage entails comprehending the users and designing waste management techniques. The second step entails careful coordination with all stakeholders for various actions, implementation on the ground, and capacity building. Replicating the model is the third stage, which can have an impact beyond one group and into many others.

The integrated process has multiple steps that are easy to apply and standardise. The team begins with a baseline assessment of all waste-related data in the participatory organisation. An elaborate waste audit follows, after which an analysis for 5R waste management is performed. Based on this, the strategies are formulated in collaboration with stakeholders, and the intervention is implemented through behaviour change campaigns. This work tries to conceptualise solid waste management using a sectoral approach using "Preventive Lenses" rather than, as is typically the case, "Fixative Lenses."

Maitri Patel

Maitri Patel is engaged with Recycle.green, a zero-waste commerce platform. She is an Architect and Urban Planner, working with various government, private, and academic organisations to enhance the sectoral planning approach for water and sanitation services.

Anjali Choudhary

Anjali Choudhary is a research associate at the Indian Institute of Management, Ahmedabad. She pursued PGDRM from Institute of Rural Management, Anand. Social mobilisation and project implementation are areas of her expertise. Her interest lies in converting household organic waste into compost and rejuvenating soil health.

Miloni Modi

Miloni Modi is the founder of Kaizen Waste Management Solutions. She has done her bachelor's in architecture from CEPT University and is practising as a Project Manager in Ahmedabad.

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