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MENTORING | NETWORKING | INCUBATING

# **GREEN BOOK**

Delhi-NCR | Dehradun | Jaipur | Lucknow | Udaipur



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#### ECO GRANT TEAMS

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Eco Grants is a corpus conceptualised by PVR NEST, Plan India and Centre for Youth (C4Y) to identify, mentor and incubate 10 innovative green solutions by youth for resolving the environmental challenges in five selected cities of India.

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We express our heartfelt gratitude to the Sectoral Expert Committee (SEC) Final Jury members for their commendable role in selecting the final ten grantees. We deeply cherish their contribution in selecting our bright young motivated minds.

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We express our profound admiration to the young teams of grantees and their host institutions for participating enthusiastically in creating green innovative solutions. The expertise and resources contributed by Department of Environmental Studies, University of Delhi; Academy of Technology, Hooghly; Air Pollution Monitoring and Assessment Laboratory of Doon University; Civil Engineering Department of Techno India NJR Institute of Technology, Udaipur, Rajasthan; Computer Science Department of Dehradun Institute of Technology (DIT) University; Sri Venkateswara College, University of Delhi; Agricultural Department of College of Technology and Engineering, Udaipur; Teach for Green (TFG), Distinct Horizon, The Green Earthlings, Watershed Consultant Organisation (WASCO) and Enactus Society in making the green solutions scalable and replicable have been very valuable, timely and strategic. We also appreciate the significant role of all government and non-government organisations in taking the movement forward.

The teams from the partner organisations steered by Deepa Menon, SVP - Corp. Comm & CSR PVR Nest; Mohammad Asif, Executive Director, Plan India and Alka Tomar, Chairperson, C4Y attributed to the huge success of ECO Grants. The mutually enriching collaboration of the partner organisations - PVR NEST, Plan India, and Centre for Youth has gone from strength to strength in making ECO Grants an impactful and outcome-oriented programme.

Thank you all for the roaring success of ECO GRANTS!

## Ten Green Thematic Solutions

#### THEME: ACCESSIBLE GREEN SPACES



Green School Green Community, Dehradun



Hydro Green House, Lucknow



Soil Inoculation A Way to Sustainable Gardening, New Delhi

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## THEME: AIR POLLUTION & HEALTH IMPACTS



Ecological Approaches for Air Pollution, Dehradun



Smog Reducer and Energy Conserver,New Delhi

## THEME: WATER SECURITY



FASAL AMRIT GÇô Way for Low-Water Agriculture, Udaipur

#### THEME: EFFECTIVE WASTE MANAGEMENT



WRICKS Building for Sustainable Future, Udaipur



Biofuel from Used Cooking Oil (UCO), Jaipur

## THEME: SANITATION AND HYGIENE



Jyotirgamaya (Leading towards Light), Dehradun



The Crimson Project, New Delhi



## THE BACKGROUND

The sustainable management of the environment and natural resources is vital for economic growth and human wellbeing. When managed well, renewable natural resources, watersheds, productive landscapes, and seascapes can provide the foundation for sustained inclusive growth, food security, and poverty reduction. (World Bank Environment Overview).

In developing countries, forests, lakes, rivers and oceans provide a significant share of households' diets, fuel, and incomes. They represent a precious safety net in times of crisis, particularly for 78 percent of the world's extreme poor who live in the rural areas. Three quarters of the world's top 115 food crops depend on animal pollination (World Bank, 2019). A third of the world's 100 largest cities draw their water supply from the protected areas. The integrity and functionality of these vital natural assets, however, are increasingly compromised. Air pollution is now the fourth leading risk factor for premature death, contributing to one in 10 of all deaths worldwide and resulting in significant losses of welfare and income.



Additionally, as per current projections, India will have added 416 million people to its urban population by 2050. (United Nations Department of Economic and Social Affairs, 2018). Consequently, the volume of waste generated will grow by 5 percent each year. More than three-fourths of municipal budgets are spent on collection and transportation of the waste, leaving very little for processing, recovery, and disposal.

Around 60 to 70 percent of the world's ecosystems are degrading faster than they can recover. Mismanagement of the environment and natural resources results in significant economic losses: for instance, an estimated \$80 billion are squandered each year due to ocean fisheries mismanagement (World Bank, 2019).

Set in this context, PVR NEST, Plan India and Centre for Youth (C4Y) conceptualised Eco Grants, a corpus to identify, mentor and incubate 10 innovative green solutions by youth for resolving the environmental challenges in five selected cities of India.



Youth all over the world have always been the dreamers and drivers of positive change. As per United Nations population prospects, the youth population (15-29 years) globally stands at 1.8 billion. Out of the total youth in the world, every fifth resides (20 percent) in India (366 million), reflecting the importance of this segment of people in the country. India, at present, is home to the largest population of youth in the world. The 'National Youth Policy of India' (2014) defines youth in the country as persons belonging in the age group of 15-29 years. According to Census data (2011), the youth constitute 28 percent of the total population in the country and have a contribution of over 34 percent in the country's national income. The latest estimates show that around 27 percent of the total population of 1.3 billion in 2020 are youth.



The present era of globalisation and rapid changes makes it vital to bring together organisations and individuals, who are capable of developing innovative eco-friendly solutions to such challenges. Three partners have stepped in with their strategic and organisational strengths to programmatically and financially support scalable green ideas by youth, which can be replicated pan-India.

'ECO Grants' vision is far-reaching and fosters environmental sustainability for the people and by the people.



## THEMATIC FOCUS

#### Accessible Green Spaces

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Focus: Revival of urban green spaces for community engagement

# Air Pollution & Health Impacts

Focus: Solutions to mitigate indoor and outdoor air pollution for improved health

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Promoting hygiene & at home and spac



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### Waste Management

**s:** healthy sanitation in public es Focus: Integrated waste treatment solutions for solid waste management

#### Water Security

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Focus: Solutions to make safe drinking water available & accessible for a water secured future

#### Theme I: Accessible Green Spaces

Urban nature has become a victim of unprecedented, rapid, and mostly unplanned urbanisation leading to fragmentation, shrinking and disappearance of urban green spaces such as vegetation and water bodies. This severely affects ecosystem services and biodiversity. Green spaces flourish if a clean and safe environment is provided for people to utilise its benefits for physical and mental health. Positive and interesting activities, plan of action, and on-ground operation and management strategies contribute to make green spaces more accessible especially for girls.



#### Theme II: Air Pollution & Health Impacts



About 95 percent of the global population, are exposed to the lethal effects of air pollution, leading to 6.1 million premature deaths – half of which are in India and China (Health Effects Institute, 2018). Non-communicable diseases affected by air pollution are rising and even, the long-term exposure has led to an increase in deaths from stroke, heart attack, lung cancer, and chronic lung disease. Alternatives like CNG, electric cars, biofuel, clean fuel, crop residue handling, renewable energy, improved public transport, are being considered as viable solutions for developing a roadmap for clean air in India.

#### Theme III: Sanitation and Hygiene

Healthy sanitation conditions at home and in public spaces are a pressing need today. Access to clean sanitation spaces & facilities; promotion of positive hygiene habits and hygienic surroundings are integral to achieving lower incidences of illness. A change in mindset & attitude, and affordable technologies to promote good health and hygiene are critical for India. Merely, provision of pipelines and building of toilets are not enough, apart from technologies, service delivery mechanisms must be community customised and communicate with citizens to bridge the knowledge & attitude gaps for positive behaviour change.



#### Theme IV: Water Security

Water security is the availability and accessibility of sufficient and safe drinking water. NITI Aayog has predicted that by 2030, India's water supply will fall short by 50 percent. Industrialisation, water intensive agriculture and poor sanitation practices has resulted in major vulnerabilities in groundwater reserves across the country. Activities such as rejuvenating ponds, water reservoirs and construction of small bunds & dams will help in rivers retaining more surface water, while recharging the ground water. Cost-effective technologies and measures such as rainwater harvesting, afforestation, bioremediation and change in water management practices will enhance water sufficiency for a safe and secure future.



#### Theme V: Waste Management



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More than 7,000 tonnes of waste are generated each day in large metros; yet only 83 percent of waste is collected and less than 30 percent is treated. According to the World Bank, India's daily waste generation will reach 377,000 tonnes by the year 2025. This presents numerous social and environmental challenges for urban local bodies. Integrated water and waste treatment through waste-to-wealth technologies, windrow method for waste collection, raw sewage & sludge treatment, energy harnessing from waste and a community action model to promote a sense of ownership are striking examples of community initiative for waste management.

### ECO GRANTS MILESTONES







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## **CONCEPTUAL JOURNEY**

ECO Grants was gestated with the realisation that current programmes and initiatives on urban environmental issues are not cohesive enough. There is a need for proactive synergies and collaboration of knowledge experts. A citizen and youth led approach is required to face the environmental concerns of the present moment. Thus, ECO Grants was conceptualised in July 2017 as a link in an ecosystem of change. It was created to connect grass root implementing agencies, youth and communities to policy makers. PVR NEST, the CSR arm of PVR Ltd., India's largest cinema exhibition company, has conceptualised this programme along with Centre for Youth and Plan India.

The concept was detailed out and five themes were aligned according to the Sustainable Development Goals. 10 innovation scalable projects were decided to be funded with up to INR 5 Lakhs. A range of bi-lateral and multi-lateral, government and prominent organisations were approached for the partnership.

Plan India joined hands with PVR NEST and C4Y in 2018 to launch the ECO Grants in five intervention cities of India - Dehradun, Jaipur, Lucknow, NCR of Delhi and Udaipur.

The branding and visibility through ECO Grant poster, brochure, and campaign film featuring Ayushmann Khurrana and Wake Up to the Impression film were developed for first ever ECO Grants.

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## ECO GRANTS LAUNCH

On July 17, 2018 PVR NEST, Plan India and C4Y announced the launch of "*ECO Grants-Incubating Youth Ideas*" at PVR Plaza, Connaught Place. The inauguration ceremony witnessed the presence of *Mr Amitabh Kant, CEO, NITI Aayog as the Chief Guest along with H E Ms Harinder Sidhu – Australia's High Commissioner to India and Mr Rahul Bose, Actor and Social Activist* as esteemed guests. The congregation also included a select gathering of Government representatives, international & national civil society organisations, policy makers, creative & technical experts and students from several institutes and colleges.

The launch also witnessed a multi-sectoral panel session, moderated by Mr Manak Matiyani, Executive Director, The YP Foundation, with industry elites and activists such as Ms Ravina Raj Kohli, Int'l Media Veteran and Social Impact Activist; Dr Amrita Bahl, Senior Director Strategic Partnerships, Hriday; Mr Afroz Shah, Lawyer and Nature/Ocean Lover, and Mr Vimlendu Jha, Founder, Swechha. The experts opined on the need of citizen awareness around sustainable management of the environment and identification of solutions, which can address India's aggravating concerns on the natural ecosystem.

The launch ceremony also saw the unveiling of the ECO Grants brochure, the premiere of the ECO Grants Campaign Film and Wake Up to the Impression – a short film capturing views of leading personalities from Delhi-NCR on environmental concerns.



#### **GRANT PROCESS AND STRUCTURE**



#### **Call for Proposals**

Online applicants were invited from various youth groups in five cities



#### **Outreach and Orientation Workshops**

Information on the call for proposals was widely disseminated and workshops for orienting on the application process were organised



#### Peer Review

Evaluation and shortlisting of 30 proposals by the partners

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#### Mentorship

Allocation of expert mentors to the shortlisted for guidance and preparing them for the final pitching and selection

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#### Jury Process and Final Selection

Presentation by 30 shortlisted before high-profile Sectoral Expert Committee (SEC) Jury Panel and selection of final 10 grantees



#### **Project Implementation and Concurrent Monitoring**

Up to Rs 5 lakhs each project were given to the grantees, along with programmatic & financial capacity building sessions, experience sharing sessions, mentoring, liaisoning, mid-term monitoring and networking support



#### **10 Innovative Green Solutions**

200 youth developed their impactful ideas into 10 innovative green solutions



#### 10 Eco Solutions and Green Book

Highly impactful ten films documenting eco solutions were made and a vibrant green book documenting the Eco Grants journey is also prepared





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### CALL FOR PROPOSALS

The proposal format was developed for inviting applications for Round I. The applications in Hindi or English were invited from the youth in the age group of 18-29 years for grant amount up to five lakhs. Following network and institutions were reached out:



### Types of Proposal Invited

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Innovation in new process/ service/ delivery method to address the environmental concern, developing a new product or else improvement of existing initiatives.

#### Outreach

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Through series of digital mailers, personal visits to the universities & colleges, research and incubation centres, bulk sms, whatspp, emails, posting on youth networks websites/ portals, social media, the call for proposal information was disseminated. A call centre was set up at C4Y office to address to queries on proposal submission and eligibility. Infromation on the call for proposal were disseminated to the network of Gandhi Fellowship Programme, Ashoka Fellows, Leadership on Environment and Development (LEAD) Fellowship and other fellowships. Overall, accounting for those approached through Whatsapp, email, Facebook and SMS, ECO Grants has reached out to approximately 1,00,000 young enthusiasts from the five cities. Community level youths from the slums and settlement colonies also shown great enthusiasm and submitted their actionable on-ground proposals as green solutions.



#### **Orientation Workshops**

In each of the five cities, the workshops were held in August 2018 for the potential candidates. The focus were on ECO Grants process, roll out plan, five thematic areas, possible way forward, types of expected proposals, who can apply and the grant structure. Information on the influencers, mentors and Sectoral Expert Committees (SECs). The impact and outputs of ECO Grants and a timeline for the entire programme were outlined. The participants were taken through proposal submission format and process for Round II.



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A grand total of about 600 potential applicants took part in the workshops on call for proposal. The highest number of participants was in Jaipur (173) followed by Udaipur (108), Lucknow (110), NCR of Delhi (74), and Dehradun (71).

The workshops would not have been possible without the support of the venue partners illustrated below and the ECO Grants team is grateful for their crucial support.





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## **PROPOSALS SEEKING SOLUTIONS**

In the inaugural edition, about 200 proposals were received for ECO Grants. Approx. 45 percent of the proposals were from NCR of Delhi and 28 percent of the proposals were seeking grant under waste management theme.



The programme received overwhelming response. Applicants from NCR of Delhi submitted the highest number of proposals (95), followed by Jaipur (33), Lucknow (25), Dehradun (22) and Udaipur (21). Waste management theme attracted the highest number of proposals along with sanitation and hygiene.



#### **Proposals Insights**

The C4Y team screened all the proposals and prepared a summary sheet with key information about the proposals. Missing information was asked from the applicants. The focus of the proposals has been on proposing a range of solutions:

Theme I: Accessible Green Spaces: The ideas to make the urban spaces accessible and green, youth groups proposed concepts of development of butterfly, herbal & medicinal gardens, restoration of degraded sites, taking school medium for greening the communities, proposing universal inventory & policy on the conservation status of natural resources in metropolitan area, revival of urban green spaces using Plant Growth Promoting Rhizosphere (PGPR) for facilitating early plant establishment or using hydroponic techniques for greening the spaces.

Theme II: Air Pollution & Health Impacts: Innovations using nano-structured metal oxide coating technology for buildings & roads, interesting product design for water sprinklers to control the dust & air purifier built into it, a green wall with composting unit installed, solution to develop a housing unit using renewable energy sources (i.e. self-sufficient homes) were offered in the proposals under this theme.

**Theme III: Sanitation and Hygiene:** The proposals presented solutions such as flushable anti-odour toilet seat covers, selling mesh composters, development & distribution of a citronella & lemon grass based mosquito repellent extract or waterless toilets.

Theme IV: Water Security: The ideas presented under this theme included green synthesis of nano-particles for water treatment, sanitisation of available water in government schools to reduce the dropout rate of students, a low cost technology to store rain water in natural reservoirs using existing channels along the roads, awareness on roof-top rain water harvesting. This category spans the spectrum from modern technology to reviving traditional methods. It has yielded exciting, new products such as a supercritical CO2 washing machine which reduces the water used by the machine to reviving the practice of using baolis to store water.



**Theme V: Waste Management:** The topic of waste management caught the imagination of our applicants with many innovative ideas. Concepts included using waste water to create electricity, feasibility study for creation of ventilation corridors, plastic waste management through use of non-recyclable plastic for co-processing in cement plant, a drum decomposing technology for kitchen waste or using waste hair to produce amino acid for agriculture.

### Who Applied

A wide range of civil societies and institutions applied to be a part of ECO Grants. Some notable names include University of Delhi, IIT Delhi, Cancer Aid Society, Centre for Ecology Development and Research (CEDAR), Youth Unite for Voluntary Action (YUVA), and CSIR- Institute of Himalayan Bio-resource Technology.



115 Organisations



50 Independent teams



31 Independent groups



## SELECTION PROCESS

An elaborate selection process was followed to select the finalists of the ECO Grant 1.0



🙆 Peer Review

Although a staggering 196 proposals were received, only the best 30 were selected for Round II. All the partners have peer review the proposals by rating them on a scale of 1 to 10 based on the following parameters:





C4Y averaged the ratings to shortlist the 30 highest ranked proposals with representation of five cities ensuring selection of six proposals per theme.

#### **Top Thirty Proposals**





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Top 30 applicants were given common uniform formats for power points and Round II proposal for pitching. The Round II proposal formats were far more rigorous than Round I seeking information on the proposed project's baseline, anticipated risks, challenges & how grantees planned to mitigate them, relevance of the project, its sustainability and financial viability.

### **Mentoring Applicants**

Mentors provided crucial guidance on finalising the selected draft proposal and its submission, perfecting the PPT for pitching before the final jury. The mentors spent 4-5 hours on each grantee over 15 days. Team created a briefing document for mentors to guide them on how to advise on the final shape of the proposal. Zoom sessions were also conducted for the mentors.

The ECO Grant partnered with Lead India, Gandhi and Ashoka Fellows for mentoring the young candidates. The selection process was meticulous. Mentors were sought with at least 8-10 years of experience in their respective fields. Some stipulations were that they should have implemented programmes on-ground, developed & launched products and processes, effected change via social & behaviour change programmes, engaged in capacity building programmes or have been part of such teams/projects/programmes.

#### The Eco Grants Mentors







Manjula Natarajan, Partner, Diametric iDeas



Matrushri P Shetty, Director – Programmes & Strategy, Lung Care

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Foundation

Mathew Jose, Founder & CEO – Paperman (Ashoka Fellows)



Meenu Ratnani, Consultant



Punita Bansal, Associate Director, KPMG India



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Priyanka Kulshreshtha, Co-founder & Joint Secretary, Society for Indoor Environment (SIE) and Assistant Professor, University of Delhi



Ruchi Verma, Architect-cum-Urban Designer, OpenCities Institute (*LEAD India Fellows*)

Salmon Jacob, National Coordinator -Climate Change & Environment, World Vision India



Shalini Prasad, C4D (WASH) Specialist, UNICEF India



Shikha Srivastava, Deputy Director, Indo-Global Social Service Society (IGSSS)





Shreem Kohli, Expert (Gandhi Fellows)



Taru Mehta, Fellow & Area Convenor, Environment Education and Awareness Area, TERI





Dr Vijai Pratap Singh, Technical Expert-Climate Finance GIZ (LEAD India Fellows)



Virajitha Chimalapathi Conservation Architect







#### Due Diligence

At this stage, due diligence of the applicants and documents in particular, photos of the team members, profiles, aadhar cards, PAN cards were asked. Addresses were verified and references were checked. Registration documents and audited financial statements were also validate the organisations that have submitted the proposals.

### Sectoral Expert Committee (SEC) – Final Jury

To form the Sectoral Expert Committee, professionals with a minimum of 15 years of experience working in areas related to the five ECO Grants themes were invited. Technical, social and financial experts were approached. The ECO Grants team picked those with experience of the practical processes involved in the implementation of social sector projects such as environmental norms, green certifications, the parameters to be met for green projects, green technologies, adaptive management, eco-friendly technology development, the technicalities of harnessing of natural resources/spaces and its processes/impacts. Social entrepreneurs were chosen for their experience in leadership development. Financial experts from the financial/marketing/venture capital areas were also selected. Experience in leading, developing and nurturing engagement and relationship with financial partners and investors was given importance.





#### Members of the Sectoral Expert Committee:



Rita Roy Choudhury, FICCI Assistant Secretary General was nominated as ECO Grants Jury Chairperson



Anil Cherukupalli, Communication Lead, India Country Programme, PATH



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**Dipankar Ghosh,** Partner, Sustainability and Climate Change, ThinkThrough Consulting Pvt. Ltd



**Dr Ishtiyak Ahmed,** Education Officer, Bombay Natural History Society (BNHS) Conservation Education Centre

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Consultant, Environment Programmes, The Shri Ram School (TSRS)



Manjula Natarajan, Partner, Diametric Ideas



Nirmala Nair, Head, India Team, WASH United



Padmapriya Sastry, Associate Programme Director, BBC Media Action



Dr Priyanka Kulshreshtha, Co-founder & Joint Secretary, Society for Indoor Environment (SIE) and Assistant Professor, University of Delhi



**Punita Bansal,** Regional Head – North India, Samhita



Salmon Jacob, National Coordinator - Climate Change & Environment, World Vision India



Shalini Prasad, C4D (WASH) Specialist, UNICEF India



Shikha Srivastava, Deputy Director, Indo-Global Social Service Society (IGSSS)



Shireen Kurian, Consultant, Corporate Watch, Praxis India



Dr Veena Khanduri, Executive Secretary, India Water Partnership (IWP)



Dr Vivek Choudhary, Scientist, Biodiversity Park Programme, CEMDE, University of Delhi





#### **Selecting Final Grantees**

On November 5, 2018, the Final Jury Meet of the Sectoral Expert Committee was organised at Shri Ram School, Vasant Vihar, New Delhi. During the evaluations, the 30 shortlisted applicants pitched their proposal before the committee. The SEC evaluated the 30-minute pitch by each proposer on a scale from 1 to 5 on the following ten criteria:



Some shortlisted participants who were not able to attend the SEC Jury evaluation physically were allowed to submit audio files of their presentations and were interviewed by the SEC telephonically. The SECs then selected the change projects (two for each theme) representing five cities along with a Partners' Choice project for Lucknow city.

Third party audit was also conducted to validate the selection process and the grantees for ECO Grant 1.0. Grant Thornton certified the process.



## **GEARING UP FOR IMPLEMENTATION**

The proposals of the grantees were further streamlined with inputs from SEC and the partners. For formalising the contracting process, the memorandum of understanding were signed. A grant of up to 5 lakhs per group was committed in following tranches:

- I. First advance tranche of 40 percent
- II. Second mid-term tranche of 40 percent
- III. Final tranche of 20 percent on completion of the project

Mid-term report, final project report and financial report formats were developed, on-site mid-term monitoring of the projects were conducted and the final projects of the grantees were reviewed by the ECO Grant Team.

### Inception and Incubation Workshop

The grantees were guided into the implementation phase by an inception and incubation workshop held from July 23 – 24, 2019 at International Institute of Health Management (IIHMR), Dwarka, New Delhi. On the first day, the partners briefed the grantees about their respective organisations. The film partner conducted a session on the documenting and narrating stories for their projects through photos and videos. Following that, the grantees took centre stage and presented the progress of their projects. The sessions on branding and visibility, protocols on documentation including getting the photo release form signed from the respective individuals for use of their photos were held. The second day of the workshop began with sessions on protocols on reporting mechanism, timeline and the monitoring & evaluation of projects. Another important session on safeguarding children & youth and the final session on the grant agreement, accounts, cash book, fund utilisation, audit, grant disbursement process, financial monitoring & reporting process helped them in orienting the grantees on project management.

Once the sessions were concluded, the grantees mapped their action plan and timeline for implementation of the project on a chart. After this an open forum between the grantees and the partners was held on the project implementation, protocols and partners' expectations. The workshop ended with final remarks from the partners and informing the grantees on next set of required actions and processes.





### Mid-term Assessments of Projects

C4Y conducted a detail technical and financial mid-term assessment of the projects. The team visited the project sites in five cities and interacted with the young grantees, host institutions and beneficiaries.

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# THEME: ACCESSIBLE GREEN SPACES

## Green School Green Community, Dehradun

A process, awareness and action oriented project by Teach for Green (TFG) focuses on making a healthy, sustainable and A process, awareness and action oriented project by Teach for Green (TFG) focuses on making a healthy, sustainable and liveable Earth. For this, TFG has built a cadre and movement of community leaders, youth and students to foster practices towards environmental sustainability. The team innovatively utilised local creativity and resources to engage children, youth and communities to reinvigorate selected public places. The team worked on improving the existing 15 green spaces through campaign rallies, plastic waste collection & cleanliness drive, plantations, wall paintings and developing herbal corners and hanging gardens. Through the project, there will be accessibility to vibrant green space in urban areas which is associated with learning, understanding nature and improved physical and mental health.



### The Team

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Teach for Green organisation aims to bridge the gap between the environment and community by strengthening interaction with nature through 'learning-by-doing' concepts. The team is working on Solar Energy, Waste Management, Water Conservation, Agriculture and Health.

The project team included: Ajay Kumar, Project Lead | Abhishek Kumar Chanchal, Strategist | Gyan Deep, Community Mobilizer | Pradeep Yadav, Community Mobilizer | Pooja, Community Mobilizer | Sudipta, Community Mobilizer | Sanjana, Project Fellow | Sangita, Project Fellow | Shayla, Project Fellow



### **Challenges Addressed**

Each green space had its own challenges in terms of stakeholders' engagement, resources availability and accessibility. The team worked with collective approach and integrated pooling of local resources for efficient results. The main strategy to address the challenges were:

- Frequent interactions with the local students and youth to build on ideas and creativity.
- Utilised locally available material for art and craft pieces.
- Organised plantation drives with endemic species.
- Engaged local stakeholders and government departments.
- Promoted the concepts of herbal corners, hanging gardens and wall paintings to create vibrant organic spaces in urban areas.



### Change Demonstrated

- The green school green community project envisioned to create a society that is able to take environmentally conscious actions.
- Encouraged the students and youth to showcase their leadership skills and team work.
- Created green ambassadors through knowledge driven Do It Yourself (DIY) impact tools.
- Raised awareness on the concept of single use plastic, importance of plantation, harmful impact of plastics on the environment, herbal & kitchen garden and new methods to recycle plastic material from their everyday waste.
- Understanding level of the involved children and youth has increased more than 50 percent during the course of the project.

#### Innovations



#### Acknowledgment

Mr Vinay Shankar Pandey (IAS), Municipal Commissioner, Dehradun Nagar Nigam, , Dehradun | Neelam Joshi, Principal, Government Girls School, Lakhibagh, Dehradun | Seema, Teacher, Government School, Khurbura | Reetika Joshi, Coordinator, Him Joyti, Dehradun | Kushum, Headmaster, Government School, Lakhibagh, Dehradun | Aayushi, Coordinator, Siddharth Public School, Dehradun | Mohit Raghav, Uttrakhand Coordinator, Goonj, Dehradun | Heena, Delhi Region, Wipro, Dehradun | Give India

"While, working with this project we learn about how we can mobilise community in new way and also how adding art will help engage individual for environmental sustainability." Team, Teach for Green

"Students participated with joy in activities facilitated by the TFG team, they looks all passi ate, always comes with new kind of activities where students learn about sustainability." BEO, Education Department, Dehradun



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## Soil Inoculation: A Way to Sustainable Gardening, New Delhi

The project intent to ensure successful greening of stressed urban spaces which are nutrient-defiient due to excessive concretisation. The team from Department of Environmental Studies, University of Delhi identified key barriers limiting seed germination and survival of the native plants in urban areas. Soil biota, especially the rhizobacteria which is required for plant as well as for the improvement of soil health determine the success of plantation. Thus, the project used soil inoculation (adding desirable microbes into the soil) in three parks to solve the problem of failure of growth of beneficial native plant species in parks and restored accessibility to green spaces.



### The Team

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The team consisted of PhD scholars and master students from the Department of Environmental Studies, University of Delhi. The experiments conducted in bio-resources and environmental biotechnology laboratories helped in incubating the ideas and developing the product.

The project team included: Shafali Garg, Project Leader | Pankaj Kumar, Team Member | Anand Kumar Bharti, Team Member | Jigdol Tenzing Gyalpo Bhutia, Team Member | Furqaan Farooqi, Team Member | Archana, Team Member

### **Challenges Addressed**

- The cooperation and support from the Resident Welfare Associations (RWA) to work in their parks was a challenge initially.
- The residents and RWAs showed no interest in the development of these parks as the spaces were wastelands with presence of anti-social elements.
- The delays in the permission from the authorities to access the water supply or disposing the waste debris were the unforeseen footraces.
- The timeline and resources for field testing of the prototype or the proof-of-concept stretched beyond the plan.





• Resulting, in the initial phase, the restoration of parks using this technology got tangled into permissions, area cleaning and maintenance.

The team forged collaborations with the RWAs and through consistent dialogues with the community were able to restore the parks.

### **Change Demonstrated**

- The residents started seeing change and their willingness to help had remarkably increased.
- The knowledge regarding importance of native tree species, multiple health and environmental benefits has tremendously augmented.
- The parks are seen now as community hotspot, children's playground and clean environment to nurture.
- The residents become closer to nature and actively using these green spaces.
- Starkly noticeable increase in the number of butterflies and birds in the area.
- Successful establishment of native plants by changing the soil community structure.
- Structurally, there is visible change in the condition of all these parks as the greenery and canopy
  of trees have been established which is a huge change from the concretization that was evident
  earlier.

#### Innovations

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Restored urban spaces by planting native species and ensuring high success rate by using soil inoculum Established native species contributed to ecosystem services like maintaining soil nutrient balance, purifying air and providing adequate nutrition to organisms especially birds and insects. Grown naturally occurring native plants instead of fast-growing exotic plants. The exotic species drive-out native plants and change the natural micro-biome and macro-biome of the ecosystem and cripple the last few green patches in the urban areas.

### Acknowledgment

Prof C R Babu, Prof Emeritus and Founder, Centre for Management of Degraded Ecosystems (CEMDE) | Prof S D Biju, Head, Department of Environmental Studies, University of Delhi | Prof Inderjit, Former Head and Incumbent Director of CEMDE of Department of Environmental Studies, University of Delhi | Prof R S Sharma, Laboratory Co-Supervisor, Department of Environmental Studies, University of Delhi | Dr Vandana Mishra, Laboratory Co-supervisor and Assistant Professor, Department of Environmental Studies, University of Delhi | Dr Faiyaz Khudsar, Scientist-in-charge, Centre for Management of Degraded Ecosystems (CEMDE) and Yamuna Biodiversity Park | Dr A K Singh, Scientist-in-charge, Centre for Management of Degraded Ecosystems, Kamla Nehru Ridge | Mr Suraj Dabas, In-charge, Garden Committee of University of Delhi | Mr A K Jain, Executive Engineer, Delhi Development Authority (DDA) | Mr Manmohan Saraswat, President, Jyoti Nagar Resident's Welfare Association (RWA) | Mr S K Garg, Vice-president, Jyoti Nagar Resident's Welfare Association (RWA) | Mr Yogesh Jain, President, Vijay Nagar Single Storey, Resident's Welfare Association (RWA) | Mr Ved Prakash, Member, Vijay Nagar Single Storey, Resident's Welfare Association (RWA)



"The idea was incubating for quite some time but we didn't know how to go about it but the grant gave us this platform that strengthened the incentive as well as provided the resources needed to carry out work of such proportions. At least 50 houses have benefitted directly from this work and with successful uptake and implementation of this technology and idea, million more households could be helped along with making our planet a better place to live." Team, Students of Department of Environmental Studios

of Environmental Studies, University of Delhi

"When we were first approached by the team of young scientists, we were a little skeptical regarding what could they do but later we became more comfortable and the results are for everyone to see! The parks are looking great. The change in people's attitude towards the parks is also visible as the trash dumping in the park has stopped and people are recognizing the park as a part of their own ecosystem, essential for sustenance."

Mr Manmohan Saraswat, President, West Jyoti Nagar Resident's Welfare Association, Delhi





## Hydro Green House, Lucknow

To make healthy nutritious and absolutely fresh food available to all, the project envisioned to change the current health-degrading habit of eating junk food to an invigorating healthy habit of eating safe and healthy food. The project developed an affordable, soil less food grower environmentally friendly Hydroponics system that grows chemical-free food and achieves high nutrition, productivity & portability. It bridges the gap by creating an affordable system which is easy to use for growing fresh nutritious food in less space and can be installed in the communities, schools or in other public places.



### The Team

Distinct Horizon, an IITian start-up from Uttar Pradesh has the vision to develop high social impact technological innovations which will lead to better health, environment and poverty elevation.

The project team included: Vishal Jain, R&D Head, Leading the Technology Development | Vaibhav Indane, Project Manager | Bheem Jaiswal, Operations Manager | Amit Verma, Fabricator | Ayush Nigam, Co-Founder & CEO, Mentor

### **Challenges Addressed**

- Constructing waterproof channels was a challenge so the team used PVC sealant followed by M-Seal.
- Even the stand with 10 channels started to sink into the floor disturbing the water level slope in the channels. The plastic interlocking planks resolved the issue completely.
- Materials especially raw iron for the building structure to conduct experimentation was expensive so the team bought secondhand metal bar at a lower cost.







• Due to a major storm which caused significant damage to the structures, many saplings could not survive in the initial phase and showed different growth rate. This, however was solved but the final completion of the structures took much longer than expected.

#### **Change Demonstrated**

Hydroponics is generally perceived as a closed system. The project demonstrated that it can be set up in an open space and could be seen as an alternative to commonly used geoponics' pots. The team grew plants with limited resources & space, which surprised and encouraged the colony residence to collectively participate in developing a feasible model for growing food for themselves and others. The project developed three types of Hydroponic setups:

- 1. White House: Easy to assemble modular closed type Hydroponics Poly House, which is covered with white PE sheet and employs underground air and water temperature moderating system.
- Silver House: Easy to assemble modular partially closed Hydroponics Poly House, which are covered with silver aluminet with 50 percent reflectivity and employs interlocking modular plastic floor.
- 3. Open House (Pot Type): Open Hydroponics system with a shade for household usage. This system will be made more customizable in upcoming future.

#### Innovations

Automating the soil less food grower technology, using a powerful processor and creating a nature friendly method for maintaining temperature, all make the product handy.

Structure of poly house is designed such that it can be assembled easily without welding or bolting and can be joined together in a variety of shapes and sizes.

Underground air and water temperature moderation system is developed with easily available materials. With the use of modular interlocking plastic planks, stands can be installed on a non-concrete floor without shrinking into the ground and disturbing the slope of channels.

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Bhahadur, Residents of Satsang Colony Bijnor, Lucknow | Gaurav, Residents of Satsang Colony Bijnor, Lucknow | Manasa Gonchigar, Consultants Engineering Physics, IIT Madras | Shail, Creative Product Designer and Consultants | Bahaar Rao, Civil Engineer and Consultants | Anuvind, Creative Produc Designer and Consultants | Lakhvindar, Farmers, Lakhimpur | Ramakant, Farmers, Lakhimpur

"It has been a wonderful experience working in this project. We are glad to apply engineering into farming. The journey went through multiple unexpected challenges, but with everyone support we have come a long way. Observing the growth of plants and later consuming has been overwhelming experience for us. We are thankful to Eco grants and Distinct Horizon for providing me a wonderfully learnt experience".

Team, Distinct Horizon

"Our colony is always ready to encourage youngsters. These boys did a great job and have opened a new gate for us to grow food. It not only brought up a less practiced method but also created a means of bringing residents closer."

Mr Bahadur, Resident and Advocate, Satsang Colony



## ► THEME: AIR POLLUTION & HEALTH IMPACTS



## Smog Reducer and Energy Conserver, New Delhi

With the pollution from carbon-emitting automobiles along with pollution from mass-producing factories, the objective of the project is solely to curb the adverse effects of smog, to the furthest reach possible, which is slowly poisoning the framework of the human body. The model acts as a catalyst in purifying the air and simultaneously conserves energy in the process. This is done when ITO glasses (conducting glasses), coated with TiO2 paste which starts behaving as a solar panel. The energy is stored into a battery which can power up small LEDs, CFLs and table fans in places where there are no electricity/ frequent power cuts.

### The Team

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The Green Earthlings Team from Academy of Technology, Hooghly, West Bengal has implemented their first ever project.

The project team included: Swarup Sarkar, Project Leader | Raksha Mohta, Member | Aneek Das, Member | Arindam Sain, Member | Koushik Maity, Member | Jyoti Ghosh, Member | Anish Dutta, Member | Aman Yadav, Member | Anirban Dey, Member | Arghya Konar, Member | Souvik Roy, Member

### **Challenges Addressed**

- Delay in the delivery of raw materials.
- Cancellation of orders from sellers during the pandemic- COVID-19.
- Unavailability of labs for experimentation in lockdown.
- Uncertainty of weather (cloudy/rainy days).







#### **Change Demonstrated**

A noticeable change in the quality of the air was seen where the experiment was conducted. The pollution levels dropped significantly and a clearer air was observed. This is the change that was initially envisioned to be brought about in the environment.

The product help in breakdown of smog particles into harmless substances and simple by-products is carbon dioxide and water which is used by plants to produce fresh oxygen; thus, creating a balanced cycle between nature and humans and maintaining that healthy co-dependency.

#### Innovations



"We really appreciate and thank ECO Grants for providing us with this opportunity and we are beyond privileged to have been a part of this undertaking. We appreciate the level of exposure we were provided with. We would like to offer our gratitude to every single person linked to this grand green initiative for guiding us till the very end and for teaching us the importance of time management, teamwork and the necessity to do our part in keeping the only known habitable planet green."

#### Team, Green Earthlings

"With immense happiness in my heart, I feel proud of my students, as a teacher, for the invaluable work that they have done for society in whatever percentage they could. I have nothing but appreciation for the cognizance of these young talented minds and their team- THE GREEN EARTHLINGS, who have stood up and decided ITS TIME TO LEAD! I wish them the very best in their endeavors." Dr Abhinaba Dutta,

Assistant Professor, Academy of Technology, Hooghly



## **Ecological Approaches for Air Pollution**, Dehradun

The tree species for plantation in urban spaces are selected based on the beautification, survival rate, viability, water in-take etc. However, the 'atmospheric pollution adsorption capacity of leaves' should be an important indicator for deciding urban landscape trees. The project experimented to identify effective landscape tree species that can absorb the atmospheric particles efficiently and reduce exposure to humans. The exposure of children and elderly people towards atmospheric particulate matter can be reduced. The team considered the 'High Adsorption Capacity of Leaves towards atmospheric pollution' as a parameter which is vital for a growing city like Dehradun. Ashok tree species have High Adsorption Capacity (HAC) or Leaf Adsorption Capacity (LAC) for air pollution tolerance and thus recommended by the project for urban landscaping.





### The Team

The team of budding scientists from Air Pollution Monitoring and Assessment Laboratory of Doon University, Dehradun are working on monitoring various air pollutants at different locations of Uttarakhand. They have published related research works in several high-quality journals.

The project team included: Vignesh Prabhu, Project Lead | Sandeep Madhwal, Project Member | Srishti Verma, Project Member

### Challenges Addressed

Growing plants at a controlled condition was a big challenge, and the team spent a lot of time doing so. Also, promotion of the effective tree species was a task, which they overcame by taking support of the university network.



### Change Demonstrated

- Through the project, effective tree species were discovered which could adsorb the particulate present in the atmosphere.
- Initially, only 10 species (mango, litchi, silver oak, pine, pipal, sal, ashok, neem tree, papaya tree and bottle brush) were tested.
- However, since Air Pollution Tolerance Index (APTI) for Ashok tree was high and in conclusion, it
  was found that this species could be planted in vulnerable areas to reduce the exposure of air
  pollution.
- Identified Ashok tree as High Adsorption Capacity (HAC) or Leaf Adsorption Capacity (LAC) species.
- The team planted 20-30 saplings of Ashok tree indicating high level of air pollution. The results are being monitored.
- The lab setup for conducting leaf adsorption capacity experiment can be utilised by students or interested groups to analyze any other species in the future. This can lead to continuity in experi mentation with more objectives and scope and the progressive results can be documented in a long run.
- Increase in green cover in the city can be visualized. The Ashok tree is a dense and long living tree that can help in growing the green cover of the city. If more plantations of this tree species is supported with appropriate maintenance, then, it can lead to not only the increase of green cover, but also decrease the level of atmospheric particulate matter.
- This could also result in reducing ever growing impact of air pollution on the health especially on children and elderly people.

#### Innovations





Included new parameter named Leaf Adsorption Capacity (LAC) as a criterion for plantation.



### Acknowledgment

Dr Vijay Shridhar, Faculty and Assistant Professor, Doon University, Dehradun | Suraj, Laboratory Assistant, Doon University, Dehradun

"This project is unique in its approach as it involves finding indigenous tree species that are tolerant to air pollution. We, the members of this project have worked tirelessly both on field and in the laboratory to find the tolerant tree species. Although many species were found to be tolerant, Ashok tree due its dense and tall nature, can be effective. Moreover, it can be easily planted. From day one, ECOGRANT team have been really good at managing things. We are pleased to be a part of this project."

> Team, Air Pollution Monitoring and Assessment Laboratory, Doon University, Dehradun

"I am happy that, our students have worked on exploring tree species that can hinder the path of air pollution and reduce its concentration, we appreciate ECOGRANTS for their commitment and trust."

> Dr Vijay Sridhar, Assistant Professor, Air Pollution Monitoring and Assessment Laboratory, Doon University, Dehradun





## Biofuel from Used Cooking Oil (UCO), Jaipur

This project is concerning converting Used Cooking Oil (UCO) considered as waste, which has been unfit for human consumption, to a renewable resource in the form of Biofuel. The issue of wrong disposal or illegal selling of Used Cooking Oil in the market is a very huge concern these days. The project through offline and online awareness programmes "Ab India chalega UCO se" highlighted health impact of used cooking oil with individuals, small and large chain of restaurants, resorts, cafe, hotels, and other places where oil consumption is very high to stimulate converting used oil as important feedstock for the production of Bio-fuel. The Biofuel is an alternative which is less expensive, renewable and clean. Bio-Fuel Authority of Government of Rajasthan (BFA) has guided and supported the team in promoting eco-friendly recycling of UCO resulting decrease in waste and water pollution.

### The Team

The young team from Watershed Consultant Organisation (WASCO) has been working for ecology development through water conservation, forestation, horticulture plantation, soil conservation. It builds the capacities through training and raising awareness on environmental issues, soil and water sustainability.

The project team included: Shipika Singh, Team Coordinator | Taranjot, Social Media Manager | Ajay Pratap Singh, Awareness In-charge | Yashwashni Rathore, Survey Coordinator | Neha Shekhawat, Finances

#### **Challenges Addressed**

- Reluctance of people to interact on this issue sometimes acted as barrier in reaching out to large groups.
- Enforcement of regulations of Food Safety and Standards Authority of India (FSSAI) is not strictly being adhered.









Lack of awareness about Repurpose Used Cooking Oil (RUCO) App and launched by FSSAI

### **Change Demonstrated**

The groups who were involved in the awareness programmes became aware of the correct usage and disposal of used cooking oil. The people who showed interest started working as UCO entrepreneurs in Jaipur. The project also connected interested restaurants and hotels to UCO collectors

#### Innovations



#### Acknowledgment

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Shri Surendra Singh Rathore, CEO, Bio-Fuel Authority (BFA) of Rajasthan | Shri Maninder Jit Singh, Deputy CEO, Bio-Fuel Authority (BFA) of Rajasthan | Shri Sushil Vaishnav, UCO Collection Agent & Co-founder, Arises Enterprises | Shri Sarthak Soni, Bio Diesel Manufacturer, Rajputana Biodiesel, Phulera, Jaipur | Watershed Consultancy Organization (WASCO) Team

"ECO Grant is a great platform who is helping new entrepreneurs to work towards their idea. This project is being conducted in five cities through which we came into contact with other youngsters with their innovative ideas. We are obliged that we are part of this project and got to know these people with their ideas. Along with this we got the knowledge how a program has to be conducted and got chance to work with BFA."

#### Team, WASCO

"I appreciate the work done by the team in conducting awareness sessions in colleges and mobilising the youth to be conscious of the products they use and consume in their daily lives. I'm sure they are now more informed about life time sustainability and reuse of products like cooking oil. More programmes like Eco Grants should come to support the youth and help government in spreading the awareness among local population of a state."

> Shri Surendra Singh Rathore, CEO & PD, Biofuel Authority, Govt. of Rajasthan



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## WRICKS: Building for Sustainable Future, Udaipur

Waste plastic, demolition waste, fly ash, and marble slurry are among top wastes in the world in terms of annual generation. Some technologies have been identified for each of the waste but none of them have been successful enough to consume all the wastes. The project created low cost and environment friendly bricks, paver blocks, tiles and panels called Waste material bricks (WRICKS), for low cost housing with the raw materials required in making these products being wastes like waste plastic, fly ash and marble slurry. The waste plastic acts as a binder, fly ash and crushed demolition waste act as filler and marble slurry acts as both a filler and fire retardant. The team has also filed patent for this technology and will be ready to start commercial production by early 2021.g.

#### The Team

The young final year students of WRICKS team are from the Civil Engineering Department of Techno India NJR Institute of Technology, Udaipur, Rajasthan. Techno India NJR has always believed that innovation and entrepreneurship are the only way to effectively overcome the challenges faced by Indian society.



The project team included: Kunjpreet Arora, Team Leader | Gaurav Suthar, Team Member | Sayed Aamir Hussain, Team Member | Nikita Sharma, Team Member | Kajol Parihar, Team Member

### **Challenges Addressed**

To prepare the raw materials to meet the input requirement of extruder, there was a need to completely mechanize the raw material pre-processing. For this a requirement of two additional equipment i.e. Shredder for chopping waste plastic into smaller pieces and Crusher to process demolition waste to required size was needed. To meet this more pressing and crucial requirement for mass production, the team decided to cut down on hydraulic press and fabricate a simple press using hydraulic jack. With the two-equipment material, pre-processing has become very fast. Even, for ramping up production a larger size heater-mixer is designed.



#### Change Demonstrated

The project achieved up to 26 MPa of strength for bricks/paver blocks with optimum mix proportion and appropriate raw materials made using the technology. The team is at the final stage of commercialising production of bricks and paver blocks. The project was recognised at several forums:

- First Runner Up at TISS, Social Venture Challenge- iPrenuer'19, TATA Institute of Social Sciences, December 2019.
- Selected for Launch and Zoom 2.0, Accelerator Program by IIM Udaipur.
- The project idea was selected as one of the 100 Great Ideas by Indian Express 100 Great Ideas.
- Invited to present the work at workshop on "Circular Economy and 5R Strategy for Industry. Challenges and Opportunities" organised by Indian Rubber Institute, February 2020.



#### Innovations

## 01

Eliminated use of fertile soil and coal thus conserving scarce natural resources and reducing emission of greenhouse gases.

#### 02

Product has crafted competitive advantage over fly ash bricks because of the expensive raw materials.

#### 03

Developed environmentally sustainable technology which can be thought of as "killing poison with poison" where hazardous waste materials replace scarce natural resources as raw material to result in high quality, low cost products.

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### Acknowledgment

Dr Pankaj Porwal, Principal, Techno India NJR Institute of Technology, Udaipur | Sadasiba Behra, Startup Fellow, AICTE | Gaurav Kanthaliya, Incubation Ecosystem Development, Indian Institute of Management (IIM), Incubation Centre, Udaipur | Mr Arun Vyas, Superintending Engineer, Udaipur Municipal Corporation.

"For us ECO GRANTS is our first step towards building a Startup story, with the help of them we could build our Minimum viable product and do its validation in the market. Eco Grants have been tremendous catalyst for Wricks that also connected us with the right people and mentors to contribute in Wricks. We hope to begin commercial production of our products soon." Team, WRICKS

"I am glad that the team Wricks has made very good process in last one year. The support and guidance of Eco Grants has played a key role in the success of team Wricks and I am very grateful to them for the same. I wish team Wricks all the success for their endeavours."

R S Vyas, Director Techno India NJR Institute of Technology, Udaipur



### • THEME: SANITATION AND HYGIENE



## Jyotirgamaya (Leading towards Light), Dehradun

Often, people tend to throw garbage on roadside due to lack of access of dustbins or urinate roadside as public toilets location are not known to them. The project Jyotirgamaya is an android application and website for Dehradun focussing on improving sanitation conditions of the city. The team want to reduce incidences of littering, urination and would intend to provide women access to safe & hygienic solutions. **Dustbin and Toilet Locators Mobile App** is an information tool for the citizens of Dehradun and tourists to locate safe and clean public utilities. The mobile app user can also complain by uploading pictures of dirty public toilets and areas, or broken dustbins. Uniquely, the project partnered with Dehradun Municipal Corporation and NGOs to resolve maintenance complaints of the users for promoting clean and hygienic city. The app users can also add the location of new dustbins found; post verification it gets added to the database. Additionally, donations can be used to set up new dustbins.

### The Team

The students from Computer Science Department of Dehradun Institute of Technology (DIT) University have conceptualised the initiative. DIT University is a renowned university where knowledge meets achievement, history meets the future and ambition meets inspiration.

The project team included: Sneh Lata Aswal, Mentor | Priyanshi Shah, Team Leader | Sourabh Prakash, Overall Manager | Himanshu Gupta, Android App Developer | Ranjeet Singh, Web Developer.

### Challenges Addressed

- Collection and triangulation of the data and information for the mobile app.
- Picking up garbage regularly by contacting the municipality.
- Promotion of the app and website through advertisements and pamphlets.
- Need for constant monitoring of app, website, new locations and dustbins and managing new information.

### Change Demonstrated

- Jyotirgamaya have placed 40 dustbins in pairs (with a capacity of 100L each) around the city for dry and wet waste collection.
- The team reached out to tourists, residents, shopkeepers, school children, youth and municipality office for promoting the use of mobile app and the use of facilities located in the app.
- The team covered almost the entire Dehradun City for dustbin and toilet locations and also plotted new areas especially where the footfall is high.
- During the testing phase of the app and website, the group received good responses by the residents with over 100+ downloads in a month.
- They received positive reviews on Play Store, from the tourists visiting Dehradun and praises from the Commissioner on the adoption of the App.
- The promotion through population mediums also helped in raising awareness among the youth and children.

### Innovations

First ever mobile app and website for locating dustbins & toilets in the city of Dehradun.

Two different types of dustbins recyclable and non-recyclable

are set up.

Any complaints related to broken dustbins are being taken care of by the NGO or the Municipality.

The app has to the applicability of being used by the govt to verify the work of the contractors who have built the toilets and its conditions by getting them to upload photos on the app









#### Acknowledgment

Dr K K Raina, Vice Chancellor, Dehradun Institute of Technology (DIT) University, Dehradun | Shri Sunil Uniyal 'Gama', Mayor, Dehradun Municipal Corporation, Dehradun | Mr Vinay Shankar Pandey (IAS), Municipal Commissioner, Dehradun Nagar Nigam, Dehradun | Dr Amrita Bahl, Senior Director, HRIDAY

"It was a wonderful experience in doing the project funded by ECO Grants for maintaining the sanitation and hygiene. Our app and website will be useful for the people to maintain cleanliness around them. We believe that a clean environment is the key to a good living world. This will lead to the betterment of the Society."

#### Team, Jyotirgamaya

"Very good work. Well done. Keep up the great work. I wish all the success to the team in keeping the city clean and spreading awareness among the people. We are very happy that Eco-Grants has provided a platform for the changemakers to benefit the society and always ready to welcome such initiatives

Dr K K Raina, Vice Chancellor, DIT University, Dehradun





## The Crimson Project, New Delhi

To curb the issue of lack of menstrual hygiene, stigma surrounding menstruation and access to viable & economical sanitary napkins, the project Crimson was initiated by Enactus SVC based on extensive research including a survey of 500+ respondents to switch to Reusable Sanitary Napkins. The Crimson project strives to effect change in society by generating employment and providing viable reusable menstrual pads as low cost solution. The sanitary napkins are produced by a group of women having basic stitching skills and further trained by the young team to manufacture the reusable pads. The goal is to make these women financially independent. Cloth sanitary pads also address the problem of waste generation as they are perfectly hygienic with a life of three years and can be composted and recycled easily. Series of awareness sessions are conducted in low-income communities for addressing social stigma, promoting menstrual hygiene and cloth sanitary pads usage.



### The Team

Enactus is a non-profit organisation established in various colleges with a community of students, academic and business leaders committed to using entrepreneurial action for transforming lives and shaping a sustainable world. Enactus Society instituted in Sri Venkateswara College, University of Delhi has worked upon multiple projects of social relevance..

The project team included: Aastha Mohanty, Project Head | Harshita Sharma, Finance Head | Kaavya Malhan, Project Head | Crimson Project Volunteers | Guidance & Support by Mokshi Jain | Ananya Kumar | Abhishek Chopra | Mehar Sindhu | Tanya Gupta | Riya Sapra

### **Challenges Addressed**

- Faced issues in obtaining a certification for the product due to technical faults at the Sigma Testing Centre.
- Concerns with the notion of being backwards and "going back" to cloth.
- Communicating the issue of menstrual hygiene with adolescent girls and women at the community was difficult. The project partnered with various community based organisations to address this.



#### Change Demonstrated

- Understanding among the adolescent girls and women on basic menstrual hygiene, urinary & and reproductive tract infections and infertility increased.
- Livelihood opportunity provided to women and entrepreneur skill enhanced.
- Distributed over 2000 pads to over 600 women over a course of four months through awareness and distribution sessions.
- Successfully impacted the lives of 1200 women and 200 adolescents.
- Shipped 1400 pads to an NGO Orikalankini in Karnataka during the outbreak of the Covid-19 pandemic.
- Won 2<sup>nd</sup> position in "Start-up Showcase" organised by Maharaja Agarasen Institute of Management Studies.

#### Innovations

Created period positivity solution by designing a reusable sanitary napkin for women that fits their current habit.

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Three layers of absorbent material make the ultra-thin sanitary napkin leak proof for better protection. Cloth sanitary pads address the problems posed by disposable products. The pads can last for 60-75 washes, which averages to a life of three years making it viable to switch from the single use sanitary napkins. Due to the hesitation in usage of the pad, re-designed the product giving it a new rectangular shape making it easier and more convenient for women to dry them.

### Acknowledgment

Dr S Venkata Kumar, Principal, Sri Venkateswara College | Nandita, Society Convenor, Enactus, Sri Venkateswara College | Krishna Kumar, Society Convenor, Enactus, Sri Venkateswara College

"Eco-Grants has given our project the opportunity to expand to an extent which was earlier impossible. With the mentorship and grant funds, we have been able to reach out to women and adolescents in an around Delhi NCR to adopt healthy menstrual practices and switch to reusable sanitary napkins."

#### Team, Crimson Project

"The project has helped us a lot, the session educated my daughter and I about menstruation and made me realise it was okay to talk freely about it. I'm glad that we had this opportunity. All my colleagues have now started to talk about periods in a more comfortable space. They also gave us pads to use and they were extremely comfortable. It is much better than the cloth we used and also helps us save money. I thank you for this experience."

Sheela Didi, Khwaab Foundation



## FASAL AMRIT – Way for Low-Water Agriculture, Udaipur

Super Absorbent Polymer, also known as SAP, is a new type of macromolecular synthetic water absorbing polymer material. Super Absorbent Polymers used in agriculture are called polyacrylates. Based on the concept of polyacrylate, the project provided a solution to the chemical-based SAP by creating pollution free and completely biodegradable SAP, manufactured with fruit peels as key ingredient. The product work as an organic fertilizers as well as water retention natural polymer for farmers, enabling growth of more crops at low costs. The product use has led to increase in productivity in the agricultural fields with an additional up to 10,000 times water retention capacity. Thus, the product provides a solution to low water availability and a facility to irrigate more land in same water resource, thus improving economy. With affordable cost, the product is available for farmers of different income groups.



### The Team

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The young team is from the Agricultural Department of College of Technology and Engineering, Udaipur. They have won several awards for this innovation, including an award by the Honourable President of India.

The project team included: Narayan Lal Gurjar, Founder and CEO | Puran Singh Rajput, Co-founder | Shashi Pratap Singh, Chief Operating Officer | Ankit Jain, Marketing Manager | Buddhi Prakash Gurjar, IT Head



- Sufficient space was taken on rent for manufacturing the product.
- Microwave Solar Dryer was bought for drying and grinding process.
- Relevant and suitable distributors approached for marketing the product.
- Working with Okinawa University, Japan to fix fungus and mould problems.
- Initiating a small production unit in Jhalawar for raw material. .
- Better packaging facility and essential product certification by Social Alpha Programme of IIT Kanpur.

#### Change Demonstrated

- Aided the farmers who are struggling to maintain their crop production level due to water scarcity caused by irregular rainfall.
- Supported gardeners and nurseries having water availability issue.
- Provided water and organic fertilizer solution to vertical agriculture/gardening in urban spaces.
- Added to farmers' income by increasing overall production with lower costs. Overall cost reduction is of about 60-70 percent.

#### Innovations

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Organic and biodegradable product to increase water Eco-friendly, easy use, Conserve ground water by retention capacity of crops. It pollution-free product and decreasing the demand of absorbs water in huge quantity causes no harmful impact irrigation. and stores it for a longer on crops as well as soil. duration and then releases water slowly as and when necessary to the roots and soil. High durability as single time use will be effective

for three-four months.



### Acknowledgment

Dr S M Mathur, Professor & Head of Agriculture Department, College of Technology and Engineering, Udaipur; | Aanad, Shop Owner, Aanand Juice Center, Udaipur | Prayag, Shop Owner, Mahaveer Banana Chips Centre, Udaipur | Madhulika Singh, Senior Editor and Reporter, Rajasthan Patrika | Dr I J Mathur, Village Testing Coordinator, Sukher, Udaipur | Sukher and Hayla, Village Farmers, Udaipur | Hiralal Dangi, Farmer, Udaipur | Banyan Roots | Balaji Floor Mills | Ganpati Traders | PVA Gardening.

"Since we have started to work on the project, we faced the problem of financial support every time but after getting financial support from Eco-Grant, we were very confident to finish the field testing of the product and bring the product into the market and can help the poor farmers in the low developed region."

#### Team, Eco-Friendly Water Retention Natural Polymer

"Firstly I would like to thanks to Eco Grant Partners for their valuable feedback, mentoring, co-operation, inspiration, and the most important financial support. Through Eco-grant support, we completed our testing, production and marketing. We tested our product in our college farmhouse as well as other places with very good results. We saved water up to 40 percent and increased production up to 1.5 times. Our target will reaching 10,000 farmers up to 2022. I wish entire EF polymer Team for their bright future."

Dr S M Mathur, Head of Agriculture Dept, CTAE, Udaipur, Project Mentor



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OUTCOME & IMPACT

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#### **ECO Grants Impact**

Identified & incubated young change makers for a sustainable tomorrow ۲

## Sectoral Impact

Connoted alternatives of disposable sanitary napkins	Conser soil to scarc res	rved fertile preserve e natural ources		Demonstrat up-cycle plas material fro everyday wa	ed stic m ste	Developed a feasible model for growing food in urban spaces	
Enhanced soil nutrient balance for native species growth	ed soil balance species vth		Improved in the number of butterflies and birds		of d	Increased water retention in the agricultural fields	
Informed 1200 women and 200 adolescents about menstrual hygiene	Lessen coal to emis greenho	ed use of o reduce ssion of ouse gases	Offered viability for access to safe and clean toilets		lity afe ets	Promoted biodegradable sustainable cloth based sanitary napkins	
Raised awarene the range of en mental issues b activities	Areness on of environ- ues by DIY rities Reduced the water requirement for crops by using natural polymer Sensitised on used cooking oil as renew- able resource in the form of Biofuel			ensitised on used oking oil as renew- le resource in the form of Biofuel			
Signified air pollution challenges by LAF based species Utilised hazardous waste materials for high quality, low cost and environmentally sustainable products						ous waste quality, low inmentally products	

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## **RECOMMENDATIONS AND WAY AHEAD**



Disseminate the innovations' results via films, green book and social media to government representatives, international & national civil society organisations, policy makers, experts and youth from several institutes and colleges

Incubate and support other youth green innovations and take the existing innovation to scale

Reach out to youth groups in other cities facing aggravating environmental conditions

Institutionalise partnership with like-minded organisations government and non-government organisations for technical and non-technical expertise to replicate the innovations and support new ideas



### **TESTIMONIALS**

#### Guests



Mr Amitabh Kant, CEO, NITI Aayog

#### **ECO GRANTS Partners**



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Through this initiative, we are one step closer in reaffirming our commitment to a cleaner and sustainable planet. We are duty-bound to bestowing a greener and eco-friendly legacy to our children. PVR NEST is proud to partner with Plan India and C4Y and contribute towards this important cause of fostering environment sustainability by developing practical and scalable solutions for environmentally buoyant communities. PVR NEST's 'ECO Grants' initiative combines altruism and movement to create awareness and dialogue on the Sustainable Development Goals (SDGs).

Ms Deepa Menon, Senior VP – CSR, PVR Ltd

Plan India to be updated .....

C4Y is very happy to partner with the unique ECO Grants initiative. C4Y's focus area is youth and our endeavours are always geared towards harnessing their immense potential. ECO Grants is our actionable partnership in that direction. It has not only funded youth ideas and solutions to environmental concerns but also provided a seminal platform for this very vibrant and important segment of our population.

I am encouraged by

PVR NEST's ECO Grants initiative. For organisations, one of the key business objectives should be to care for the society and the

environment we operate in. In India, more

organisations need to commit and invest

in long-term sustained vision for solving

environmental and other social issues that

help them become drivers of change for

sustainable societies.

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Mr Rahul Bose,

Actor-Director and

Activist

Ms Alka Tomar, Chairperson Centre for Youth

#### Sectoral Expert Committee Jury



Shireen Kurian, Consultant, Corporate Watch, Praxis India I think the issues that we are engaging with here, whether it has to do with green space, waste management, air pollution, are very relevant. And to see youth engaging and thinking about it is very, very encouraging. I think this is something that needs to be encouraged and supported.

Padmapriya Sastry, Associate Programme Director, BBC Media Action





Shikha Srivastava, Deputy Director, Indo-Global Social Service Society (IGSSS)

So, from taking the idea into practice, they need handholding, they need financial support and also mentoring. I think this platform will be helpful for them.

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This has been

Madhu Bhatnagar, Consultant, Environment

Programmes, The Shri Ram School (TSRS)

the most wonderful I think a Pandora's box just got open

of so many ideas and innovations. We also need look at

nature for the ideas and inspiration. And that's what I'm

trying to advocate, that this is something biomimicry. It's

time that we actually put our thinking down and look at

nature for the ideas, inspiration and results. They have all

the answers to all our problems, and they're the solution lies.

**Dr Veena Khanduri,** Executive Secretary, India Water Partnership (IWP)

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The selection criteria and process followed was robust. The final shortlisted concepts are worth supporting as each of these can be made scalable, replicable and sustainable. This is a great platform for encouraging youth to champion green solutions and innovations"

> Ms Rita Roy Choudhury, FICCI Assistant Secretary General & ECO Grants Jury Chairperson

"I'm really glad that that I came today because it's It was fantastic and it was refreshing to hear young people so passionately talk about what they believe in. I think it's a wonderful opportunity, I mean, to have to be able to mentor young people, especially when they're talking about social change and social impact and social businesses, I think is the way forward."

Nirmala Nair, Former Head India Team, WASH United & Founder Director, Kaboom Social Impact Pvt Ltd





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## ECO GRANTS PARTNERS

# **PVR** nest

PVR NEST (Network for Enablement & Social Transformation) was founded in 2006, as a social arm of PVR Ltd, that envisions sustainable, liveable cities with safe multi-utility spaces that empower women & children. PVR NEST's core philosophy is to develop and promote public-private partnerships that work on urban sustainability issues and to create a safe environment for all sections of the society. The trust believes in educating, empowering and building a collaborative society by extending ongoing support to the vulnerable sections of the society via its various programs. The programs of PVR NEST are aimed to provide sustainable solutions to the most fundamental problems such as safety, health, education, and workforce participation, faced by the underprivileged.



Plan India is a nationally registered not for profit organisation striving to advance children's rights and equality for girls, thus creating a lasting impact in the lives of vulnerable and excluded children and their communities. Since 1979, Plan India and its partners have improved the lives of millions of children and young people by enabling them access to protection, quality education and healthcare services, a healthy environment, livelihood opportunities and participation in decisions which affect their lives. Plan India is a member of the Plan International Federation, an independent development and humanitarian organisation that advances children's rights and equality for girls. Plan International is active in more than 70 countries.



Centre for Youth is a self-sustaining and not-for-profit organisation working for the welfare of the rural and urban youth. C4Y facilitates the participation and civic engagement of youth at all levels of governance by providing them sustainable avenues and the right platforms to further their growth and encourage their participation for social and financial inclusion. Since its inception in 2014, C4Y has conducted several innovative programmes, seeking to further its thematic focus. C4Y has been implementing Corporate Social Responsibilities (CSR) programmes. The organisation has undertaken several outreach, awareness and behavioural change communication programmes pan India. C4Y also has been working on research, evaluation and documentation of the projects.



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