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PROFIT FOR GOOD

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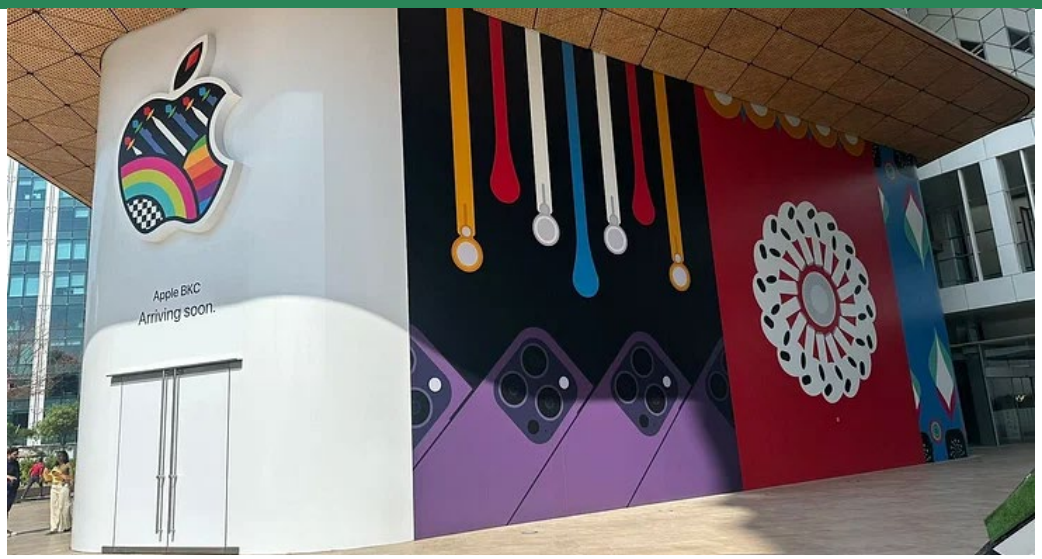
Trends, Analysis Green Products, Green Books, Youth Entrepreneurship

Purpose
To excite entrepreneurs, executives and graduate students about immense opportunities in green business.



Apple all set to say "Hello" to its 1st Retail Store in India

Apple Opens Carbon Neutral Stores in Mumbai & Delhi

By SN Staff

When Apple opened its first store in India in April 2023 in Mumbai, it followed its policy of opening only carbon-neutral stores worldwide. Apple's corporate office in Cupertino, California, went carbon neutral in 2020.

Apple's 28,000 sq. ft. store at BKC, Mumbai, is designed to be one of the most energy-efficient Apple Store locations in the world, with a dedicated solar array and zero reliance on fossil fuels for store operations. The store is operationally carbon neutral, running on 100 per cent renewable energy.

The store's design, according to a report by AP, is inspired by the iconic black and yellow cabs which happen to be unique to the city.

Apple's second store opened in Saket in Delhi a few weeks after the first in Mumbai. The Delhi store is located in SelectCITY Walk mall. Even this store runs on 100 per cent renewable energy and is carbon neutral.

Apple has announced that it is committed to becoming carbon neutral by 2030. "Every Apple product will be made with clean energy and even more recycled and renewable materials. Because the earth won't wait, and neither will we," says a company note.

Apple said about 20 per cent of the materials in products are made from recycled or renewable sources. "Our goal is to one day reach 100 per cent, and to end our reliance on mining altogether. Where we continue to extract materials, we maintain the highest standards in our due diligence and respect for human rights. And we're accelerating our work with new goals to use 100 per cent recycled cobalt, tin, gold, and rare earth elements in key components by 2025."

It adds, "One thing is clear: We're closer than ever to the day you can hold your Apple device and be confident in the knowledge that it has net-zero carbon impact."

https://www.apple.com/in/environment/

Renewable Energy Recruitment Specialists - https://www.worldwide-rs.com/

1M1B Launches Green Jobs Accelerator

By SN Staff

1M1B (One Million for One Billion), an organization developing and mobilizing India's future-ready tech workforce, in partnership with Aditya Birla Fashion and Retail (ABFRL), has announced the launch and implementation of the green jobs and sustainability accelerator program in climate change.

The program aims to create awareness and encourage the participation of young minds in the fight against climate change. ABFRL partners with 1M1B to mobilize youth for Climate Change action.

What is a green job? According to Ananth Aravamudan, Sector Lead for Climate Action at Villgro, green jobs are livelihood opportunities that either create climate-friendly products or adopt processes that go in hand with them. India has a bright opportunity to provide employment to millions in the green economy space. Waste management, agro-forestry, micro energy systems, Carbon Footprint Management, water management services, green supply chain and logistics – are a few areas that will need massive skills. Carbon credits, green finance, and green tech are other more challenging areas that offer big potential.

Notpla - LONDON MARATHON 2019!

Startups are Working Hard for a Plastic-free World

By Ram Ramprasad

Ram Ramprasad sifts through recent breakthroughs, led by startups, in ridding the world of plastics, and recommends how India can catch up quickly and smartly.

Plastics have become the world's number one menace. They have decimated all ecosystems – microplastics now run through the gut, stool, and tissues of all life forms both marine and terrestrial. Nano plastics paint a more dystopian future.

In 2021, the world produced 391 million metric tons of plastic (greater than the weight of all humans on Earth – 350 million tons) compared to 1.5 million in 1950, this number is expected to reach 1.1 billion by 2050. Unless drastic steps are taken, we will turn our land and oceans into a plastic oasis.

Roughly half of what we produce today is single-use (SUPs). Commodity-type plastics, the most common account for roughly two-thirds of plastic. It is classified under six major categories based on end-use and the type of chemical processing applied – this further adds to the complex challenge of recycling a mixed bag of hard-to-sort plastics.

The cheap availability of virgin plastic has also been a disincentive for recycling. Therefore, it is not a surprise that only 9% gets recycled globally, and about 10-14% gets incinerated. The balance just finds a home wherever the human decides to dump it. It is time we create an ecosystem that encourages entrepreneurs to build diverse start-ups that disrupt existing plastic-dependent businesses and create thousands of jobs in the process.

Our primary focus must be to replace plastic via novel biodegradable alternatives; the secondary focus must be to recycle or biodegrade plastic waste. A plethora of innovations must be encouraged – skewed to nature, biology and microbiology – they use minimal energy, unlike current plastic production systems that use high energy for both production and recycling. Smart ideas sometimes make a big impact on our everyday lives. For example, we put a man on the moon before we had wheels on our suitcases, The common man needs to see the impact of plastic reduction in his everyday life. Let us learn and leverage some of the few best practices detailed below.

Developing Alternatives to Plastics – Startups and Strategies

Startups are creating several products that can replace plastics. Mushrooms, orange peels, seaweed, bamboo, rattan, and several plant-based materials are all being used as alternatives. The Plastics Innovation Award recently granted its prize to three startups using seaweed – Sway, USA; Zero Circle, India; and Notpla, England.

Participants of the **London marathon drank water from Notpla's single-use sachets** instead of the single-use plastic bottle. All these companies are engaged in producing a variety of alternatives to plastic ranging from packaging materials to single-use items. There are 12,000 species of seaweed, they grow 10 times faster than land-based crops sometimes growing up to one meter per day, they don't require fertilizer or pesticides, seaweed plastic products are 100% home compostable, degrade in seawater, do not compete with land-based crops, seaweed products are sealable and can be used in a variety of food packaging. However, there are many other options such as bamboo that grows fast and grows on degraded land. It is now being used to create a variety of tableware products including straws.

The startup, CHUK, India, uses sugarcane waste to manufacture compostable packaging and tableware, their biggest customer is the Indian Railways. GALY, USA, is growing cotton in a lab with a significantly lower land and water footprint, startups need to emulate such a model to replace plastic bags with cloth bags.

The startup Nohbo, Florida, has a vision to encapsulate all personal care products in water-soluble films – their drop-size single

dose pods when exposed to a large quantity of water dissolve to produce a personal care product such as a shampoo, body wash, shaving cream. The performance and quality of the products are comparable to branded products. However, Nohbo significantly reduces the plastic personal care product footprint through its unique technology that allows a consumer to use a metal container. Giant multinationals may need to emulate such innovations.

There are many other companies using a variety of plant-based materials to switch from plastic packaging to more sustainable alternatives such as Traceless, Germany; TIPA, Israel; Shellworks, England; IUV, Italy; Pulpac, Sweden.

Strategies for Consideration

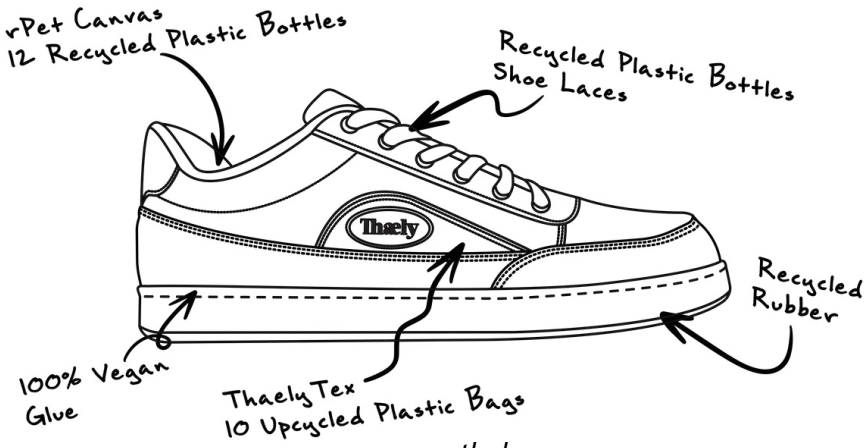
- Every company must have a goal to replace 1-2 plastic items every year with biodegradable alternatives. E-commerce, airlines, personal care products, the food industry, the water bottle & beverage industry. They should plan for more ambitious goals. Single-use plastic items account for 50% of the plastic waste. The "E" in the ESG can also stand for disruptive innovation that addresses environmental issues in a significant manner.
- Major food chains and restaurants need to switch to a non-disposable culture, e.g., foster innovation for a liquid CO2 dishwasher (liquid CO2 is non-toxic, biodegradable, fully recyclable, and uses zero water).
- Ayurvedic or herbal product industries in India can easily switch to biodegradable packaging since their business model is already centered on these lines.
- Startups must explore the vast field of bio-composites and materials science, they can replace both plastic and metal.
- Encourage the growth of lab-based meat, it may free up a significant amount of land and water to grow plant-based plastic alternatives.

Startups recycling plastic to make profitable products

A 23-year-old entrepreneur started a shoe company that mostly uses plastic to manufacture its sneakers and shoes that are now sold worldwide. His company, Thaely, India, uses 12 plastic bags and 10 plastic bottles to make a single shoe.

Licella, Australia, is converting plastics to oil. Mura Technologies, UK, converts plastic waste to liquid hydrocarbons and gas and supplies it to the petrochemical industry.

23-year-old Entrepreneur who uses 'Thaley' to Make Sustainable Shoes! – https:///leverageedu.com/



thaley.com

There are several other startups converting plastic waste to useful products; ReNew LLP and Brightmark Energy convert plastic waste to fuel.

Strategic Consideration

Some individuals and organizations are advocating taxing virgin plastic, banning its use, or even phasing them out in a few years. Cheap virgin plastic is a huge disincentive to recycling. Countries must implement these ideas without delay. Recycling technology has made significant advances in both up-cycling and down-cycling to create quality plastic products.

Startups Need to Leverage New Research

Polypropylene, a common widely used hard-to-recycle plastic that accounts for 28% of all global plastic waste has now been successfully biodegraded in the lab by researchers at the University of Sydney. Two common strains of fungi typically found in soil and plants – Aspergillus Terreus and Engyodontium Album were able to biodegrade the recalcitrant polypropylene. The findings appeared in the April 14, 2023 edition of NPJ Materials Degradation. Scientists have observed fungi growing on carpets thrown in landfills and other odd objects.

Strategic Considerations

- Universities must encourage students to address the urgent problems of the world and become eco-entrepreneurs. Social scientists and behavioural economists need to recommend the right solutions.
- Universities must research microbes that contribute to the fast growth of seaweed. Develop solutions to grow them in a lab on a mass scale.
- Research microbial activity in landfills to develop appropriate solutions.

Leverage Countries' Best Practices

Germany, Austria, and South Korea and a few others rank high on the recycling scale. Germany with its green dot program encourages manufacturers to reduce their packaging material and/or seek better alternatives. Fees vary in the green dot program, skewed in favour of companies making the right efforts on the packaging. However, if a manufacturer doesn't participate in the green dot program he must take on the responsibility of collecting the packaging waste and recycling it. Austria and South Korea have banned the use of certain plastic items. Singapore has only one landfill. Norway recycles 97% of its plastic and 92% is turned back into bottles. Each country must learn from the other on what has worked and what has not worked.

Government Strategies to Encourage Startups

- Governments may consider banning the manufacture of non-essential plastic items, e.g., ornamental plastic products. This will allow startups to come out with better alternatives.

- Government of India must tax all plastic packaging at the highest GST (Goods and Services Tax) tier. Every year a few more plastic products get added.
- Impact Investing has shown that it can produce decent market returns, therefore, countries need to build the right ecosystem for investing.

Plug into Actions Happening at a Global Level

UN Member States established an Intergovernmental Negotiating Committee (INC) to advance a legally binding international agreement on plastics. The goal is to complete the draft of the agreement by the end of 2024. The agreement is intended to address the full life cycle of plastics including the design, production, and disposal.

Several organizations are also involved in furthering the efforts at a local, national and global level. The industry should tune in to leverage the findings and build disruptive models. Researchers and journalists need to access the Global Plastic Watch (GPW) digital platform to assess in real-time any country's plastic pollution in detail. The platform has insightful information on plastic waste sites, and proximity to water, among others.

Addressing the plastic menace should be a top ESG agenda both for governments and corporations. A startup culture must be fostered. Collaboration between startups and big companies must be strongly encouraged. This assures disruptive models that can replace cheap fossil fuel-based plastics and in the process create several jobs.

Simultaneously, we must ban the production of cheap virgin plastic while ramping up our plastic recycling efforts. This three-pronged strategy may reduce household use of plastic by 5-10% every year. This must be the goal of every country. Finally, a plastic-free world can only be achieved if every citizen of the world is committed to making it happen.

Ram Ramprasad contributes articles on sustainability to reputed magazines in India. He worked as a Global Marketing Director for a Fortune 100 company in the USA. He graduated from Yale University, USA, and Madras University, India.

HUL, Cipla Win KPMG's Maiden ESG Awards

By SN Staff

KPMG celebrated its 30th anniversary in India with its first awards for companies practicing Environmental, Social and Governance (ESG) as part of their corporate responsibility. The awards coincided with a conclave with the theme – Thought – Action – Impact.

Hindustan Unilever Limited – Consumer Market Sector and Cipla Limited's Pharmaceutical & Healthcare Sector won first and second place in the composite ESG category.

Achieving impact through ESG requires calibrating short-term KPIs with a longer-term vision. It also requires navigating shareholders' expectations by managing short-term pressures with maximizing longer-term opportunities. It's never easy.

ESG is still nascent in India and the road to learning is long. Learning by doing things right, preferably the first time, is what leaders hope. Chances of them succeeding in this journey get higher if they have an enabling ecosystem, less-ambiguous regulations and a workforce that takes ownership of their actions.

Attracting ample domestic and global climate finance to implement ESG goals get better when companies' strategies align with their sustainability goals. This requires leaders who can take people along a transparent route. Indian organizations are beginning to get the nuances of voluntary disclosures.

But there's still some way to go to prevent many of them from resorting to greenwashing. How to prevent greenwashing will be a challenge for a few more years. Introducing traceability criteria into all products will help significantly.

Winners

Fifteen Awards were given to companies across seven key sectors.

Environment

1. Hindalco Industries Limited – Industrial Manufacturing & Auto sector
2. Godrej Properties Limited – Infrastructure and Real Estate sector
3. Tata Consultancy Services Limited – Technology, Media & Telecom sector
4. UPL Limited in Energy – Natural Resources & Chemicals sector

Social

1. Hindalco Industries Limited – Industrial Manufacturing & Auto sector
2. Godrej Properties Limited – Infrastructure and Real Estate sector

3. Wipro Limited – Technology, Media & Telecom sector
4. The Tata Power Company Limited – Energy, Natural Resources & Chemicals sector
5. HDFC Bank Limited – Financial Services sector

2. Infosys Limited – Technology, Media & Telecom sector
3. The Tata Power Company Limited – Energy, Natural Resources & Chemicals sector
4. HDFC Bank Limited – Financial Services sector

Governance

1. Mahindra & Mahindra Limited – Industrial Manufacturing & Auto sector

The awards were chosen by a high-profile jury comprising:

Aditi Haldar
Director of South Asia, Global Reporting Initiative

Amit Tandon
Founder and Managing Director, Institutional Investor Advisory Services

Beroz Gazdar
Former Sr. VP – Group Sustainability, Mahindra & Mahindra Group

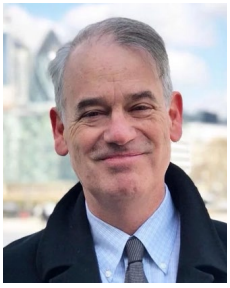
J B Mohapatra
Former Chairman, Central Board of Direct Taxes, Ministry of Finance – GOI

Joe Phelan
Executive Director Asia Pacific, World Business Council for Sustainable Development

Kalpana Morparia
Independent Director & Former Chairman South & South East Asia J.P. Morgan & Co

Mukund Govind Rajan
Chairperson, ECube Investment Advisors

O.P. Bhatt
Independent Director and former Chairman, SBI



Sean Kidney
Co-Founder and CEO, Climate Bonds Initiative

Tanya Singhal
Founder Mynzo Carbon and Former Founder SolarArise

Tejinderpal Miglani
Founding Member, Climate Angels

Climate-change, depleting reservoirs and the blindness to water treatment and recycling - https://www.moneycontrol.com/

ACT Funds CEC to Cut Farm Water Waste by 60%

By SN Staff

The inefficient use of water is devastating to both India's natural environment as well as agricultural incomes. We need to urgently address our groundwater levels, and radically improving agricultural water utilization is an important starting point for this.

India accounts for 18% of the world's population yet just 4% of the world's water resources. It is the 13th most water-stressed country in the world. Agriculture uses 84% of this water. At the same time, our utilization of agricultural water is clearly inefficient – 38% efficiency in comparison to 70-80% in the USA; in other words, **62% of the water used for agriculture is being wasted.** Groundwater in India contributes 62% of irrigated farming, while groundwater withdrawal increased tenfold between 1980 and 2015.

The challenge is practically nationwide with 256 districts experiencing water stress, and increasingly farmers must rely on expensive tanker water as local groundwater is unavailable. Groundwater is used to grow high-value farm-income crops of fruits, vegetables, flowers, and agro-forestry whose demand is rising.

Most fruit trees mature to the peak yield phase and fetch high income only after 3 to 5 years; in the absence of a steady water supply and expensive tanker water, many farmers retain a few high-productivity trees and let the others wither. At the same time, farmers have little incentive to conserve water, and often overuse water, to the point of requiring excess fertilizer consumption and sub-optimal yields.

SWAR – Centre For Environment Concerns

ACT, a non-profit venture philanthropy platform announced its decision to fund CEC (Centre for Environmental Concerns) – **System of Water for Agricultural Rejuvenation (SWAR)** – to dramatically reduce water consumption, promote soil health, reduce fertilizer requirements and improve crop yields and thus farmer incomes.

SWAR is a sub-soil water diffuser that can connect to existing drip irrigation systems to deliver moisture calibrated to the root zone, where it is most needed, ensuring optimal absorption and eliminating evaporation losses. It has been proven to yield water savings of 30-70%, reduce soil nutrient requirements by approximately 30%, improve crop quality and yield (5-10%) and increase farmer incomes by Rs. 35,000+ per acre. The product was developed with scientists and farmers to ensure water security and increase livelihoods for small and marginal farmers.

5 Ms

- Moisture
- Measurement
- Microbes
- Mychorisae (Fungi to support plant root health)
- Management

To us, this holistic and systemic approach to soil health, farmer needs, and agricultural water efficiency is an enormous area of differentiation. ACT For Environment will be working with the CEC team to ensure the widespread adoption of SWAR, scaling the business side of operations and accelerating sales to reach more farmers across India, while continuing to serve marginal farmers.

Excerpts from an email interview with SN

Who has pioneered this tech – what is their background?

Gopal Komandur is the Director at the Centre for Environment Concerns (CEC), Hyderabad and has over 40 years of rural development experience. He has also taught at the Administrative Staff College of India, Hyderabad, at the University of York in the UK and recently at the Tata Institute of Social Sciences, Mumbai.

ACT says it believes that an entrepreneurial mindset, technology & innovation and collective action have the power to create meaningful social impact at scale. It's arm ACT For Environment funds climate and environment startups that have the potential to catalyze climate impact at scale.

In addition to providing funding, it works with grantees on strategy, operations and harnessing the strength of ACT's collective to build enduring, sustainable organizations. The model aims to help India deliver on its dual promises of economic development and environmental security, including those made to its citizens and laid out in the SDGs and NDCs.

Who developed this technology and when?

SWAR (System of Water for Agricultural Rejuvenation) was co-created by CEC (Centre For Environmental Concerns) along with farmers & scientists. The team started working in 2014 and built the first moisture diffuser in 2017 and refined it to develop their go-to-market product in 2018.

What is the cost of installing this tech?

Depends on the type of crop and its water requirement. Giving pomegranate as an example:

A. Cost Per Acre (200 trees x 2 SWAR units) = 200 x 2 x 45 = Rs. 18,000 per acre

B. Pit & Installation Cost = Rs.400 x 10 = Rs 4000

Total Farmer Investment (A+B) = Rs.22,000

Baseline Annual Savings

A. Yield Improvement (200 trees x ~2 kg fruit yield/tree x Rs. 40/kg) = 200 x 2 x 40 = Rs. 16,000 per acre

B. Weeding Labor & Fertilizer Savings = Rs. 12000 per acre

Savings & Income In Year 1 (A+B) = Rs. 28000

Access is a big challenge in India – how will ACT help in better access?

ACT For Environment is supporting the CEC team with their go-to-market strategy, building the right sales and leadership team and helping SWAR create market linkages.

What is the current usage of this tech and its present growth?

CEC has sold 24,000 units so far by helping farmers see the impact. SWAR is increasing the quantity and quality of their agricultural yield through a very affordable investment that helps them save input costs and increases their overall income.

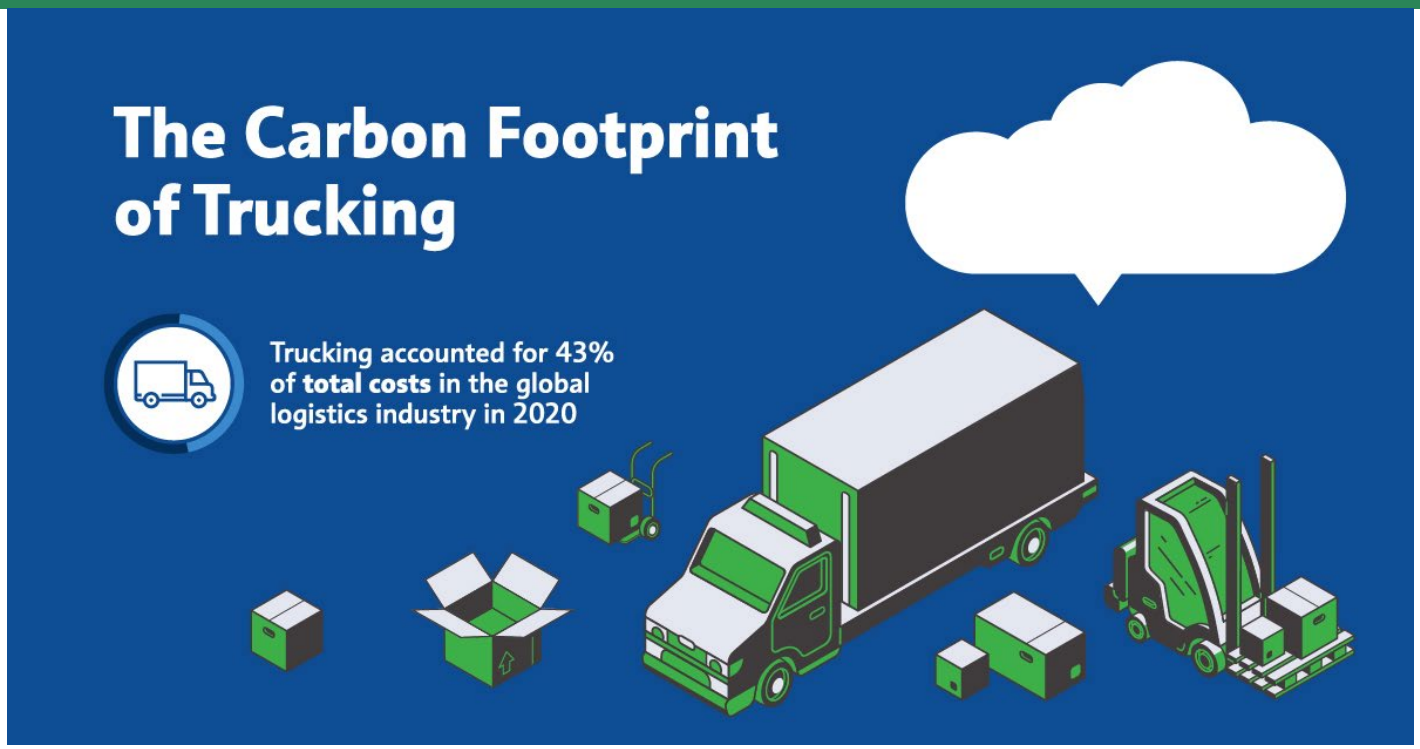
How can it work with other technologies for better productivity?

SWAR is a first-of-its-kind moisture at-root zone irrigation technology which delivers moisture in a calibrated manner to the root zone, where it is most needed, ensuring optimal absorption and eliminating evaporation losses.

Using only one-fifth of other drip irrigation systems in India, SWAR doesn't require electricity and has been proven to yield water savings, reduce fertilizer requirements, improve crop quality and yield and increase farmer incomes.

Is there a patent on this tech?

CEC has applied for a patent and is awaiting confirmation on the same.



The Carbon Footprint of Trucking: Driving Toward A Cleaner Future - https://www.visualcapitalist.com/

TCI-IIMB Centre Launches Online Transportation Emission Calculator

By SN Staff

Knowing well that accurately measuring emissions is the first important step in climate mitigation, IIMB's Supply Chain Management Centre recently announced its collaboration with TCI Group. TCI will fund this centre's research initiatives.

The new TCI-IIMB Supply Chain Sustainability Lab announced the launch of the Online Transportation Emission Calculator. This tool **https://www.iimb.ac.in/centres-of-excellence/scmc** is available to all transporters and shippers for calculating their greenhouse gas emissions from every trip they make. This centre will help them reduce emissions through consultation, coaching, certifications and collaborations.

This initiative is vital for India as logistics contributes to more than 60 per cent of the total air pollution compared to less than 10 per cent in advanced economies. The tool is currently in English and Hindi. Plans are afoot to make it multi-lingual.

Dr. Devi Shetty, Chairman and ED of Narayana Health, and Chairperson, Board of Governors, IIM Bangalore inaugurated the tool with Mr. **DP Agarwal** Chairman of the TCI Group. Mr. Vineet Agarwal, Managing Director – TCI Group, launched the beta version of a GHG Measurement Tool. This tool named TEMT has a multi-lingual interface, enabling the grass-root level adoption by India's logistics and supply chain ecosystem. It covers all modes of transportation – road, rail, air, and sea.

https://locus.sh/resources/green-logistics-to-build-a-sustainable-supply-chain/

The TCI-IIMB Supply Chain Sustainability Lab also plans to conduct research in areas such as decarbonization, circular economy and sustainable procurement, and publish white papers on sustainable supply chain management topics. It will also offer consulting services on carbon-related mapping, measurement, mitigation and management. The centre will provide certification and assessment services, such as supplier sustainability assessment.

https://www.iimb.ac.in/tci-supply-chain-sustainability-lab

IIMB has been actively pursuing Supply Chain Management as a major area of teaching and research for more than a decade. With a distinguished faculty line-up including world-class scholars and a talented pool of researchers and doctoral students, IIMB has carried out dedicated research, teaching and consulting activities in different aspects of Supply Chain Management covering logistics management, inbound/outbound transportation, network design, modelling and optimization, partnership and negotiation, information technology and e-commerce and end-to-end Supply Chain Management strategies.

TCI Group, with revenues of over INR 6000 Crores is India's leading integrated supply chain and logistics solutions provider. With six decades in business TCI's network includes 1500+ company-owned offices, 13 million sq. ft. of warehousing space and a team of 5500 plus employees.

The TCI-IIMB centre gains importance as the Central government announced its new logistics policy a few months ago. The focus of the policy is on digital transformation in the logistics sector and bringing it in line with global standards. The policy promotes multi-modal transport instead of relying heavily on high-cost and inefficient road transportation. India's high logistics and transaction costs have been driving its competitive edge in global markets.

Mitsubishi Corporation (MC) Urban Development Group - https://www.mitsubishicorp.com/

Mitsubishi Launches $400 Million Climate Tech Growth Fund

By SN Staff

Mitsubishi Corporation (MC) announced the launch of Marunouchi Climate Tech Growth Fund L.P. to invest primarily in companies dedicated to decarbonization through the development of climate tech. The fund raised $ 400 million of capital commitment from investors. MIP plans to raise new investment through additional rounds of funding and increase the size of the fund to $ 800 million by its final closing.

The fund is managed by Marunouchi Innovation Partners Co., Ltd. (MIP), a company jointly established by MC, MUFG Bank Ltd. (MUBK) and Pavilion Private Equity Co., Ltd. (PPE).

In October 2021, MC unveiled its "Roadmap to a Carbon Neutral Society" and its aim to be a net-zero greenhouse-gas (GHG) emissions company by the year 2050. It has also committed to a new growth strategy under its latest management plan, "Midterm Corporate Strategy 2024 – Creating MC Shared Value," the main objective of which is to build a brighter future by jointly promoting energy (EX) and digital (DX) transformations.

The field of climate tech has raised expectations from an accelerated development and application of a wide range of cutting-edge, net-zero technologies and solutions. With more funding crucial to meeting those expectations, the demand for climate tech investments is likely to grow over the medium to long term.

With the Fund prioritizing investments aimed at spurring growth in companies dedicated to climate tech solutions, MC and MIP shall leverage this opportunity to help commercialize, scale up and roll out those entities' cutting-edge technologies. As a result, the Fund should not only help to boost those entities' corporate value but also support decarbonization and the realization of a carbon-neutral society.

Furthermore, with the MC Group serving as its main sponsor, the Fund will take advantage of the group's broad industry expertise, business network and collective capabilities, and play an important role in connecting all of its strategic investors. MC and MIP are excited about the Fund's potential in securing blue-chip investment opportunities and supporting the growth of its portfolio companies.

www.mitsubishicorp.com/jp/en/pr/archive/2023/html/0000051198.html

Memories of a Flood

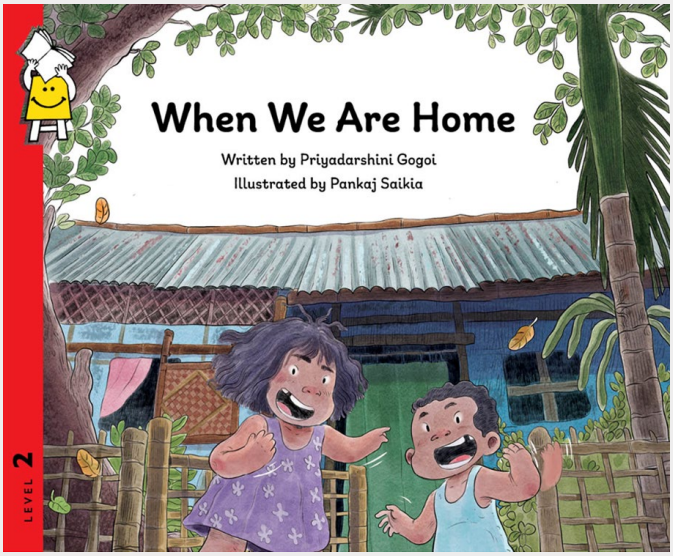
By **Nidhi Gaur**

Climate change is not fifty years away. It is here, shaping our reality. When we are Home, written by Priyadarshini Gogoi and illustrated by Pankaj Saikia urges readers to take heed of this crisis through the story of two siblings rafting on an overflowing Brahmputra, as they think about their home… fragrant with Aneaido's *til pitha*, rhythmically swaying to papa's snores, and dancing to the beats of ma's loom. The home that is now submerged in flood water, leaving the two children homeless, struggling to survive with their family in a makeshift house.

What makes it particularly evocative is the gradual unfolding. **Readers enter this cautionary tale with optimism and leave with a vivid awareness of the jolting reality of climate change and the threat it poses for children**. Yet, the seeds of hope are planted and are likely to stay, encouraging young readers to make the world a better place for everyone.

The story compels us to ask what we are leaving behind for our children and what lies ahead for children born in the recent years? It also takes a searing look at the socio-economic reality, raising uneasy questions about the background of the children.

Assam is a particularly flood-prone state. In recent years the devastation caused by floods has been unprecedented. In June 2022, even before the onset of monsoon, the region had seen over 100 percent excess rainfall, affecting nearly 30 districts and more than 40



lakh people. Moreover, the state government reports that extreme rainfall events are likely to increase by 38 percent. **By centring the narrative within this ecologically-fragile geography, the book encourages readers to find out more about the state**'s topographical realities, the causes of frequent flooding and how climate change is making life increasingly difficult for its population.

A special note of appreciation is due to Pankaj Saikia. His imaginatively composed illustrations effectively manoeuvre the tricky then-and-now narrative, to provide a striking glimpse of everyday life in a rural home in Assam, without overwhelming readers with the weight of the tragedy.

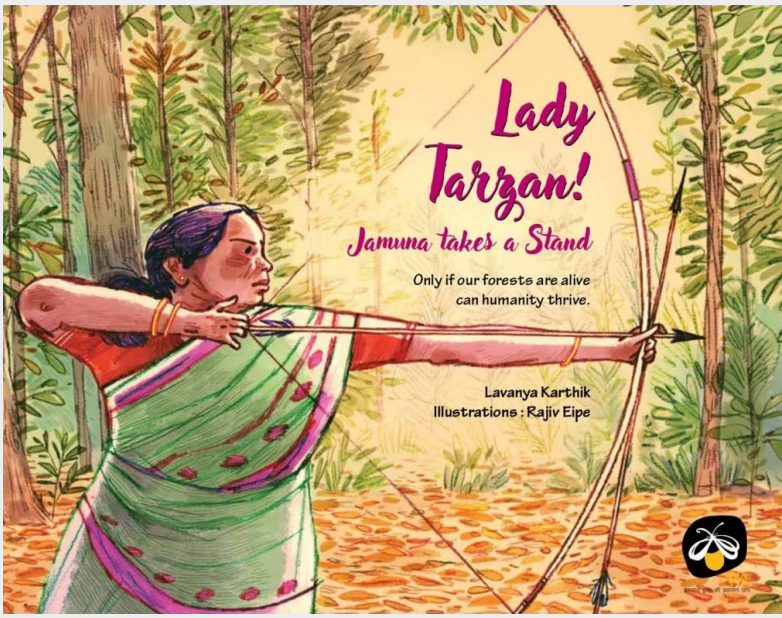
As the weather pushes to the extremes every year, and floods and droughts become rampant, this picture book offers a timely reminder of the immediacy of the crisis and how it is shaping our everyday lives.

Nidhi Gaur is an academic and a researcher who has been working with children in various capacities for nearly 20 years.

Guardian of the Forests

By JoAnne Saldanha

"LEAVE MY BROTHERS ALONE." These words stand out on the opening spread of **Lady Tarzan! Jamuna takes a Stand, a picture book biography of the indigenous environmental activist Jamuna Tudu,** written by Lavanya Karthik, illustrated by Rajiv Eipe and published by Jugnoo Prakashan. The illustrations indicate that the 'brothers' being harmed are trees. Jamuna's fierce cry and arrows scare away the axemen.



As in most indigenous communities, Jamuna's father brought her up to think of trees as her brothers and sisters. Aware of all that trees do for her, Jamuna cannot imagine a life without them. She is shocked to find that in the village she moves to after marriage, trees are being chopped by the timber mafia, ponds being filled, forests burned to clear the land for farms, and animals and birds hunted for their skin, feathers, bones and meat. When she appeals to her new family, neighbours and villagers to do something, they share their fears about being too small and powerless to take on the timber mafia armed with weapons.

But Jamuna is undaunted. Familial love runs deep and she is determined to protect her beloved 'siblings'. She starts patrolling the forests by herself, scaring away the loggers, raising alerts when fires are started and planting trees all around her village. Her unrelenting commitment and conviction eventually convince the villagers to join her.

Stories of the brave have the ability to travel on a breeze, through the whispers of rustling leaves and on the wings of birds. Jamuna's story reaches the ears of many, growing her little army of tree protectors into a large one that spreads across her state. Resisting threats to her home and life, Jamuna leads them fearlessly as they begin to acknowledge trees as their siblings. Together they save over fifty hectares of forest land. New traditions ensure that girls are welcomed at birth and during marriage with the planting of new trees. The people begin to call fearless and strong Jamuna, 'Lady Tarzan'.

The power of an individual, believing in your cause, finding the motivation and courage to act, appealing for support and, more than anything else, the human-nature relationship… there is much to share and talk about with this book, particularly with children who are older than six years of age.

There is no doubt that Jamuna Tudu faced plenty of challenges in her undertaking. Yet the **narrative tends to skim over details that would be interesting to children and would help them understand the magnitude of what she had to deal with to remain true to her ideals.** For instance, underplaying the danger in her story, undermines her courage. Children want to hear about this. Similarly, 'one day' doesn't bring with it a whole army of supporters. Great leaders always have strong pushbacks and hefty hurdles to surmount. What was the build-up to raising her army?

The last line of the book was also a bit disorienting because while the entire story was narrated in third person, the last line is suddenly told in the voice of the trees.

Rajiv Eipe's illustrations are wonderfully detailed, atmospheric and add little nuances to the text.

What I consider a must **in picture book biographies and something that's often missing, including in this book, is end matter that features a photograph of the person being written about, along with a few details of his/her life.** This helps children consolidate their journey through the narrative, making what they are reading very real.

Despite these shortcomings, the book is **an inspiring account of an offbeat environmental activist from an underrepresented community** and promises to open the room for much discussion and learning.

JoAnne Saldanha is a Story Educator and Library Educator, connecting books and oral stories to topics in the curriculum, popular culture, current affairs, social justice issues, environment issues and social emotional learning.

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