INSTITUTE OF LAW NIRMA UNIVERSITY
CENTRE OF ENVIRONMETAL LAW

ECOSYSTEM RESTORATION

REIMAGINE • RECREATE• RESTORE

5 JUNE • WORLD ENVIRONMENT DAY 2021 ISSUE

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CONTENTS

MESSAGE FROM OUR CENTRE HEAD

by Dr. Madhuri Parikh

The World Environment Day is celebrated on 5th June every year. Since 1974, it has been celebrated to make the world aware about the need to protect the environment and the resources of the world. This year the World Environment Day will launch the UN Decade of Ecosystem Restoration. It will provide the platform to share ideas and to act to restore our ecosystem. It is high time to act for ecosystem restoration. The accelerated process of climate change is felt and experienced through its severe impacts on the mother earth.

The combined efforts of the government and communities are required to achieve the goal of ecosystem restoration. The strategic plan and policy measures targeting the sustainable development approach is required from the side of the government of a State. Equally important is the role and participation of the communities in implementation of the decisions to restore the environment in achieving the target.

There are two ways to achieve the ecosystem restoration goal. One is to take action to restore the damaged ecosystem and another is to prevent the further harm to the ecosystem. There are various measures that can be taken to prevent the further harm to the ecosystems through the development activities, one of them is the Environment Impact Assessment process. The Environment Impact Assessment [EIA] is one such approach through which precautionary measures can be taken by reviewing the probable impacts of the proposed development activity in advance. The process of EIA does include the scope for public participation wherein the affected people can share their concerns related to environment in reference to the project. The process is well designed and provides enough scope to the people to participate in environment decision making process. A small study to analyse the trend of public participation as part of EIA process has been conducted in Gujarat under the ICSSR IMPRESS funded research project by the Institute of Law, Nirma University in the year 1920-21.

As a part of the study, the various public hearing sessions were attended and observed. Total 26 public hearings were attended. The major observations led to the conclusions that the proper education and orientation of people are required to make them understand the importance of the process and their effective participation.The provision for public participation provides opportunities to integrate the local knowledge in environmental decision-making process. The lack of awareness about the process is another reason for the smaller number of participants in the process. The participants hardly read the summary report of the development project before participating. The EIA summary report is highly technical in nature and difficult for a lay person to understand clearly in complete manner. Looking to these issues, it can be suggested that the local gram panchayats can play important role in motivating the people to participate in the public hearing sessions. The educational institutions can equally play important role in educating the people about their duties to participate, its importance, and its impacts. The technically drafted EIA report can be simplified to make the people understand the report. These are the small steps but can bring effective results. A drop of practice has a potential to bring big change. We being part of the educating institutions, let us strive to follow our fundamental duty under Article 51 – A (g). “You must be the change you want to see in the world.” [Mahatma Gandhi]. In the light of this, the Centre for Environmental Law, at the Institute of Law, Nirma University proposes to conduct activities to increase the stakeholders’ participation in environmental decision making process for the coming year. Let us be the instrument in bringing the positive change.

RESPONSIBLE CONSUMPTION AND PRODUCTION

A METHOD FOR ECOSYSTEM RESTORATION

By Prof. Neeraj Gupta

The World Environment Day is celebrated every year on June 5 [1]. This is the day to remember that a habitable environment is the prerequisite for life on the Earth. The theme for this year's World Environment Day is 'Ecosystem Restoration'. Ecosystem is a complex system where the biotic and abiotic components interact which each other in a specific environment [2]. The word restoration can be understood as bringing back the original position or situation, requiring us to undo something which has deteriorated the environment. The question is that what are the acts which can be stopped? And, what are the other acts which are required to be done to restore the ecosystem?

The answers are not easy to find as the needs of the human being are something which poses the biggest challenge before moving with the issue of environment protection. This tussle of human needs and protection of environment has led to the emergence of the concept of Sustainable Development. The phrase was defined by the Brundtland commission as the 'the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' Thus, the definitions expressly talks of the intergenerational equity. Any development policy of the present has to be such which does not compel the future generations to make their developmental decisions in constrained manner. In other words, it requires that the availability of the resources and the diversity in the resources, as it is found today should remain intact. However, the very fact that we have chosen the theme of restoration is the indicative of the fact that such availability and diversity has been compromised. What we need to understand that we cannot halt the production and consumption of the natural resources, however, we can ensure that the resources are consumed in a manner which is optimal.

[1]United Nations Conference on Human Environment, A/RES/2994, dated 15 December 1972.
[2]Ramprasad Sengupta, ECOLOGY AND ECONOMICS: AN APPROACH TO SUSTAINABLE DEVELOPMENT, OUP 2001, New Delhi, pp.23-37.

Another aspect of Brundtland definition which is not emphasised in the books is the latter portion of the definition. The definition contains two key concepts of needs and limitations. It has been emphasised in the definitions that the essential needs of the poor people of the world has to be met first. Secondly, the limitations which are imposed due to technology or social institutions cannot be an excuse for compromising with the sustainable development. Thus, it is crystal clear from the idea of sustainable development that the environment protection cannot be seen in isolation and any discussion on the issue of environment protection has to be accompanied by meeting the needs of the poorest sections of the society. Further, the State cannot take an excuse that the resources are not sufficient or the State does not adhere to any specific ideology or adheres to specific ideology or mode of production and therefore, it is not bound to respect the idea of sustainable development.

In the year 2015 the international community adopted 17 Sustainable Development Goals as agenda 2030. These goals are aimed to be achieved by the year 2030 [3]. Each of these goals have various targets and indicators [4]. However, it should be remembered that these goals, targets and indicators cannot be seen in isolation. As all these goals are not mutually exclusive and they may overlap, they may be inter-dependent or they may also work in tandem. Thus, overemphasising one goal and forgetting other goals may prove counterproductive.

Looking from Indian perspective, India is a welfare country [5] and it is the mandate of the Constitution that the resource allocation must be rational and just with minimal inequalities [6]. The idea of economic, social and political justice is the bedrock of our Constitution. Further, it is also duty of the State as well as citizens to ensure that the environment is not abused and it is protected and preserved [7]. Thus, the Indian Constitution also creates a mandate which requires that the resources should be utilised in a manner which is based on the equitable principles and the environment, natural resources and the wildlife and other creatures also are protected and preserved. However, we find that there is huge disparities in resource allocation amongst the various segments of the society. [8]

[3] For further details, see https://sdgs.un.org/goals.

[4]For further details, see https://unstats.un.org/sdgs/indicators/indicators-list/.

[5] The Constitution of India, 1950, Article 38. (1) The State shall strive to promote the welfare of the people by securing and protecting as effectively as it may a social order in which justice, social, economic and political, shall inform all the institutions of the national life.

[6]The Constitution of India, 1950, Article 38.(2) The State shall, in particular, strive to minimise the inequalities in income, and endeavour to eliminate inequalities in status, facilities and opportunities, not only amongst individuals but also amongst groups of people residing in different areas or engaged in different vocations.

[7] See The Constitution of India, 1950, Article 48A and 51A (g).

[8]See generally, https://www.oxfam.org/en/india-extreme-inequality-numbers.

This disparity in the resource allocation can be considered as one of the major reasons for the stress on the natural resources. It is the need of the hour that the affluent sections of the society should not indulge in consumption of the natural resources in a manner which creates additional pressure on the existing reserves of these resources. This type of responsible consumption and production is one of the SDGs. [9]

The State can play a crucial role in ensuring such responsible consumption and production by levying environmental taxes. The environmental taxes are considered as one of the important behavioural tool which has the direct impact on the consumption and production patterns. It has been found in various countries such as Norway, Finland and Sweden that imposition of environmental taxes has led to the reduction in consumption of natural resources such as petroleum products, polluting substances and other substances which may have adverse effect on the environment. However, while imposing such taxes two important issues must be kept in mind. First, the rate of such taxation should be such which is efficient in promoting the environmentally benign behaviour, secondly, such taxes should be imposed in a targeted manner so that the poor sections of the society is not adversely affected by it.

It is expected that if such types of taxes are imposed in a well-planned manner it may have long term positive impact on the environment. It may promote responsible consumption and production behaviour of the resources on the one hand, on the other hand it can also provide the resources in the hands of the State which may be utilised for the uplift of the poorest sections of the society. Thus ensuring optimal utilisation of natural resources, which can be considered as sustainable. With this hope that we all will indulge in responsible consumption and production process wishing you all a very Happy World Environment Day!

[9] See SDG 12. Responsible Consumption and Production.

FUN FACTS

By JahnaviTolani&Vidhi Maharishi

- Coral produces its own sunscreen. Too much sunlight can damage the algae that live inside coral in shallow water. To protect the algae, which are a main source of sustenance for the coral, the corals fluoresce. This creates proteins that act as a sort of sunscreen for the algae.

- You can't drink sea water, but you can drink sea ice. However, you don't want to drink fresh sea ice, which still has little pockets of brine trapped in between ice crystals. As the ice ages, the brine drains out, and the ice becomes fresh enough that, according to the NSIDC, it can be melted and consumed.

- Trees have their own special ‘internet’ to communicate Trees can 'talk' to each other, and they even share nutrients. They manage to do this through an incredible underground system created by soil fungi. A special mycorrhizal type of fungi lives on the roots of many trees. They help trees to absorb water and nutrients from the soil – but they also work on a much larger scale, like an underground internet, to connect entire forests.

- Tulips are worth their weight in gold. Back in 17th century Holland, tulips were considered to be worth more than gold and silver. Back then, one bulb cost upwards of $2,000.

- Some trees have been to moon. “Moon trees” were grown from seeds taken to moon during the Apollo 14 mission in early 1971. NASA and the US forest service wanted to see if the moon’s orbit caused the seeds to grow differently back on earth. These trees were donated to state forestryservices in 1975 and 1976

- Koala fingerprints are so close to humans' that they could taint crime scenes Koalas might not seem to have a lot in common with us, but if you were to take a closer look at their hands, you'd see that they have fingerprints that are just like humans'. In fact, they're so similar when it comes to the distinctive loops and arches, that in Australia, "police feared that criminal investigations may have been hampered by koala prints," according to Ripley's Believe It or Not.

- Phytoplankton in the Oceans Provide 50% to 85% of the Oxygen on Earth. Phytoplankton are tiny plants that live in the upper areas of the ocean and use photosynthesis to make their food. They are so abundant in the oceans that all together they account for about 50% of the photosynthetic activity and over 50% of the oxygen production on the planet.

- Snapdragon flowers resemble a dragon, and if you squeeze the sides, the dragon's mouth will appear to open and close.

- Before trees, Earth was home to fungi that grew 26 feet tall. From about 420 milion to 370 million years ago, a mysterious genus of creatures named Prototaxites grew large trunks up to 3 feet wide and 26 feet in height.

- At its widest point, from Indonesia all the way to Colombia, the Pacific Ocean is wider than the moon, by quite a lot. This expanse of ocean is 12,300 miles across, which is more than five times the diameter of the moon!

EXPRESSION OF THE ART

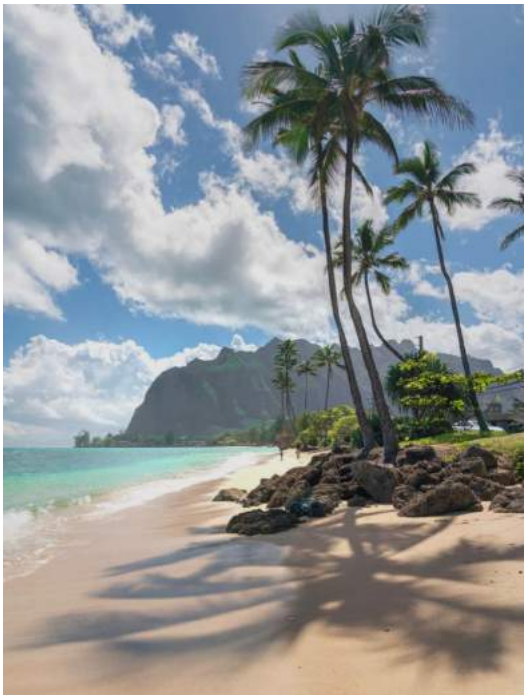
By Kruti Kachhwaha

Michelangelo's Creation of Adam is one of the most famous section of the Sistine Chapel ceiling. It is illustrative of the biblical creation narrative in which god's imminent touch gives life to Adam and the entire mankind. According to the genesis creation narrative there were six days of creation. By the end of the third day of creation, god had created light, sea and earth and had commanded the earth to produce vegetation. God created living creatures. Lastly, on the sixth day, god created man.

The creation of Adam can be used to trace a theocentric view of mankind's relation with nature and environment. Theocentric view maintains the view that humans should take care of the future generation and also be considerate towards the nature.

The artwork here takes elements from Michelangelo's work and mixes the anatomical structures with sea creatures in a nebula explosion background.

BIRD'S EYE VIEW TO ECOSYSTEM RESTORATION



By Aakansha Dave, AditiInsaa& G Moushmi

"Restoration is not a silver bullet. There is no silver bullet. It is just one of a huge portfolio of solutions that we so desperately need."
-Thomas Crowther

Save Trees! The Tigers! The Honeybees! You've undoubtedly encountered one or all of these conservation campaigns over the course in your lifetime. You'll probably encounter many more as our earth's wildlife continues to hurdle towards mass extinction at an alarming rate. Our earth needs assistance and comfort. While the second wave of Covid pandemic is sweeping across the country and the immediate focus is to control the virus, there is also an urgent need to heal the environment to prevent further pandemics. Something must be done!

The environmental crisis happening on a daily basis at large scale is destroying our home and the millions of species who share with us this beautiful planet. The diverse and dynamic communities of the ecosystem can be degraded by human activities like construction, poaching, selective logging, grazing etc. To overcome degradation, should be our priority and motto because destruction is inevitable and we can still turn the table by restoring .

our earth. Ecosystem Restoration as the name suggests is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed and it aims to re-create the ecosystem on a trajectory to reach full recovery thereby contributing to the application of ecosystem approach. It focuses on repairing the damage human activities have caused to natural ecosystems and seeks to return them to an earlier state or to another state that is closely related to one unaltered by human activities. Ecosystem Restoration or "Restoration Ecology" is relatively a new branch and is receiving attention worldwide. Increased appreciation for soil health, forestation, plant-soil feedbacks, biological crusts, erosion control, and water quality is evident in recent times.

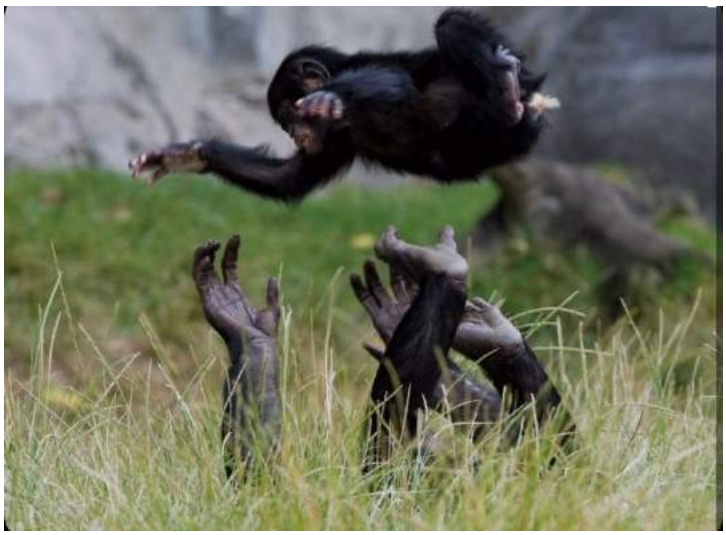
However, a myth revolves around,that restoration is just like conservation but this is not the case. As restoration is neither a substitute for conservation nor should the promise of restoration be used to justify destruction or unsustainable use of resources. Conservation focuses on preventing further losses to ecosystems and planned management of a natural resource to prevent exploitation, destruction but restoration aims to return a degraded ecosystem to its historic trajectory, not its historic condition. Restoration provides an opportunity to reverse degradation and increase local biodiversity. This could be done through a scientific process of benchmarking

with reference to models from the same native ecosystem. For example, while we can initiate a forest restoration process by planting trees, for full recovery to be achieved, the site should be a fully functioning forest with mature trees in the age-classes representative of a mature native forest. Restoration typically targets species that were dominant before the Industrial Revolution, in effect, looking back in time. What is perhaps most important to restoration is how persistent restorations are on decade to century scales, and restorations are now of sufficient quantity and age to test questions about persistence.

The UN, contributing one step further in the same direction is launching "UN Decade on Ecosystem Restoration 2021-2030" on World Environment Day 2021 to increase global co-operation and to restore degraded and destroyed ecosystems. Around 2 billion hectares of degraded lands worldwide have the ability for ecosystem restoration and in most of the rehabilitation process; it could take the

form of “mosaic restoration” which is actually combining forests with protected areas, agriculture, water bodies and human settlements. Their goal will further aid in building a common vision to address current challenges and fostering a holistic approach to achieve international commitments including the 17 Sustainable Development Goals by increasing the flow of resources, knowledge and capacity. The restoration of 350 million hectares of degraded terrestrial and aquatic ecosystems by 2030 could generate US$9 trillion in ecosystem services and remove 13 to 26 gigatons of greenhouse gases from the atmosphere which will act as a silver lining in the cause.

International approach promotes individual approach. So now let’s have a look at what our country, India is doing to achieve the cause. India being a diverse country and home to millions of species of flora and fauna, it is the responsibility of the Nation and its people to protect them not only for our sake but also for the future generations. Human activities have disturbed the ecosystem to such an extent that we have put the future generations at stake. That’s the reason our methods should not only aim towards conservation but to restore all the ecosystems that are possible to do so. In India there are many ecosystems that have zero possibilities of getting restored either naturally or through human efforts but



there still exist those areas which can be restored. So far, the efforts have been just to conserve our environment. The process of environment restoration requires well equipped practitioners to bring awareness of such restoration practices and implement them on ground. There haven’t been any universities or institutions offering such courses in India, most of the practitioners are almost self-taught or have pursued their courses in the foreign universities but of course there have been small-scale projects and initiatives. The dearth of academic courses and very few practitioners who are experts in restoration of ecosystems give chances of conducting a few awareness programs. So, the efforts should be to encourage students to take up such courses.

One more problem is the lack of funds. The process of restoration is a long-term one and not so easy to do so. Allocation of funds and support from the government can help a lot. Since, restoration is not just about afforestation, planting trees, but to bring

back the species natural to that particular environment, it is imperative that we become serious about it. Human activities have already done so much damage to the environment and to fulfill the needs of the world's second largest population is a strenuous task to accomplish. So, to satisfy plethora of such needs we the people of India should not leave any stone unturned and optimally use all the opportunities to save our flora and fauna.

Efforts are being made all over India though in a small-scale for now. A recent unique study in Bengaluru in 2019, which assessed the effectiveness of ecological restoration in one of the country's biodiversity hotspots, that is the Western Ghats. This study was conducted in collaboration with the Nature Conservation Foundation, India and Columbia University, USA. This project assessed ecological restoration projects with duration of at least 20 years. It is one of the very few studies that have been done till date. The researchers conducted their study on the Valparai Plateau, a 22,000-hectare section of the Anamalai Hills, which they describe as a "human-modified landscape". Since the year 2000, three plantation companies have conducted various restoration activities on the plateau. The sites were carefully chosen after their scrutiny that they were degraded rainforests alone and did not include the famously misunderstood native grasslands of the Western Ghats.

The restoration process conducted included the following steps:

1. Firstly, avoiding cutting of wood
2. Prevention of the growth of weeds
3. Planting a sundry of variety of native species, keeping in mind the geographical and topographical conditions around
4. They did try to restore the entire selected area for only human restoration techniques but left half of the land for natural restoration.

They have observed that the area of active restoration came so close to that of natural restoration. In fact, active restoration showed more consistent and prominent results. The study concluded that, since it is almost the first of its kind, it helps to act as a base in further ecological restoration activities in India. Though afforestation is the most accepted tool globally, restoration of ecosystems is the most effective one. It is because, in the process of restoration, the planting of native species keeps the sanctity of the ecosystem intact.
Society for economic restoration (SER) is an international organization which has 70 countries as members and many more international organizations such as International Union for Conservation of Nature (IUCN) supporting this society. Established in 1988 and based in the USA, it defines and provides for standards of practice for ecological restoration. International standards for ecological restoration, including key

practices, are one of the live documents of SER that provides for standard practices of ecological restoration. This was first published in 2016.

According to the 2020 Environmental Performance Index (EPI), which ranks 180 countries each year in terms of how proactively each one is in prioritizing environmental health and ecosystem vitality, the first ranked country was Denmark having a score of 82.5 out of 100 and whereas India's ranking was 168 with a score of 27.6 out of 100. Furthermore, its neighboring countries such as China, Pakistan, Bhutan, Nepal and Sri Lanka have comparatively much higher EPI scores and ranking.

The high scorers exhibit long-standing policies and programs to protect public health, preserve natural resources, and decrease greenhouse gas emissions. The data further suggest that countries making concerted efforts to decarbonize their electricity sectors have made the greatest gains in combating cli- mate change, with associated benefits for ecosystems and human health. Nonetheless there are various practices which all the countries have to work in some way or the other to actually meet the standards. It is generally observed that the higher scoring countries have policy and law targeting each specific problem and focusing on better sustainable use of resources. For instance, France, which achieved 5th rank, has laws for greener and efficient energy (such as the Energy Transition for Green Growth Act) apart from other environmental legislations.

Still as the standards and publication by SER indicates the world needs to place more efforts on ecological restoration and measurement of the same. Commitment to the Bonn challenge, which provides for land restoration and the initiation of the UN decade for restoration, will definitely require that many principles of restoration are fulfilled. As per J Castro and others, it is very necessary that a precision based restoration should take place. For instance, it should be ensured that seeds planted today for forest restoration should be able to grow into adult trees and not just plantations. It is also opined by environmentalists that there has to be a clear cut definition of restoration, rehabilitation and reclamation of the environment and that they should be properly distinguished for better standards.

This article tried to explore the area of ecological restoration through the lenses of already existing literature. Though this concept of restoration has recently been taken into consideration as important, there is a considerable lack of data for comparing and contrasting the practices of States, which also adversely affects accountability. It is pointed out that it is not necessary to compromise sustainability for the purpose of economic advancement; however, relying on practices of industrialization and urbanization, the governments are putting pressure on the environment and which is leading to degradation of overall ecology. Nonetheless, it is hoped that through efforts of the UN decade there will be scientific and technological measures accompanied by various other factors for ensuring a proper ecological restoration.

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POEMS

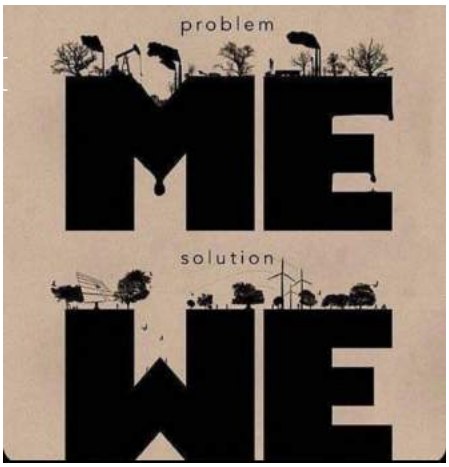
RESTORE EARTH

By Astitva Sharma

There is no more light
In the oil lamp
Nor any star in the
Citylight
The plastic horse
And rides in the mall
Is what, fun nowadays
Not running through the
Field barefoot on the grass
And that's not all
What we lose in this modern
Advanced age
But we can come closer to it
Again
Let's plant a tree in our own
Backyard
Cherish it
Not for ourselves
But for the future
We wanted for our
Younger selves
Let go to the park
Leaving the console and tabs
Behind
Step by step let walk the journey
To restore earth to it's former glory

THERE'S SOMETHING WE CAN DO!

By Jahnvi Mishra



There's something each one of us can do,
Conserve our resources and find new ways,
Sow a seed of sustainable development that will thrive,
To help our planet remain alive,
Protect what's available to us for free, before it gets unaffordable,
For once they're gone, don't you dare say,
Consider yourself warned of that fatal day,
As they say, you reap what you've sown,
So you can't blame anyone alone,
Crystal clear water turned swamps,
Poisons and Insecticides sprayed on food,
Factories emitting caustic gases,
There has to be something each one us can do,
Plant a tree, clean a beach or follow 3Rs,
Raise awareness to those around you,
This blue planet trembles and shakes,
All this'll result is in destruction of mankind,
The cost you'll pay, it's your life at stake,
Making this planet a better place to live for your coming generations,
And, be the part of solution, not Pollution!

पर्यावरण नहीं तो जीवन नहीं

By Samay Jain

हो जायेगा सब तबाह
अगर तुम ने नहीं की परवाह
सुधरजा ओ अब भी थोड़ा वक्तहै
पेड़ पौधे नहीं तो जीवन का अंत है

खतरे में है ये संसार सारा
मिलकर हमे इसे बचाना है
पर्यावरण की रक्षा हमने अगर नहीं की
तो ज़िन्दगी हमे गवानी है

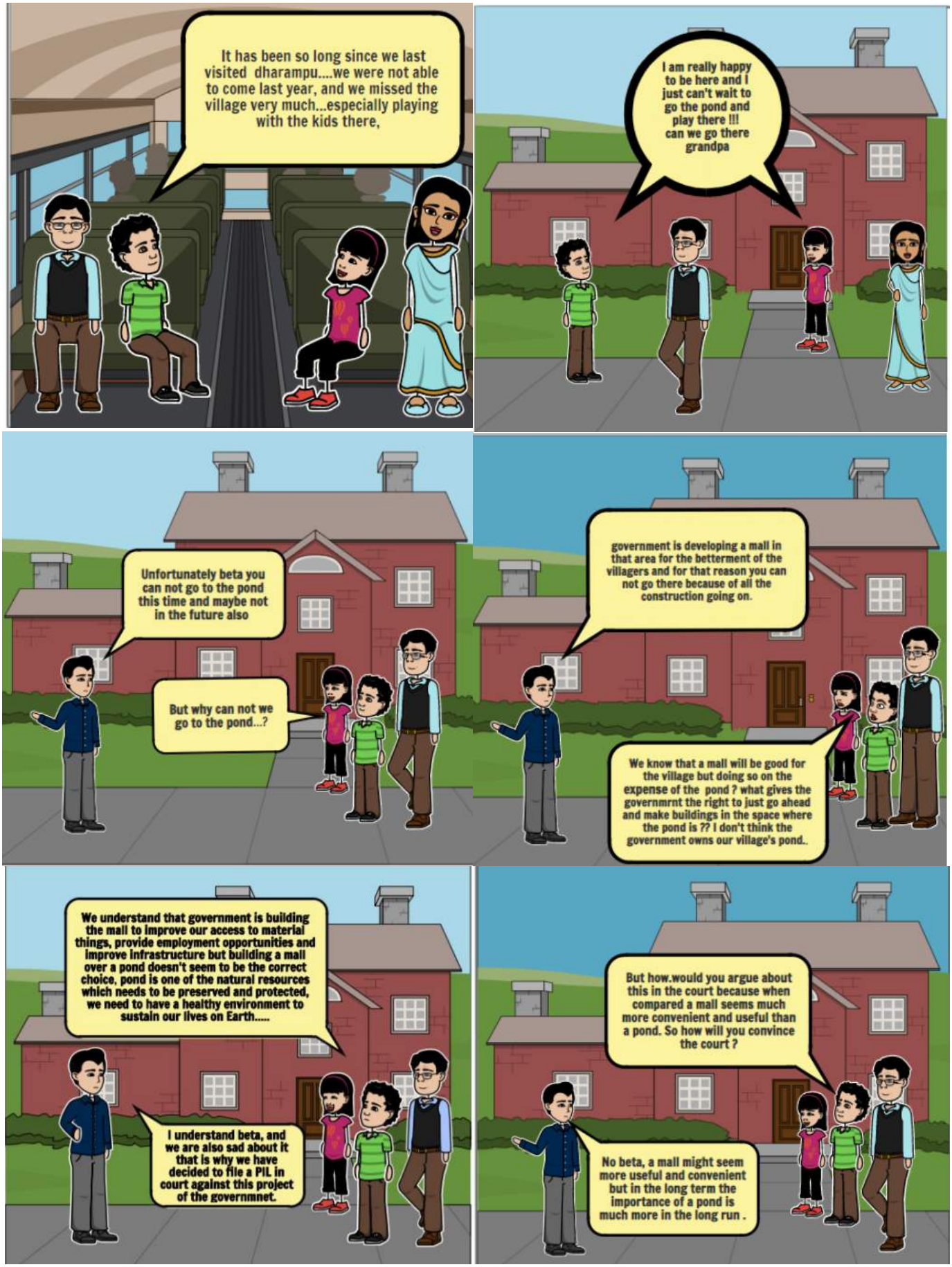
आओ सब मिल कर हाथ बढ़ाते है
वातावरण को स्वत्छ बनाते है
सुधर जाओ अब भी थोड़ा वक्त है
पेड़पौधे नहीं तो जीवन का अंत है

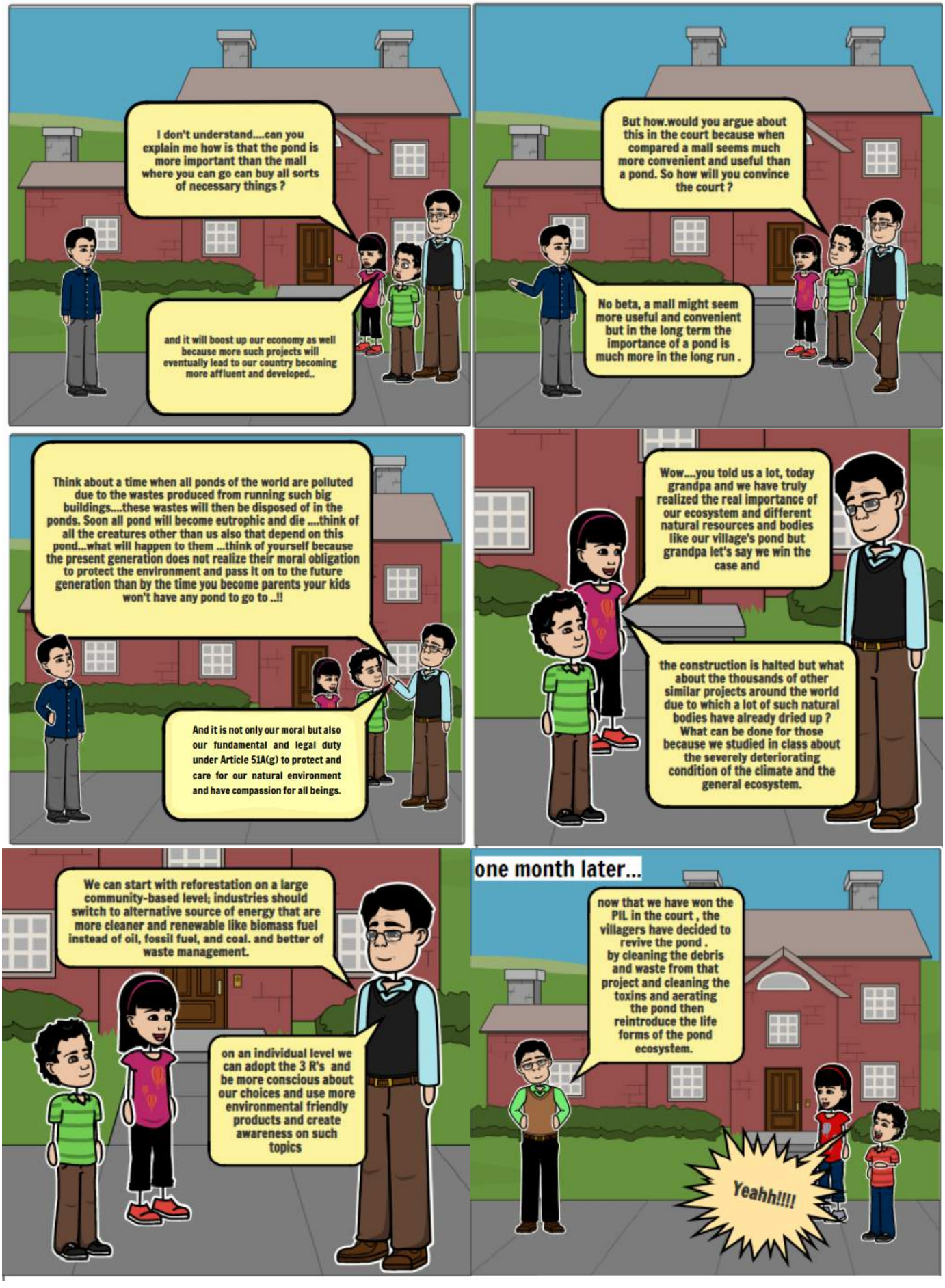
पर्यावरण ने हमे कितना दिया
फिर भी हमने इसे दूषित किया
यही संसार की माया है
जहाँ पेड़ है वहाँ छाया है

मानव तूने अपनी ज़रूरतें पूरी करने के लिए
पर्यावरण को कितना कष्ट पहुँचाया है
प्रकृति का कर सम्मान, वरना हर जगह बर्बादी की माया है
देख प्रदुषण ने चारो तरफ क्या हाहाकार मचाया है
सुधरजाओ अब भी थोड़ा वक्त है
पेड़ पौधे नहीं तो जीवन का अंत है

COMIC STRIP

By Isha Jagetiya, Astitva Sharma &VarshaVenkat




I don't understand....can you explain me how is that the pond is more important than the mall where you can go can buy all sorts of necessary things ?
and it will boost up our economy as well because more such projects will eventually lead to our country becoming more affluent and developed..
But how.would you argue about this in the court because when compared a mall seems much more convenient and useful than a pond. So how will you convince the court ?
No beta, a mall might seem more useful and convenient but in the long term the importance of a pond is much more in the long run .
Think about a time when all ponds of the world are polluted due to the wastes produced from running such big buildings....these wastes will then be disposed of in the ponds. Soon all pond will become eutrophic and die ....think of all the creatures other than us also that depend on this pond...what will happen to them ...think of yourself because the present generation does not realize their moral obligation to protect the environment and pass it on to the future generation than by the time you become parents your kids won't have any pond to go to ..!!
And it is not only our moral but also our fundamental and legal duty under Article 51A(g) to protect and care for our natural environment and have compassion for all beings.
Wow....you told us a lot, today grandpa and we have truly realized the real importance of our ecosystem and different natural resources and bodies like our village's pond but grandpa let's say we win the case and
the construction is halted but what about the thousands of other similar projects around the world due to which a lot of such natural bodies have already dried up ? What can be done for those because we studied in class about the severely deteriorating condition of the climate and the general ecosystem.
We can start with reforestation on a large community-based level; industries should switch to alternative source of energy that are more cleaner and renewable like biomass fuel instead of oil, fossil fuel, and coal. and better of waste management.
on an individual level we can adopt the 3 R's and be more conscious about our choices and use more environmental friendly products and create awareness on such topics
one month later...
now that we have won the PIL in the court , the villagers have decided to revive the pond . by cleaning the debris and waste from that project and cleaning the toxins and aerating the pond then reintroduce the life forms of the pond ecosystem.
Yeahh!!!!

CLIMATE ACTION & BEHAVIOURAL CHANGE

FINDING SOLUTIONS THROUGH ANTHROPOGENIC PRISM

By Mehul Agarwal & Pruthvirajsinh Zala

Recently, as a result of the lockdown the Himalayan ranges were visible from more than 100 miles for the first time in several decades. This phenomenon was a result of reduction in air pollution which was driven by the COVID-19 lockdown induced behavior change. Even though this effect was a result of an externally induced behavior change, it showcases the impact of behavior modification on ecological restoration and climate mitigation.

On one hand the human activities are the drivers of environmental degradation and at the same time people-centric nature conservation is a significant part of the solution. Environmental Restoration is not merely about technological and policy driven solutions. Disregarding socio-economic, cultural and political factors undermines the impact of the outcomes. 2021-2030 has been declared as the UN Decade on Ecosystem Restoration. In order to achieve the goals of reversing the ever-increasing cycle of degradation we require collaboration between stakeholders across the board and active people engagement at the community level. Behavior change is one of the key transformative tools which will lead to systematic, deep, effective and sustainable change. Ingraining a pro-environmental behavior contributes efficiently to the sustainability of restoration efforts. Cultural aspects being a

vital part of the socio-ecological system has a direct effect on people's perspective and mindset, eventually influencing the restorative interventions.

According to the Intergovernmental Panel on Climate Change, 'The existence of limits to adaptation suggests transformational change may be a requirement for sustainable development in a changing climate—that is, not only for adapting to the impacts of climate change, but for altering the systems and structures economic and social relations, and beliefs and behaviors that contribute to climate change and social vulnerability'. For actualizing the goals of ecosystem restoration there is a dire need of incorporating instruments and tools which are conducive of behavior change. Behavioral change is not only a potential tool for achieving sustainable lifestyle but an indispensable one.

Broadly there are four different instruments which deal with environmental behavior change, namely: regulations and incentives; education and awareness raising; community management of environmental resources, and reference to moral, religious or ethical principles. Economic instruments like grants or rebate and educational campaigns are some of the modes used for driving behavioral change. However, there is skepticism about the possibilities to change current high-energy, high-carbon behavior patterns. The skepticism's underlying cause is methodological individualism. The model focuses on economical and psychological factors of behavior but fail to note the emotional, social and cultural aspects of the same. Indubitably, many people say that by changing actions of one person it would not

make any huge difference. There is a need of socio-cultural and emotional driven factors for inducing behavioral change in order to effectively contribute in changing the consumption patterns. Thus, people need assurances that they are not alone and everyone is in this movement of saving the planet together so as to enable effective change. Actionable interventions across local communities and countries are a key to the climate change challenge. A Centre for behavior and the environment report elucidates 30 behavioral solutions which can address global warming and mitigate carbon emissions-which are discussed below.

BEHAVIORAL SOLUTIONS FOR CLIMATE MITIGATION

Food Sector

- **Reduction of Food Waste:** Minimizing food loss and wastage throughout the food supply chain from harvest to consumption.
- **Plant Rich Diets:** Individuals consuming more fruits, vegetables, grains, and legumes instead of animal protein and products (e.g., beef, chicken, milk), while also being mindful of local food sourcing and nutrition.

- **Clean cook stoves:** Using efficient cookstoves and fuels in place of traditional cookstoves or cooking over open flames.
- **Composting:** Converting biodegradable waste (e.g., food scraps, plant material) into a useful soil fertilizer instead of sending it to the landfill.

Agriculture & Land Management Sector

- **Silvopasture:** Adding trees to pastures to increase productivity when raising livestock
- **Tropical staple trees:** Converting land from annuals to perennial tree crops to produce food.
- **Tree intercropping:** Deliberately planting trees in the same area as annual crops.
- **Regenerative agriculture:** Adopting at least four of the following six agricultural practices: compost application, cover crops, crop rotation, green manures, no-till or reduced tillage, and/or organic production.
- **Farmland restoration:** Restoring degraded and abandoned farmland to grow crops or native vegetation.
- **Managed grazing:** Changing grazing practices by adjusting stocking rates, timing, and intensity of grazing in grassland soils.
- **System of rice intensification and improved rice cultivation:** Adopting low-methane rice production methods for small or large operations through a series of innovative techniques such as altering watering and planting patterns.
- **Conservation agriculture:** Adopting crop rotation, cover crops, and reduced tillage practices on agricultural land.

- **Nutrient management:** Farmers more effectively managing nitrogen fertilizers that are used in agricultural systems.
- **Farmland irrigation:** Improving irrigation systems around the world, using technologies like sprinkler and drip irrigation

Transportation Sector

- **Electric vehicles:** Driving battery and plug-in vehicles instead of conventional vehicles.
- **Ridesharing:** Using ridesharing services and/or carpooling to get to destinations rather than personal vehicles.
- **Mass transit:** Choosing mass transit options for commuting in cities instead of personal vehicles.
- **Telepresence:** Using video-conferencing technologies in the place of taking commercial flights to business meetings in distant locations.
- **Hybrid cars:** Individuals switching from driving conventional internal combustion engine cars to driving hybrid cars.
- **Bicycle infrastructure:** Biking to

destinations in cities instead of using cars or other motorized transport and building a supportive biking environment.
- **Walkable cities:** Walking to destinations in cities instead of using cars or other motorized transport and building an environment suitable for walking.
- **Electric bicycles:** Using electric bikes for urban transport instead of driving cars

Energy & Material Sector:

- **Rooftop solar:** Installing small-scale solar photovoltaic systems to provide energy for households.
- **Solar water:** Using solar radiation to pre-heat or heat water for household and building use instead of using fossil fuels.
- **Methane digesters:** Using sealed tanks that produce biogas through the anaerobic digestion of organic waste (e.g., manure) to heat households instead of stoves that use wood, charcoal, or fossil fuels.
- **LED lighting:** Using efficient light-emitting diodes (LEDs) in residential buildings instead of other conventional residential lighting solutions (e.g., compact fluorescent lamps, halogen lamps, incandescent lamps).
- **Household water saving:** Installing and using water saving devices in homes such as low-flow showerheads and taps.
- **Smart thermostats:** Installing devices that control heating and cooling within the home to maximize energy savings in the place of conventional thermostats.
- **Household recycling and recycled paper:** Recycling and reusing paper, metal, plastic, and glass materials.
- **Micro wind:** Installing small wind turbines of under 100 kilowatts to provide household electricity needs instead of fossil fuels.

The urgency of climate emergency cannot be overstated! The emerging evidence of the impact of behavioural change approach is a ray of hope. A systemic approach is needed of amalgamating behavioural science with climate change mitigation. The crisis is worsening day by day and it is imperative that we must act now. IF NOT NOW, WHEN?

TAKE A WALK AND REIMAGINE

Location : Agra; By Nandini Goyal

INSPIRATIONAL STORIES

KNOW YOUR ENVIRONMENTALIST

By Pruthvirajsinh Zala

Dr. MK Ranjitsinh Jhala

Dr. MK Ranjitsinh Jhala (born 19 February 1939) is a wildlife and nature conservationist and an author. He belongs to the former princely state of Wankaner and is the second son of erstwhile titular Maharaja of Wankaner. He has been at the forefront of India's conservation movement for over half a century. He played a crucial role in bringing cheetah back to India. It is significant to note that he was the prime architect of the Wildlife (Protection) Act of 1972 and of the Central government schemes to assist national parks and sanctuaries. He facilitated the first-ever relocation of a village from inside a Protected Area, was the Member Secretary of the task force that formulated Project Tiger, launched successful captive breeding and release programmes for all three species of Indian crocodilians, and oversaw the notification of over eight National Parks and 11 Wildlife Sanctuaries amongst much else.

His entire life has been spent walking the wilds, drafting ground breaking policies, catalysing action for lesser-known species and initiating pioneering conservation projects. His passion for saving endangered species continues after his retirement, whether in planning the relocation of the Asiatic lion from Gir forest, the reintroduction of the cheetah into the grasslands of central India, or in saving from extinction the Kashmir stag, the Manipur brow-antlered deer and the Great Indian bustard. He is notable for pioneering the scientific use of camera traps that help to study the population density of large wild mammals in India.He is also a former 1961 batch IAS officer and served in numerous important posts like the Secretary for Forests & Tourism in Madha Pradesh 1970-1973 and Director Wildlife Preservation 1973-1975.

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He is author of several books on Indian wildlife and conservation like "The Indian Blackbuck" (1989), "Indian Wildlife" (1995), "Beyond the Tiger: Portraits of Asian Wildlife" (1997) and others. Recently, in M.K.Ranjitsinh vs Union of India, the Supreme Court ordered for protection of the endangered species of Great Indian Bustard from the overhead electric poles. He was awarded lifetime achievement award in 2014 for his works in conservation of wildlife.

Amla Ruia

Amla Ruia is a conservationist known for her work in water harvesting. She has brought life-giving water to parched villagers through her water harvesting projects. She was inspired by severe droughts in 1999/2000 and 2003 to improve water harvesting in Rajasthan villages. She founded the Aakar Charitable Trust(ACT) to partner with villages to build check dams that provide water security. Her first check dam project was in Mandawar village,[1] which was a success. Farmers managed to earn up to 120 million rupees in a year via the two check dams built by Aakar Charitable Trust. By the end of 2017, Aakar Charitable Trust had built more than 200 check dams in more than 115 villages in Rajasthan, with flow-on effects to almost 200 other villages. The Trust provides 60-70% of the resources required to construct each check dam, while the village where the dam is sited provides 30-40% of resources, participates in its construction, and is responsible for its maintenance.

She estimates that the resulting increased income gives a 750% return on the investment in the check dams. According to her, girls are able to attend school, as they no longer need to help their mothers carry water from long distances, and students can undertake tertiary education. She is popularly known as Paani Mata ("Water Mother"). Ruia and her team have extended their efforts in other states such as Madhya Pradesh, Maharashtra, Odisha, and the Dantewada district in Chhattisgarh, and have plans to expand into Bihar, Haryana, Uttaranchal and Uttar Pradesh. In 2011, she was awarded a Lakshmipat Singhania - IIM Lucknow National Leadership Award in the category of Community Service and Social Upliftment. In 2016, she was nominated for the Women of Worth Social Award category. In 2018, she received the India Eye International Human Rights Observer Achievement Award 2018.

QUOTES

Compiled by Indira Yadav & Payodhi Agarwal

"First do no harm. Second, begin integrating restoration."
-Keith Bowers

"You must unite behind the science. You must take action. You must do the impossible. Because giving up can never be an option."
-Greta Thunberg

"One of the first conditions of happiness is that the link between man and nature shall not be broken."
—Leo Tolstoy

"The environment is where we all meet; where we all have a mutual interest; it is the one thing all of us share."
-Lady Bird Johnson

"The ultimate test of man's conscience may be his willingness to sacrifice something today for future generations whose words of thanks will not be heard."
—Gaylord Nelson

"What's the use of a fine house if you haven't got a tolerable planet to put it on".
—Henry David Thoreau