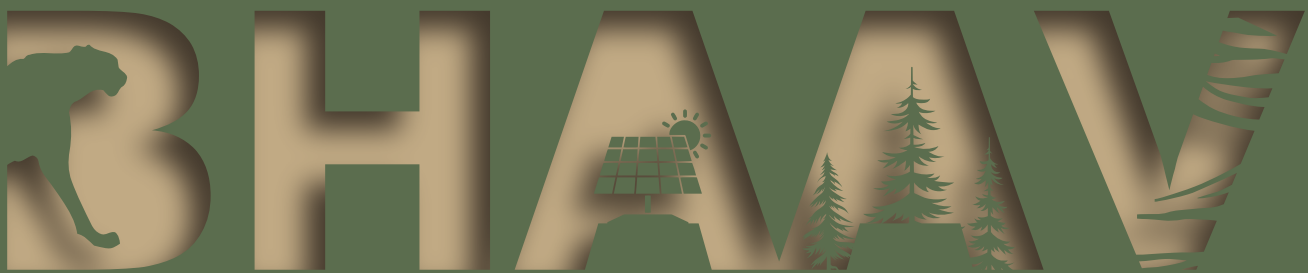




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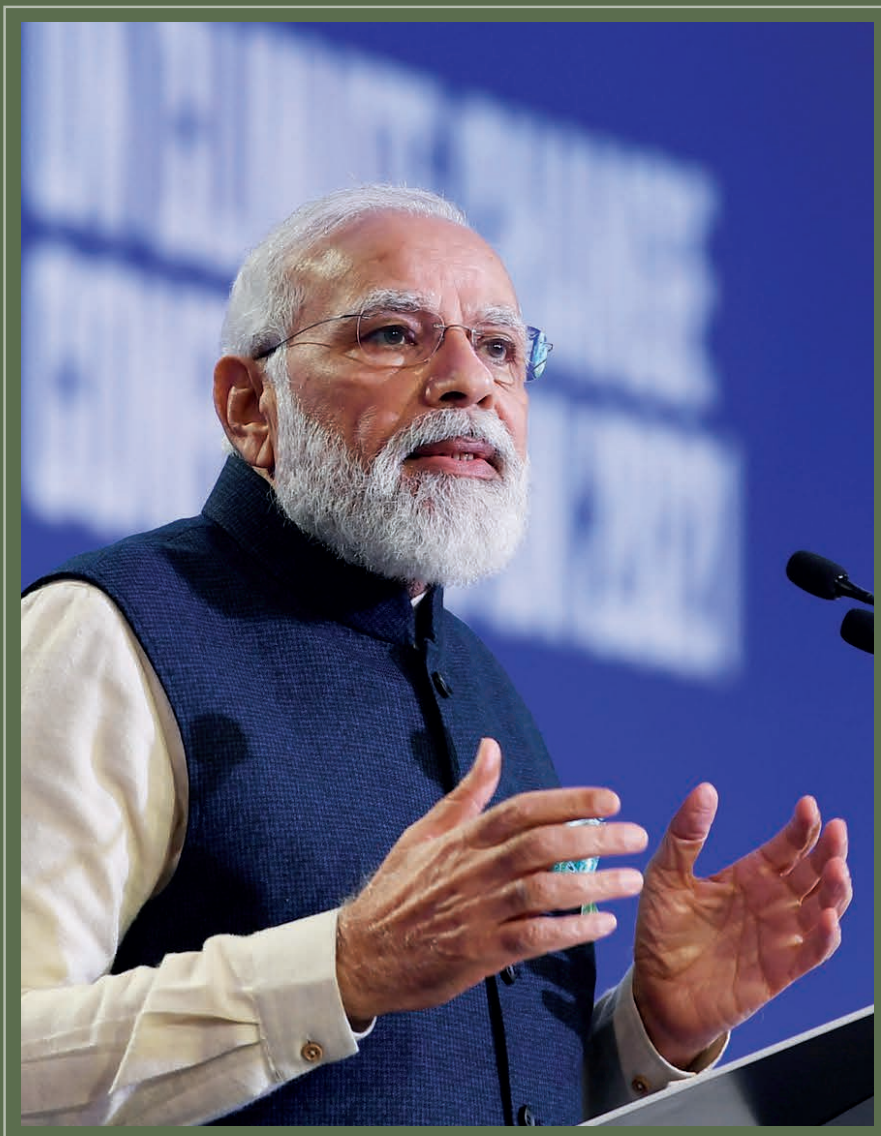


TAK

FROM
MINDLESS CONSUMPTION
TO MINDFUL UTILIZATION



LIFE
Lifestyle for
Environment



“ The word is LiFE, which means ‘Lifestyle For Environment’. Today, there is a need for all of us to come together and take Lifestyle For Environment forward as a campaign. This can become a mass movement towards an environmentally conscious lifestyle. ”

SHRI NARENDRA MODI
Prime Minister of India

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Message



Shri Bhupender Yadav

*Minister of Environment,
Forest and Climate Change*

Hon'ble Prime Minister of India Shri Narendra Modi and the UNSG Mr Antonio Gueterres launched Mission LiFE (Lifestyles for Environment) on 20.10.2022. Mission LiFE aims to build a global mass movement of Pro Planet People, for adopting sustainable lifestyles based on mindful utilization, minimizing waste and making 'green' choices at individual, family and community levels. Promoting 'LiFE' stands incorporated in India's enhanced NDC submitted to the UNFCCC in August 2022.

At the heart of Indian culture and traditions is a reverence towards our natural resources. All our ancient scriptures emphasize the need to maintain ecological balance. India is taking examples from its rich culture as well as modern scientific solutions, to strengthen collective awareness of ecologically sensitive choices and habits that ensure that our footprint on the Earth is sustainable and clean.

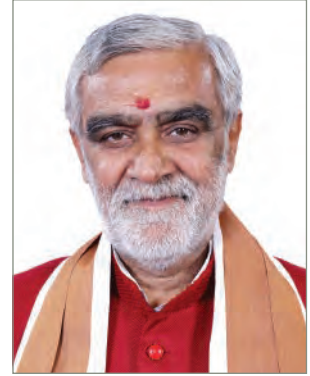
The onus of protecting the environment is on each of us individuals. More often than not, people tend to think that they are not central to either the problem or the solution and that individual actions do not make an appreciable difference. However, a challenge of the magnitude that we face today needs to be addressed using the collective wisdom of people as well as the strengths of institutions, technologies, innovations and policies.

India is committed to propagating a healthy and sustainable way of living based on traditional values of conservation, moderation and optimal utilization of resources. There is a strong focus on circular economy with its principles of reduce, reuse and recycle. Through the LiFE movement, the country aims to promote climate resilient local foods and grains such as millets, climate-sensitive agricultural practices, sustainable clothing, public and shared transport infrastructure, aggressively implementing renewable energy projects, working with rural communities to restore and rejuvenate local biodiversity, among many other actions.

This Compendium provides a robust framework and a plethora of examples that can promote the LiFE movement in consonance with local contexts and needs.



Message



Shri Ashwini Kumar Choubey

*Minister of State for Environment,
Forest and Climate Change*

Hon'ble Prime Minister Narendra Modi's call for LiFE (Lifestyle For Environment) as a mass movement, at the 26th Session of the Conference of Parties in Glasgow, is being recognized as a key initiative for reducing Greenhouse Gas emissions and improving health and well-being at the same time. There is global recognition of the fact that to address climate change challenges, there needs to be active participation of the human population towards Mindful and Deliberate Utilization of natural resources as against the Mindless and Destructive Consumption that caused the problem in the first place. Behavioural changes at the individual and community level offer significant potential for emissions reduction.

LiFE encourages individuals and communities to bear responsibility for a healthy planet and there is much that India can offer to the discourse through its traditional practices and indigenous knowledge. As a country that has worshipped nature in all its forms, sustainability has been built into traditional Indian lifestyles for centuries. It gives me great pleasure to present to you in this Compendium of LiFE, a wide variety of examples from across the country spanning different sectors and ecosystems, illustrating how traditional knowledge systems are being re-established and simultaneously melded with new technologies to address the well-being of the Planet and its inhabitants in a holistic manner.

Understanding the essence and inter-connectedness of indigenous practices and using that to shape future policies that guide people towards positive climate action at an individual level is the need of the hour. This Compendium offers direction with rich evidence on how countries can steer their people from being at the centre of the climate problem to being the centre of the climate solution.





Foreword



Ms. Leena Nandan

*Secretary, Ministry of Environment,
Forest and Climate Change*

Individual consumption patterns have a key bearing on Greenhouse Gas emissions. Meeting our collective climate targets set through the Paris Agreement and reinforced at the Glasgow COP26 last year requires a drastic change in our lifestyles. The journey to net zero cannot depend on policies alone. Responsible citizens and societies have an equally important role to play.

The LiFE movement is envisaged as an opportunity to turn climate crisis into climate opportunity. Be it the food we eat, the homes we live in, the things we buy, the modes of transport we choose, the way we manage our water resources or the waste we generate, every individual can choose a more sustainable option. By combining our traditional wisdom with modern scientific innovations, we can make green lifestyles an integral part of our society and economy.

Launching Mission LiFE at the Statue of Unity in Gujarat with the UN Secretary General António Guterres, Prime Minister Narendra Modi spoke about how it can unite the people of the Earth as pro-planet people. Achieving sustainable lifestyles is the cornerstone of achieving our climate goals.

India has an economy and lifestyle that is closely tied to its natural resource base. The Compendium gives examples of how the synergy of India's traditional ethics with modern technologies and innovative policies maps with various behaviour change theories. The shift in lifestyles among its people is helping the country move towards meeting the ambitious climate targets that it has set for itself, keeping in mind equity, access and well-being of marginalized, poor communities.

This compendium on LiFE highlights how equitable, pro-planet lifestyle choices made by billions of people every day can be a game-changer in our fight against climate change. Through examples from India, it provides a framework for LiFE, which can be contextualized by governments and societies based on their requirements. It identifies the pivotal motivators and drivers for stimulating pro-planet behaviour change from mindless consumerism to mindful utilization of resources in individuals and scale up across communities and nations.

I congratulate my colleagues at Ministry of Environment, Forest & Climate Change and the United Nations Development Programme for developing this publication, and hope that it sparks more conversations and actions to take forward the LiFE movement.



Preface



Ms. Shoko Noda

*Resident Representative,
UNDP India*

Climate change is the biggest crisis of our time. It is also the biggest opportunity to change how we treat our planet – as individuals, societies, and nations.

Last year at UNFCCC COP26, the Hon'ble Prime Minister of India, Shri Narendra Modi, proposed a global movement called Lifestyle for Environment, or LiFE, to bring individual behaviours to the forefront of the global climate action narrative. Last month, PM Modi and UN Secretary-General António Guterres launched this global mission from the Statue of Unity in India.

More than two-thirds of Greenhouse Gas emissions can be attributed to household consumption and lifestyles. Sustainable consumption habits are crucial to achieve the urgent cuts we need in global emissions. The way we eat, dress, travel, work – every aspect of our lifestyle affects the environment.

LiFE aims to encourage individuals to become 'Pro-Planet People' by 2027 by adopting simple lifestyle changes and habits that lead to positive climate action.

For example, about 6-8 percent of global emissions can be avoided if we simply stop wasting food. Transitioning from in-person to virtual meetings at work can substantially reduce the carbon footprint by 94 percent and energy use by 90 percent.

If millions of people start taking such positive lifestyle actions, we will make significant progress towards achieving our climate ambition and the Sustainable Development Goals.

This publication highlights important behaviour change theories that can support the development of policies to drive sustainable consumption and production across the world. It also showcases some LiFE actions from India demonstrating climate-friendly practices and behaviours to inspire others to make a difference.

UNDP remains a committed partner in this mission and will continue to work with individuals, civil society, governments, private sector and development partners to create a sustainable future *“for people, for planet”*.

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List of Abbreviations

CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CSEB	Compressed Stabilized Earth Blocks
CSR	Corporate Social Responsibility
GHG	Greenhouse gas
Gt	Giga tonnes
ha	Hectare
IPCC	Intergovernmental Panel on Climate Change
lpcd	Litres Per Capita Per Day
LUC	Land-use change
MHT	Mahila Housing Trust
m ³	Cubic metre
mt	Metric tonnes
NGO	Non-Governmental Organization
NTFP	Non-Timber Forest Products
PMC	Pune Municipal Corporation
SBM	Swachh Bharat Mission
SDG	Sustainable Development Goal
SHG	Self-Help Groups
SWM	Solid Waste Management



Introduction

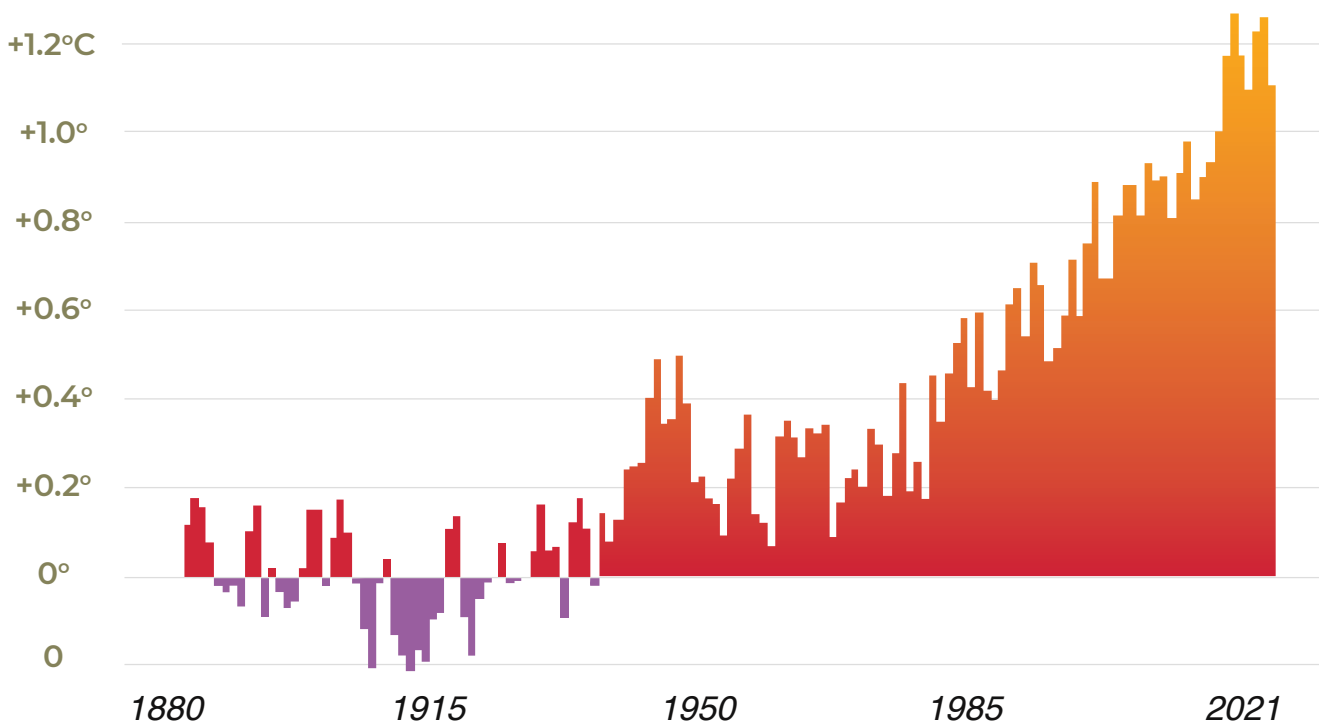
Over many millennia, the Earth's climate has seen frequent peaks and troughs, with several ice ages being followed by warmer periods. Yet, the warming trends we are currently experiencing—the result of rapid increase in human activities since the mid-1800s and the advent of the Industrial Revolution—are unprecedented. As human civilisation transitioned from handlooms to spinning jennies, new energy sources such as coal and petroleum have been in considerably greater use. Energy-intensive technological advancements have also come at a heavy price. The spread of fossil fuel based material consumption and changing lifestyles are major drivers of global resource use and the main contributors to rising greenhouse gas (GHG) emissions. Carbon dioxide (CO₂), the primary greenhouse gas, is emitted through the combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation.

As we know, greenhouse gases trap heat in the Earth's atmosphere and cause global warming. Most of the global warming so far has occurred in the past 40 years, with the last seven years being the warmest recorded in history (Figure 1). In its Sixth Assessment Report, published in 2022, the Intergovernmental Panel on Climate Change (IPCC) states that 'since systematic scientific assessments began in the 1970s, the influence of human activity on the warming of the climate system has evolved from theory to established fact'. Human-induced warming reached approximately 1°C above pre-industrial levels in 2017 and at the current rate of global warming, it would increase to 1.5°C around 2040.¹

As the planet warms, the balance of climate systems is affected and the resulting change in weather patterns over long-term averages is known as climate change. The negative impact of human activities on the environment has been so significant that experts believe it has ushered in a new geological age: the age of human impact on Earth, or the Anthropocene.

Figure 1.

GLOBAL TEMPERATURE Departure from 1881-1910 Average



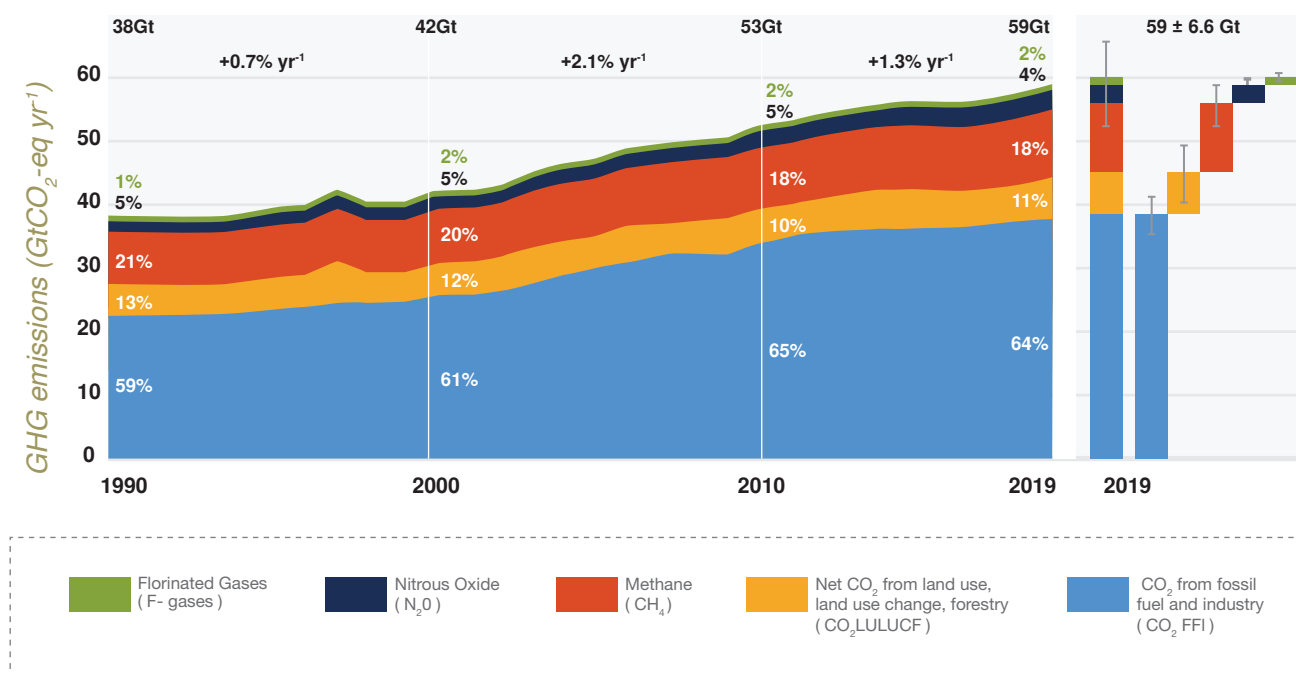
Source: Climate Central, "2021 in Review: Global Temperature Rankings", 13 January 2022.

The United Nations Environment Programme (UNEP) Emissions Gap Report (2020) states that in 2019 GHG emissions continued to rise across all major groups of GHGs and were at their highest level in history, reaching 52.4 GtCO₂e (range: ±5.2) without land-use change (LUC) emissions and 59.1 GtCO₂e (range: ±5.9) when including LUC.

According to the IPCC's Sixth Assessment Report (2022), emissions in 2019 were 12 percent higher than in 2010 and 54 percent higher than in 1990. However, there have been some signs of progress – the decadal growth of GHG emissions reduced 0.8 percent between 2010 and 2019 as against 2000 and 2009 (GHG emissions growth was 1.3 percent between 2010 and 2019 as against 2.1 percent between 2010 and 2009) (Figure 2).

Figure 2.

GLOBAL NET ANTHROPOGENIC GHG EMISSIONS (1990–2019)



Source: IPCC Sixth Assessment Report (2021)

An increase in GHG emissions and consequently in the mean temperature of the Earth is causing widespread climate disruptions with severe impacts across the globe. Floods, storms, heatwaves and droughts resulting from global warming are already threatening lives and livelihoods of billions. In recognition of the urgent and immense threat that climate change represents to the Earth and all its inhabitants, in December 2015, a majority of the countries in the world adopted the Paris Agreement with the aim of holding the increase in global average temperature to well below 2°C and pursuing efforts to limit the global temperature rise to 1.5°C above pre-industrial levels.

In the scenarios assessed by the IPCC, limiting warming to around 1.5°C requires global GHG emissions to peak before 2025 at the latest and be reduced by 43 percent by 2030. Global temperature will stabilize when CO₂ emissions reach net zero. For 1.5°C, this means achieving net zero CO₂ emissions globally by the early 2050s. However, the latest data shows that efforts to mitigate climate change are still inadequate, and we are not on track to limit warming to 1.5°C above pre-industrial levels.

Historically, India's GHG emissions have always been low, adding up to just 4 percent of the global total between 1870 and 2019, and yet it is amongst the most vulnerable to the impact of climate change caused by historical emissions from wealthier nations. It faces criticism as the third-largest contributor of carbon emissions, at 7.06 percent of global emissions, but the scale of its emissions is not comparable by any stretch to the top two emitters – China at 26.4 percent and the United States at 12.5 percent of global emissions.²

The annual per capita CO₂ emissions from India, a nation that needs energy to bring an increasing number of people adversely impacted by climate change caused by wealthy countries out of poverty, stood at 1.8 metric tonnes (mt) in 2019, which is less than half of the global average of 4.5 mt.³

Despite the challenges that India faces in meeting the Sustainable Development Goal (SDG) 1, of ending poverty in all its forms everywhere, the country in line with its traditional environmental ethics, put forth bold commitments to fight climate change. At the 2021 United Nations Framework Convention on Climate Change in Glasgow, Scotland (United Kingdom), commonly referred to as the 26th Conference of Parties or COP26, the Prime Minister of India, Shri Narendra Modi, committed that the country would achieve net zero emissions by 2070, which translates to meeting more of India's energy needs through renewable and non-fossil energy sources and reducing the carbon intensity of its economy and overall carbon emissions.

India has an economy and lifestyle that is closely tied to its natural resource base, and simple living has been part of the Indian ethos. For centuries, ancient Indian traditions have advocated an environmentally conscious lifestyle, a life of simplicity. Three out of the four *ashramas* (stages of life) – *brahmacharya* (student life), *vanaprastha* (retired life) and *sanyasa* (phase of renunciation) – emphasize leading a frugal lifestyle and practicing detachment from materialism.

यात्रामात्रप्रसिद्धयर्थं स्वैः कर्मभरिग्रहितैः ।
अक्लेशेन शरीरस्य कूर्वीत धनसञ्चयम् ॥ ३ ॥

yātrāmātraprasiddhyartham svaiḥ karmabhiragarhitaiḥ |
akleśena śarīrasya kurvīta dhanasañcayam || 3 ||

The idea that one may rightfully accumulate as much wealth as is required for the subsistence of one's own family, as quoted above, is touched upon in several ancient Indian scriptures. Subhashita's, a literary genre of Sanskrit epigrammatic poems known for their moral and ethical advice, caution against needless accumulation by saying that when one needs but a cup of milk, a morsel of food and a cot, of what use is it to own big herds of cattle, large farmlands and a huge palace. Many verses highlight the value of charity over amassing wealth and advise controlling one's mind against incessant desires.

Nature has traditionally been given an exalted status in India and is worshipped in its many forms, be it as a river or a sacred grove. Many ancient Indian texts such as the Vedas, Puranas, Upanishads, and the Epics, emphasize environmental ethics and the preservation of ecological balance. They emphasize that nature and the environment are not outside of us, but an inseparable part of our existence.

Many proverbs in various Indian languages endorse moderation of consumption. A Kannada proverb says that one who eats one meal a day is a *yogi*, one who eats two meals a day is a content person, one who eats three meals a day is a sick person, and one who eats four meals a day is a dead man. Ayurveda advises against filling one's stomach at a meal, rather keeping a quarter of the stomach empty so that digestion can be effective. Many texts, such as a Pali discourse in the *Samyutta-nikāya*, deliver teachings on the importance of being mindful and exercising moderation with food. From Gautam Buddha to Mahatma Gandhi, over the ages, India has had many proponents of simple living.

Simple lifestyles where consumption is mindful of the Earth's limited natural resources is a formidable tool for mitigating global warming and climate change. In keeping with its principles of simple living and environmental consciousness since the ages, India has proposed a global mission LiFE – Lifestyle for Environment – with the view to create a mass movement to make the human lifestyles more planet-friendly.

India has a strong foundation of respect towards the environment, and this book illustrates how traditional knowledge systems are being re-established and simultaneously melded with new technologies. The success of LiFE and the transition from mindless consumption to mindful utilization hinges on behaviour changes, and the book discusses a variety of relevant behaviour change theories, while giving examples of on-ground projects and programmes in India that have implemented these theories successfully. It also presents a framework for LiFE, which other countries can contextualize, adopt and promote, thereby creating a mass movement for the environment, which is the need of the hour.

CHAPTER

01

The number '0' is a large white oval containing a dark brown footprint. Inside the footprint, there are two stylized green leaves. The number '1' is a large white vertical bar with a curved top, positioned to the right of the '0'.



**LiFE -
FROM MINDLESS
CONSUMPTION
TO MINDFUL UTILIZATION**





Climate change is the result of more than a century of unsustainable energy and land use, lifestyles and patterns of consumption and production. ”

– Jim Skea, Co-Chair, IPCC Working Group III

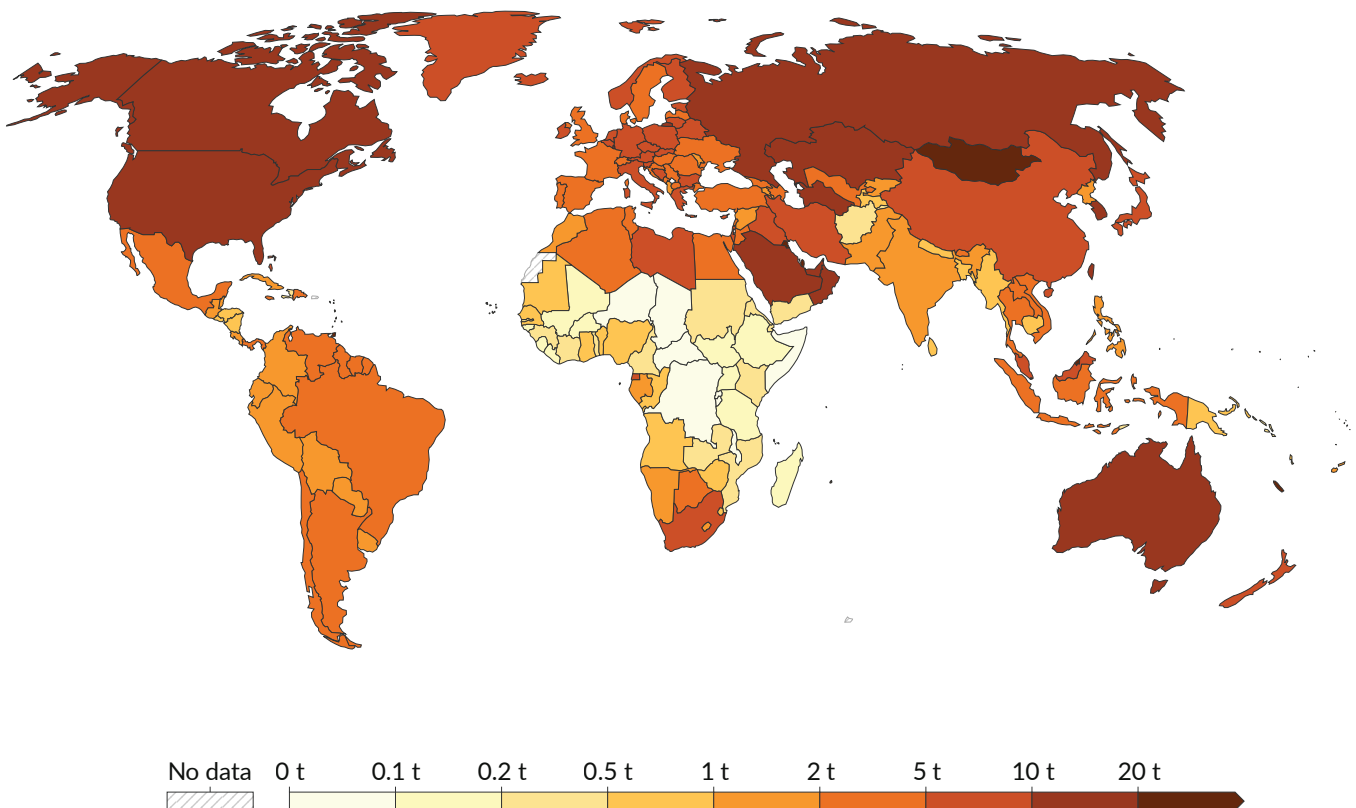
To combat climate change, countries initially focussed on technology, policy and regulatory means to curb GHG emissions, but the impact was not as high as predicted. One reason for this may be that the world has adopted a culture of consumerism. Carbon-intensive lifestyles in industrialized countries fuel global aspirations and drive consumption. Advertising and social media also play a significant role in promoting consumerism. The global middle class, the backbone of economies and markets, has increased sharply over the past two decades, and this manifests as increased purchasing power, which only drives consumption.

Wealth and income have a positive correlation with consumption patterns and consequently with GHG emissions, and this results in a carbon inequality between countries. The wealthiest 1 percent have more than twice the emissions of the poorest 50 percent.⁴ In 2019, some Middle Eastern nations were responsible for 15.3–32.5 mt of CO₂ emissions per capita, North America for 14.8 mt, OECD member countries for 8.5 mt, and China for 7.6 mt. On the other end of the spectrum, the CO₂ emissions per capita of the Democratic Republic of Congo, Somalia, Burundi, Chad, the Central African Republic, Rwanda and Malawi were less than 0.1 mt.⁵

Figure 3.

PER CAPITA CO₂ EMISSIONS, 2020

Carbon dioxide (CO₂) emissions from fossil fuels and industry. Land use change is not included.



Source: Our World in Data based on the Global Carbon Project (2019)

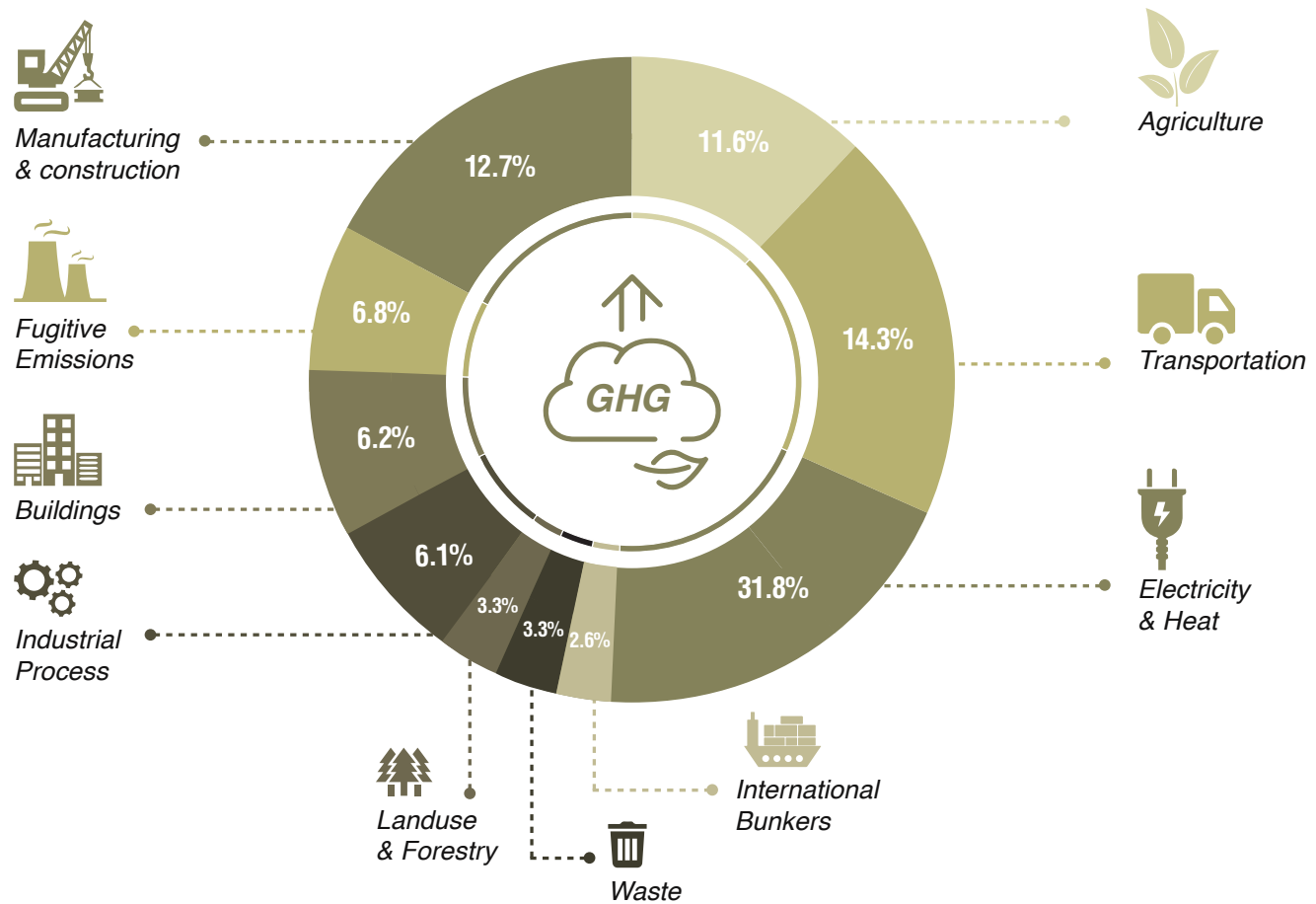
Lifting more than 1 billion people out of poverty to achieve SDG 1 would mean giving them access to electricity, food, water and essential services, all of which can increase GHG emissions. If people and societies can reduce their carbon footprint, the world can achieve SDG 1 without compromising on climate targets.

The change starts with us

The buildings we live in and the way we travel are key contributors to global emissions. In 2019, 14.3 percent of total emissions came from just transportation, and 18 percent of the total emissions were generated by construction of and energy use in residential and commercial buildings.⁶

Figure 4.

GLOBAL GREEN HOUSE GAS EMISSION BY SECTOR



Source: Adapted from raw data from IEA (2021).

Transport

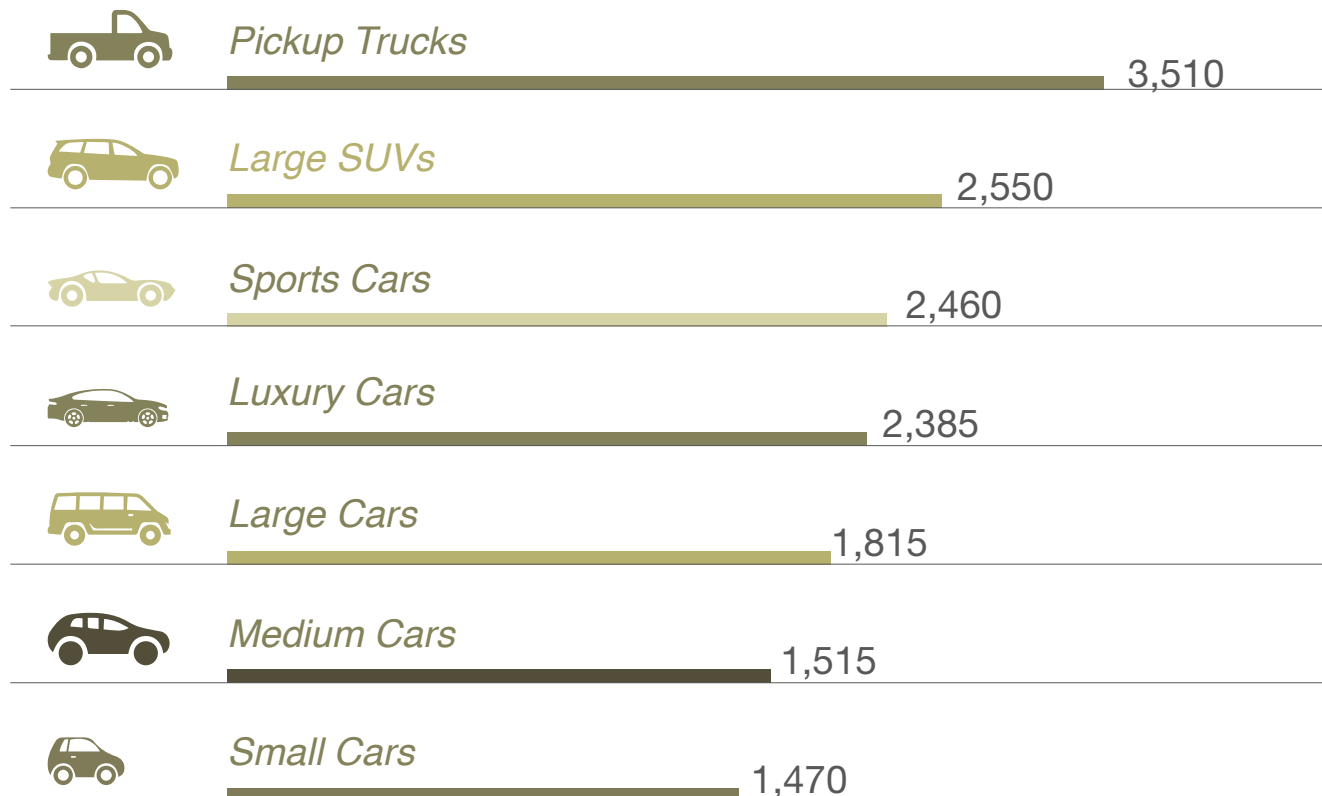
Each time we use motorized transport, we burn fossil fuels and release GHG emissions into the atmosphere. Despite numerous technological advances in energy efficiency and fuel economy, the emissions from this sector have not reduced substantially due to the constantly increasing volumes of travel of passengers and freight, which more than offset the gains made.

On average globally, a small car emits 1470 kg CO₂ annually, assuming that it is used to travel a distance of 50 km a day for 25 days every month. If a Sports Utility Vehicle is used to cover the same distance, CO₂ emissions increase over 76% to 2550 kg (Figure 5).⁷

Figure 5.

MILES APART: CAR CO₂ EMISSIONS

Global average emissions of passenger cars in 2022 (in kg CO₂/ year), by type

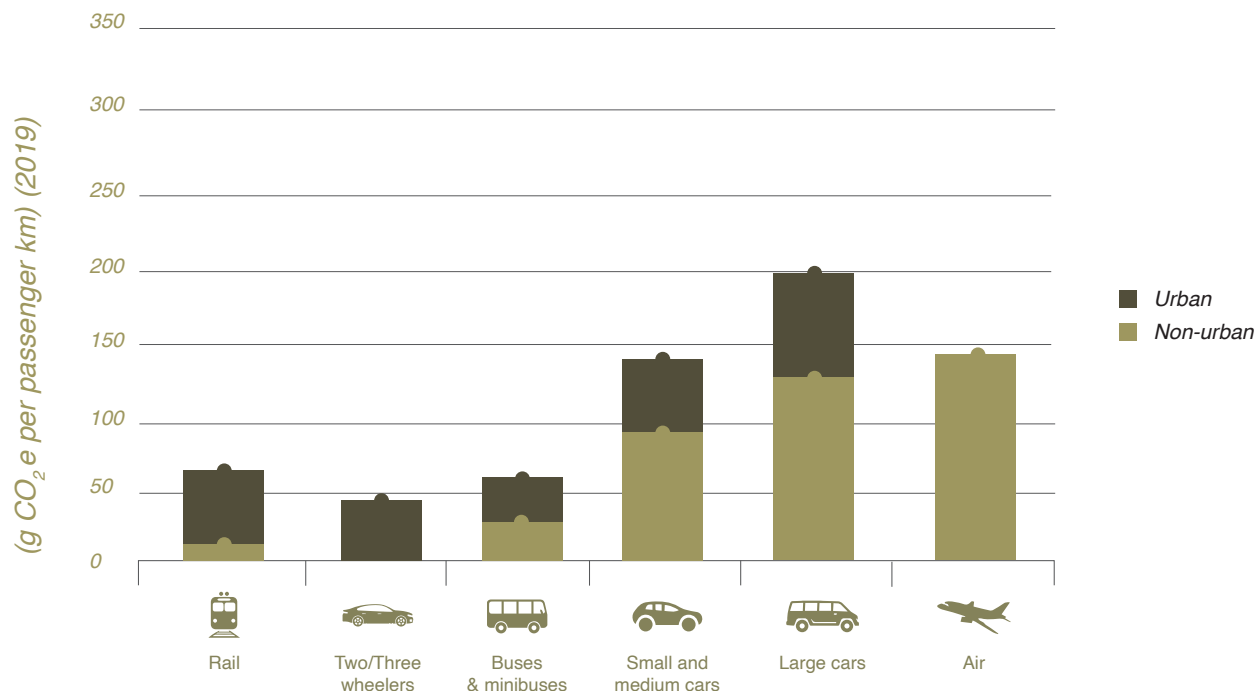


Source: Statista Mobility Market Outlook (2022).

The average GHG emission intensity (g CO₂e per passenger km) of large cars is even more than that of aircrafts, and trains are most environmentally friendly option for inter-city travel (Figure 6).

Figure 6.

AVERAGE GHG INTENSITY OF PASSENGER TRANSPORT MODES

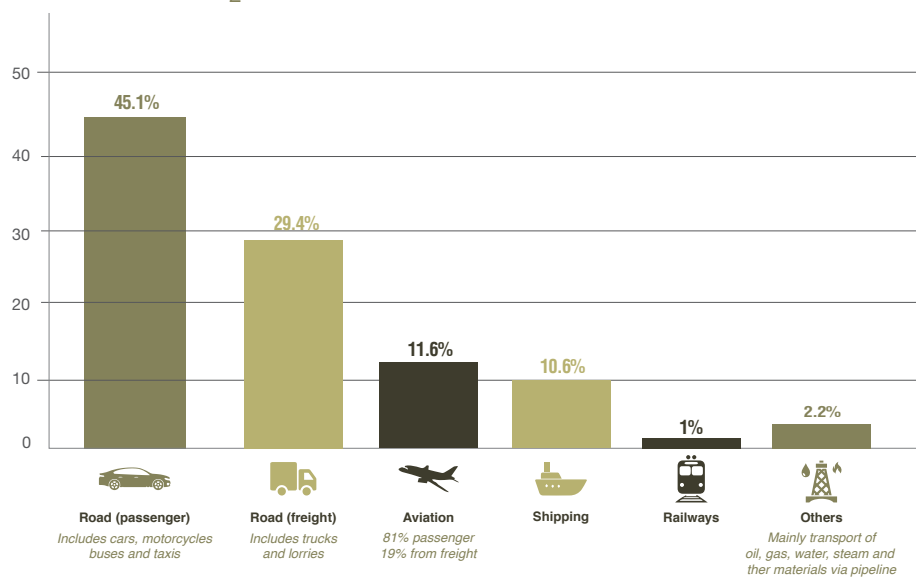


Source: Adapted from IEA (2019)

Three-quarters of transport sector emissions are from road transport. 60 percent of this comes from passenger vehicles and the remaining 40 percent comes from trucks carrying freight. Rail transport contributes to only 1 percent of all transport emissions, while aviation (mainly passenger movement) and shipping (mainly freight movement) each contribute 10 – 12 percent of total transport emissions (Figure 7).⁸

Figure 7.

GLOBAL CO₂ EMISSIONS FROM TRANSPORT (2018)



Source: Adapted from IEA (2019) and the International Council on Clean Transportation (ICCT)

Addressing emissions from the transport sector is crucial for GHG mitigation. Large scale adoption of clean mobility choices is the way forward.

LIFESTYLE CHANGES THAT CAN HELP

- Choosing to walk and cycle more often over short to medium distances is most beneficial to the environment, and also has a positive impact on health and well-being.
- Using public transport over private modes.
- Preferring trains over flights or cars for inter-city travel.
- Flying economy class against business or first class.
- Implementing fuel efficient practices while driving.
- Car-pooling or using the bus to and from work or school.
- Reducing emissions from freight movement by buying locally grown fruits and vegetables.

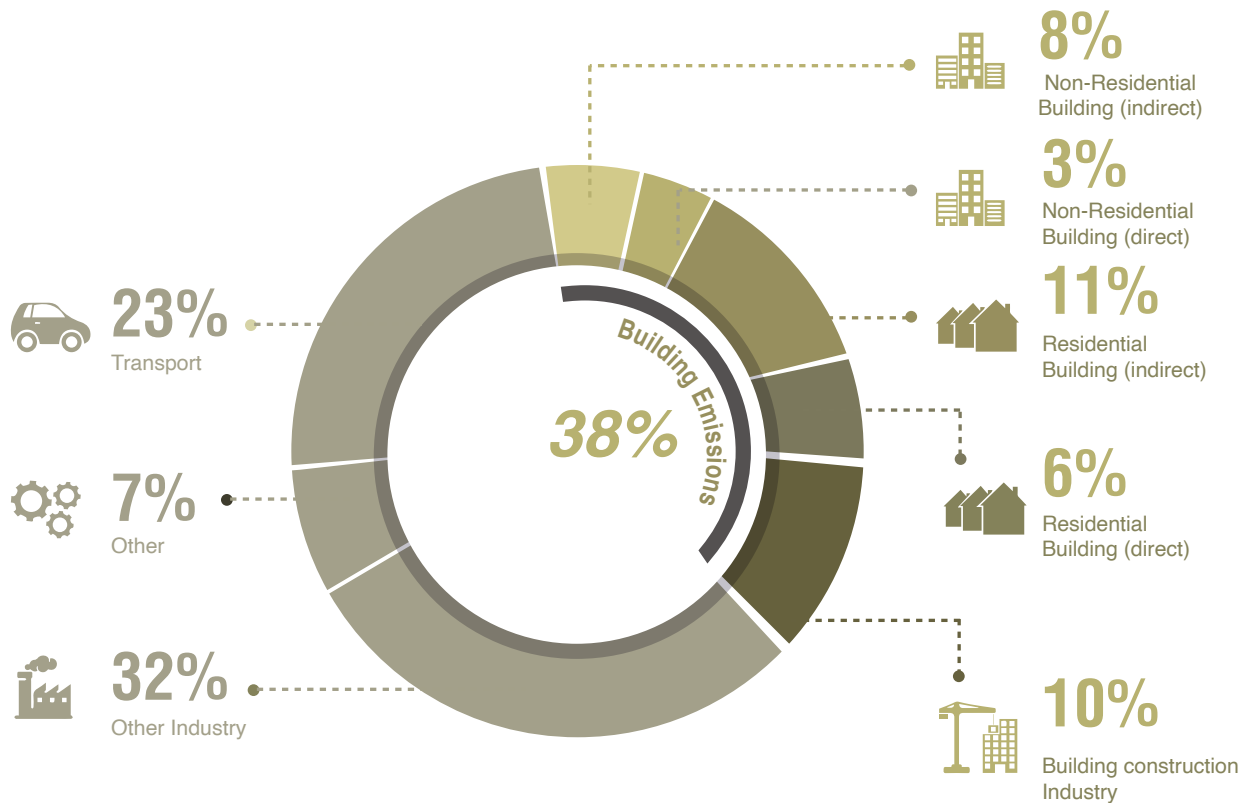
Buildings

Our homes, offices, and entertainment spaces account for 38 percent of all energy-related CO₂ emissions when adding building construction industry emissions (Figure 8). Buildings emissions can be categorized into two parts:

- embodied emissions, which are the GHG emissions released during the extraction, transportation, and manufacturing of building materials, whether it is cement, steel, glass, tiles, bricks, sanitaryware, pipes, etc.; and,
- building operation emissions, which are the GHG emissions released due to the use of lighting, heating, ventilation, air conditioning, and other electricity/gas based appliances when a building is in use.

Figure 8.

GLOBAL SHARE OF BUILDING EMISSIONS COMPARED TO ALL ENERGY RELATED EMISSIONS, 2019

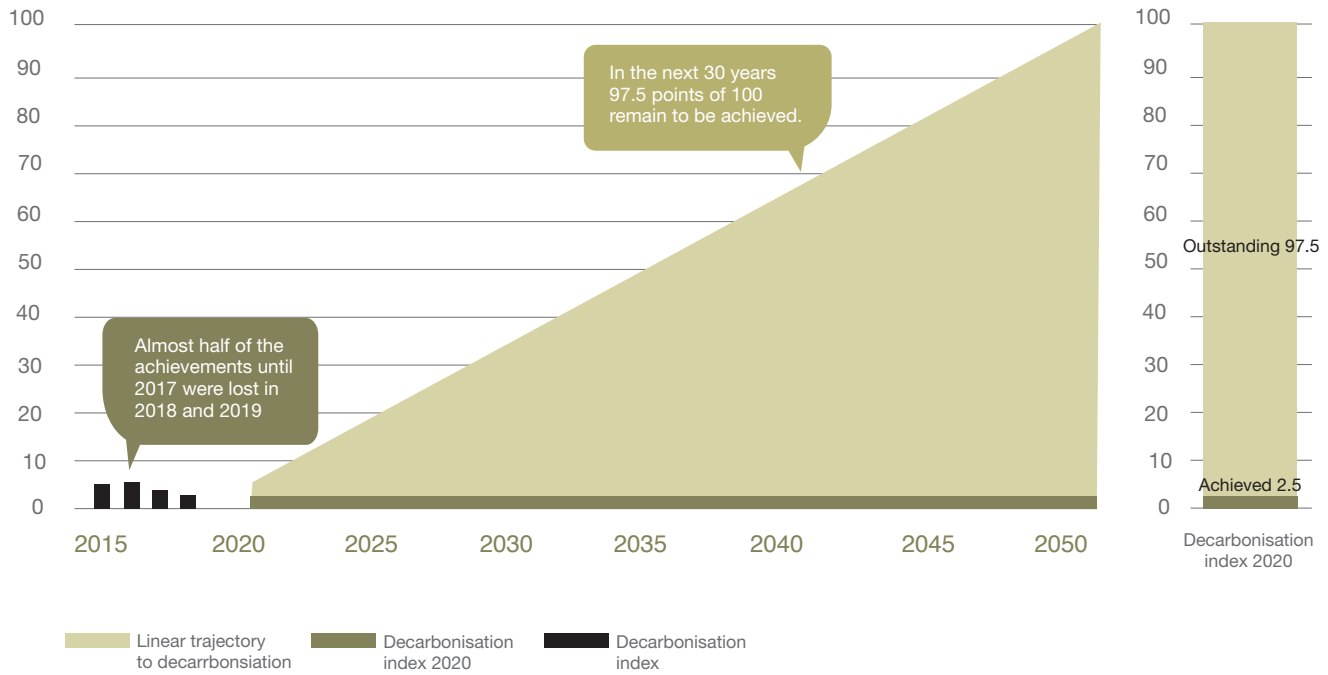


Source: Adapted from "2020 Global Status Report for Buildings and Construction", based of raw data from IEA (2020).

In 2019, emissions from the operation of buildings hit their highest-ever level, moving the sector farther away from the goals of the Paris Agreement (Figure 9). Direct building CO₂ emissions in this sector need to halve by 2030 to get on track for net zero carbon building stock. This means a required reduction in building sector emissions of around 6 percent per year from 2020 to 2030.⁹

Figure 9.

BUILDING DECARBONIZATION INDEX -
where we are and where we need to be



Source: Adapted from "2020 Global Status Report for Buildings and Construction", based of raw data from Buildings Performance Institute Europe (BPIE).

LIFESTYLE CHANGES THAT CAN HELP

- Using energy efficient appliances in our homes and workplaces and practicing energy efficiency in daily actions, be it as simple an action as turning off lights and fans when not required.
- Maintaining efficiency of heating, ventilation and air conditioning systems in our homes and offices.
- Increasing reliance on decentralized (rooftop) renewable energy systems for electricity, water heating and cooking instead of using fossil fuel intensive grid-based electricity.
- Retrofitting our buildings with climate-friendly cooling or heating techniques as the need may be.
- If one is a new home builder or buyer:
 - ◆ Demanding climate sensitive building design, with adequate natural lighting and ventilation.
 - ◆ Using natural and locally available construction materials and traditional climate-friendly architecture principles to the extent possible

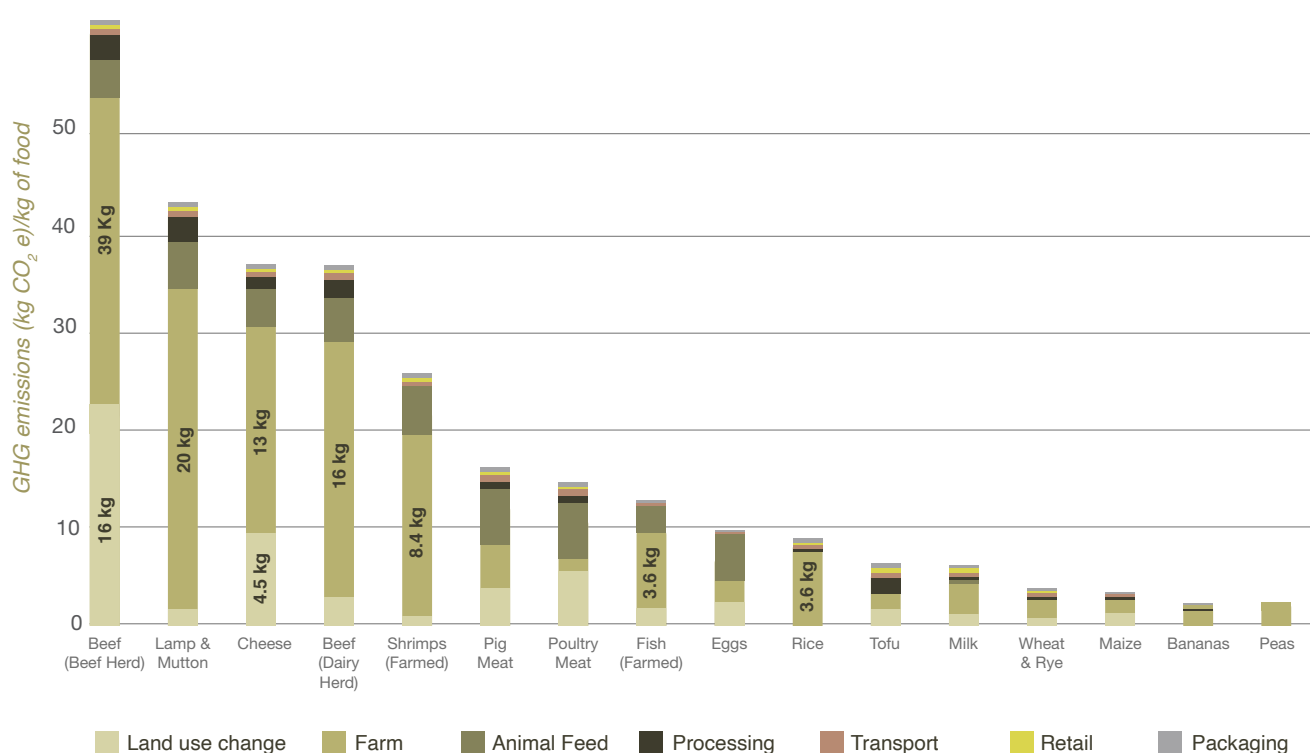
All the above will not only reduce GHG emissions, but also help residents reduce energy costs.

Food

In 2018, the world's food systems were responsible for about 16 Gt CO₂ e per year, about one-third of the global anthropogenic total.¹⁰ The total food systems emissions per capita in developed countries were about twice those in developing countries in 2018.¹¹ One of the greatest tragedies of our times is that one-third of all the food produced eventually ends up rotting in bins and creating more GHG emissions in the form of methane, while millions around the world go hungry.

Figure 10.

GREENHOUSE GAS EMISSIONS ACROSS THE FOOD SUPPLY CHAIN



Source: Chiara Cecchini, "Can you eat to save the climate", World Economic Forum

What we eat has a significant impact on GHG emissions as can be seen in Figure 10. Animal-based foods, especially red meat, dairy, and farmed shrimp are generally associated with the highest emissions because meat and dairy production require extensive grasslands and quite often forests are destroyed to create pastures for grazing. The destruction of forests releases CO₂ stored in the trees. Additionally, chemical fertilizers used for growing cattle feed emit nitrous oxide, and livestock produce methane as a by-product of their normal digestive process. Both nitrous oxide and methane are more potent GHGs when compared to CO₂. Mangroves, which absorb huge amounts of CO₂, are cut down to create shrimp farms, raising the GHG intensity of shrimps or prawns as a food. Plant-based foods (fruits, vegetables, grains, lentils, nuts etc.) generally use less water, energy, and land than animal-based foods and hence have lower GHG intensities.

LIFESTYLE CHANGES THAT CAN HELP

CONSUMERS

- Switching to a balanced, plant-rich diet where energy and nutrients are derived from several different food groups, instead of a predominantly red meat based diet .
- Trading ruminant meat for chicken, pork or seafood.
- Reducing the intake of saturated fats found in dairy, meat and palm oil.
- Reducing food wastage by buying only what one needs and using as much of the food as possible while cooking.
- Buying imperfect looking fruits and vegetables, which may otherwise get thrown.
- Composting food and vegetable waste.
- Preferring locally grown seasonal produce.

FARMERS

- Following better agricultural practices and rejuvenating fallow, degraded lands to improve soil quality.
- Reducing the use of chemical fertilizers and pesticides.
- Having smaller herd sizes of livestock and using the manure in biogas plants to produce energy that can be used as an alternative to traditional fossil fuels.

Fashion

The fashion industry is responsible for 10 percent of annual global carbon emissions, which is more than the emissions of all international flights and maritime shipping combined (Figure 11).¹² Virgin fossil fuel-based fibres accounted for a sixth¹³ of the 367 million tonnes of plastic produced in 2020.¹⁴ With garments getting cheaper and the middle class expanding, more people are buying more clothes and using them for shorter periods of time.

Globally, on average, a person buys 5 kg of clothes per year,¹⁵ whereas in Europe, the figure is as high as 26 kg.¹⁶ Of the total fibre input used for clothing, 87 percent is ultimately incinerated or sent to a landfill and only a fraction is recycled. In some countries, 40 percent of purchased clothing is never used.¹⁷ Not just increased waste generation, the garment industry also contributes greatly to water pollution. Twenty percent of the industrial water pollution globally is attributable to the dyeing and treatment of textiles. It is also estimated that 0.5 million tonnes of microplastics, shed during the washing of polyester, nylon or acrylic, end up in our oceans annually.¹⁸

Figure 11.

GHG EMISSIONS FROM CLOTHING AND FOOTWEAR PRODUCTION



To reach the 1.5°C target, emissions from the fashion industry would need to reduce annually to around 1.1 billion metric tonnes in 2030, roughly half of today's numbers. 21 percent of this reduction can be achieved through changes in consumer behaviour.¹⁹

LIFESTYLE CHANGES THAT CAN HELP

- Buying only what one needs.
- Using a mix and match approach to reuse garments often without appearing repetitive.
- Buying better quality garments that can be easily accessorized and used multiple times.
- Buying pre-loved, lightly used clothing instead of new garments.
- Repairing clothes and donating them to the less fortunate, instead of trashing them.
- Choosing clothes of natural fibres, especially those that are sustainably grown and manufactured.

Water

What makes water a sector of concern in our race against climate change is that it's inextricably linked to individual health and well-being, agriculture and food production, power generation and manufacturing. Agriculture uses 72 percent of all freshwater withdrawals, 16 percent is drawn by municipalities for households and services, and 12 percent by industries.

By 2050, global food production would need to increase by 50 percent to feed the more than 9 billion people projected to live on the planet, and global water demand is projected to increase by 20 to 30 percent by 2050. 90 percent of global power generation is water-intensive, and power plant cooling is responsible for 43 percent of total freshwater withdrawals in Europe and nearly 50 percent in the US.²⁰

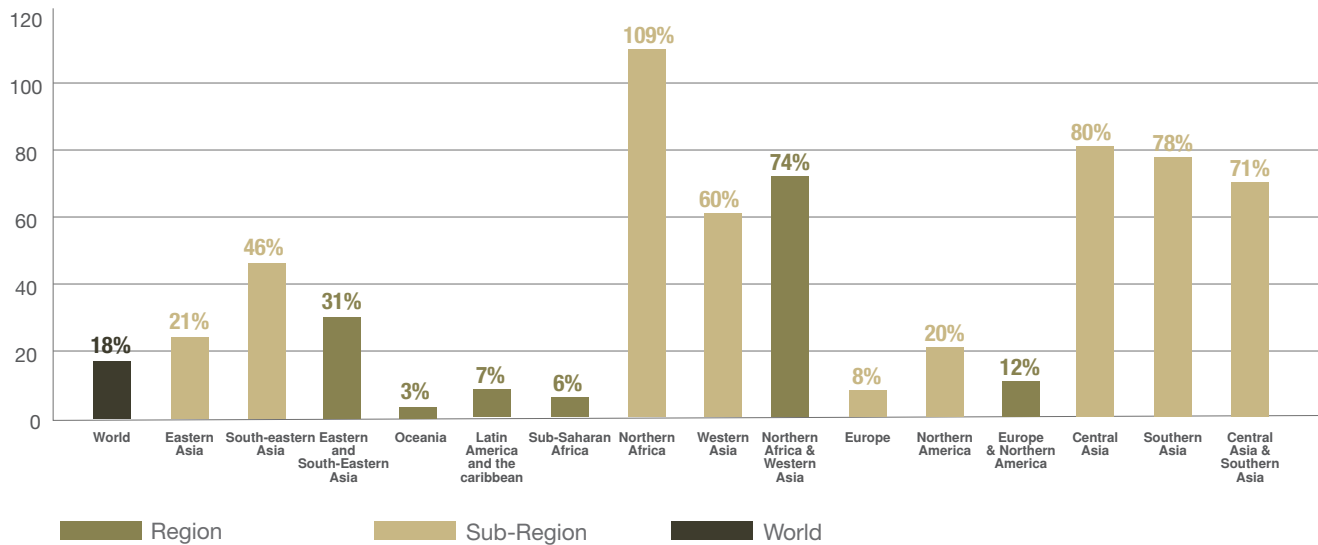
Ensuring that everyone has access to sustainable water and sanitation services is a critical climate change mitigation strategy for the coming years, and we need to focus on adopting lifestyle changes that foster sustainable consumption and protect our water resources.

We drink only 2–4 litres of water per capita per day (lpcd). In India, 135 lpcd is supplied in urban areas and 55 lpcd in rural areas, to take care of hygiene and other water requirements in a household. But there is a large hidden water footprint estimated to be a staggering 1.24 million lpcd, because water is required in the production of everything that we use, be it food, clothes, other raw materials, goods and energy.²¹

Water stress and scarcity are looming over the world, with 2.3 billion people already living in water stressed countries. North Africa, and Central and Southern Asia are worst affected, as seen in Figure 12. Approximately 700 million people could become water refugees due to intense water scarcity in their region, as early as 2030.²² Water has to be treated as a scarce resource and each of us has a responsibility to protect and manage our water resources.

Figure 12.

LEVEL OF WATER STRESS BY REGION AND SUBREGION (2018)



Source: Progress on Level of Water Stress. Global status and acceleration needs for SDG Indicator 6.4.2, FAO and UN Water, 2021

LIFESTYLE CHANGES THAT CAN HELP

- Rainwater harvesting.
- Monitoring and regulating household water consumption.
- Practicing water efficiency.
- Using natural cleaners.
- Changing to water efficient faucets and fixtures.
- Choosing natural clothing fibres that are not grown in a water intensive manner and are processed with minimal water pollution.
- Eating vegetarian meals and switching to grains and vegetables that are not water intensive to grow

Waste

By 2050, the amount of municipal solid waste generated globally is expected to increase by over 60 percent, from 2.01 billion tonnes to 3.4 billion tonnes. As the world gets richer it discards more, high-income countries accounting for 16 percent of the world's population, generate about 34 percent of this waste. It was estimated that 1.6 billion tonnes of CO₂e GHG emissions (5 percent of global emissions) were generated from solid waste treatment and disposal in 2016.²³

Every year, 8 million tonnes of plastic enters our oceans and pollutes marine ecosystems and the global food chain. Only 14 percent of plastic is recycled, and the main reason behind this is lack of segregation at source. Most of the waste is mixed, so it is difficult to segregate them at a recycling plant. Thus, more often than not, recyclables are also dumped in landfills or incinerated.

In addition, nearly a third of the food produced worldwide is wasted. The decomposition of food in landfills leads to methane emissions, but more importantly, the change in land use patterns to produce food that is eventually wasted adds significantly to GHG emissions, biodiversity loss, land degradation and unsustainable water use.

Electronic waste, which is a health and environmental hazard, is the world's fastest-growing waste stream, with 53.6 million mt generated in 2019, and predicted to reach 74 mt by 2030. Only 17.4 percent of this waste was recycled in 2019. This means that gold, silver, copper, platinum and other high-value, recoverable materials – conservatively valued at US\$ 57 billion, a sum greater than the gross domestic product of many countries – were mostly dumped or burned rather than being collected for treatment and reuse.²⁴

Waste also pollutes our water and soil resources, which, in turn, has severe consequences on climate change mitigation strategies. It is a misconception that technology alone can help address the problem of waste mismanagement. Human lifestyles and mindsets play a key role in addressing this problem, and technology is just one supporting factor.

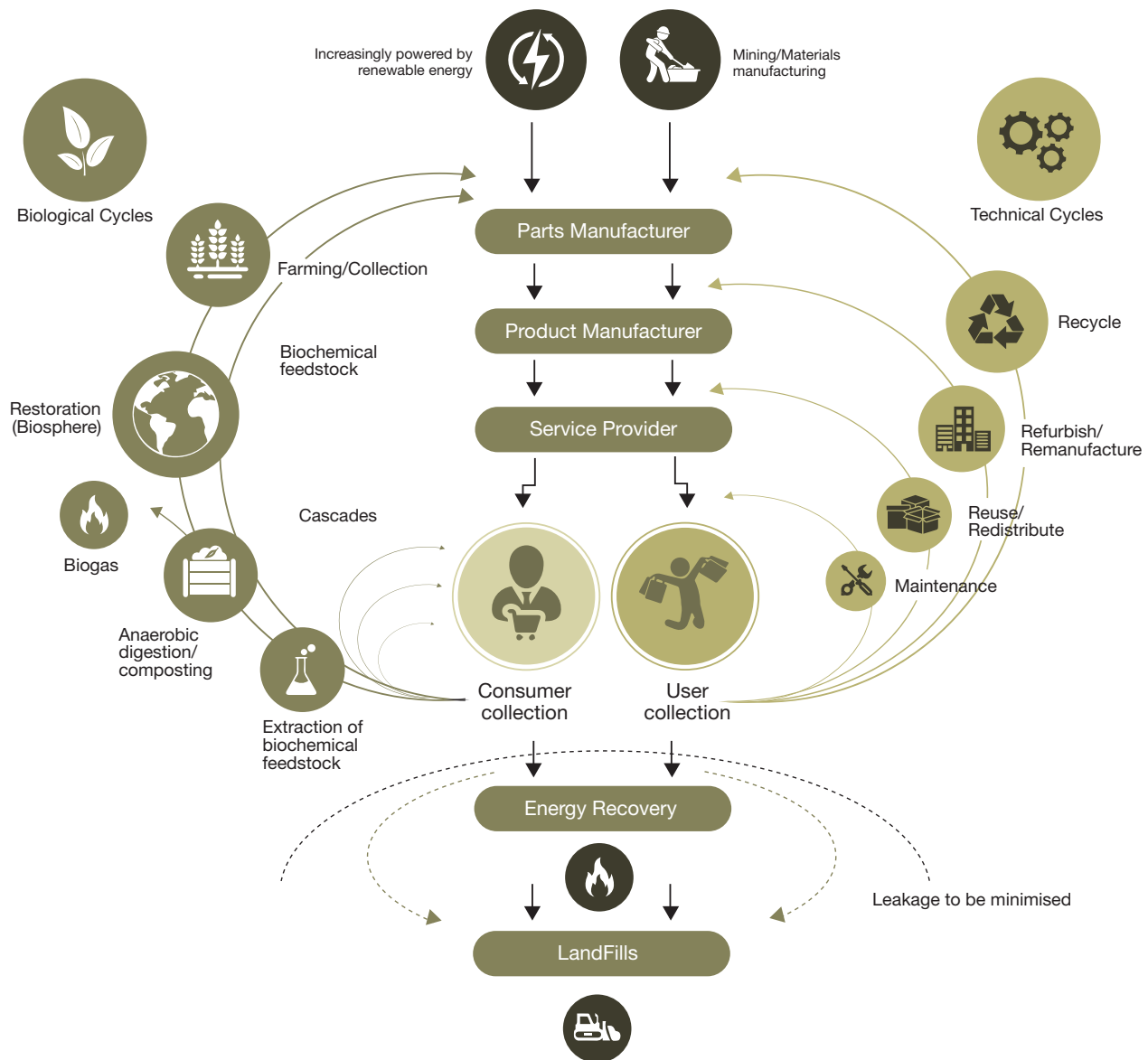
We need to move towards a circular economy (Figures 13), where products are kept in use for as long as possible through repair, redesign, and recycling. At the end of a product's life, its components should be extracted and reused to the extent possible.

LIFESTYLE CHANGES THAT CAN HELP

- Buying only what we need.
- Investing in more durable products, instead of use and throw ones.
- Identifying robust channels for donation of lightly used items and reaching it to the needy to promote reuse.
- Recycling goods that have reached the end of their lives into other useful products. For this to happen, we must segregate our wastes diligently.

Figure 13.

CIRCULAR ECONOMY- AN INDUSTRIAL SYSTEM THAT IS RESTORATIVE BY DESIGN



Source: David C Wilson ed., *Global Waste Management Outlook*, 2015.

Biodiversity

There are an estimated 8.7 million species on Earth, each connected to the other, forming a complex web of life. Ancient Indian literature and philosophy stress on the integral connections between man, all other living beings, and the five basic elements-namely land, water, air, fire and space. Our scriptures portray nature as the essence of human culture without which man is but an entity without a soul.

There is a delicate balance within an ecosystem and between vastly different ecosystems. Nutrients, organisms, moisture, air and other materials move between ecosystems, forming a complex connection between them. For example, intense winds in the Sahara desert send clouds of dust on a trans-Atlantic journey to the Amazon basin and the phosphorus rich dust provides much needed nutrients to the rainforest, where it is in short supply. Removing just one species from an ecosystem can have a domino effect which can adversely impact not just the ecosystem it resides in but other ecosystems as well.

Human actions are severely damaging species population, fuelling climate change and exacerbating the risk of zoonotic diseases like COVID-19 and monkey pox. We are responsible for the replacement of native species with exotic and invasive species; thereby disrupting natural systems and reducing the variety of life on Earth. Extensive use of chemicals and increasing urbanization is causing changes in evolutionary biology. The loss of natural biodiversity is causing climate change, the impacts of which are further destroying natural biodiversity, further compounding the climate change issue. As per the Living Planet Report, the populations of mammals, birds, fish, amphibians and reptiles have already seen an alarming average drop in numbers of about 68 percent since 1970 and global warming has several other implications for biodiversity (Figure 14).²⁵ Studies also have hinted that a rise in extreme weather events increases the vulnerability of biodiversity, leading to the local destruction of several species, some of which appears to be permanent.²⁶

The Global Assessment Report on Biodiversity and Ecosystem Services of 2019, one of the most comprehensive assessments conducted by the Intergovernmental Science – Policy Platform on Biodiversity and Ecosystem Services (IPBES), presents an ominous picture. It finds that around 1 million animal and plant species are now threatened with extinction, many within decades, more than ever before in human history. The deterioration of ecosystems across the planet has global ramifications on health, livelihoods, food security, and economy as we are eroding the very foundations of life on the planet.

According to the report, the average abundance of native species in most land based habitats has fallen by at least 20 percent, mostly since 1900. More than 40 percent of amphibian species, almost 33 percent of reef forming corals and more than one-third of all marine mammals are threatened. A tentative estimate of 10 percent of insect species are under threat and at least 680 vertebrate species have been driven to extinction since the 16th century.²⁷

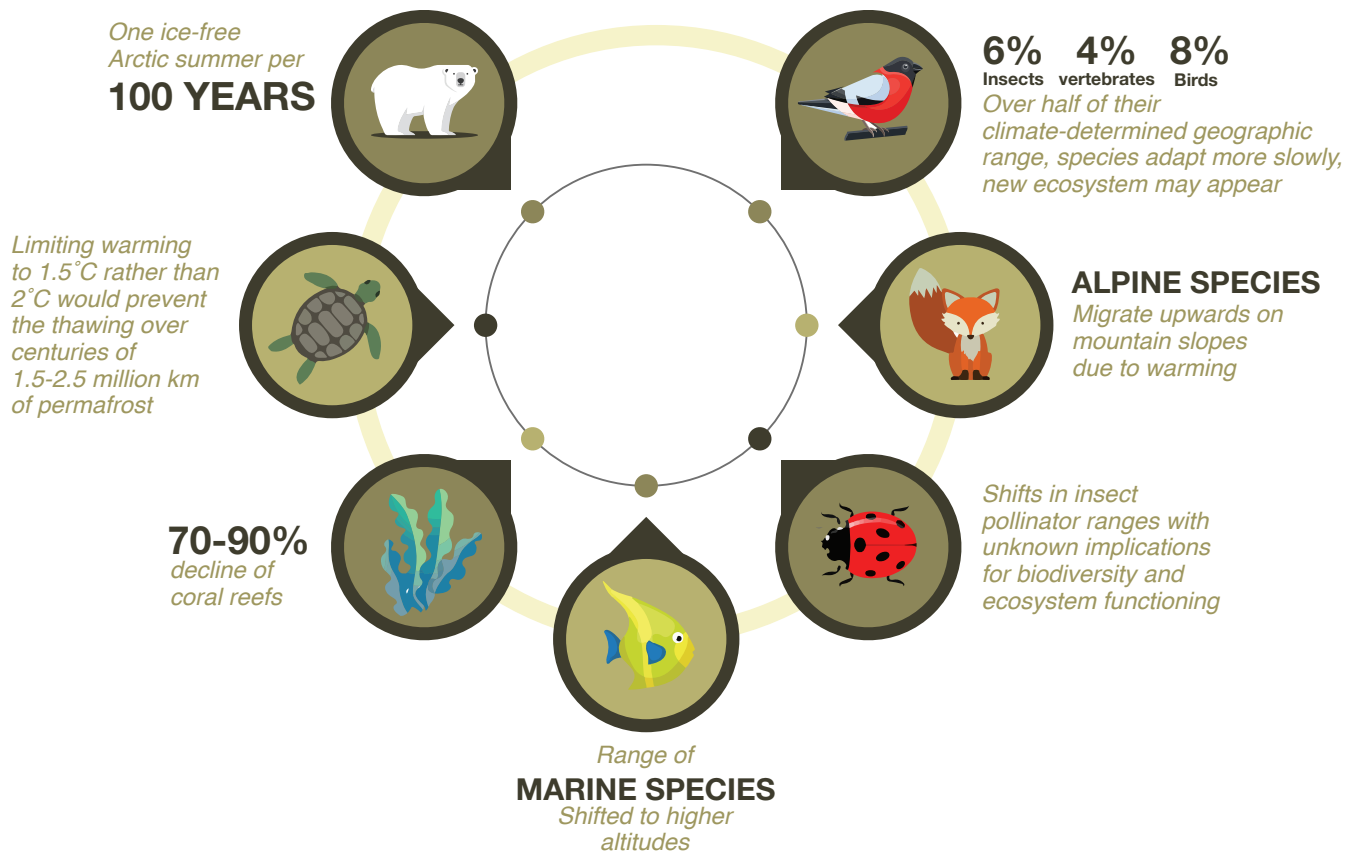
Climate change is impacting nature from the level of ecosystems to that of genetics. With increase in global warming and climate change, impacts on nature are expected to increase in the coming decades on a scale far greater than any of the other drivers of change in natural systems. These negative trends will continue beyond 2050 in all policy scenarios explored in IPBES's Global Assessment Report, except when there is transformative change.

We have a responsibility to coexist harmoniously with other species on the planet and transformative conservation efforts are the need of the hour.

LIFESTYLE CHANGES THAT CAN HELP

- Reducing food wastage.
- Supporting organic agriculture and buying locally grown fruits, vegetables and cereals.
- Using natural cleaners and improving solid and liquid waste management.
- Working with local communities and governments to protect local flora and fauna.
- Improving air quality by practicing energy efficiency and opting for less polluting modes of transport.

FIGURE 14.
IMPLICATIONS FOR BIODIVERSITY OF GLOBAL WARMING: 1.5°C



LiFE

Industrialization resulted in many benefits for humankind, from improved medical care; access to better livelihood opportunities; reduction in drudgery of daily chores; and greater economic development. Hand in hand with these advantages came some challenges, the chief one among them being climate change and its impacts. Today the magnitude of the climate crisis may seem overwhelming, but we must remember that the power of billions of people taking stewardship of the planet and changing their lifestyles in simple ways can play a significant role in reducing carbon emissions. According to the IPCC, lifestyles change can reduce 40–70 percent of the GHG emissions by 2050.

The *1.5-Degree Lifestyles: Towards A Fair Consumption Space for All* report of 2021 estimated that by 2030, the average global lifestyle carbon footprint should not exceed 2.5 (t CO₂e) per person per year, and that by 2050, it should have fallen below 0.7 t CO₂e. In 2020, the global average lifestyles carbon footprint was 4.6 t CO₂e, almost twice the target for 2030.

The magnitude and rate of reduction in GHG emissions requires governments, industries, communities and individuals to work together. There will be a reduction in the per capita carbon emissions when industrial production is undertaken more sustainably and when government policies promote/mandate the adoption of low carbon technologies, but individuals too need to take responsibility for the outcomes of their actions. We need to reflect on our consumption patterns and ensure that our footprint on the Earth is light enough to maintain ecological integrity.

In order to ensure a sustainable future, we need to fundamentally change our lifestyles: redefine our needs, aspirations and identities, reorganize how we consume and interact with our societal systems, and re-establish our understanding of progress. This is the idea behind the Mission LiFE.

“*What is needed today is mindful and deliberate utilization, instead of mindless and destructive consumption.*”

Prime Minister of India, Shri Narendra Modi,

at the 26th Conference of Parties to the United Nations Framework Convention on Climate Change, 2021.

- Foregoing one long-haul return flight and video-conferencing instead, has the potential to reduce annual personal emissions by 2.69 mtCO₂e per capita.²⁸
- Increasing the air conditioner temperature setting from 18°C to 24°C can reduce 492 kg CO₂e per household annually.²⁹
- Moving to a plant based diet could reduce emissions by an average of 0.5 tCO₂e per capita per year.³⁰
- The adoption of a more conscious approach to fashion consumption, changes in consumer behaviour during use and reuse, and the introduction by brands of radically new business models could contribute 347 million metric tonnes of emission abatement in 2030.³¹
- According to the FAO, water harvesting and water conservation techniques could boost rainfed kilocalorie production by up to 24%.
- Holistic management of the world’s solid waste problem could cut annual GHG emissions by up to 20% while generating green jobs, improving public health and saving countries billions of dollars.³²
- On an individual level, reducing food waste by just 1 kg per day can reduce annual GHG emissions by 118 to 470 kg per household.³³
- Reducing deforestation and forest degradation can contribute to lowering human-caused greenhouse gas emissions, by a wide range from GtCO₂e per year.³⁴

CHAPTER

02

The number '0' is a large white digit with a dark grey outline. Inside the '0' is a dark grey silhouette of a person in a yoga pose, with arms raised and hands joined in a prayer position above their head. The number '2' is a large white digit with a dark grey outline, positioned to the right of the '0'.



LIFE ON THE GROUND: CASE STUDIES FROM INDIA



Local or indigenous knowledge refers to the understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings. Indigenous communities do not look at the environment in silos or sectors, rather as an interconnected whole, and are excellent in observation and interpretation of environmental changes. The knowledge they have gathered and practices they have adopted and passed down over generations offers valuable insights for climate change adaptation and mitigation actions. This is getting increasing recognition in many global environmental fora and traditional knowledge is emerging as an influential contributor to the global science-policy interface.

Fikret Berkes, an applied ecologist who has worked extensively in investigating the relations between societies and their resources, uses the phrase “knowledge as process” and defines traditional knowledge as “knowledge that undergoes continual generation and regeneration as people interact with the environment; observing, learning, and adapting.”³⁵

The IPBES’s Global Assessment Report of 2019 found that environmental decline in indigenous communities has been ‘less severe’ than in other parts of the world, because traditional knowledge encompasses practical approaches to ensure maintenance of ecological balance. These communities are often better placed than scientists to provide detailed information on local biodiversity and environmental change, and are important contributors to the governance of natural ecosystems. Their knowledge, accumulated over generations and yet adapted and enriched over time, guides the development of cost-effective, participatory, and sustainable strategies in response to the climate crises. When incorporated into the process of decision and policymaking at all levels, these strategies can go a long way in climate change adaptation and mitigation across the globe.

For effective climate action, we need to revive traditional knowledge systems and blend them with modern technologies. Together they can create robust systems that improve the resilience of socioecological structures and encourage transparency and accountability.

India has several such examples because of its diversity. It has a wide variety of climatic regions, including tropical, arid, temperate and highland. Consequently it is a land of rich biodiversity with a number of ethno-botanically important species. Agriculture, cuisines, shelters, clothes, water resource management and every aspect of life has traditionally adapted to local climatic and geographical conditions. Traditional knowledge systems from India can provide the world with rich examples for LiFE.

A few of these are listed below.

Agriculture

Pesticide-free Punukula, Andhra Pradesh

For many years, farmers in Punukula, a village in Andhra Pradesh, growing cotton as their main crop, were steeped in debt due to pest-ridden harvests. The pests were resistant to even the most expensive and effective, pesticides. The community was also burdened with high healthcare bills due to the overuse of pesticides. In 1999, a local non-governmental organization (NGO) stepped in and suggested natural approaches for pest management. The suggestion was met with scepticism in the beginning, and only eight farmers implemented the new system initially, making sprays with local and inexpensive materials, such as neem seed powder and green chilli-garlic extract. The farmers also used pheromone traps to attract moths and destroyed them before they started mating and used “crop traps” like marigold or castor that attracted the pests more than the cotton.

Despite encouraging results right from year 1, this method was slow to be adopted as it involved more work – the pesticides needed to be prepared by hand – and some men were ready to switch back to the easily available and usable chemical pesticides. However, the determination and support of five women’s self-help groups (SHGs), who took on the additional work of preparing the natural anti-pest sprays, made the shift to natural methods possible. By 2003, almost all the farmers had switched to natural pest control methods, and no pesticides were sprayed in the 240 acres in the village growing paddy, pigeon pea, cotton and chilli.

Today, Punukula has become a model – not only their neighbouring villages but 13 districts in the state of Andhra Pradesh now use some form of non-chemical pesticides. Andhra Pradesh intends to become India’s first 100 percent “zero budget natural farming” state by 2027, which will require transitioning over 8 million hectares of land to sustainable farming. The support from the village elders, who used to follow such practices before the Green Revolution, and the cultural system of collective decision-making in the village were crucial factors for this shift since this practice had to be implemented jointly at a community level. The panchayat pitched in by enforcing punitive measures for non-conformance. The NGO which drove the project initially, had a strong reputation in the area and their credibility allowed them to even suggest a change in practice. Very importantly, the women’s SHGs, who appreciated the positive health implications of this change and took on additional work until systems could be put in place, were critical to the success of this initiative.



Credits: National Geographic



Impact:

The average net income per hectare has increased with pesticide-free crops commanding a higher market price. The farmers have cleared their debts, their health has improved and the ecological balance in the fields is restored. There are many more insects in the fields, without any of them reaching a 'pest' stage of threat. An increase in the insect population has resulted in an increase in the number of birds as well. This prosperity has resulted in increased work (collection of neem seeds and making organic pesticide powders and pastes) and better wages for agricultural workers as well as the introduction of mechanization in creating the natural extracts. The women's SHGs have bought a neem seed seed crushing unit and two women are employed full time at this unit.³⁶

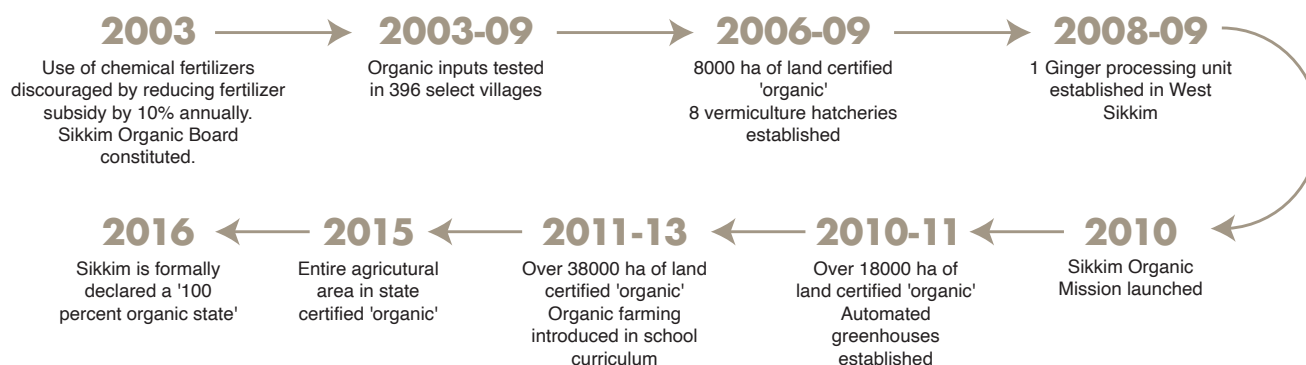
The Sikkim Organic Mission, Sikkim

Sikkim is a small Himalayan state in northeast India. A biodiversity hotspot, its fragile mountainous ecosystem is not suited to intensive industrial farming. In early 2003, to preserve its natural capital, the state's legislative assembly passed a resolution to adopt organic farming. The Sikkim Organic Mission gathered momentum in 2010 and today the state is the first democratic model of organic farming in the world, where it voluntarily adopted these methods.

In the preparatory stage between 2003 and 2010, several pilot programmes supporting organic farming were implemented (how to compost, manufacture organic fertilizers and pesticides, etc.), and farmers were trained in organic farming practices. Beginning in 2005, the government worked on reducing the demand for chemical fertilizers and pesticides by reducing their subsidies by 10 percent annually; all subsidies were finally phased out by 2008. Simultaneously, they also reduced supply by reducing and eventually banning (in 2014) the import of these fertilizers into the state.

Other actions under the Sikkim Organic Mission included capacity building for farmers, livelihood training for local youth, explaining organic farming methods in school curricula, developing export markets as well as setting up organic seed banks with efficient production and distribution Seed and soil testing laboratories seed and soil testing laboratories, local organic outlets and centres of excellence to demonstrate organic farming methods and oversee trials.

The strong political will exercised by the state government, along with the provision of a practical road map and policies with well-defined targets, have been key to the mission's success. The certification of farms according to international standards also gave farmers a goal to aim for and has been another factor in the accomplishments of this mission.



Impact:

In Sikkim, 100 percent of the farmlands are certified organic today. This transition has benefitted more than 66,000 farming families practicing organic and agroecological farming on more than 76,000 ha of land. The benefits include better health, rural development, and sustainable tourism in the state. By including an understanding of organic farming in school curriculum, generations of locals will understand and want to follow sustainable farming practices from a young age. The Sikkim Organic Mission is receiving attention from other Indian states and other countries in Asia, and many state governments have announced action plans and funding for organic farming. Bhutan, along the lines of the Sikkim model, has also set out a road map towards becoming 100 percent organic by 2023.³⁷



Food

Traditional wisdom of conserving indigenous seeds, Madhya Pradesh

Muala Sani village in Mandla district of Madhya Pradesh comprises mostly of tribal households who depend mainly on agriculture for their livelihoods. People practice rain-fed agriculture to cultivate paddy, maize, lentils, pulses, mustard and wheat among other crops. They also grow leafy greens and other vegetables like okra, flat beans, tomato, brinjal, chilli, pumpkin and turmeric on their homestead land.

The women of the village play a significant role as custodians of a vast variety of indigenous seeds. While harvesting the crop, they identify areas that might give a better yield, judge the seeds from that area based on weight and quality and separate the best ones. They fill the selected seeds in a sack, seal it and store it in the granary, locally known as the *kothi*, until the next season. Vegetable seeds are also dried and stored. During the next sowing season, the good seeds are planted, ensuring a more resilient crop. Children observe their mothers and follow these practices without any formal training and thus, the knowledge of seed conservation and preservation is passed down the generations.

Depending on the terrain of a particular field (whether it is water-logged or if it is sloping land with not very much water, etc.), the crop to be planted is decided by the women of the village. In the current scenario, where rural communities are facing the disproportionate impact of climate change, resilience to fluctuating micro-climatic conditions and maintaining diversity are important factors in the success of a harvest. The women also decide how much seed must be distributed depending on the size of the household.

The practice of seed conservation is closely associated with another traditional practice of seed exchange, and this is deeply woven into the social fabric of the community in Sikkim. Women exchange seeds of different vegetables with their neighbours and the excess produce is also exchanged or given away within the community. Traditional varieties of seeds are also exchanged on the condition that after the harvest, the recipients will pass the seeds onto other farmers in the village. Several villages in the region have started celebrating seed exchange festivals to give a greater impetus to this practice.

Village institutions led by women who appreciate the need for resilient and diverse crops are critical to preserving and protecting systems of seed conservation and exchange. The community bonding and the values built up over the generations is another important factor in maintaining this indigenous practice.

Impact:

The immediate impact of seed conservation is a reduced dependency on the market for purchase of seeds as well as food. This helps farmers save money, which is important in a region where the average monthly household income is less than USD 60. These locally grown vegetables are chemical-free, thus healthier. Such seed management practices resonate strongly with the knowledge of maintaining diverse and resilient food systems.³⁸



Sattvik Food Festival, Gujarat

The Sattvik Food Festival, an annual three-day event, is one of Ahmedabad's most popular food celebrations. Launched in 2004, the festival provides a platform for people to showcase forgotten traditional recipes, lesser-known grains, vegetables and minor millets from underdeveloped areas to the urban populace. It enables city dwellers to adopt healthier food habits and lifestyles. It also aims to raise the demand for lesser known but highly nutritious traditional crops, which people do not use because they are unaware of their nutritional richness and ways to cook them. The products in the various stalls range from grains, pulses, spices, vegetables, oils, jaggery and a variety of leaves and roots. In 2019, 70 percent of the products at the fest were made and sold by women farmers directly to the consumer. Organized by SRISTI, a voluntary development organization, the festival also creates a market for farmers engaged in organic farming to sell their products directly to urban consumers.

The festival hosts workshops by grandmothers, who share the food habits and lifestyles that keep them healthy. Doctors are invited to discussions, where a range of positive lifestyle changes are examined. Surveys and competitions are conducted to understand consumers' preferences in local and organic foods, as well as to gauge their knowledge, attitude and practices towards organic food and farming.

The credibility of SRISTI, the organizers of this festival, and their guarantees for the quality of produce sold through their fair is an important factor in developing the demand and market for these products. When good health and enjoyment are combined, it creates a powerful base for social marketing. Sattvik Food Festival is an example of how women are taking the lead to bring back traditional practices in cooking and diets.

Impact:

The increasing popularity of this food festival and the rising market for organic and traditional produce speak for the outcomes of behaviour change initiatives. Such a festival benefits farmers as well, as they receive a platform to understand consumer demand. The diversity of and the science behind traditional Indian food is celebrated with an increased awareness of healthy dietary practices.³⁹



Transport

Ecocab, Punjab

Fazilka, a town in Punjab, is home to roughly 80,000 people. For generations, cycle rickshaws were the traditional mode of public transport in most Indian towns, but with the proliferation of private automobiles, especially two-wheelers, the roads in many towns became unsafe for these rickshaws, and there was a decline in their usage.

In response to increased traffic congestion on the roads and pollution caused by the use of personal motorized transport, and with a view to stimulate the dwindling livelihood of over 500 cycle rickshaw pullers, Graduate Welfare Organization, a non-profit in Fazilka, conceptualized a plan to revive non-motorized, shared transport in the form of a dial-a-cycle-rickshaw called Ecocab. The town was divided into 9 service zones and 20 feeder subzones to reduce waiting times, and the safety and comfort of the rickshaws were upgraded. The Ecocabs and passengers are connected using a mobile app.

Looking at the success of the Ecocabs model in Fazilka, the High Court of Punjab and Haryana issued a suo moto directive to both state governments asking them to start similar services in each state. A similar initiative has been started in Patiala in association with the Tourism Department. Ecocabs are currently plying in half of Chandigarh city, where on an average 5 lakh passenger trips are made daily by cycle rickshaws. Navdeep Kumar Asija, the founder of Ecocab says, “Ecocabs are not a new mode of transport, but a new system of transport. It cannot be achieved by one person but by a collaborative effort of rickshaw operators unions, local authorities and a local NGO working in transportation.”

In an age of urgent climate action, cycle rickshaws are a truly eco-friendly mode of mobility and have the potential to create meaningful, green livelihoods in Indian cities and towns. Non-motorized transport is a core component of Indian cities and can take centre stage in urban planning if the community comes together to create infrastructures to support their needs.

Ecocabs work better in smaller towns and cities, where trip lengths are short, and the pace of life is slower. Mobile apps link service providers and consumers, and good urban transport planning ensures that people don't have to wait long for a rickshaw. Ease of access makes the adoption of behaviour change much easier. In addition, under the programme, the rickshaws were made safer, more manoeuvrable and comfortable, which removed any negative bias people may have had about using them.

Impact:

This initiative has created employment for 500 people and helped save 900 litres of fuel every day. It has reduced congestion on the roads by reducing the number of two-wheelers, and apart from ferrying passengers, Ecocabs are also being used to deliver essential goods and services.⁴⁰



Ranchi's cycling revolution, Jharkhand

Ranchi, the capital of Jharkhand, is one of many cities in India working on addressing air quality issues by changing behaviours and promoting the adoption of non-motorized forms of transport. A tier II city, studies showed that most residents live within a five-kilometre radius of their offices, schools and markets, and that 50 percent of the households owned a bicycle. There is also a growing tribe of recreational cyclists and fitness enthusiasts in the city, and the COVID-19 pandemic gave an impetus to this community. Capitalizing on this interest and being spurred by Ranchi's inclusion in the Smart Cities Challenge, municipal authorities and citizens have come together to encourage cycling as an alternative to motorized transport. This has been done through the provision of better infrastructure, implementing car-free Saturday campaigns, free cycle repair clinics, pop-up cycle tracks and a public bicycle sharing system.

A number of NGOs and cycling clubs have also been promoting cycling in the city. Ranchi has a bicycle mayor, who, in association with various cycling clubs, organizes group cycling events.

App based local food delivery partners are also providing cycle-based deliveries in the city, using the public bicycle rental system available in the city.

A good example of public-private partnership, resulting in behaviour change, the efforts in Ranchi make it a case study worth emulating in other tier II and III cities. The state government has provided required infrastructure and has tied up with private organizations to implement a bicycle-sharing system and free cycle repair clinics. Cycling clubs like Cycle Dost and Ranchi Cycling Club organize group cycling events (Figure 14), which increase the visibility of cyclists on the road and inspire others to join the movement. They also bring about a change in perception, where people start considering city roads as being safe for cyclists. Social awareness campaigns like a car-free day nudge people to shift to a new normal of using non-motorized transport for daily activities.

Impact:

The share of non-motorized transport in Ranchi is now close to 50 percent of the total trips taken. Data shows that public bicycle-sharing rentals were 56 percent higher in March 2021 as compared to March 2020.⁴¹



Fashion

Kala Cotton Initiative, Gujarat

Kala cotton is an indigenous variety of cotton typically grown as a rain-fed crop in the arid Kutch region of Gujarat. It is grown without using irrigation, chemical fertilizers or pesticides, and it has a very small ecological footprint, being considered amongst the most energy efficient and carbon neutral crops in the world. The traditional practice of cultivating Kala cotton was based on a zero-waste agriculture pattern, where all parts of the plant were utilized for various purposes – the leaves for cattle feed, cotton for yarn and stems as fuel.

Kala cotton, with a 5000-year history of being used in fine fabrics, including muslin, lost popularity to long staple cotton introduced by the British during colonial rule because its short staple length makes it difficult to spin and weave. In an effort to bring back this indigenous cotton, local NGO Khamir, along with an association of organic farmers called Satvik, worked with experts to develop a process to convert it into yarn. Local weavers also had to be convinced about the value of kala cotton since weaving it requires changes in how their looms are set up.

It took three years of experimentation not only to perfect the spinning and weaving techniques for kala cotton but also to create a supply chain between the farmers, ginners, spinners and weavers and convert the raw cotton into handwoven products. Today, 600–700 farmers and over 250 weavers in the Kutch region continue the traditional practice of growing and weaving this cotton and contribute significantly in reducing the ecological cost of clothes. Kala cotton material and clothes are being sold online and in offline stores in different parts of India. Other NGOs like Tula, Association for Sarva Seva Farms, People's Endeavour for Social Change etc. are also working in different parts of the country to revive indigenous cotton.

With the emergence of Voluntary Sustainable Standards in cotton, which includes certification schemes and labelling programmes, organic cotton farmers get a better price for their produce from buyers. This has motivated more farmers to switch to Kala cotton. Some of the best known design houses in India are giving Kala cotton prominence in fashion circles. Since the supply chain systems are now in place, more farmers are looking at moving to this variety of cotton, due to the enhanced awareness on the ill-effects of pesticides.

Impact:

The Kala Cotton Initiative encourages sustainable fashion, working with marginalized communities, who live in water-scarce regions where proper irrigation has not been implemented. Farmers on the ground are also seeing how the extensive use of pesticides can poison their land and are more amenable to moving to indigenous cotton, which is pest resilient. The weather-related vagaries of climate change have also encouraged them to move to a variety of cotton that needs very little water.

In terms of the final product, Khamir works with designers to design and create quality outfits that can be marketed to upper-middle-income groups in urban centres. Khamir also helps farmers market their products online and offline, reaching out to a larger market in India and abroad. This situation benefits all stakeholders: everyone in the supply chain gets a fair price, and a larger urban population can move to sustainable fashion.⁴²



GoCoop - weaving technology and fashion together

India has approximately 9 million weavers and artisans in over 600 handloom clusters across the country. Unfortunately, the sector is plagued with challenges, including producer cooperatives being disaggregated and having no marketing power and ability. There is also a large community of profiteering middlemen who leave the producers poor.

GoCoop is India's first online handloom sales platform, directly connecting producers and consumers and providing a sustainable livelihood for producers. Transparency and fair financial practices are the cornerstones of this initiative. There was initially a lot of scepticism about the feasibility of the scheme since producers did not have access to banking systems or the internet and were suspicious of technology, since they did not know how to use it. In order to overcome these barriers, the GoCoop team worked directly with handloom clusters in four states over two years, building strong relationships with the producers during this engagement. They did this by conducting capacity building and awareness workshops in areas including market research, design development, procuring high-quality raw materials, understanding pricing mechanisms, the advantages of going online, etc. These interactions helped the GoCoop team understand the ground realities of their work and more importantly, it helped them gain credibility with the local weavers and artisans.

GoCoop now works with more than 70 handicraft clusters and more than 350 cooperatives and master weavers. They promote Indian handlooms to the urban populace not just through their website but also through offline exhibitions in different cities in India. GoCoop's Go Swadeshi and #CraftingChange campaigns have been steadily gaining support.

GoCoop has employed technology to drive social change on either ends of the spectrum – improving the incomes and livelihoods of the underserved and moving the wealthy towards adopting sustainable fashion and local crafts. The credibility the GoCoop team built with all the stakeholders has been an important contributor to the initiative's success.

Impact:

GoCoop has supported over 30,000 livelihoods with every artisan generating an average additional income of almost USD 350. Artisans and weavers have also received a platform to share their stories and the intricacies of their crafts. The organization is working towards increasing its international sales and creating a global market for India's handicrafts across the world. Through social media advertising and campaigns, as well as pop-up offline exhibitions across the country, GoCoop has been introducing master craftsmen and diverse handlooms and handicrafts to the Indian populace. Repeated exposure to these crafts, fabrics and weaves is changing mind-sets of people, who are increasingly embracing local handlooms and handicrafts. This has been a very important outcome of GoCoop's activities.⁴³



Buildings

Auroville Earth Institute, Puducherry

One of the world's leading centres for excellence in earthen architecture, the Auroville Earth Institute focusses on reviving the traditional skills of raw earth construction and combining them with the modern technology of Compressed Stabilized Earth Blocks (CSEBs) – a mixture of earth with 5 percent cement. CSEBs can be made onsite (almost no transportation footprint) and manufacturing them uses 10.7 times less energy than making a country fired brick. The Institute's earthquake-resistant technology using hollow, interlocking CSEBs was used extensively in Gujarat after the 2001 earthquake, in Bam (Iran) after the 2003 earthquake, and in Tamil Nadu after the 2004 tsunami.

This technology is currently being used in 38 countries across the world and can be used in all climates. It has been used for load-bearing applications up to four floors and in high rises, it can be used only for non-load bearing applications or filler walls. The Institute also conducts trainings and over 13,000 people have been trained in raw earth construction techniques and technologies.

Impact:

The Auroville Earth Institute's research and training have created a number of earth architects around the world, who in turn, are reaching out to an increasing number of discerning home builders over the years.

The onsite manufacture of bricks also reduces transportation costs and resultant GHG emissions. It generates local employment and is resource efficient, cost-effective, climate resilient, energy efficient and eco-friendly. GHG emissions are also further reduced because these blocks are not fired in kilns like clay bricks, and earth constructions use less mortar. There is also a reduction in cement use and consequently in embodied energy because these blocks don't require plastering. The embodied energy of these buildings is approximately 11 percent less than burnt clay bricks per m³ of raw material, and the CO₂ emissions are 13 times less than country fired bricks. Earthen frame constructions have 4 times less embodied energy than a conventional building made on a reinforced cement concrete (RCC) frame, RCC slabs and infills of fired bricks. Exposed CSEB walls also reduce the consumption of energy in the building during its lifetime because they regulate indoor humidity and help achieve thermal comfort throughout the year.⁴⁴



Mahila Housing Trust, Gujarat

The Mahila Housing Trust (MHT), based in Ahmedabad, Gujarat, uses innovative approaches to tackle climate change and urban inequality by empowering women from slums with knowledge, tools for change and leadership skills to bring a bottom-up transformation to their neighbourhoods.

MHT members host demos of pro-poor, climate resilient solutions to show the community what's possible, often using their own homes as examples. Solutions include rainwater-harvesting systems and cool roofing solutions. Many households have been particularly receptive to cool roofing because summer temperatures in Ahmedabad can go above 41°C and slum residences can become excruciatingly and dangerously hot then. MHT has created a network of climate champions, who help raise awareness about affordable solutions. For example, white paint, a cheaper intervention, can be applied to existing roofs; ModRoofs, a more expensive option, involves replacing the existing roof with a still (relatively) cheap custom material that is stronger, cooler, waterproof, fireproof and made largely from recycled materials or bamboo.

MHT realized that a lack of knowledge around the causes and impacts of climate change was the first barrier to building climate resilience in slum communities. To address this they initially focussed on awareness programmes. When people face the various impacts of climate change, it no longer becomes an abstract concept, and action is more likely. An informed citizenry is capable of identifying its own problems better than any third party, and the awareness campaigns have played a very important role in spurring action.

Breaking climate change down into smaller, more local issues and involving the affected parties in coming up with solutions for specific action points is more effective and brings a greater degree of ownership to the implementation of the solution. Women are typically at the centre of any societal progress, and MHT's model of empowering them is the secret of the initiative's success.

MHT members also collect evidence of climate risks, such as water quality and disease vectors and they have been able to successfully advocate for the city authorities to invest in improved water systems and the clearing of drains.

Impact:

MHT members were invited by city authorities to help develop the city's Heat Action Plan of 2017, Monsoon Action Plan of 2019, and a city-wide cool roof programme, bringing the unheard yet critical voices of slum dwellers to policies and plans. As a result of MHT's advocacy, the city has installed more than 17,000 cool roofs in affordable housing units and is planning to scale this up to more households.

A notable attribute of MHT's work is the gradual and sustained approach it adopted to empower women and increase their personal and communal capacities to advocate for change. Thousands of women have been empowered to navigate formal systems of governance to advocate for themselves and their communities, morphing from beneficiaries to active collaborators in the city's climate action planning.

MHT's model has now reached 125,000 women across six cities in three countries. It is an internationally recognized example of building grassroots climate resilience.⁴⁵



Energy

Ecozen Solutions

India loses more than 30–40 percent of the fruits and vegetables harvested per year due to a lack of quality infrastructure and cold storage facilities.⁴⁶ Cold storage facilities are a primary solution to reducing waste and increasing income for farmers. However, most cooling solutions are also carbon intensive and unavailable to farmers living in energy deprived regions. To meet the demand for sustainable, off-grid cooling solutions, particularly at the “first mile”, when produce has just been harvested and its quality starts to rapidly decline, Ecozen Solutions have developed a portable solar-powered cold room that enables farmers to store post-harvest produce at optimum temperatures. This maximizes its shelf life and enables the farmer to supply quality produce to the markets at the right time, ensuring success through whole the supply chain. These systems are used mainly by horticulture farmers to store fruits, vegetables, and flowers. The company also has an Internet of Things-enabled solar irrigation pumping system and an app that connects farmers to marketplaces where they can get the best value for their produce without going through middlemen.

Impact:

The company claims to have helped over 100,000 farmers across 20 states in India and 10 countries around the globe. They say that they have been able to reduce 18,000 mt of food wastage, generate 1 billion kwh of clean energy, and reduce 1 million tonnes of CO₂ emissions. Some farmers have earned an additional USD 6,000 in three months because of the access to a proper cold chain and market connections. Applying climate-smart deep tech solutions, Ecozen have been able to make a positive impact on food security and clean energy, which are both very important factors in the climate debate.

Success factors: Innovative, user-friendly technology and economically viable usage models developed by young entrepreneurs are the main reasons for the success of this initiative. There was a clear need for solutions that would help farmers reduce wastage and gain financially. Tech-savvy private sector players move fast to capitalize on the available market and provide a win-win solution for all stakeholders. Simple and useful technologies that result in financial gain tend to diffuse organically among user groups through word of mouth and observation.

The government infrastructure of mobile network coverage across the country and the push for the adoption of solar photovoltaic solutions are significant contributors to the success of this initiative.⁴⁷



Waste to Energy, Varadharajapuram, Tamil Nadu

Varadharajapuram, a peri-urban area around Chennai, is home to many dairy farmers. With no spare land in which to dispose cow dung, villagers soon began dumping it in the local waterbody and polluting it. A bio-gas plant using this cow dung was set up by a start-up called Carbon Loops in collaboration with the Tiruvallur District Rural Development Agency. Now it produces 200 units of electricity per day, which is enough to power the streetlights in the village and saves them USD 1,200 in electricity bills on a monthly basis.

Carbon Loops had earlier installed waste to energy plants using agricultural and food waste, in another district of Tamil Nadu. On learning about this, the district administration approached them with the problem of handling cow dung. Instead of individual cattle owners going in for small biogas plants, where improper operation and eventual disuse is likely, the option of a community biogas plant managed by a technically sound private organization was explored.

During the ideation stage, the founders of Carbon Loops came across the Khadi and Village Industries Commission (KVIC) model for solid waste management. This traditional method has been used for decades and helps in managing waste without generating any foul smell. Carbon Loops, however, enhanced the KVIC biogas model and made it more efficient and economical.

Sanitary workers collect cow dung from the cattle owners on a daily basis and this is brought to the plant situated half a kilometre away from the village. The involvement of the local community, Panchayat, district administration and a private company ensures sustainability of the project.

As the need for better waste management becomes more important, public private partnerships where local communities are important stakeholders are more likely to be sustainable. Monetary benefit to the local community keeps them pro-actively involved, and ensures proper flow of required inputs to the waste to energy plant.

Impact:

Apart from reduction in GHG emissions and reduced electricity bills, the village waterbody is now clean, and the residual slurry output from the biogas plant is used by the local farmers as organic manure for growing chillies and bananas. The monetary profits and visual cleanliness has motivated the villagers to look at expanding the generation of electricity and utilizing it for electric vehicle charging stations, so that there is easier adoption of environment friendly technologies in the village.

Buoyed by this success, the district administration is planning to replicate the model in at least two more villages.

Carbon Loops has also tied up with 70 multinational companies for collection of food waste from their premises for bio-methanation in other biogas plants. As the quantity of waste being processed increases, it is anticipated that the residual slurry output will help 100 farmers in the district take up organic farming. Waste generators are charged for processing the waste and the residual manure is given free of cost to the farmers.

In the future, Carbon Loops plans to extend their clean energy footprint by powering borewells and other equipment with biogas, initially in and around Chennai.⁴⁸



Waste Management

Goonj, New Delhi

The practices of reusing and recycling have long been intrinsic to Indian culture, until the advent of plastics and composites and an increase in disposable income in urban areas, among other factors, led to an increase in the use and throw practice. An entire industry of waste recycling is supported by informal recyclers and rag pickers, and there are many initiatives in the country towards implementing a circular economy. The example of Goonj is noteworthy in that field.

Goonj is an NGO that collects old clothes from urban households and refurbishes or upcycles them for use by poorer communities in villages through its clothing campaign called *Vastra Samman*. The receivers do not receive the clothes as a donation; instead, they get it in return for community work done to protect and manage natural resources within their village. Thus, Goonj ensures the reuse of clothes (discarded by one person but valuable for another) while bringing communities to work together for a common good. The organization works with 250 grassroots organizations across 21 states in this endeavour. Goonj has a team of 180 people across 11 offices and is supported by thousands of volunteers across India.

Used clothes are sorted and assembled into complete sets. Refurbishing them (changing zips/elastic, undertaking minor repairs, etc.) creates employment for many people and allows for discarded clothes to be reused. Based on geographical and cultural needs, the items are then dispatched across India for use in the *Vastra Samman* initiative. Discarded school uniforms are given to poor children under the “School to School” initiative as a reward for maintaining hygiene, punctuality and discipline. Relatively new clothes and export surplus materials are given to poor families to support marriages. Goonj also sells export surplus materials for raising funds. Otherwise unusable materials like torn clothes, used books and notebooks are upcycled into various usable products like sanitary pads, bags, mats, mattresses, skipping ropes etc. Apart from clothes, Goonj also collects footwear, utensils, stationery, paper, food (dry rations), school materials and newspapers.

Gaining a deep understanding of the needs and aspirations of poor communities and nudging richer ones to donate to Goonj, instead of trashing items, have contributed to the success of Goonj’s initiatives. The organization has networked well: with grassroots organizations with strong credibility in rural communities; with organizations with extensive logistics management capabilities, including the Indian Army, for transport of goods from place of generation to place of use; and with volunteers in urban centres, who want to contribute to good causes.

Impact:

GOONJ diverts about 3 million kg of solid waste annually from landfills and creates employment for many and promotes what goes beyond a circular economy. As part of the Cloth for Work programme, a well was built in a village in the Khandwa district, Madhya Pradesh, at zero cost. A 200-foot-long bridge was constructed in a village in Bihar for just USD 27/-. There are many such examples from across the country.⁴⁹



Water

Conserving Wetlands, Jammu & Kashmir

A study, published at the end of 2017, by researchers from the Department of Earth Sciences, University of Kashmir, observed that over the last five decades, nearly 20 wetlands have been lost to urban colonies in and around Srinagar city. The study reported that in the Jhelum basin of Kashmir, the total area of the major wetlands (with area more than 25 ha) decreased from 288.96 sq. km. in 1972 to 266.45 sq. km. in 2013. It was no surprise that the capital city bore the full brunt of floods in 2014, with habitation on both sides of Jhelum lying submerged for weeks.

The 2014 floods were a wake-up call for locals in Kashmir. It brought an increased awareness among the people on the need to protect the wetlands and other waterbodies in Kashmir. Capitalizing on this momentum to protect nature, the Jammu & Kashmir Eco Watch, a voluntary environment group was created to bring together volunteers to take up eco-initiatives to protect the wetlands, forests or lakes in their own neighbourhood.

Jammu & Kashmir Eco Watch was conceived as a community-led movement where every member is treated equally as a green ambassador. Currently, the group has 25 functioning Eco Watch teams (across 23 districts of Jammu and Kashmir and one each in Kargil and Leh). These teams have been cleaning various waterbodies – from freshwater springs at Verinag and the Chatlam wetlands to a cleanliness drive at Kausar Nag at an altitude of 13,000 feet. Every awareness/cleanliness drive is recorded meticulously on social media.

The district teams have hundreds of volunteers ranging from retired professionals and scientists to school students working to protect the neighbourhood waterbodies, with the numbers increasing with increased public awareness. Hydraulic engineering experts share the methodology for the restoration of different aquatic systems (river, springs, lakes etc.). They discuss strategies on how to increase water yield in catchments, how to remove weeds in springs, how to handle solid waste management in the wetlands, etc.

The crux of this initiative is the participation of local communities in conserving their regional waterbodies and wetlands. Locals are encouraged to join the movement through a variety of awareness campaigns and social media posts. In the decentralized structure, every volunteer is given importance and hence, there is greater ownership of actions and results.

Impact:

Jammu & Kashmir Eco Watch now has more and more local students turn up to their sessions of nature education programmes. Pampore, which saw the earliest of conservation interventions, such as awareness drives on the ill-effects of improper disposal of garbage, and the importance of wetland conservation; forming anti-poaching squads and transferring the wetlands from the Revenue Department to the Wildlife Department, is already seeing increased avian presence. Bar-headed Geese were sighted here for the first time ever, and several species like Grey-headed Swamp Hen, Red-crested Pochard, Pheasant-tailed Jacana, Common Coot and others have started breeding in good numbers. These wetlands are a major stop for migratory birds that travel from their breeding grounds in Siberia to various parts of Asia during the winter. Healthy wetlands allow the birds to rest, feed and gather strength before continuing on their arduous journeys.

People are now proud of protecting their environmental assets, and they do not allow any mafia to cut trees illegally or the community to throw garbage into the waterbodies. Eco Watch has over 15 lawyers who handle legal petitions for protecting the environment.⁵⁰



Restoring orans through its waterbodies, Rajasthan

Orans are sacred groves managed by local communities in Rajasthan. They are local micro bio-diversity reserves, with a protected water source in their midst, and are important pasture tracts for local livestock. They also provide fuelwood, livelihoods, food, medicinal herbs and minor forest produce to the people in the villages around. Nesting birds such as owls, parakeets and woodpeckers build homes in the large trees of the oran, and assist farmers by eliminating agricultural pests and insects. There are about 7.5 million pastoralists and 54.5 million livestock in Rajasthan dependent on orans for sustenance and livelihood.

With the advent of irrigation, traditional sources of water in the orans like bawdis (stepwells) and johads (percolation ponds) were neglected as agricultural patterns changed to more water-intensive crops, and livestock composition changed to rearing more buffaloes and goats instead of cattle. The mismatch in the pasturage available in the orans and that needed for buffaloes and goats resulted in the further degradation of the biodiversity of the orans. As a result, the perceived value of the oran diminished and hence, there was a reluctance to invest resources and energy into its maintenance. Additionally, this responsibility of the orans was taken away from traditional village institutions, alienating the local communities.

With climate change and its associated impacts, local communities are realizing the importance of reviving traditional water-sensitive practices and land management methods. Krishi Avam Parishitiki Vikas Sansthan (KRAPAVIS), an NGO, has restored around 100 orans by reviving the waterbodies, sowing grass seeds and planting around 2,000 native species of trees within each of them, leading to improved soil health and biodiversity within the oran. KRAPAVIS also works to enhance the capacity of community members, especially women, to manage and maintain orans through contextually sensitive regulation and enforcement systems.

KRAPAVIS has used citizen science research and studied traditional systems to come up with effective oran revival plans. By entering into dialogue with community members, especially those old enough to remember orans and how they were managed before any land reforms, the organization has been able to foster in villagers a feeling that through community resource management, they can take back some control of their lives. They have returned control of vital resources to the economically vulnerable communities dependent on them. The reestablishment of taboos and more formal rules associated with large-scale resource extraction from orans has resulted in a noticeable improvement in biodiversity in general.

Impact:

There has been a dramatic improvement in the livelihoods of the rural communities, particularly for women, associated with the 100 orans restored by KRAPAVIS. They have also created a cadre of around 300 women and youth, who have been trained in understanding climate change causes and impacts, biodiversity conservation, water management and irrigation methods. These, in turn, offer their services as trainers and advisors to oran management institutions in other districts. They have increased the adaptive capacity of communities to deal with climate change by re-establishing methods and institutions for efficient use of water resources, encouraging multi-cropping and by introducing improved chulhas (stoves) and solar photovoltaic electricity, which conserve fuel wood in the orans.⁵¹



Climate adaptation in wetlands along the Mahanadi River catchment area, Chhattisgarh

The Chhattisgarh government along with the Ministry of Environment, Forest and Climate Change, Government of India, is implementing a climate adaptation project in 19 villages of three forest divisions along the Mahanadi River catchment area. Despite being in a wetland region, due to the increased degradation of forests, soil erosion and surface run-off, the villagers face water scarcity during the summer. The project is promoting an integrated climate adaptation strategy, including better watershed management along with demand-side interventions. It is also improving the adaptive capacity of the local community by providing additional sources of livelihood and enhancing quality of life.

A thorough baseline assessment was conducted to identify vulnerable ecosystems and communities, and an integrated climate adaptation strategy was then devised based on local needs. The strategy included forest and watershed management, improved irrigation efficiency, switching to climate smart practices and skill training for alternate livelihoods.

Impact:

The project has benefitted almost 13,000 villagers. A variety of check dams, anicuts, stop dams, percolation tanks and lift irrigation systems have been constructed as part of the water management component of the project. Old ponds have been repaired, and over 22,000 m³ of silt has been removed to increase water holding capacity in various waterbodies. These are expected to increase groundwater recharge to the tune of 81,000 m³ and irrigate almost 600 ha of land. Additionally, the fertile silt excavated from the waterbodies has been spread on agricultural land to increase soil productivity. The levelling of land and the construction of bunds has been carried out in 801 ha of land, benefitting close to 400 farmers.

Steps have also been taken to reduce soil erosion through grass seeding and the construction of staggered contour trenches and gully plugs. Forest density is being increased by planting native species in the forests and along the riverbank. Additionally, horticultural farming has been encouraged over 19 ha of land.

Farmers have been trained in climate smart agricultural and irrigation practices, including crop diversification. Communities have also been educated in sustainable non-timber forest products (NTFP) collection methods as well as being trained in alternate livelihoods such as fishery, poultry and duck farming, growing medicinal plants, horticulture and as healthcare professionals. The establishment of kitchen gardens has been promoted to reduce external dependencies and improve health and nutrition of beneficiaries. Improved cooking stoves have also been provided to some families to reduce fuelwood depletion from the forest, improve the health of beneficiaries and reduce the drudgery of women.



Conserving biodiversity

Coastal habitat rehabilitation and management, Gulf of Mannar, Tamil Nadu

Coastal habitats, such as mangroves, wetlands, seagrasses, estuaries and coral reefs, are very important ecosystems because they have a high carbon management potential and increase marine resource productivity. They are vital to the food security and livelihood of coastal communities. Higher sea surface temperatures, changing precipitation patterns, rising sea levels and increase in incidence and intensity of storms, as a result of global warming, are posing a significant threat to coastal ecosystems. Communities that rely on these ecosystems for their livelihood are thereby adversely affected. Habitat recovery and promotion of alternate livelihood options for coastal communities are therefore important to build resilience among them to face climate change impacts.

Under this project, a baseline study was carried out along 365 km of coastline to identify vulnerable communities and ecosystems (including biodiversity and fishery) in the Gulf of Mannar. Coral and sea grass rehabilitation was done along 4 sq. km around the Kariyachalli and Vilanguchalli Islands. Coral fragments from diverse native corals (8–11 cm size) were extracted from donor coral reefs and tied with rope to the cement slabs, which were deployed under water. About 6,000 artificial reef modules of ferro-cement and reinforcement steel were positioned around the rapidly eroding Vaan Island.

Eco-development activities, including the creation and nurturing of SHGs, providing training in eco-tourism activities and infrastructure development for alternate livelihoods were conducted in 23 coastal villages under this project.

Impact:

The placement of artificial reef modules around the Vaan Island resulted in increased soil accretion and the expansion of island's size by 1.3 ha during low tide and 0.4 ha during high tide over a period of three-and-a-half years, providing reclaimed habitats for greater marine biodiversity. The increased coral density increased fish biodiversity, which provided additional livelihood to the local fishermen. The rehabilitation of the coral reefs and sea grass increased the fish biodiversity around both the Kariyachalli and Vilanguchalli Islands, and 792 fisherfolk have benefitted from various eco-development activities to date.



Rehabilitation and management of grasslands, coastal regions and an arid island between salt flats –Kutch, Gujarat

Kutch is a climatically and seismically vulnerable district in Gujarat, and the variations in temperature and precipitation and storms due to climate change have had a large impact on natural resources and the productivity of ecosystems. As a result, the sustenance and livelihood of the local communities that are dependent on natural resources for their survival has been threatened. Through an exhaustive baseline survey and a vulnerability assessment based on their high sensitivity, exposure to climate change and low adaptive capacity, 32 vulnerable villages comprising three natural resource-dependent communities (the Pagadiya fishermen community in the coastal region of Abdasa *taluka*, the Maldharis or the pastoral communities of the Banni grassland, Bhuj *taluka*, and the marginal farmers of Khadir Beyt, Bhachau *taluka*) were selected. To enhance their adaptive capacity, the government implemented interventions for water security, livelihood security and ecosystem restoration.

Through ecosystem and community-based interventions, water security was improved through the construction of 140 (talabs [lakes/ponds]) and 40 *holiyus*, which are traditional aquifer recharge structures. Drip irrigation systems were connected to 405 ha of land, and solar water pumps were provided to benefit the marginal farmers of Khadir Beyt. In addition, 200 bio-char units were installed to improve soil fertility of the region.

About 700 ha of highly degraded mangroves were also restored in the coastal region, which has resulted in multiple benefits for the Pagadiya fishermen community – they get a better catch of fish nearer the shoreline, better catch of crustaceans (crabs and prawns), and protection from extreme climatic events, such as sea surges and cyclones. The mangroves also provide fodder during extreme weather events when other sources are unavailable.

Further, 600 ha of grassland were restored in the Banni grasslands to provide fodder security to the Maldhari pastoralists. The grassland is also now a seed bank for indigenous grass varieties.

Awareness programmes and trainings have also been conducted for over 4,000 households and alternate livelihood training/skill enhancement training was provided to a number of women, through the creation of 16 women artisan federations.

Impact:

More than 2.5 million m³ of additional water recharge has been created through water storage and recharge structures, and 1,300 ha of degraded ecosystems have been restored in coastal and grassland areas. With the increased availability of potable water for villagers and livestock and water for irrigation, the temporary migration of residents has almost come to an end.



Enhancing climate resilience of forests and forest dependent communities: Jharkhand

Jharkhand accounts for 3.4 percent of the total forest cover in India, at 23,605 sq. km which is 29.61 percent of the geographical area of the state. The state is home to 32 tribal groups, and forests provide essential resources to approximately one fifth of its population, mainly from socially deprived and historically marginalized communities. Increasing water stress, increasing incidences of forest fires and decreasing biodiversity within the forests have affected dependent communities by reducing availability of NTFPs and forced distress migration.

In 2018, the government of Jharkhand initiated a five-year integrated development project with a landscape approach in 48 villages in the state. The project aims to facilitate adaptation to climate change through the improvement of forest micro climates through soil and moisture conservation and water harvesting; the enhancement of gender sensitive and climate resilient livelihood systems, the improvement of energy use efficiency; and alternative energy use.

The project combines indigenous community methods as well as contemporary scientific approaches to deal with the adverse consequences of climate change. It encourages a number of initiatives, including an increase in the storage capacity of ponds and check dams, which not only improve water security and reduce soil erosion but also sequester carbon; implementing low carbon farming methodologies of rice, millets, pulses and oilseeds for improved sequestration of carbon in the soil and added benefits of improved nutritional uptake in the family; installing improved stoves for reduced consumption of fuel wood and drudgery among women while improving their health; and constructing biogas plants where feasible. Kitchen gardens are being promoted to improve nutrition and reduce external dependencies.

Some villagers have been trained in alternate livelihood activities such as fishing, rearing native poultry and ducks, making sal leaf plates etc. to build their capacity to adapt to climate change. Community cadres and local youth have also been trained to provide agro-met services for part-time seasonal self-employment.

The project is being implemented with the cooperation of state and central government departments, technical institutions, financial institutions, joint forest management committees, and village representatives. The plan of action was devised in consultation with villagers, who shared their traditional practices, and technical institutions that brought in contemporary scientific approaches.

Impact:

About 6,500 villagers have been trained on low carbon cultivation practices and the use of organic fertilizers and pesticides has increased. Improved cultivation practices have helped increase income by INR 6,000 (USD 74) per acre per cropping cycle while reducing the GHG intensity of the crops (an emission reduction of 30 percent).

Through plantations of pulses and millets and creation of water harvesting structures, over 130,000 person days of employment were generated. There is improved flow in existing streams and an increase in water levels in village wells.

Approximately 5,000 families have been provided solar home lighting systems and 3,000 have been given better stoves, which have 28 percent efficiency as against the 3 percent efficiency of traditional cook stoves, leading to an emission reduction of 5432 tonnes CO₂e/year. Renewable energy initiatives have reduced emissions to the tune of 500 tonnes CO₂e/year.

There is improved green cover in 53.61 ha of private land, outside the forest area, and a reduction in erosion in 2,187 ha of land mass. Each ha of plantation sequesters a minimum of 2 tonnes CO₂ per year (108 tonnes of CO₂ equivalent per year). The cultivation of local pulses, like horse gram and pigeon pea, improves carbon sequestration by 5.73 tonnes CO₂e/ha/crop.



CHAPTER

03

The number '03' is rendered in a large, white, sans-serif font with a subtle drop shadow. The zero contains a silhouette of a human head in profile, facing left. Inside the head, three interlocking gears are depicted, symbolizing thought, logic, or cognitive processes.



THE SCIENCE BEHIND BEHAVIOUR CHANGE



To change what one has been practising for years, and in a limited time frame, requires us to understand what drives human behaviour. If human behaviour has caused climate change, we need to study the science of human behaviour to understand how to appeal to people's values and emotions, to inspire them to non-materialistic goals and create new social norms. Simultaneously, we need to identify agents of change who can direct people on a path different from what they are used to, and ready infrastructure which allows for easy adoption of new practices. The science of behaviour change is very important in our quest for solutions to climate change.

What has been advocated in most ancient Indian scriptures was conveyed in modern terms by Richard Gregg in 1936. Influenced by the Swadeshi movement during India's struggle for independence, Gregg proposed the idea of "voluntary simplicity", which means ordering and guiding our energy and desires, exercising partial restraint in some directions to secure a greater abundance of life in other directions. Inspired by the central idea of self-reliance behind the Swadeshi movement, Gregg emphasized that living simply would significantly contribute towards cutting one's share in the exploitation of natural resources and contributions to the detriment of the planet as a whole. Simply put, if we aim at consuming "just enough",⁵² it would be a step towards living more sustainably.

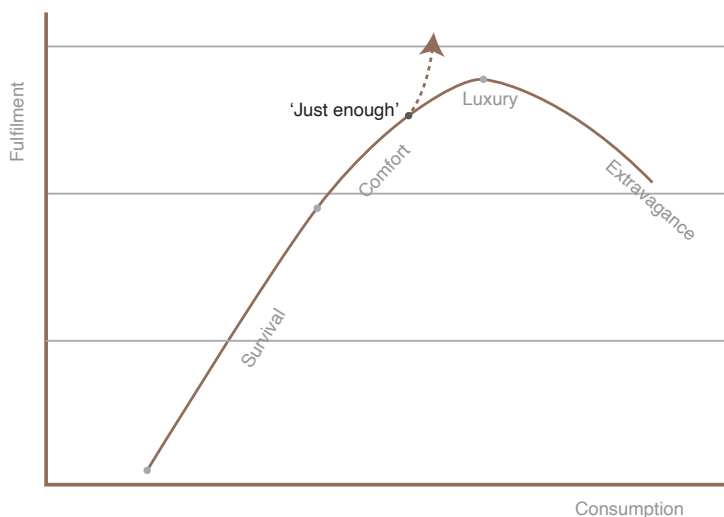
What is that ideal point of having "just enough"?

Excessive consumption diverts labour and capital from socially more productive and beneficial tasks to meet rising demands; it often takes land away from productive use and wastes raw materials that might be used to better advantage.⁵³ If we measure utility as personal needs and aspirations, then considering the Law of Diminishing Marginal Utility – where any additional utility gained from an increase in consumption decreases with each subsequent increase in the level of consumption – we can see in Figure 16 that maximum fulfilment is achieved at luxury consumption, after which it begins to decline.

"Just enough" is the threshold after which even if consumption is not increased, fulfilment can increase (dotted line in Figure 4) through various non-materialistic gains, such as happiness, responsibility, generosity, mindfulness, self-reliance, social engagement, authenticity, readiness to help others, living in the moment, life experience and gratefulness.⁵⁴

Figure 15.

DIMINISHING MARGINAL UTILITY



The concept of voluntary simplicity looks at only limiting individual consumption. LiFE, on the other hand, aims at encouraging individuals to consume just enough while ensuring that those individuals that have borne the burden of socioeconomic injustices and are vulnerable to climate change are also able to improve their consumption to enough.

Climate change was caused by billions of people making lifestyle choices that were harmful to the planet. It can seem like an overwhelming problem now, but billions of people making equitable, pro-planet lifestyle choices, supported by technology, policy and regulation, can help us reach our goal of net zero carbon emissions.

Long-term sustained behaviour change, from a consumerist lifestyle towards a simpler one with mindful consumption, is a long drawn and complex process because many of our actions have become routine. Change requires people to think before every action, break their current habits, inculcate new ones consciously while simultaneously making a mental shift in toning down material aspirations that they have fostered over years. To help us identify drivers of change in individuals, we have to resort to behaviour science to give us an understanding of how people process information and make choices. Habit is one of the key challenges for behaviour change policy and with increased focus on individual lifestyles, a number of behaviour change theories are being researched and implemented.

NUDGE THEORY

Nobel Prize-winning behavioural economist Richard Thaler and legal scholar Cass Sunstein endorse thoughtful design of “choice architecture” as a means of nudging consumer decision-making towards desirable behaviours without limiting the freedom of the individual to make a choice. We live in a world of information overload and ever-increasing options, but how a choice is framed tends to influence consumer behaviour. One of the key principles of choice architecture is setting appropriate defaults. With limited time and an increasing number of alternatives, individuals are likely to pick the default option given to them, and defaults can be used to promote better choices.

Given the state of our planet and the rate and magnitude of changes required, nudges, by themselves, are woefully inadequate, but combined with measures like incentives and mandate based policies, they can be effective behaviour modifiers in some cases. A majority of public policies are capable of incorporating nudges, but the architecture of the nudge should understand target audiences, social contexts, market forces, friction factors and nudge timing well to achieve desired results. For example, Ranchi’s multi-pronged efforts at increasing the adoption of cycling as a preferred mode of transport or the Sattvik Food Festival are good examples of nudging people towards a desirable behaviour without curtailing their choices. It must be remembered that the back-end facilitation of infrastructure is essential to allow for easy adoption of the behaviour, be it cycling tracks or easy availability of millets in neighbourhood stores.

Swachh Bharat Mission

In the recent past, several successful Indian schemes have employed insights from behavioural thinkers. In the field of climate adaptation and mitigation, the Swachh Bharat Mission (SBM) is an important case study in understanding how a nudge factor along with policy, infrastructure and communication could bring about behaviour change.

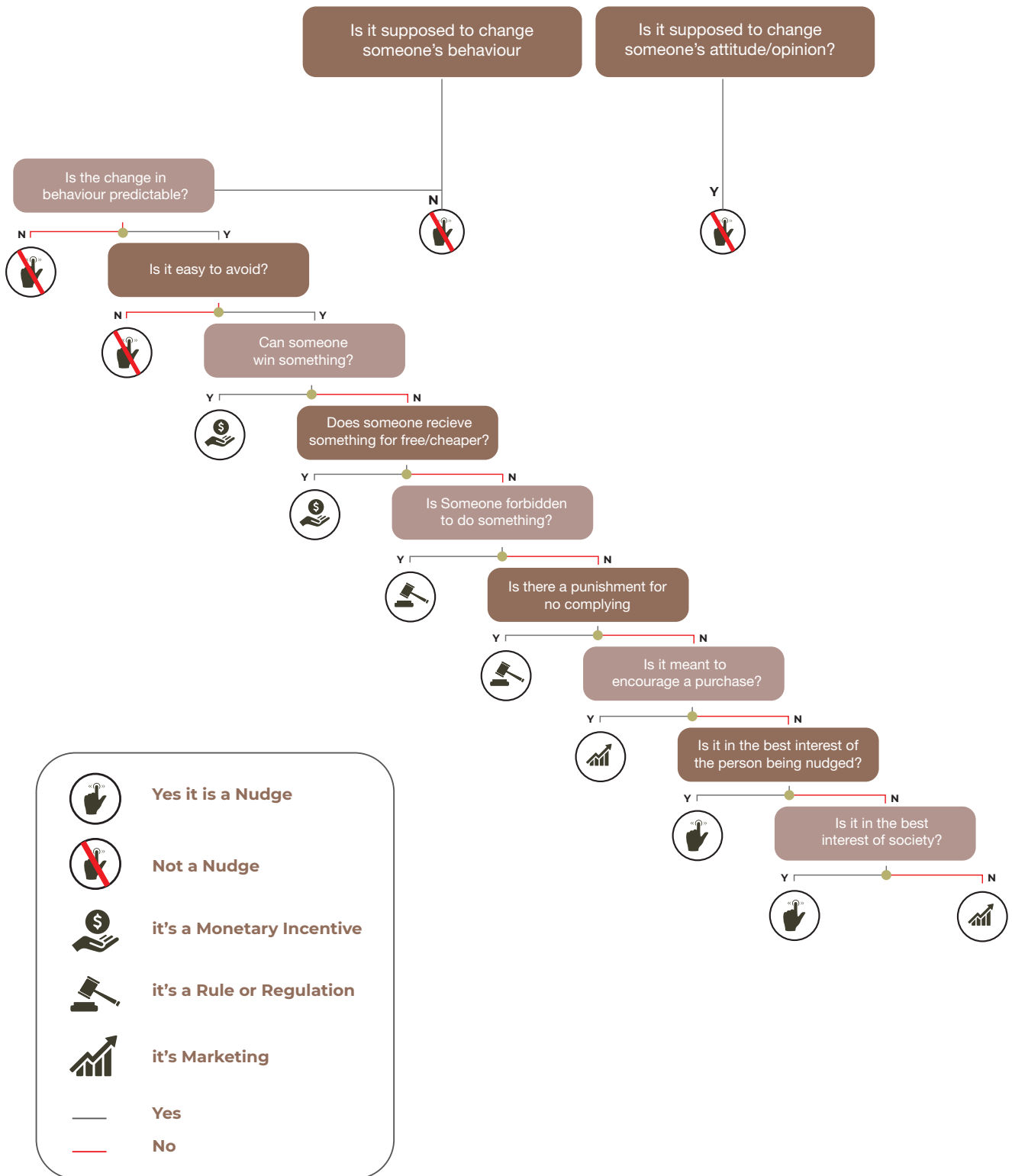
Launched in 2014, the SBM was a mission with a simple idea: achieve universal sanitation coverage. Up until then, no cleanliness mission had succeeded in showing dramatic shifts in access to safe and clean toilets. SBM was one of the first policies with a focus on behaviour change. Within five years of being launched, household access to toilets increased to nearly 100 per cent in all states.

While there was the material incentive of building free toilets, ensuring that they are also used was a challenge. This is where the principles of behaviour economics were leveraged through the following actions.

- i. Local ambassadors of change were engaged in every village to create a sense of solidarity around the initiative, since people tend to adhere to and emulate someone they know.
- ii. Participatory rural appraisal induced individuals to come together as a community to address the issue of sanitation collectively. For people who did not work with the collective or those who resisted, it served as a failure bias that elicited the fear of attracting the scorn of the community as well as a desire to fit in.
- iii. By attaching a sense of disgust to open defecation, SBM appealed to the emotions of the people, thus moving people to change.
- iv. By invoking a sense of empowerment for girls and women, SBM has been instrumental in improving the literacy rates and, consequently, discouraging early marriage of girls.

Figure 16.

NOT SURE WHETHER YOUR INTERVENTION IS A NUDGE?



COGNITIVE BIAS

Researchers are also studying the challenge of biases to climate change – how people perceive, understand and solve environmental problems. Psychologists have identified more than 150 cognitive biases, and a few of these can explain why we lack the collective will to act on climate change.

There is no specificity in how climate change will impact a particular individual in a definite time frame or geographic location but rather, there is a generalization of what could impact humanity over a period of time with many variables to account for. The inter-related nature of biotic and abiotic systems on the planet also makes solutions more amorphous.

Our evolution has conditioned our minds to focus on what is immediately essential to our survival and not on complex long-term challenges that threaten our existence. The present is more important to us than our future, and this is one of the main reasons that hampers our ability to take action to address slower, complex challenges. We also tend to believe that someone else will deal with the crisis (the bystander effect) and larger the group, the stronger this bias.

Bringing about behaviour change to address the climate crisis, therefore, requires a more sophisticated analysis of human cognition and the role of socially shared values. Addressing the climate change issue requires collective action on a scale that is challenging for our evolutionary capacities, but when smaller groups are nudged to shape narratives around individual interests, people are more likely to engage. When local communities focus on specific problems and are involved in devising and implementing the solutions, there is greater ownership (endowment effect) and hence, a sustained commitment. The work of small groups can also have a ripple effect because we evaluate ourselves by looking at others around us. If we are surrounded by people taking pro-planet action, it's very likely that we will do so too. The actions of the cotton farmers in Pudukkottai towards pesticide-free farming or the Jammu and Kashmir Wetland Trust to preserve natural ecosystems are good examples of how local communities come up with solutions for local problems and how the ripple effect is spreading through their state.

Switch 2 Green Competition, Maharashtra

Nyati Environ Cooperative Housing Society in the city of Pune in Maharashtra halved its monthly electricity bills from an average of INR USD 4250 to USD 2100 over the course of one year by switching to energy efficient lighting, efficiently managing elevators by appointing a single milkman and paper vendor, and by installing an enzyme-based sewage treatment plant that slashed energy consumption to almost a third of a traditional system, among other initiatives. The Indradhanu Society cut down on decorative lighting, switched to energy efficient bulbs, and painted common area walls white so that they were more reflective, requiring fewer common area lights. Sunshine Park brought in small changes to the water pumping system to bring about a significant change in energy consumption for the same.

These three housing societies were among 50 complexes selected by a Pune-based NGO, Green Energy Foundation, in association with Racold Thermo Company, to participate in the Switch 2 Green competition. The competition aimed to motivate societies to implement green practices and apart from energy conservation, these apartment complexes have implemented a range of eco-friendly practices in waste and water management as well. Some societies have also started implementing energy conservation in individual households after witnessing the positive impact in their communities. These 50 housing societies, comprising 8,187 households, saved 43,000 units of electricity in three months.⁵⁵

Working with small groups, having them focus on specific problems, providing them with adequate information, involving them in devising and implementing their own solutions, and incentivizing their efforts through a competition are some of the ways in which Green Energy Foundation and the Racold Thermo Company have been able to bring about sustained behaviour change and created a citizenry that is looking at mindful consumption.

Community Managed Ecotourism: Odisha

Odisha is a land of rich natural biodiversity. With 39 percent forest cover, 480 km of coastline, rivers, wetlands, waterfalls, lakes and mangroves, it is a preferred tourist destination within the country. About 83 percent of Odisha's population live in rural areas, and their role in conserving the state's natural resources is pivotal. In 2016–17, the state launched an ecotourism project driven by community participation.

Awareness sessions were conducted to make communities understand that preservation of bio-resources was far more beneficial in the long term as compared to their over-consumption for short-term gains. 47 Ecotourism destinations were identified, and training and capacity building for 632 community members (mainly tribal and rural women) living in and around these destinations were conducted by the Indian Institute of Tourism and Travel Management, Institute of Hotel Management and Odisha Biodiversity Board. Sponsored by the Department of Tourism, Government of Odisha, the training covered subjects like hospitality, housekeeping, hygiene, sanitation, cooking, communication skills, check-in and check-out protocols, etc. *Vana Samrakshana Samithis* (Forest Protection Groups) and ecodevelopment committees were formed to manage the destinations. About 90 percent of the income generated from these ecotourism activities is put back into the welfare of the community managing ecotourism and for the development of eco-tourism facilities.

The community-based ecotourism model provides the local community an alternative and sustainable livelihood option, and it reduces the dependency on the natural ecosystem they reside in. It has spun off careers ancillary to the hospitality industry and provided an impetus to local artisans. Tourists get an immersive experience of local/tribal customs, crafts, foods and culture, and respect for nature is intrinsic to every tourist activity in these sites, which provides an important learning experience for visitors while nurturing eco-systems.

The income generated from ecotourism in 2021–22 was over USD 1 million, a 10-fold growth over 5 years. With 90 percent of this going back to the community, there is now a collective sense of ownership towards wildlife and natural ecosystems. This is evident by the reduction in illegal activities, such as felling trees in the forest, over-extraction of sand from rivers, poaching and smuggling, as well as reduction in unsustainable extraction of NTFPs. Forest fire incidents have also reduced sharply due to a vigilant community.

Involving the local community who were impacted by resource degradation in taking ownership of the eco-friendly actions, and equipping them with necessary skills and infrastructure has helped rejuvenate natural biodiversity and provided better income and livelihoods for the poor.



Credits: Department of tourism of Odisha

SOCIAL DILEMMA

In the climate debate, decision-makers face social dilemmas in which their personal interest may conflict with the common interest. Collective action to address problems where individuals will be affected if targets are not achieved brings us to the theory of collective risk social dilemma. Reaching a collective target of GHG emissions reduction requires individuals to make changes, but there is no guarantee that all others in the collective will contribute equally and hence, there is no guarantee of the outcomes. A case in point is water conservation efforts in apartment complexes where there is no water metering for individual apartments. Residents can be tempted to become lax about water conservation because they are not sure if others will also work towards the common goal or not and hence, there is a risk of failure. In water consumption, one can at least get a cumulative reading at the end of each month to understand if individuals in the collective are making a change or not, but in the larger umbrella of climate change, results are visible over a much larger time span, making it more of a challenge for sustained collective action.

Empirical research suggests that individual commitments may increase if there were transparency in the information available on the commitments achieved by others in the community. This transparency of information helps create social norms and aspirations, as well as associated emotions of pride and guilt. *The revival of the orans in Rajasthan or the conservation of biodiversity in Khonoma* are examples of how collective action, even if immediate personal gains were in conflict with long-term community interests, could bring about positive change.



Credits: iccaconsortium.org

Endangered Species Conservation, Khonoma, Nagaland

Khonoma, a small village in Nagaland primarily inhabited by the Angami tribals, is the site of a unique conservation endeavour – a 20 sq. km nature reserve is the result of a predominantly local initiative to preserve the local endangered pheasant, the Blyth's Tragopan.

Hunting and foraging has been a part of the village's culture, and conservation was nowhere on their agenda. The Centre for Environment Education, a registered society that works in the field of environmental education across India, started awareness programmes in Khonoma, but the real impetus for conservation came after a hunting competition, where these endangered birds were killed on a large scale. Realizing that this could wipe out a culturally relevant species and disturb the ecological balance of the region, the village elders sprang into action and 20 sq. kms was demarcated by the village council as the Khonoma Nature Conservation and Tragopan Sanctuary (KNCTS). While the sanctuary is only 20 sq. km., the actual forest sprawls over 123 sq. km., and the community chose to ban hunting across the entire stretch of the forest. Predictably, there was huge opposition, but persistent awareness drives, the support of the elders and punitive measures for transgressors brought the villagers around.

While it has taken time and consistent effort, today, the village is actively involved in conserving their rich flora and fauna – 72 species of mammals, 200 species of birds, over 70 medicinal plant species, 5 plants that produce natural dyes, and hundreds more that provide food in the form of wild berries, roots, vegetables and mushrooms, that are all part of the community's rich traditional cuisine. It follows a model of community based ecotourism, showcasing its diverse natural and cultural heritage, and offering home stays.

The village has been recognized as a “green village” by the Government of India in the year 2015 and has been showcased often in international media as a striking example of community-led conservation efforts.⁵⁶

The importance of village elders in taking decisions based on their traditional experience and the respect given to them by the community have been instrumental in the success of this initiative. Effective awareness campaigns which focused on the value of preserving natural biodiversity, along with providing alternate sources of livelihood were other factors that helped overcome the social dilemma of self over community.⁵⁶



Credits: Nagaland tourism

Robert Gifford's general model of social dilemmas lists a number of psychological barriers to pro-environmental behaviour and explains these influences on decision-making. The identification of these barriers and the use of good models of human decision-making are key to designing successful behaviour change interventions.

Research has also found that behaviour change is more likely when challenges and solutions are framed positively. To facilitate action, we need to focus on issues that affect a community personally and provide an enabling environment for them to identify local solutions, focussing on the positive impact the solution will bring about.

A lesson in community farming, Korangatti, Kerala

Korangatti, a little hamlet, is a rare wetland region in Kerala. It had nearly 100 acres of paddy fields at one time but due to the excessive cultivation of hybrid varieties of paddy, the land became fallow, and paddy cultivation dwindled to less than 10 acres. In 2021, indigenous rice cultivation returned to the region, with 42 acres of fallow land being converted into fertile fields, under the High Range Mountain Landscape Project of UNDP, Global Environment Facility, and Government of India.

Fixing issues that affected the community, like a waterlogged canal, with the help of relevant government departments garnered the trust of the local, largely tribal community. Before the sowing season, an exhibition of indigenous seed varieties was held. More viable varieties suited for high-range landscape were re-introduced to the community instead of the hybrid varieties. Forty-two farmers decided to plant indigenous rice varieties and were provided high-quality seeds through the Haritha Keralam Mission. While the overall yield appears to be lower than for hybrid seeds, the benefits reaped from the sowing of indigenous varieties are far greater: The fallow lands could be reclaimed for agriculture, the seeds can be used for replanting, and the process helps conserve the rare wetlands of the region which were on the path of degradation.

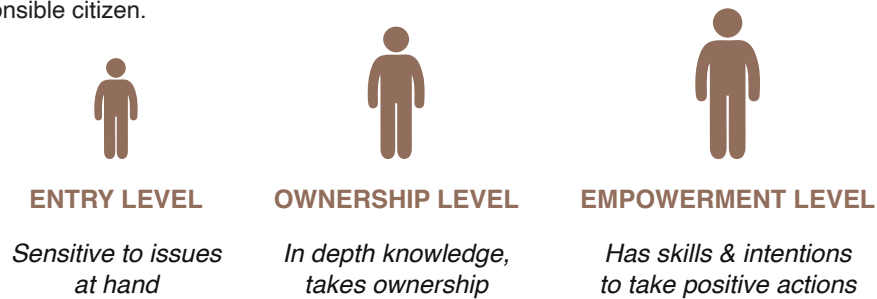
The farmers' committee, enthused with the reclamation of fallow land and understanding the significance of their role in wetland and seed conservation, plans to bring more fallow land under indigenous crop cultivation in 2022. The collective farming project has inspired a feeling of togetherness among the community and has evolved into a sustainable model for wetland conservation.⁵⁷



Credits: Shutterstock

THE ENVIRONMENTAL CITIZENSHIP MODEL BY HUNGERFORD AND VOLK

Behaviour change in individuals should take into consideration the level of the target audience in the environment literacy ladder. The Environmental Citizenship Model by Hungerford and Volk is a framework/scale that can be employed to tell if a citizen is at the entry level (is sensitive to the issue at hand), ownership level (has in-depth knowledge and takes ownership of making a change), empowerment level (has the skills and intention to take positive action) or has grown to be an environmentally responsible citizen.



AJZEN’S THEORY OF PLANNED BEHAVIOUR

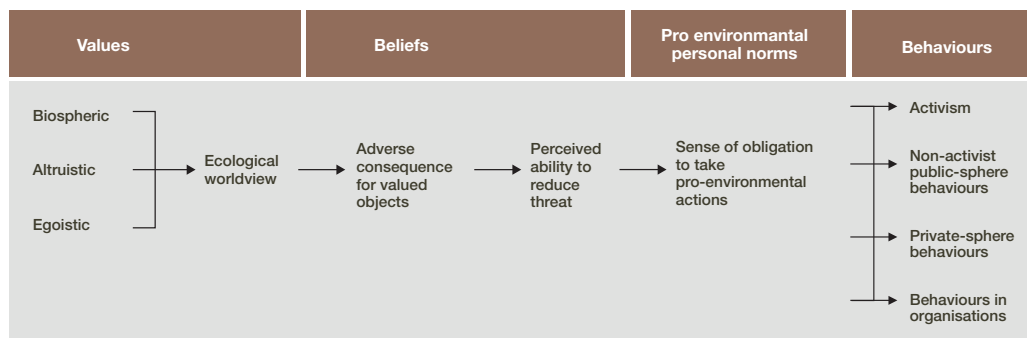
Ajzen’s theory of planned behaviour states that the most important determinant of an individual’s behaviour is their intent to perform that behaviour with three cognitive variables – attitude towards the behaviour, social norms, and perceived behaviour control. Attitudes reflect how positively or negatively an individual regards a specific behaviour; social norms refer to the perceived social pressure to engage in the specific behaviour; and behaviour control is the extent to which they feel other factors, such as time, money, skills, ability etc., may influence their ability to perform a behaviour. People who intend to perform a specific behaviour are generally more likely to do so. This framework has been widely used to understand how attitudes toward behaviour contribute to predicting behavioural tendencies and has been frequently applied to the transport and diet domains in climate change behaviour research.

STERN’S VALUE BELIEF NORM THEORY

Stern’s value belief norm theory explains that there is a chain of influence that controls an individual’s pro-environmental actions. Personal values and beliefs set the foundation for establishing behaviour norms, which results in a sense of obligation to act in a certain way. A chain of five variables were identified and grouped into values, beliefs and norms, as shown in Figure 17 and these variables have a bearing on whether a person is likely to adopt pro-environmental behaviours or not.

Figure 17.

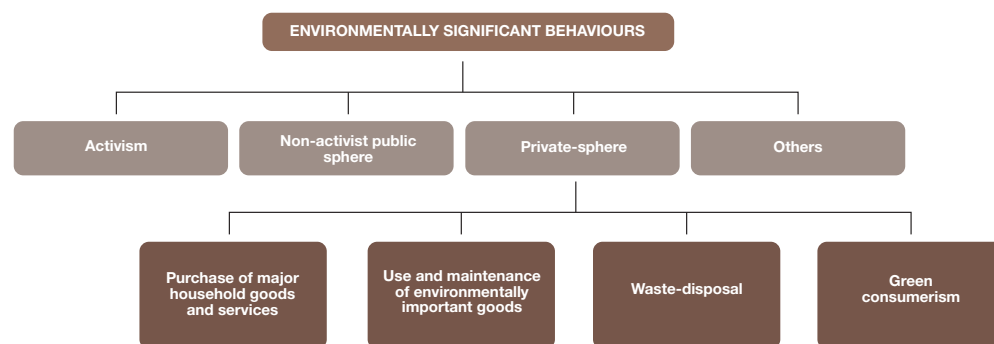
VALUE-BELIEF-NORM THEORY OF ENVIRONMENTALISM.



The increasing contributions to Goonj, the greater adoption of reusable menstrual products, the increased preference for handloom natural fabrics over synthetic clothes, building homes with earth architecture are all likely because increasing number of people have a sense of obligation to take pro-environmental actions, thanks to increased awareness and knowledge on the issue over the years.

Figure 18.

STERN'S CLASSIFICATION OF ENVIRONMENTALLY SIGNIFICANT BEHAVIOUR



Uger: Saying no to plastic every month, Rajasthan

The inner layers of disposable sanitary napkins are made from heavily bleached wood pulp, and the top and bottom layers are typically made of plastic. The bleaching agent and synthetic raw materials like non-woven polymers, polyacrylate gel, plastic, chemicals and dioxins, can cause itching, fungal infections, contact dermatitis as well as problems of the uterus and vagina.⁵⁸

Depending on the materials used to make the sanitary napkin, it could take up to 800 years to decompose a single one. This is especially alarming given that on average, in India, people who menstruate throw away 12 billion pads every year, which despite being categorized as domestic, hazardous waste, ends up in landfills with other municipal solid waste, impacting the soil, water and air, making the landfill a breeding ground for pathogens.⁵⁹

India has one of the lowest usage rates for of sanitary pads in the world. People who menstruate use rags, husk, sand and other unsanitary materials to manage their monthly periods. Studio Vikalp Design, which works in sexual and reproductive health communication for adolescents, in association with an NGO called Jatan Sansthan, launched a campaign called ‘*Surakshit Mahawari Abhiyan*’ (Safe Menstrual Health). This campaign was aimed at breaking the silence surrounding menstruation and to help people who menstruate to make healthier choices. The initiative promotes *Uger* cloth pads, an alternative to the environmentally unsustainable synthetic pads. With 7–9 layers of soft absorbent cotton, an *Uger* pad can easily last 18–24 menstrual cycles, and these pads are biodegradable when finally discarded. Providing employment to women, conducting workshops and awareness campaigns with rural and urban audiences and using online platforms to market the cotton pads, *Uger* is bringing environmentally friendly menstrual care alternatives into the mainstream.

According to Dr Lakshmi Murthy, founder of Studio Vikalp Design and the additional director of Jatan Sansthan, through their workshops and training sessions, more than 50,000 people who menstruate, 10,000 adolescents and 5,000 boys and men have been directly reached. These have helped create a shift towards environmentally significant behaviours, based on the foundation of the Health Belief Theory.

Uger has also set up four cloth pad production units in Meghalaya, Assam, Arunachal Pradesh and Manipur at the invitation of the Ministry of Development of North Eastern Region and Indian Institute of Technology–Madras, under the Science and Technology Initiatives for the North East Region (STINER) project. Since its inception in 2019, the pad production unit in Arunachal Pradesh has sold over 10,000 cloth pads with the support and endorsement of the local administration.

Many corporate social responsibility (CSR) initiatives, state governments and municipal corporations have partnered with Jatan Sansthan to train SHGs and women entrepreneurs. Water Aid is now disseminating the design of the *Uger* pad by printing and distributing pad-making instructions. Women trained with Water Aid’s support have been producing cloth pads in Madhya Pradesh, Bihar and Chattisgarh.

A women’s group in Gunjur, a small town on the southwestern coast of the Republic of the Gambia, has replicated the *Uger* cloth pads and is now advocating their use in local communities.

Jatan Sansthan believes in the ‘copyleft’ philosophy, which, as against copyright, is the practice of offering the right to freely study, copy, modify and distribute a work with the stipulation that the same rights be preserved in derivative works created later. This has allowed free copying of the awareness materials and sanitary pad design, leading to the fast and widespread dissemination of the information aided by technology.⁶⁰

HEALTH BELIEF THEORY

Beliefs help shape behaviour, and the Health Belief theory developed by social psychologists Hochbaum, Rosenstock and others suggests that when there is an increase in an individual’s assessed level of risk, it is more likely that the individual will adopt recommended preventive behaviours. The variables to consider in this theory are perceived benefits of action and barriers to action. Additionally there are demographic, socio-psychological and structural variables to be considered when applying this theory. The model states that a stimulus is required to trigger the health promoting behaviour. One of the most used theories in health behaviour research, the tenets of this model can be applied in our quest for understanding pro-environment behaviour change, especially since there are health impacts of current consumptive practices, for oneself, humanity as a whole and for future generations.

Odisha Millets Mission, Odisha

As urban consumers become more health and fitness conscious, there has been an increase in the consumption of millets, and this has cascaded into benefits for small farmers. In addition, with growing concerns around health and immunity during the COVID-19 pandemic, traditional millets finally started to get their due as super grains. Millets are nutrient-rich, climate resilient crops, which require no chemicals to grow and are more nutritious than rice and wheat. An increase in millet farming can help reduce carbon emissions and can lead to a significant improvement in the growth of children when compared to a rice-based diet.

Riding on the increased demand for millets, many state governments are now working with small farmers to increase millet production, and Odisha has made it a state mission. The Odisha Millet Mission has reached out to more than 110,000 farmers across over 15,000 villages. Women’s SHGs are taking the lead in millet processing, improving yield with bio-inputs, and running cafes that serve millet-based dishes. The inventive streak in women and their openness to new ideas inspired the Odisha government to facilitate women SHGs to open Millet Shakti Cafes, which sell ragi and bajra sweets and savouries, flour mixes, breads and other items. The cafes are trying to cut down on the use of refined flour and processed sugar in recipes and are a source of motivation and income for homemakers.⁶¹



SOCIAL MARKETING

Social marketing emerged as a valuable behaviour change tool in the 1970s. Its main aim was to employ principles used to market consumer goods to market ideas, attitudes and behaviours. Social marketing encompasses the design, implementation, and monitoring of programmes created to influence the acceptability of social ideas. It focuses on learning what people in a specific target group want and need to bring about behavioural change for social good. A social marketing campaign requires a clear understanding of the problem and the social, demographical, cultural, behavioural and structural dynamics influencing target audiences. The clarity achieved by goal setting and understanding the barriers to achieving these goals and the perceived benefits help choose the appropriate strategies, messages and modes of campaign delivery to different audience segments.

Kotler and Andreasen, in 1991, proposed a social marketing model (Figure 19) with five stages of the marketing efforts for behavioural change.⁶² Akin to marketing ideologies used to selling products, social marketing uses strategies to create awareness of social behaviours that will benefit society at large. Over time the social marketing campaign leads people to action, through a process of changing their values and persuading them to exhibit these changes through easy and incremental steps. Since the campaign addresses a community, individuals see their peer groups also exhibiting change in behaviour and slowly the changed behaviour becomes the norm.

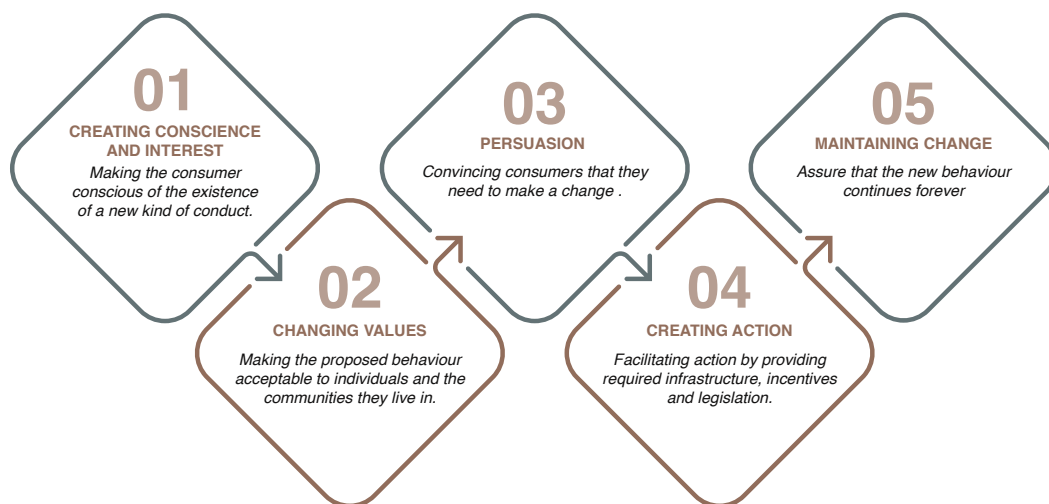
Research is currently being conducted on the use of digital technologies for social marketing and behavioural change. There is a small but accelerating body of literature that shows digital technologies are central to supporting funders, stakeholders and partnerships in designing and implementing behavioural change programmes.⁶³

Personal consumption is strongly influenced by social norms – this includes consumption behaviours that we see in our circles and what we aspire to, as well as those that are looked down upon by society. Our behaviour is motivated by a tendency to be part of a social group, and social marketing has the ability to make pro-planet products and behaviours more desirable and aspirational and unsustainable ones less so. It can, therefore, create a transition in social norms. For over a century, people have aspired to status symbols that reflect their wealth. Social marketing can make them aspire to different ones, such as those that reflect their commitment to the greater good of the planet. As aspirations change, planned behaviours may shift to more pro-environment ones, and these are more likely to be practised eventually.

Information, by itself, is inadequate in bringing about behavioural change. For social marketing to be effective, it should be part of a larger behaviour change intervention, which includes infrastructure for easy uptake. Incentivization and/or legislation may also be required to bring about change in lifestyle and behaviours until they become a norm. A social marketing campaign on recycling will not be effective unless there is infrastructure and systems to collect segregated garbage and incentivization/punishment for those who do/do not participate.

Figure 19.

KOTLER AND ANDREASEN MODEL.



Solid Waste Collection and Handling (SWaCH), Pune, Maharashtra

The Solid Waste Collection and Handling (SWaCH) Cooperative Society was formed in 2008 as a public-private partnership to tackle the growing problem of solid waste management (SWM) in Pune. It is a workers' cooperative run by informal waste workers with infrastructure and policy support from the Pune Municipal Corporation (PMC). The SWaCH Cooperative has evolved to be a critical actor in Pune's SWM system. It has achieved this through awareness-raising exercises, demonstrations and grassroots mobilization around waste workers' rights and SWM, and by instituting a democratic governance process involving all its 3,500-plus waste workers. Due to the SWaCH Cooperative's initiatives, 60 mt of waste is diverted away from landfills annually, with 80–85 percent of the waste generated in the city being recycled/processed, resulting in annual GHG emission savings of approximately 50,000 tonnes of CO₂. The SWaCH Cooperative's door-to-door collection model has also helped PMC save ~INR 90 crores (USD 12.5 million) per year in labour, processing and transportation costs.

Since its inception, the SWaCH Cooperative has followed a coordinated outreach strategy to engage, involve, and act in synergy with the city's policy aspirations. It runs regular campaigns and webinars to promote its environment-friendly SWM approach, and establish the legitimacy of its members and the crucial role they play in keeping the city clean. Their website acts as a key node for facilitating awareness campaigns with a consolidated repository of resources, such as pamphlets and posters, both in English and Marathi. The website hosts a dedicated section on short films and documentaries highlighting the cause that the SWaCH Cooperative is fighting for as well as the challenges it faces. Videos on meetings and consultations on waste and recycling, involving both SWaCH Cooperative members and the public, are also published on the website. The Cooperative regularly leverages its social media platforms to promote its activities to the wider public. Their outreach team, comprising 160-plus coordinators, also liaises directly with stakeholders through door-to-door campaigns. The waste workers themselves are the most critical actors in driving public engagement around waste management. On their daily rounds they speak to people about their work, advise them on best practices on waste management, and seek on-the-spot feedback.

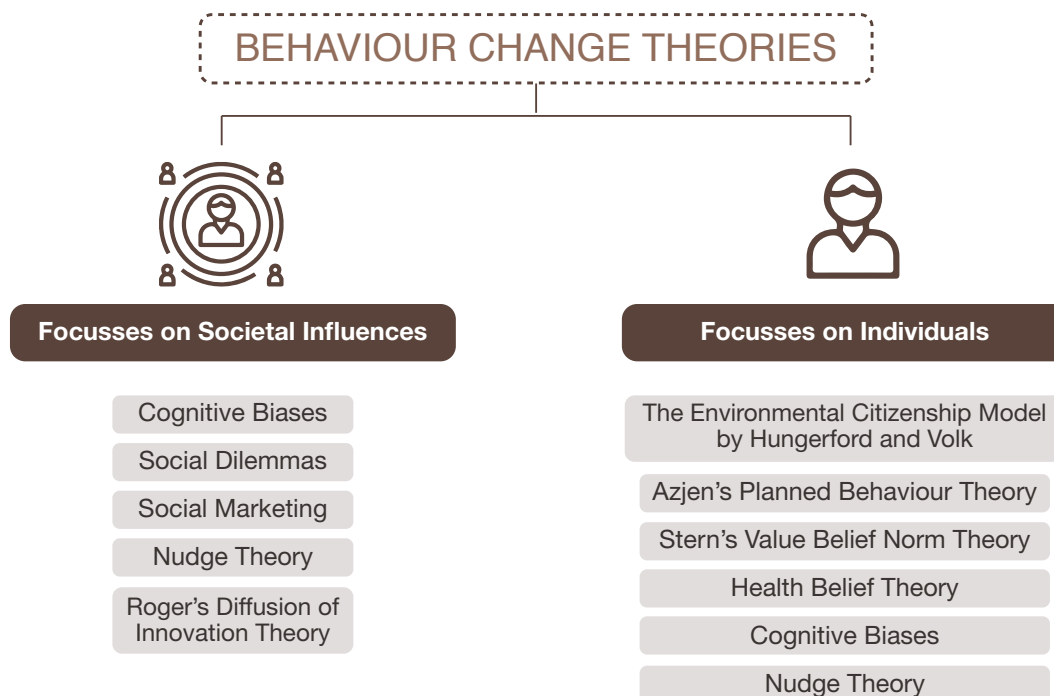
One key initiative was the red dot campaign, which was initiated to build awareness around safe and hygienic sanitary waste disposal practices. Every day, SWaCH workers collect ~20,000 kg of dirty diapers and sanitary napkins. Door-to-door campaigns for 30,000 city residents were organized to raise awareness on how sanitary waste could be wrapped and marked with a red dot. To facilitate easy uptake, the SWaCH workers also made paper bags labelled with red dots, which they sold for a nominal amount during their rounds. Waste collection vehicles were also fitted with compartments marked with a red dot, which acted as a daily reminder of the campaign. Posters were put up in public places. The SWaCH Cooperative also runs various workshop sessions on menstrual health and sanitary disposal.

The SWaCH Cooperative also initiated the Send it Back campaign in 2013, where sanitary pads were sent back to the companies that manufactured these products (including Kimberly-Clark, Procter & Gamble) to nudge them to think more responsibly about disposal and packaging waste when developing their product strategies. The awareness raised through this move has led to SWaCH workers now being actively engaged with Procter & Gamble to find ways for product packaging to be repurposed as degradable red-dot disposal bags.⁶⁴

ROGER'S DIFFUSION OF INNOVATION THEORY

To address the increasingly critical climate problem, we need to look at lifestyles that adopt low carbon technologies/techniques and behaviour change to address habits of over-consumption. While traditional practices offer a wealth of knowledge on environmentally conscious production and consumption – practices that we have forgotten in our race to acquire more – some new technologies can hasten the adoption of sustainable alternatives and practices as seen in the case of GoCoop and Ecozen.

Everett Roger's Diffusion of Innovation theory focuses on how ideas spread through a culture. Elements that influence the diffusion of change in practices, techniques or technologies in society include the idea itself (practice/technique/technology), communication channels, characteristics of early adopters, time and the social system. The model also highlights the importance of opinion leaders/influential change agents in the process and relies heavily on social capital. Rogers outlines several strategies to help an idea reach a critical mass of adoption so that it can be self-sustaining. To address our environmental problems, change must occur at a collective level, and models such as these help implementers identify the critical ideas and create required infrastructure.



As the call for behaviour and lifestyle change to address the problem of climate change becomes louder, we need to look at an amalgamation of the various models to help nurture an informed citizenry and spur individuals and communities into action so that the goal of sustainable consumption can be achieved. Some models focus strongly on the individual and internal factors that affect decision-making, while others place importance on society and external aspects (contextual and situational variables) that impact the individual's actions. Behaviour change requires multi-dimensional forces to act in consonance, impacting both internal and external elements. Government policies, infrastructure and regulation have a strong role to play in enabling access to, facilitating and incentivizing pro-environment choices, and we need concerted strategies to make behaviour change easy.



CHAPTER



4



**LiFE:
A BEHAVIOURAL
FRAMEWORK**



Despite being a developing country with a burgeoning population, India's per capita carbon footprint is 60 percent lower than the global average.⁶⁵ The country's emissions intensity in 2021 stood at 0.25 tonnes CO₂/USD 1000 (IEA 2021), and the government is committed to reducing the emissions intensity of its gross domestic product by 45 percent by 2030 and achieving a 50 percent cumulative installed capacity of electric power from non-fossil sources. India contributes approximately 3.4 per cent to carbon dioxide emissions against 17.7 per cent of the world population.⁶⁶

"India has made remarkable progress in recent years, bringing electricity connections to hundreds of millions of people and impressively scaling up the use of renewable energy, particularly solar. The energy policy successes of the Indian government to date make me very optimistic about its ability to meet the challenges ahead in terms of energy security and sustainability."

Dr Fatih Birol, Executive Director, IEA, at the launch of India Energy Outlook 2021

An abiding respect for the environment has always been part of India's tradition and culture, and the country is looking at a low carbon future through many avenues, both from the supply and demand perspectives. Mission LiFE reinforces the traditional Indian concepts of mindful utilization of natural resources, based on need and not greed, and aims to steer demand towards pro-planet choices. Civil society and the government have been working hand-in-hand across the country towards sustainable development, as seen in the case studies in this book, which are but a fraction of the actions being taken in different sectors and regions. Through Mission LiFE, India hopes to promote responsible lifestyles as a global movement that inspires individuals from across the world to contribute their bit towards a more sustainable living.

The LiFE framework

The modern world is a complex ecosystem, and many variables and interdependent factors, spanning individual behaviour, societal pressures, available infrastructure, government policies and regulation, civil society action, business responsibility and market forces will need to be considered if we want to move from mindless consumption to mindful utilization. The LiFE framework presents the different forces that need to act together to bring about change in modern lifestyles, a grave necessity of our times (Figure 20). It reflects the importance of individual leanings based on a number of personal physical, material, and emotional factors; associated infrastructure that can make it easy for those who want to change to more sustainable behaviours to actually do so; facilitators, who can drive change in communities; and enabling conditions which should be considered to encourage more mindful utilization of natural resources. The relevance of these forces depend on the context in which they are applied, and the solutions would need to address them in differing degrees of importance.

Leanings

As we look to change the lifestyles of a large section of humanity, individual leanings, which are a function of the person's age, gender, income level, health, personal values, beliefs and personality traits, knowledge and awareness of the problem, social aspirations and the pressures to conform to social norms, all assume importance. This is one of the most important factors in sustained behaviour change towards mindful utilization of natural resources.

Bodies of research show environmental behaviours to be a function of an individual's age.⁶⁷ Some research suggests that older people are more likely to engage in pro-environmental behaviours, because, as the theory of generativity posits, ageing involves a re-examination of life roles, and older adults are eager to contribute to society and impart a lasting legacy for themselves and future generations.⁶⁸ In many of the case studies in Chapter 2, it is evident that older individuals practiced sustainability in their daily lives, and though they moved away from it for a few years, they have seen and experienced the problems associated with unsustainable activities and are motivated to return to traditional practices.

On the other hand, people born between 1995 and 2010 (Generation Z) are being seen as champions of sustainable consumer practices. We cannot consider one factor in isolation from others, but rather we should consider a combination of specific factors in any given context. Poor women bear the majority of the risk and burden of climate change impacts and take the lead in sustainable actions, with a combination of income, gender and health being the prime factors for behaviour change (for example, members of the Mahila Housing Trust, the SHG members of Pudukkula, the women of Muala Sani village who conserve seeds or those shifting to Uger sanitary pads)). Research suggests that women are more socially responsible, which motivates them towards more environmentally sound behaviours, along the lines of Azjen’s theory of planned behaviour and Stern’s Value Belief Norm theory. Women are also proven to be more powerful consumers because they are responsible for decision-making and the health of their families. Health is a key influencer of change as per the Health Belief theory, and this is even more important after the COVID-19 pandemic.

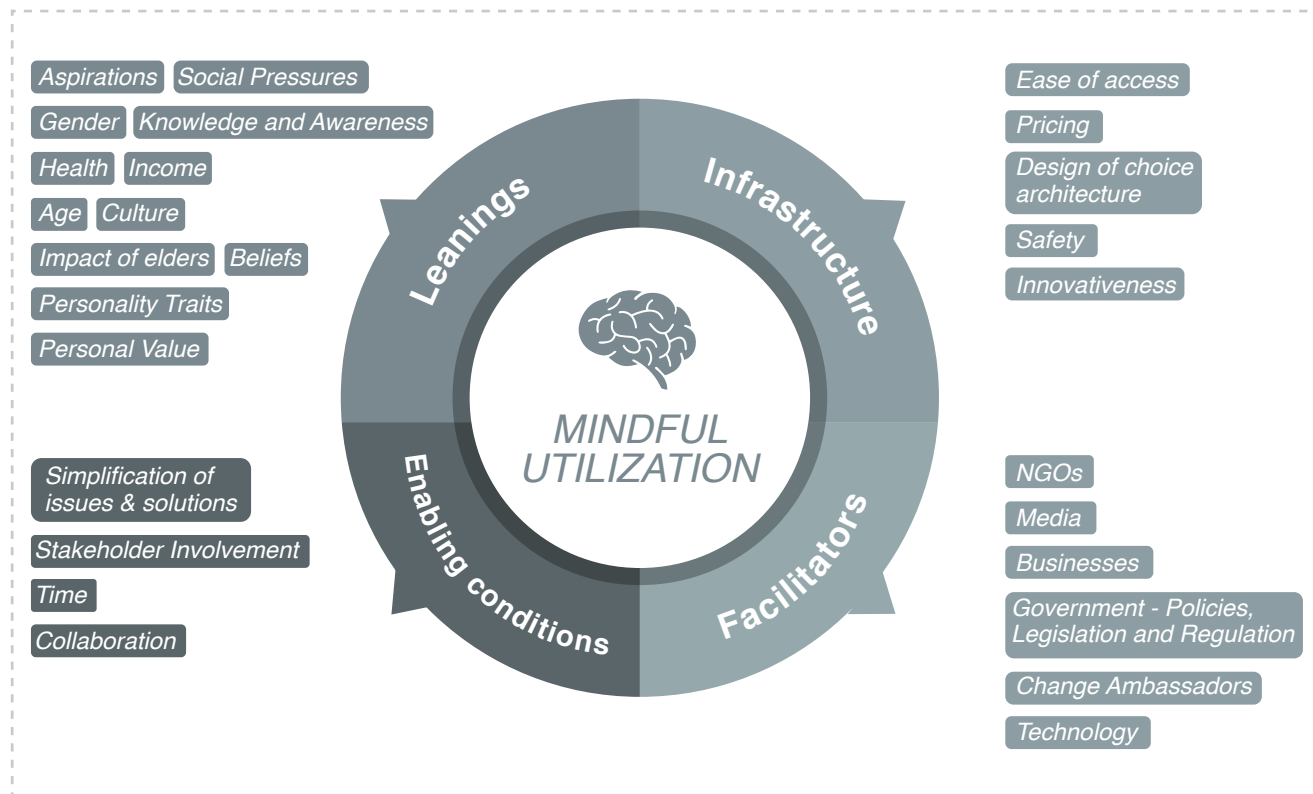
Social norms can have a powerful influence on consumer behaviour (Cialdini et al 2006; Peattie, 2010). Cialdini et al categorize social norms into descriptive and injunctive ones, where descriptive norms refer to what other people are doing or commonly do (Cialdini, Reno, Kallgren 1990), and injunctive norms are what society would approve or disapprove of (Reno, Cialdini, Kallgren 1993). Injunctive norms are more effective when individual autonomy is not threatened (White and Simpson 2013). Both norms can influence sustainable behaviours and social marketing campaigns can be built on these.

There is adequate knowledge on climate change causes and impacts and the Hungerford and Volk model of Environmental Citizenship can indicate where a person stands between the entry level and the empowerment level, which will have implications on ability to change to more sustainable behaviour.

Policies, campaigns and nudges towards more mindful utilization of natural resources should consider all these aspects and be tailored to specific target audiences.

Figure 20.

LiFE - A FRAMEWORK.



Infrastructure

Behaviours cannot change if infrastructure does not keep pace. People will not switch from personal motorized vehicles to mass transportation systems or cycling if there is no easy access to them or if their safety is compromised. Design of choice architecture assumes importance as do pricing, market forces and frictions of the available choices. Ecocabs, the Ranchi cycling initiative and the Odisha Millet Mission have been successful because requisite infrastructure has been put in place and the choice architecture nudges people towards the more environmentally friendly option. Increased use of earth architecture in the construction industry requires an ecosystem of designers, masons, brick manufacturers and other artisans, and tradesmen to be easily available for it to move from being an alternative choice to the mainstream.

Many behaviours with sustainability implications – such as food consumption, choice of transportation, energy and resource use, shopping and disposal of products – are strongly habitual with and the transition from old habits to new ones can be made easier with the provision of the infrastructure required for change.⁶⁹ If healthy foods like millets and organic produce are made available at competitive prices in local grocery stores; if first and last mile connectivity issues are addressed in mass public transportation; if a choice of good-quality, energy efficient appliances is made available; if pop-up repair clinics and “pre-loved” markets come up in neighbourhoods at regular intervals, the move towards mindful utilization will be easier. The availability of infrastructure allows us to design choice architecture and nudge consumers towards sustainable behaviour in every sector of consumption.

Facilitators

Change is never easy and changing how communities function requires concerted efforts from varied facilitators over a protracted period of time. NGOs and civil society organizations play a very important role as facilitators in this regard. They understand the problem and its impact on communities they work with because they are hands-on. They understand group dynamics and are trusted by communities, thereby increasing citizen engagement. They bring problem-solving expertise to the table along with networks with governments, businesses and other NGOs. Strengthening NGOs and running mindful utilization /lifestyle change campaigns through these organizations can deliver sustainable results in a shorter timeframe. (as we can see from the case studies of Goonj, the Kala Cotton initiative, the revival of orans and others). Civil society has a powerful contribution to make in both framing and implementing effective sustainable development policies.

The media also plays a very important role in creating awareness, nudging people in the right direction and constantly reminding them of the problems and solutions. The media is instrumental in shaping the aspirations of people. So far, it has been pushing people on the path of mindless consumption very successfully, and time has come to enlist conventional and new age social media to focus the conversation on the mindful utilization of natural resources and associated behaviour changes. The media can share good practices to a larger audience and bring together like-minded people in their attempts to create a movement for sustainability as in the case of Jammu and Kashmir wetland preservation.

Legislation and regulation are also strong facilitators for mindful utilization. Banning Single-Use plastic has moved all those sitting on the fence towards options that are more environmentally-friendly.

With a focus on costs and not longevity, a use-and-throw culture has pervaded our lives. The private sector and businesses play an important role in our quest to reverse or slow down the impacts of climate change. Businesses are becoming more environmentally responsible: by creating products that last longer, by taking back and efficiently managing wastes generated by their products, by advertising responsibly, by nudging their employees to reduce mindless consumption, and by walking the sustainability talk in all aspects of their operations.

Technology is another important facilitator for changing lifestyles as it helps in adaptation and mitigation efforts and creates awareness. Technology can bring in system efficiency and can help the underserved in myriad ways as in the case of Ecozen's offerings. It can open hitherto unknown markets to producers of sustainable alternatives as in the case of GoCoop.

Media and technology can employ influencers effectively to change social norms and thus the aspirations of people. When respected members of society set pro-planet examples that others would want to emulate, we can set the ball rolling on lifestyle change. The Indian media has been actively bringing the focus on climate change, with the print media covering different aspects of the phenomenon, its impact, challenges, social progress and public and individual accountability, on a daily basis. There is an active discourse on the subject in the audio-visual media as well.

Local groups use social media very effectively, as in the case of Jammu and Kashmir Eco Watch, to bring more like-minded people together and use these platforms for social marketing to create long-term and sustainable change.

Not just individuals, groups can be strong influencers in bringing change. Women's collectives especially, play a major role in sustained behaviour change because, among other reasons, they bear a greater burden of the impacts of climate change. The role of women whether it is in conserving indigenous seeds in Madhya Pradesh or elsewhere, their perseverance in ensuring that their villages move to pesticide-free farming in Andhra Pradesh, their efforts to mobilize others in tackling climate change innovatively as we see with the Mahila Housing Sewa Trust, is enormous, and women's groups can provide the sustained effort that the task before us needs.

Enabling conditions

There are some enabling conditions we must consider if we want to move the human race towards mindful consumption. The first is that of involving people in identifying local problems, acknowledging the role they can play to address them, and taking ownership of implementing their own solutions. Involving stakeholders is a resource-intensive process (time, money, human resources), but its importance cannot be overstated. Long-term sustainable solutions necessarily need the community's buy-in. Every case study in that finds mention in this book has taken care to involve the impacted stakeholders in planning the project and building solutions.

One also needs to break down problems so that solutions feel achievable and should seem like simple and specific tasks. As mentioned earlier, our evolution has conditioned our minds to focus on the present and not on complex long-term challenges that may threaten our existence. Climate change is an example of the latter, and if we need to change people's behaviour, we need to get them started by taking baby steps. Every pro-planet action they take, they move up the environment literacy ladder (the Hungerford and Volk model) and are more likely to plan to take more such steps (Ajzen's theory of planned behaviour). This can have a multiplier effect on the individual, who becomes more conscious of consumption, and on society through a ripple effect. A complex solution is more likely to fall by the wayside as against simple steps that can make a significant change over time. The Mahila Housing Sewa Trust or Switch 2 Green contestants are good examples of stakeholders identifying problems, devising solutions, taking ownership, breaking down the solution into doable tasks and implementing these tasks, to result in a significant impact over time.

Behaviour change takes sustained effort over time, and these must be the foundation of any programme that intends to create a habit of mindful utilization of natural resources and an environmentally conscious lifestyle. The Sikkim Organic Mission is a good example of how the government took almost 13 years but realized its vision of a 100 percent organic state in a sustainable manner.

Collaboration is another important factor to consider if we want to meet climate and sustainable development targets – collaboration between affected parties, collaboration between the people and their elected representatives or collaboration between the community and other stakeholders such as businesses, governments and civil society organizations.

Therefore, individual leanings, which are affected by personal factors as well as social norms; robust infrastructure availability to support behaviour change; facilitators who can move people towards the desired path; and the enabling conditions that must be considered to achieve set goals, are the major drivers and motivators for bringing about desired course correction and move from mindless consumption to mindful utilization.

LiFE - Mindful Utilization

There is a large body of work on low carbon lifestyles, but addressing people's sensibilities and sensitivities and expecting change is inadequate. Awareness is important, no doubt, but time has come to integrate this free-standing silo of pro-environment lifestyle sensitization with government policies and relevant human, physical, economic and technological infrastructure, to give a concerted push towards action. Marketing principles that have been honed over the years to promote rampant consumerism need to now be deployed to create new aspirations and social norms among people – of pride in mindful acquisition, in simple living and in striving towards equity instead of accumulation.

The call for LiFE is a logical evolution of the concept of a sustainable lifestyle, which is inherent in Indian culture. Sustainability has been built into traditional Indian lifestyles and practices for centuries as is demonstrated by many of the case studies in this book. Colonial rule, the industrial revolution, the modernization of agriculture and influences from developed economies have moved us away from traditional practices to consumptive unsustainable lifestyles. However, with increased awareness on the ill effects of such practices, there is a definite shift towards mindful utilization of natural resources, guided by traditional practices and the use of new technologies.

LiFE calls for change in our day-to-day practices – whether it is a farmer shifting from water-intensive to water-sensitive agriculture, or a town dweller choosing to use a less polluting form of transport, or the resident of a metropolis consciously practising energy-efficient practices and reducing the waste generated from their household.

We have a short make-or-break window of time, and it is important for people to take responsibility for their actions and not be bystanders in the war against climate change. We need to get into a mission mode to move billions of people towards the path of sustainable lifestyles, with very less time to spare. Governments, civil society, media and businesses must work in consonance with one another to achieve intended objectives and towards this we propose that Mission LiFE be adopted by all countries around the world. The framework presented here can be employed by decision makers to create circumstances that will have people and communities make pro-planet choices, consciously or otherwise, in every aspect of their daily life. History will remember people living in the 21st century, from the Baby Boomers to Generation Alpha and beyond, as those who defined the future of the world. Mission LiFE is a clarion call to each of us to work towards a regenerative and restorative future.

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