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Climate Change: Here and How!



WESTERN GHATS, THE CRADLE OF
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OCEANS HARBOURING LIFE, NOW WASTE

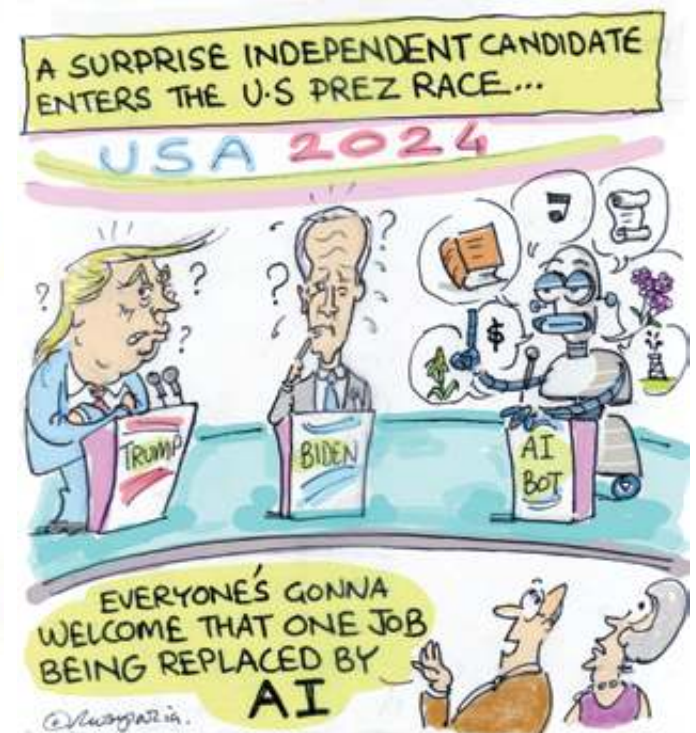
WILDLIFE, ECOLOGY STAND IMPERILLED

Know India Better

DARJEELING :
MORE THAN ORANGES AND TEAS

Face to Face

ANIRUDHA BHATTACHARJEE



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India leads the kindly light

Manu Shrivastava says India has been working towards its climate change commitments slowly and steadily. For example, in the last three decades, forest and tree cover are increasing alongside economic growth and development. In 2016, India's trees were absorbing 15 per cent of the world's CO₂ emissions. India is well on track to fulfilling its NDC commitment of 2.5 – 3 billion tonnes of additional carbon sequestration by 2030.



Impact of climate change can be seen in the form of extreme weather events, floods, droughts, landslides, etc

Climate change and environmental degradation are global issues that cannot be treated in isolation. India's leadership under G20 Presidency has raised expectations of many nations amid failure of international agreements in enforcing commitments. There's a new-found hope that India can lead the world towards achieving climate change goals laid down as part of the international convention on climate change.

The G20 nations contribute more than 80 per cent to the global emissions. The United Nations Framework Convention on Climate Change (UNFCCC) that came into effect in 1994 has been striving to bring the nations of the world to agree to adopt

mechanisms and save the planet from the effects of global warming and climate change.

The 28th Conference of Parties (COP28) of the UNFCCC is scheduled to be held later this year – at the 28th UN Climate Change Conference. The yearly conference hosts nations to assess the progress in tackling climate change, more so to establish legally binding obligations on countries to reduce their greenhouse gas emissions (GHG).

At COP28, an assessment report on progress to combat or slow down climate change will be published. Global

stocktake is a process to assess the progress made by countries towards achieving the goal of limiting global warming to 1.5 degree Celsius above pre-industrial levels as agreed upon in the Paris Agreement. This meeting is also being seen as an opportunity for course correction on climate change mitigation and adaptation.

India commits

In November 2022, India submitted its Long-Term Low Emission Development Strategy to UNFCCC, during the 27th COP in Egypt. It focuses on rational utilisation of national resources ensuring energy security, sustainable transition from fossil fuels to cleaner sources of energy, increased use of biofuels, maximising the use of electric vehicles, enhancing forest cover, climate resilient urban development and transition to low carbon development pathway. To make India a green hydrogen hub, the National Hydrogen Mission was launched in 2021.

India has been working towards its climate change commitments slowly and steadily. For example, in the last three decades, forest and tree cover are increasing alongside economic growth and development. In 2016, India's trees were absorbing 15 per cent of the world's CO2 emissions.

India is well on track to fulfilling its NDC commitment of 2.5 – 3 billion tonnes of additional carbon sequestration by 2030. Nationally Determined Contributions (NDCs) indicate the efforts made by a nation to reduce national. They are at the core of the Paris Agreement and the achievement of its long-term goals.

The low-carbon development strategy focuses on long-term, sustainable solutions based on historical considerations. India's contribution to global warming, in terms of GHG emissions, has been miniscule considering the population share. As a growing nation, there are energy needs for development that will be achieved by pursuing low-carbon strategies. India also needs to develop climate resilience and efforts are underway to achieve that as well.

The young warriors

Eleven-year-old child environmental activist from Manipur, Licypriya Kangujam was motivated by natural disasters in the zone and took the climate change issue to heart. She initiated her crusade at the age six when she attended the Third Asia Ministerial Conference of Disaster Risks Reduction.

Licypriya's efforts to mandate climate education in schools met with success when the state governments of Rajasthan and Gujarat confirmed that they will implement mandatory climate education for the 2020-21 school year. This also makes them the first in Asia to implement this.

In 2019, Earth Day Network called Licypriya a 'Rising Star' for her efforts in the fight against climate change, which have a positive impact on Earth. She was awarded the World Children Peace Prize as well as the India Peace Prize.

For 14-year-old Ridhima, fighting for environmental rights is a way of life. She was only five years old when she first saw the how floods wreaked havoc in Uttarakhand. At the age of nine, she filed a petition in the National Green Tribunal (NGT) against the inaction of the government to protect the environment and mitigate climate change effects.

In 2019, in a landmark move, she along with 15 green warriors from 12 countries complained officially to the United Nations Committee on the Rights of the Child to protest the lack of government action on the climate crisis. In 2021, she and 13 other young activists urged UN Secretary-General to declare a system-wide climate emergency.

Unique, sustainable solutions

A model village in Nagaland – Chizami – has been bustling with youth from Kohima and neighbouring villages who wish to learn and understand the 'Chizami model of development.' In this village, the women have brought about socio-economic and sustainable transformation origination from traditional practices of the region. Owing to these developments, the quality of life of local women has improved.

Gujarat's Punsari village is a world apart. Changes initiated by 33-year-old tech-savvy sarpanch Himanshu Patel have transformed the village. There are water-purifying plants, biogas plants, closed-circuit cameras, air-conditioned schools, Wi-Fi, etc. – all installed at minimum cost.

Many cities and towns in India are struggling to enforce plastic ban. But, in Meghalaya's Mawlynnong the plastic ban has been successful and without any application of force. The small hamlet with a population of about 600 people has been named as the cleanest village in India and Asia. Here, one can see spotless streets, bamboo dustbins everywhere in public spaces, people sweeping streets and unmissably large signboards warning visitors against littering.

In Maharashtra's Amravati district's Melghat region, in Payvihar village, community efforts have brought change like none other. In 2014, attempts were made in the village to conserve the environment and ensure sustainable livelihoods for villagers when a barren land of 182-hectare area was turned into a forest. The village won the Biodiversity Award from the United Nations Development Programme for their efforts and success story. The land was under community forest right. Today, the villagers are selling organic fruits under the brand name Naturals Melghat.

At ground zero

Climate change is as real as it gets. Nations across the world are bearing the brunt of climate change in the form of extreme weather events, floods, droughts, landslides, etc. In India, climate change could add about 50 million more poor people than otherwise projected by 2040. Climate change is also expected to increase the health burden of the country owing to the increase in vector-borne diseases, malaria, malnutrition, etc.

In the Reserve Bank of India (RBI) Department of Economic and Policy Research's Report on Currency & Finance 2022-23, it is estimated that the cumulative total expenditure for adapting to climate change in India will reach INR 85.6 lakh crore (at 2011-12 prices) by 2030.

The report titled 'Towards a Greener Cleaner India' said that India's goal of achieving the net zero target by 2070 would require an accelerated reduction in the energy intensity of GDP by about five per cent annually and a significant improvement in its energy-mix in favour of renewables to about 80 per cent by 2070-71.

Another recent report said that among the G20 nations, India is leading in climate performance that comprises steps and initiatives taken towards climate change mitigation. There is consensus in the world today that India can and should use its G20 Presidency to make the G20 nations acknowledge their contribution to the global problem and commit to their targets.



Manu Shrivastava is a journalist and lawyer with DraftCraft International and Co-Convenor of #TheWomanSurvivor, #MeTooAtHome and #MeTooBeyond-Borders initiatives.

Western Ghats, the cradle of biodiversity

*Designated as a UNESCO World Heritage Site, the Western Ghats display a rich diversity of woody plants nestled in its mountain ranges. **Ruchi Sharma** elaborates with various studies that among other things, the need to increase the protected areas in the zone to mitigate the effects of stress caused by human activity. The importance of the region is underscored by the fact that it is home to unique biophysical and ecological processes.*



The Western Ghats are one of the 36 biodiversity hotspots of the world and are older than the mighty Himalayas

One of the most ecologically diverse regions in India, and the world, the Western Ghats are a chain of mountain ranges that form the western rocky barrier of the Indian peninsula. A formidable mountain range, they cover a huge area across the Indian states of Gujarat, Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu, an area of about 1,60,000 sq km as they run parallel to the western coast of India.

A recent study conducted by CSIR – Centre for Cellular and Molecular Biology (CCMB) has revealed interesting facts about the mountain range. It has unfolded many aspects of the evolution of plants in the Western Ghats. As per the study, the Western Ghats serve as a museum and cradle of evolutionary diversity. The research conducted in collaboration with several international and national institutions further revealed that South Western Ghats have about six times more number of species as compared to the North Western Ghats.

The study also found that the Western Ghats have a higher diversity of woody plants with over 60 per cent endemic to

the region. These woody plants serve as museum and cradle of evolutionary diversity i.e., they comprise old and young species on the evolutionary timescale ranging in millions of years.

Published in the Proceedings of the Royal Society of B, the study also highlighted the need to increase the protected areas in the zone to mitigate the effects of stress caused by human activity.

Rich in heritage

The Western Ghats were designated as UNESCO World Heritage Site in 2012. They are one of the 36 biodiversity hotspots of the world and are older than the mighty Himalayas. There are more than 300 species of flora, fauna, reptile, fish, amphibian and bird species found in the Western Ghats that are globally threatened including Vulnerable, Endangered and Critically Endangered species.

The Ghats comprise the rich natural heritage of India

as they are home to unique biophysical and ecological processes. For example, the Western Ghats play an important role in influencing the monsoon pattern owing to the montane forests.

The Ghats form a physical barrier intercepting the south-west monsoon winds that water a majority of India in the rainy season.

There is an exceptionally high level of biological diversity and endemism in the Western Ghats. Of the more than 600 species of trees found here, 54 per cent are endemic; amphibians, 65 per cent are endemic; fish, 53 per cent endemic; reptiles 62 per cent endemic; tiger beetles, 80 per cent endemic. Single-largest population of globally threatened 'landscape' species such as Tiger, Asian Elephant and Gaur and endangered Nilgiri Tahr and Nilgiri Langur are found here.

The Western Ghats are very important as some of the major river systems originate here - more than 40 per cent of the perennial rivers flowing in India. These include the Krishna, Kaveri, Godavari, Tungabhadra and Thamiraparani rivers that form one of the four watersheds of India.

Owing to the volume of water carried by these rivers, these have been dammed for various purposes but mainly for irrigation and for generating electricity. More than 80 per cent of India's hydropower is generated from the rivers traversing the Western Ghats.

There are more than 50 dams on the rivers in the Ghats. Also, some of the most popular waterfalls of India are located here including Dudhsagar, Jog, Shivasanamudra, etc.

Impact of climate change

Like any other biologically diverse region, the Ghats are also extremely vulnerable to climate change. Climate change has initiated extreme weather events, change in forest types in the Ghats, change in rainfall patterns, increased floods and droughts, increased landslides, loss in biodiversity, rise in sea level and more coastal erosion that has impacted many marine species, plants and animals both.

A study published in Theoretical and Applied Climatology has revealed that the Western Ghats has experienced warming of about 0.8 degrees Celsius in the past 100 years due to climate change.

The latest United Nations Climate Change Report says that climate change will cause immense damage in several areas in the Western Ghats owing to high-intensity rains in short duration that will render useless the existing systems.

According to the Intergovernmental Panel on Climate Change (IPCC) report released in August 2021, climate change will severely impact the Western Ghats and their biodiversity. As per the report, in the second half of the 20th century the monsoon in the subcontinent has weakened. Human activities are affecting the major climate systems and that is detrimental to the Western Ghats as well.

The report further states that by 2050, 33 per cent of the biodiversity of the Western Ghats will be lost due to extreme weather conditions. This includes the changing of the forest type from evergreen to deciduous and dry deciduous affecting the water cycle and carbon storage.

A large part of the Indian state of Karnataka lies in the Western Ghats. The arid regions of northern Karnataka are predicted to experience high-intensity rains in short duration followed by prolonged droughts. The coastal areas, on the other hand, will face sea level rise, storm surges and saltwater intrusion.

The main cause of these changes is anthropogenic activities that are crippling the ecological balance in the Ghats. Some of the activities such as deforestation of native trees for commercial plantation, mining, stone quarrying, building of dams on rivers, urbanisation and infrastructure construction in ecologically sensitive and fragile zones have wreaked havoc in the Western Ghats.

The zone now witnesses massive floods, droughts, landslides that are taking human lives, displacing people and ruining economic activities as well. Human activities that are dumping excessive greenhouse gases in the atmosphere have expedited and aggravated the effects of climate change.

Protecting the Ghats

As a rich natural heritage of India, there's a pressing need to protect them. Today, there's an imminent need for the conservation of the biodiversity and the ecological processes of the Western Ghats.

The Western Ghats Ecology Expert Panel (WGEEP) and the High-Level Working Group (HLWG) made recommendations that if implemented can help in the protection. They identified ecologically-sensitive areas and suggested guidelines for development activities.

They further recommended increasing public awareness on the biodiversity and the effects of climate change, promoting community-based initiatives, furthering scientific research and monitoring and strengthening policy and legal frameworks for environmental governance as part of efforts to protect the Western Ghats from the effects of climate change.

The Western Ghats have many protection regimes such as Reserved Forests, Tiger Reserves, National Parks and Wildlife Sanctuaries. These are protected under several laws including the Wildlife (Protection) Act of 1972, Indian Forest Act of 1927 and Forest Conservation Act (1980).

These specific components of the Ghats are controlled and legally protected by the Forestry Department where the Forest Conservation Act (1980) provides the necessary regulatory framework to protect them from developmental activities such as infrastructure development and other anthropogenic activities causing damage to the natural resources and processes.

Ruchi Verma is a media researcher with The History and Heritage Project – A DraftCraft International Initiative to document details, analyse facts and plug lacunae generated by oversight or to further national or foreign agenda in History and Heritage Across India and Beyond Borders.

Oceans harbouring life, now waste

*As the World Ocean Day is round the corner, **Anushka Singh** explains its significance and how it promotes and furthers interest of members of the public in the protection of the world's oceans. Also, it fosters their interest towards sustainable management of the ocean's resources and the by-products of related processes and activities such as food, recreation, livelihoods, etc.*



Changing consumer behaviour, stricter regulations, smarter disposal and recycling can go a long way in decreasing plastic and e-waste in oceans

On 8 June every year, the world observes World Ocean Day – an international day that celebrates the importance of oceans for life on Earth and raises awareness about the threats it faces from human activities and climate change. It was officially recognised by the United Nations in 2008.

Presently, the World Ocean Day also supports the implementation of the Sustainable Development Goals (SDGs) especially SDG 14: Life Below Water. A very important SDG, it aims to conserve and sustainably use the oceans, seas and other marine resources.

World Ocean Day also promotes and furthers interest of members of the public in the protection of the world's oceans. Additionally, it fosters their interest towards sustainable management of the ocean's resources and the by-products of related processes and activities such as food, recreation, livelihoods, etc.

For a healthy and clean ocean

Oceans and marine biodiversity play crucial role in several ecological and environmental systems and processes that are important for human survival. World Ocean Day encourages people to take action throughout the year to protect the ocean and its biodiversity. The day also reminds and encourages governments to come together and communities to work towards a healthy and clean ocean.

On this day, several activities such as workshops, screenings, talks, competitions, beach clean-ups, etc., are conducted in schools, colleges even offices to spread awareness on the issues plaguing the world's oceans and provide sustainable solutions. World Ocean Day is a reminder of mankind's collective responsibility to protect and restore this vital natural and fragile resource for present and future generations.

The importance of oceans

Apart from the fact that oceans comprise a huge portion of the earth as they cover more than 70 per cent of the earth's surface and contain 97 per cent of the Earth's water, they are also responsible for generating half of Earth's oxygen. Oceans also serve as efficient carbon sinks as they absorb 30 per cent of the carbon dioxide produced by humans and anthropogenic activities thereby mitigating the effect of global warming.

Oceans are indispensable for human life and for life on Earth. As a major component in the water cycle, oceans are responsible for 78 per cent of global precipitation and 86 per cent of global evaporation. They play a very important role in regulating the climate and climatic systems by storing solar radiation, distributing heat and moisture and catalysing weather systems.

Life first originated in the ocean billions of years ago. Today, millions of humans are directly or indirectly dependent on oceans for survival. Marine life is extremely diverse and as per UN estimates, more than three billion people globally rely on oceans (marine and coastal biodiversity) for livelihoods. An estimated USD three trillion per year economy or five per cent of global GDP is derived from oceans and its resources.

Oceans are also very rich in biodiversity. More than 2,00,000 species living in the oceans have been identified as yet. Marine biodiversity is important for human survival as they're part of the ecological processes on the planet.

Marine biodiversity is important for circulation of matter - water and nutrients, for capturing and storing energy and for regulating the climate by way of atmospheric gases.

Of more than 2,00,000 marine species recorded are only a fraction of what exists in the ocean. According to a study based on the World Register of Marine Species (WoRMS) and published in Current Biology, the ocean may be home to 7,00,000 marine species.

Threat to oceans, marine life

The oceans are heavily affected by human activities that often have a detrimental effect such as marine pollution, ocean warming, damaged and depleted fisheries, disruption in coastal habitats, acidification of ocean and depletion of oxygen in the water that leads to destruction of marine life.

The carbon emissions are very harmful for oceans and marine life. They reduce the quality of coastal waters. Eutrophication – a process by which a water body becomes progressively enriched with minerals and nutrients such as nitrogen and phosphorus thereby leading to blooming of unwanted plants – leads to increase in harmful algae that further depletes the ocean of vital oxygen and kills marine life.

Human activities such as overfishing, pollution, waste dumping, carbon emissions, introduction of invasive species, etc. are causing deoxygenation, habitat loss, depletion of marine species, destruction of extremely sensitive coral reefs, disruption of food chains, etc. They are also causing chemical pollution such as oil spill, noise pollution, light pollution, plastic pollution, etc., that endanger marine life.

Waste in oceans

One of the major causes of pollution in the ocean is plastic. Over 300 million tons of plastic is produced every year. Of it, a very significant chunk, 14 million tons, ends up in the Earth's oceans. Shockingly, plastic comprises 80 per cent of the marine debris.

Land-based plastic that pollutes oceans comes from rainwater runoff, sewer overflow, waste dumps, littering, industrial activities, etc. Ocean-based plastic polluting the world's



oceans comes from fishing industry activities, maritime activities, etc.

Plastic in water is harmful for marine species that may ingest it or get entangled in it. Sea birds, turtles, fish, etc., often ingest plastic mistaking it for food and sustain internal injuries, lacerations and even die. Sea birds often get entangled in plastic debris floating on the ocean and get injured or die.

The plastic from the world collects in patches in the oceans and there are five such massive patches of plastic that disrupt natural marine ecosystem. They cover huge areas – one such patch, called the Great Pacific Garbage Patch, covers 20 million square km of water which is bigger than the combined area of the five largest states of the US.

The new threat

Development and modernisation have led to new types of waste that are harming the world's oceans. One such category that has been causing immense damage to the environment is electronic waste or e-waste.

Most of the time, e-waste is not directly dumped into the water. The toxic chemicals of the electronics end up in the water bodies from landfills and direct runoff. These chemicals cannot be broken down by natural processes and end up contaminating the water.

Electronic devices contain several toxic and hazardous chemicals even heavy metals, used in the production process or in the gadget itself, which are very harmful for the environment, marine life and human health. These chemicals pollute marine life and can kill sea mammals, corals and fish.

For example, Mercury used in circuit boards, batteries, etc., can end up in the food chain and stay for a long time. It gets bio-accumulated in marine food chains and is very harmful for marine life.

Mercury can impair growth and reproduction processes in fish, damage sensory processes, alter the blood and oxygen exchange process, etc. As it moves up the food chain, it can contaminate humans and cause severe health problems.

Cadmium, a highly toxic chemical used in rechargeable computer batteries, switches, etc. can also bio-accumulate and apart from damaging marine life, affect human kidneys and bones.

A collective approach and changing consumer behaviour and patterns can solve the e-waste problem. As a consumer, one must push for producer responsibility for end-of-life waste management. There is also a need for research and product design for use of non-toxic materials, increased product life, easy repairing options, etc. Stopping unnecessary purchase, stricter regulations and smarter disposal and recycling options can go a long way in decreasing e-waste in oceans.

Anushka Singh works with DraftCraft International as a Media Researcher and writes mostly on issues affecting the Fourth Estate. She likes reading contrarian literature and analysing sources of news.

Wildlife, ecology stand imperilled

*Sketching an ominous picture of the fallouts of climate change – a striking reality – **Niyati Thakur** points out that while ecological balance around human life and habitation remains threatened, habitat loss, habitat fragmentation, species extinction, species decline are distinct possibilities what with the impacts brought about by changing climate patterns.*



Siberian Crane



Great Indian Bustard



House Sparrow



Sea Turtle

A significant impact of climate change is the decline of birds and mammal species

Until a few years ago, climate change was a threat but not immediate, it was something that was looming in the future. However, the sharp increase in the number and intensity of extreme weather events and the huge economic losses incurred as a result of these anomalies has brought the attention back to climate change and made one thing clear – climate change is happening now and it is here to stay.

Apart from its direct impact on humans, climate change has an indirect impact as well – it disrupts the variables and processes that help in maintaining ecological balance around human life and habitation. Rising sea levels, extreme weather events and other manifestations of climate change are directly responsible for biodiversity loss.

Wildlife is highly vulnerable, and birds and animals are already facing the brunt of a climate crisis – habitat loss, habitat fragmentation, species extinction, species decline, etc. Changes

in environmental factors such as temperature, rainfall intensity and pattern, etc., are affecting the habitat, population and migration pattern of many species of birds and animals.

Changing patterns

A study titled 'Projected Shifts in Bird Distribution in India under Climate Change' has analysed how biodiversity in India will be impacted by climate change. It is based on the study of 1,091 bird species that revealed that owing to climate change, by 2070, 66 – 73 per cent of these would move to higher elevations or northwards and 75 per cent of endemic bird species will have reduced climatically suitable areas.

The study conducted by four Indian researchers showed how climate change will affect distribution and range of birds and species richness under different scenarios generated for climate change.

The study revealed that climate change poses a serious threat to migratory birds whose range areas are likely to reduce in size. The range reduction of partially migratory and migratory species is higher as compared to sedentary species. The habitat of long-distance migratory birds is more vulnerable as their migration behaviours and processes are closely linked to climate.

The complex process of migration and how it happens has still not been understood fully. Migratory species use several environmental variables as compass to guide them during the migration process. These include length of the day, temperature change, food, precipitation, etc. With climate change, these factors change unusually and confuse the migratory species.

Scientists and researchers are observing drastic changes in the migratory patterns of butterflies, birds, fish and some species of mammals especially those in marine environments. With increasing temperatures, species are migrating sooner now as compared to few years ago.

Climate change is also altering the migratory routes taken by some species. So, now in the Arctic, due to increased snow melting, new routes have opened which are disturbing migration patterns of narwhals and other marine mammals.

Habitat loss

One of the most significant impacts of climate change is the loss of habitat for innumerable species of birds and animals. There are many factors causing this but mainly changing patterns of environmental variables such as temperature and precipitation are causing loss of habitat. The most common example is loss of habitat of the polar bears and walruses in the polar region because of global warming and melting ice caps.

Habitat loss sometimes leads to fragmentation of habitat and that affects survival of the species as well. Habitat fragmentation happens when a larger habitat area is divided into isolated fragments – this diminishes the availability of food, shelter even mates and makes the species highly vulnerable to smaller changes.

Changes in habitats can disrupt life for many species even endanger them. Climate change affects availability of food and shelter for many species and, in turn, their survival.

Today, around the world, habitats of millions of wildlife species are changing – they are shifting, shrinking even disappearing due to climate change. For example, droughts and heat waves are drying up water bodies leading to loss of aquatic habitats, intense storms are uprooting trees and standing crops destroying habitat for many birds and smaller animals.

In the Indian Eastern Himalayan region (IEH), in Assam, Arunachal Pradesh and Manipur, more than half of the world's white winged wood duck live. The state bird of Assam was declared an endangered species by the International Union for Conservation of Nature (IUCN) in 1994. A study revealed that the 436.61 sq km of the highly potential habitat of this bird would be lost by 2070.

Intergovernmental Panel on Climate Change's (IPCC) special report on 'The Ocean and Cryosphere in a Changing Climate' released in 2019 highlighted that in the last seven decades, several marine species have undergone shifts in geographical range and seasonal activities because of changes triggered by climate change. These changes include warming of the oceans, oxygen loss in the water, salinity intrusion, ocean acidification, sea level rise, etc.

Decline in population

Another significant impact of climate change on the world's fauna is the decline of species populations. Many species of insects, birds, etc. are already extinct or facing extinction due to climate change. The species that are less likely to adapt to changing environmental variables face the threat of extinction.

Many vulnerable marine species such as fish, sea turtles are already experiencing population decline. Increase in water temperature and more acidic waters are affecting their growth and reproductive processes.

Climate change currently affects more than ten thousand species that are listed as Threatened - increasing the likelihood of their extinction.

The first mammal that was reported to have gone extinct because of the effects of climate change was Bramble Cay melomys – rising sea levels destroyed its habitat, the island of Bramble Cay.

Behavioural changes triggered by climate change is also threatening the existence of many species. Rising water temperatures, for example, have altered the migration of Chinook salmon to the Arctic rivers.

Safeguarding wildlife

The survival of millions of species coexisting on Earth can be ensured by promoting climate change adaptation and implementing strategies for nature conservation. Due to the sheer nature and scale of the problem, the solutions are not easy to find or implement.

The Ministry of Environment, Forest and Climate Change in collaboration with the United Nations Environment Programme / Convention on Migratory Species (UNEP/CMS) recently organised a meeting to strengthen conservation efforts for migratory birds and their habitats in the Central Asian Flyway (CAF).

To tackle the effects of climate change, there's a need for long-term programmes and effective strategies. Accurate monitoring and enumeration of vulnerable species is needed. Also, monitoring for diseases and deformities should be done for early detection and action.

Conserving natural habitats especially of endangered and threatened species is very important. A species is the most adaptable and resistant when it is in its native habitat. Eco-sensitive habitats such as wetlands, forests, etc. are at high risk of destruction due to climate change and must be protected at all costs.

Developing sustainable practices, minimising disruptive activities such as fishing in migratory season, educating children and youth, spreading awareness, etc. are some of the ways by which habitats of birds and animals can be protected.

Anushka Singh works with DraftCraft International as a Media Researcher and writes mostly on issues affecting the Fourth Estate. She likes reading contrarian literature and analysing sources of news.

Water needn't stay the crisis it is

*Dwelling on the causes leading to the water crisis in the country, **Anand Ahuja** observes that among the main causes of the water crisis in India is the continual overexploitation of groundwater resources by stakeholders. Owing to a lack of effective regulations and policies, farmers and industries have been using more groundwater than is being replenished, but there is hope nevertheless.*



India's water crisis is man-made

India is currently facing a severe water crisis which affects millions of people across the country. While the situation is so dire that several states are facing acute water scarcity, the scourge leads to a range of problems, from crop failure to water-borne diseases.

One of the main causes of the water crisis in India is the continual overexploitation of groundwater resources by stakeholders. Owing to a lack of effective regulations and policies, farmers and industries have been using more groundwater than is being replenished, leading to the depletion of aquifers.

As a result, there's a slump in the water table, making it more difficult and expensive to extract water. In addition, the use of borewells has become widespread across India further exacerbating the problem of groundwater depletion.

Climate Change, the most formidable threat of all times, continues to wreak havoc across India; a water crisis is but inevitable. Rising temperatures and changing rainfall patterns have led to reduced water availability, particularly in areas that are already water-stressed. Reports suggest 54 per cent of India's total area is currently facing high to extremely high water stress, and this is expected to worsen in the coming years. The change leads to glaciers melting sending a ripple effect to the rivers in India where water levels are being compromised further reducing water availability.

The swift growth of urbanisation and industrialisation in India has also contributed to the water crisis. As cities grow and industries expand, the demand for water increases, and many of these areas are already facing water shortages. In addition, the growth of industries such as textiles, food process-

ing, and mining has led to increased pollution of water sources, make it more difficult to access clean and safe water.

The range of effects water shortage triggers are mostly severe. One of the most immediate effects is that on agriculture, a major source of livelihood for millions of people in India. Due to water scarcity, farmers are unable to irrigate their crops, leading to lower yields and crop failure. This has a direct impact on the income of farmers, many of whom are already struggling to make ends meet.

To worsen things, the water crisis leads to a range of health problems. With many people forced to rely on contaminated water sources, the incidence of water-borne diseases such as cholera, typhoid, and dysentery has increased. This has led to a rise in the number of deaths and illnesses, particularly among children.

Water crisis also has an impact on the environment. With rivers and other water sources drying up, many aquatic species are at risk of extinction. In addition, the depletion of groundwater resources is leading to soil salinity, making it difficult for farmers to grow crops and leading to further environmental degradation.

Solutions to the water crisis

While there are myriad solutions to the water crisis in India, implementing them requires significant effort and investment. One of the most important solutions to the crisis is to increase the efficient use of water in agriculture. This can be achieved through measures such as promoting drip irrigation, reducing water-intensive crops, and using better irrigation techniques.

Another solution is to improve water management policies and regulations that include measures such as promoting rainwater harvesting, regulating the use of borewells, and increasing the efficiency of urban water supply systems. In addition, there needs to be greater emphasis on the protection of water sources, particularly rivers and lakes, through measures such as reducing pollution and preventing encroachment.

Most importantly, there has to be greater public awareness and education about the importance of water conservation which can be achieved through campaigns and initiatives aimed at promoting responsible consumption patterns.

Mumbai, India's financial capital, for one, has been facing an acute depletion of water. The stock in the seven lakes providing water to the city is dropping drastically and Mumbai may face a severe water crisis, as usual, in the days to follow. Brihanmumbai Mahanagar Palika (BMC), the richest corporation in Asia, has no Plan B in case the monsoons are delayed this year.

The state government recently directed all municipal corporations to "manage water stocks judiciously" and "prepare a crisis plan" to meet demand till the monsoon arrives and fills the catchment areas.

As of now, the city's seven lakes have about 3,39,258 lakh ML of water: This, while Mumbai needs 14.47 lakh million litres (ML) of water over the course of a year. The BMC supplies 3,850 million litres of water to the city every day and takes stock of available content every October 1st and then decides on water cuts.

For three weeks in April, this year, Mumbai faced a '15 per cent water cut' after a tunnel got punctured in Thane. So the

BMC has decided not to impose any water cuts immediately in the coming days. The civic authorities have requested the state government to allow them to draw additional water from the reserve stock of Upper Vaitarna and Bhatsa lakes.

Reportedly, owing to illegal connections and water thefts, more than 20 per cent approximately 700 million litres of water is wasted daily. To worsen the situation are the minor leaks in underground pipes and the concurrent failure in detecting them. There is a massive wastage of water owing to the leaks and pipeline bursts.

Mumbai witnessed a series of pipeline bursts in the recent past. Around three million litres of water was wasted daily due to a tunnel-work puncturing incident in Thane. Now, the BMC will focus on plugging the leakages in the pipeline to save the water from getting wasted.

Water cuts are the order of the day in Mumbai. The city faced a severe water crisis with 15%-30% water cuts in 2009. Following this, water cuts were imposed in 2014, 2015, 2020 and 2022, due to delay in monsoon or long breaks between spells of rain.

BMC sources maintain "The water stock we currently have can last till July if we use it judiciously. But, from past experiences we have observed the onset of monsoon gets delayed. So we are currently taking reviewing lakes' levels every 15 days. We are closely monitoring the situation."

And, though there are no immediate plans for water cuts, according to the officials, what will happen if the monsoons are delayed, is anyone's guess.

Oddly, considering the current lake level, as has been over the last decade, the BMC should have planned for a possible crisis. While the demands of the city increase every year, the BMC should have developed additional sources of water.

Estimated to be over 22 million, Mumbai's urban population is the largest in India in terms of population, trade activity and business. Over the last two decades, the metropolitan area has experienced an explosion in growth owing to migration from other states and migrants seeking business and employment opportunities.

Mumbai's population has doubled since 1991 from when 9.9 million people lived in the area. The most obvious fallout of the population outburst is the pressure it has laid on the limited resources of the state that include water, health and common amenities.

The total surface area of Mumbai is 603 kilometers squared (233 square miles). The major metropolitan area has a total surface area of 4,355 kilometers squared (1,681.5 square miles).

Mumbai's water crisis ordeal seems like the order of the day that has persisted for years on end. A solution for it will not lie in the solitary domain of the city itself but in the holistic approach to the issue of water management and control of climate change by the entire nation. It will need all that and more.

Anand Ahuja is a researcher with DraftCraft International's The Climate Change Project that documents and analyses climate crisis and action Across India and Beyond Borders.

Vanishing forests, green pockets

*While India stakes its claim to rich flora & fauna and huge biodiversity, the disconcerting fact that emerges is some of this nature's bounty stares at extinction and many other vulnerable and endangered. **Suman Singh** debates on this impact of climate change on forests and natural vegetation to elaborate how rapid urbanisation is a causative factor in damaging the ecosystem.*



Owing to climate change, there has been an increase in the extinction rate of floral and faunal species

India happens to have some of the most diverse species of plants and trees in the world. With climatic conditions as diverse and varying from hot to cold weather, the zone is rich in vegetation of all kinds.

The rich flora makes India the tenth highest in the world and fourth highest in Asia in terms of plant diversity. There are more than 46,000 species of plants in the 70 per cent of geographical area surveyed so far.

Owing to several factors including climate change, several species of Indian plants are facing extinction. About 1,336 plant species are considered vulnerable and endangered and 20 of higher plants are listed as possibly extinct. The latter means that these species have not been seen in the last few decades.

There are eight floristic regions in India, each with a set of unique characteristics. These are as follows - Western Himalayas, Eastern Himalayas, Assam, Indus Plain, Ganga Plain, Deccan, Malabar and the Andamans. Each of these regions has a distinct set of flora with a unique character.

The Himalayan region (Kashmir to Arunachal Pradesh, Sikkim, Meghalaya and Nagaland) and the Deccan region are rich in endemic flora i.e., many plants here are not found anywhere else in the world.

The diverse flora

To begin with, there is the Western Himalayan region – a temperate zone - that starts from Kashmir and goes on till Kumaon. The zone is home to the native pines, chir and other

temperate trees like the conifers. At higher elevations, the vegetation includes trees like silver fir, deodar, spruce, etc., the alpine zone is home to beautiful junipers, silver birch, etc.

Eastern Himalayas start from Sikkim and go eastwards. Also, a characteristic temperate zone, the forests here are home to maples, oaks, birch, alder, rhododendrons, junipers, conifers, etc.

On the other hand, the Assam region is rich in evergreen forests with pockets of bamboo and tall grasses. Assam's tryst with bamboo is well known – more than 50 species of bamboo grow in Assam and are used for diverse purposes.

Ganga plain is rich in alluvial soil, has small forest pockets and is mainly cultivated for sugarcane, rice and wheat. Indus plain in the north is arid and hot. Deccan in central India, the peninsular tableland has mixed deciduous forests.

The Malabar region is biodiverse and owing to excessive humidity has forest vegetation and a range of other crops with high commercial value such as cashew, coconut, etc. Andaman region is home to mangrove, evergreen forests, etc.

Global warming and flora

The impact of climate change on forests and natural vegetation is damaging the ecosystem. The Indian Space Research Organisation (ISRO) conducted a long-term study that started in 1982 and concluded in 2018. The study focussed on five major coral reef regions of India - Gulf of Kutch, Gulf of Mannar, Palk Bay, Andaman & Nicobar Islands and Lakshadweep Islands.

The study revealed that the coral reef regions in India have different regional, thermal and bleaching thresholds corresponding to their individual warmest months and quarters. Another set of data showed that there was a significant change in the sea surface temperatures since 2014 – where it was above the long-term mean.

The time periods when the sea surface temperatures in the region were the highest, in 2015 and 2016, the production of green microscopic plants decreased and was the lowest in these two periods. Interestingly, in the same time period, the zone also experienced the strongest El-Nino of the decade.

India's average temperature has already increased by 0.7 degree Celsius approximately in the time period between 1901 and 2018. The main cause is the greenhouse gas emissions. Estimates reveal that by the end of 2100, the average temperature will rise by approximately 4.4 degree Celsius.

Climate change and food security

Climate change induced by global warming is not only endangering the plant species but also affecting the country's food security. Due to rising temperatures, extreme weather events, floods and droughts, the crop yield has been disrupted and agricultural processes that are primarily rain-dependent in India are impacted adversely.

In the Himalayan region, owing to climate change, there has been an increase in the extinction rate of floral and faunal species. Climate change induced changing weather patterns such as change in rainfall intensity and pattern is affecting agricultural crops as well which are seeing changes in the maturity period of the crop plants and the overall growth, again affecting the food security.

Additionally, climate change is increasing the intensity

of several environmental phenomena such as wildfires that reduces the vegetative cover on land. As a result, humans dependent on this vegetation increases their dependency on alternate sources of food. When these people start depending on forests, there is an increase in conflict between humans and wildlife over resources available and habitat.

Other environmental changes such as increasing temperatures, excessive heat or heat waves, water shortage, etc. directly impact food security. These changes affect soil quality and irrigation and lead to reduction in crop yield.

Climate change also puts a lot of pressures on water resources such as groundwater, rivers, etc. India is still an agricultural economy and the agriculture is monsoon dependent. This makes the sector extremely fragile and prone to the effects of climate change such as water shortage.

Groundwater levels are already depleting owing to excessive human intervention, activity and use. Rains are increasingly becoming uncertain and floods and droughts are commonplace. This puts a lot of pressure on agriculture. Natural disasters which are also increasing because of climate change directly affect agriculture and the food production and supply chain. It's important to safeguard agriculture against these uncertainties and make communities climate resilient for food security.

Urbanisation and its effects

By the year 2050, two-thirds of the world's population will be living in cities, as opposed to the nearly half of the population that is in cities now. To make space for more people, often trees are cut, and houses and residential complexes are built.

The importance of trees in maintaining the ecological balance is well known. In cities, there's always a tussle between the developers who want to cut trees for construction and the environmentalists who want to protect them.

More than 80 per cent of the Earth's live carbon is in trees and the soil that holds them. Trees absorb carbon dioxide from the air, keep the soil together and prevent erosion of soil. Trees and gardens are the lungs of populated and polluted cities.

Most cities in India ensure trees are planted adequately and protected. Mumbai, for example, India's commercial capital, has been included in the World Tree City 2022 list, for the second consecutive year. In 2021, Mumbai shared the honour with Hyderabad as the city, among others worldwide, promoting best practices in urban forestry.

The United Nations Food & Agriculture Organisation (FAO) and Arbor Day Foundation (ADF) carry out this list. Mumbai fulfilled the five ADF criteria - determining responsibilities for tree care, setting rules to govern urban forests and tree management, maintaining an up-to-date inventory or assessment of local tree assets, allocating resources for a tree management plan and organising an annual tree festival to educate citizens.

Suman Singh is a researcher with DraftCraft International's The Climate Change Project that documents and analyses climate crisis and action Across India and Beyond Borders.

Climate change adaptation in rural India

*Observing that those in the rural areas and belonging to indigenous communities show a far better climate change adaptation, **Nandini Rao** buttresses it by saying they possess traditional knowledge and practices compatible with the phenomenon. As climate change issue becomes graver, it is time to take a leaf out of their book and use their strategies and implement them for sustainability.*



Rainwater harvesting structures , check dams, effective drainage management etc can mitigate effects of climate change

In India, people in rural areas and those from indigenous communities are leaders when it comes to combating climate change. In the first place, their lifestyle, customs, practices, beliefs and activities are environment-friendly and sustainable that don't put any additional burden on natural resources or the environment in general.

At the same time, they are also well-versed in traditional knowledge and practices that help in climate change adaptation and mitigation and serve as knowledge base for others. Several studies and surveys have indicated that rural communities especially those engaged in agricultural activities are adept in shaping and furthering climate change adaptation locally.

Most individuals or rural families who are engaged in such activities, do so privately and not at the community level. With the increasing effect of climate change on human lives, it's time to take these strategies and implement them at the community level to further community-based adaptation practices. There's an urgent need for developing effective climate adaptation strategies inspired from rural India, especially for community-based adaptation, at the village level.

The understanding of these practices is gradually increasing and in India, climate change mitigation and adaptation is now focusing more on community-level interventions.

Closer to nature

Climate change is constantly putting pressure on land resources. Arable land which is already endangered due to land development, urbanisation and soil pollution is becoming scarcer due to climate change – rise in temperatures, change in rainfall pattern, etc.

Some UN estimates say that more than 40 per cent of the land in the world is already degraded. Close to two billion hectare of land and more than 1.5 billion people are impacted with changing land quality.

Sustainable farming and sustenance farming that is practised in large parts of rural India is the answer to challenges posed by climate change. Employing natural farming methods go a long way in protecting the soil. This involves the use of natural and organic materials for all activities. Chemicals are

(Continued on page 28)



Darjeeling

More than oranges and teas

*In her essay, **Manjira Majumdar** drives home the point that Darjeeling has much more than its beaten-to-pulp sobriquet Queen of the Hills. Beyond its ubiquitous hills endowed with its spectacular beauty, there are quaint places around that expose visitors to, among other things, mystic climes, iconic monasteries and the abode of Lamas that are steeped in colonial history.*

Text & Photos : Manjira Manjumdar



The hills turn misty in March-April

Over time, Darjeeling as the queen of the hills has been done to death. Just like any other hill station, with too much exposure and crowds trying to do the old and familiar. But to people who love to discover a place anew, there's so much you can still do and pack in if you do it your way. Mix the old with the new, try to understand the local sensibilities and rejuvenate.

There are a few places more that have been developed to take the rush away from the main hill station so that it makes sense to detour and spend a couple of days or more at a nearby village of your choice. These small villages with a view offer home stays that have mushroomed but in select places.

With wholesome food and transport offered to customise your trip, you can easily pack in a couple of spots more.

Once upon a time, the golden triangle was Kurseong, Kalimpong and Darjeeling. A mandatory visit to Tiger Hill to watch the spectacular sunrise formed part of the must-dos.

But now there are options of bird watching, an orange farm walk through and views of rivers Teesta meeting Rangit in what is termed as the Lover's Point. A few miles down the Teesta offers river rafting, but I leave that to the more adventurous.

A stopover at Siliguri

After you have reached Bagdogra airport or NJP (New Jaipalguri) station by the newly introduced bullet train Vande Bharat that has cut down the journey by almost five hours, you can negotiate your trip to whichever place you wish to stay up in the hills. Usually the homestay owner organises transport for you.

My experience tells me that it is better to halt for a day at Siliguri, the corridor to the hills, before making that uphill journey. Vande Bharat reaches in the afternoon so there is nothing much you can do on that day.

I travelled in the season of mist that is March-April, which can make visibility almost nil despite the sun peeking on and off from the clouds. Of course the hill drivers know the roads like the back of their own hands but reaching by late afternoon than late evening is a better option. Of course, there is nothing you can do if there is a spell of rain that also creates a haze.

Siliguri, once a hot and dusty small town, today has expanded with smart buzzing cafes and for those who wish to fine dine, there is a City Centre Mall, besides a number of smaller good eateries. Maybe it could do with some art galleries and



Lamahatta eco park

boutiques than just the Hong Kong market where cheap Chinese stuff is sold.

Lamahatta – the abode of lamas

From Siliguri you can head out to Doars, Sikkim, Bhutan etc. I head towards Tinchuley known for its pristine view of three peaks. It takes about three hours and though it is not yet late in the evening, the sun has already set. After tea and snacks, I make plans to visit Lamahatta the next day. Since Vande Bharat leaves early morning from Howrah, I am a bit exhausted though the mountain air has already worked its magic and energised me to a great extent to look forward to the dinner cooked at the guest house. The sky is suddenly clear with stars twinkling and a big full moon.

At Lamahatta, there is a beautiful artificial lake inside the “woods dark and deep” with pine, dhupi and cardamom trees encircling the lake like sentries holding watch. It is an eco-park.

Lamahatta literally means abode of the lama or Buddhist monk, so serene and peaceful it is. There are prayer flags fluttering in the breeze.

In and around Tinchuley there are small crowded markets selling everyday provisions. One hopes that without spoiling the area, small tea cafes come up for which walkers can stop by for a cup of tea.

I get that at Bara Mangwa. On my way from the bird’s eye view of the two rivers that are of a different colour each to become a third colour as they meet at Lover’s Point, the view is undoubtedly spectacular; like narrow ribbons crisscrossing each other.

Further ahead at Triveni Sangam, there are camps on the river bed of the Teesta while white water rafting is offered. I sit



Prayer wheels in a monastery



Nirmal Orange Farm at Bara Mangwa where organic oranges are grown

and observe as the Teesta flows by. But I do stop by at the Nirmal Orange Farm at Bara Mangwa en route to finally get my cup of tea to be enjoyed out in the open.

Pravash Pradhan, the farm owner has been growing organic oranges in his orchard here and takes visitors through it. It is better to do that when the oranges ripen because the April sun is warm. The best time to do this is the winter season - months of November and December.

Nevertheless surrounded by clumps of the red Fairy's Horn flower, it is a lovely to shop at the little boutique for picking up orange and ginger teas, orange marmalade, ginger jam and dalle (a fruit that can taste hot to very hot) sauce for things to carry back as gifts.

I round off with a cup of orange tea myself served in a



The author sipping orange tea at the farm



Morgan House looks like a frame out of a Victoria era

teapot and enjoy it sitting in the shade with the sun on my back. I discover a little bit of paradise on earth. Fruit beer made of fresh oranges is available too.

On a monastery trail

Kalimpong by contrast is much smaller as I had the opportunity to visit it a week earlier due to some work. Only one and half hours away from Tinchuley, I had, however, taken the Siliguri route, which was roughly three hours.

I visited the Buddhist monastery here where time indeed stops. On the way, I had passed a huge figure of Buddha; the monastery, however, is dedicated to Dudjurn Rinpoche and was built by Norbu Sherpa at the original site established in 1946. .

You can do a gumfa or monastery trail. There are several in the region, including the Old Ghoom Monastery that falls on the way to Darjeeling. The external façade of this beautiful monastery, belonging to the Yellow Hat sect or Gelupka, was built by a Mongolian astrologer Sokpo Sherab Gyatso in 1850.

So old are the Buddhist monasteries in the region and the Buddhist-Tibetan influences!

Doing this segment of the journey to Kalimpong with a friend, who had insisted we stay at a nice hotel than *Morgan House*, which is old and has a colonial history.

The hotel did offer a spectacular view but mist-laden nonetheless. The sunshine next day made up for that as we went to Deolo Park. Roadside eateries were selling steamed momos, small but extremely sweet oranges and little squares of steamed cakes made of peas flour. These are known as *fampi* in local dialect and served with a spicy coriander chutney.

The monastery at Kalimpong closes at around noon but the young monk opened the gates for us. It was so colourful with yellows and red dominating. There were *tangkha* scrolls depicting the Buddhist interpretation of gods and goddesses. No photos of interiors are allowed.



The iconic Oxford book store in Darjeeling

In addition, in Kalimpong, one can visit the Orchids Park, the Kali and Hanuman temples and lunch at Morgan House with prior notice. Morgan House looks like a frame out of a Victorian era. The cottage built by one Mr Morgan for his wife is said to be haunted! The creepers outside the cottage and the large windows transport you to the British Raj era and the rolling grounds all around it makes it resemble an estate in the English countryside.

A delicious lunch of dal, chawal and chicken stew drove any fear of ghostly apparitions away but one cannot vouch for night time, when doors are said to shut suddenly, and lights go off with a sighting of Mrs Morgan! .

The Queen springs a surprise

Finally, after all this travelling, I pay respect to the Queen sitting at almost at an elevation of a little over 7, 000 feet over sea level. My plan was to visit Darjeeling strictly for a day. There is more than one route to Darjeeling and little trains (not toy train) chug along this route of Tung, Sonada and Ghoom to connect it to Darjeeling town.

The locals depend on this form of transport as tourists whizz past in cars and buses. Busy as ever on Good Friday, or maybe because it is a holiday, there is terrible traffic congestion. Everyone is out and seems to be having a good time; the locals and the tourists. This is the biggest town with a bigger railway

station.

For someone who is not interested in trekking or hiking, a day in Darjeeling is something I am looking forward to not having visited it in years. I set up myself for disappointment as was the case in my previous two visits taken a decade apart.

But this time, I am pleasantly surprised. Yes, the main centre of the town – the mall – is gradually getting crowded and as summer comes, it starts to resemble busy parts of Kolkata it is joked. But today the sky is a lovely azure blue and the sunshine is soft on your skin. There is a bracing breeze and people are generally having a wonderful time.

The shops that once cluttered the main thoroughfare are cleared out and cars need to be parked a little distance away making space for walkers.

I do the usual. Lunch at Glenary's known for its continental menu, an array of confectionaries and cakes. I browse the *iconic Oxford Book Store* and generally admire the shawls being sold by the wayside.

As the sun starts to fade it is time to head back and the driver takes me back through a quicker route.

Tomorrow I will leave for the plains after a nice quick



A tea estate in Tinchuley

holiday. I missed the *snowy peaks of Kanchanjanga* in its silver snowy glory, lit up just a bit golden in the morning, but found peace and tranquility in my heart.

In short, with some planning, one can have a little bit of everything. Or you can just remain at a tea estate bungalow, now refurbished open to public, and imbibe a tea culture.

Darjeeling in India's West Bengal state is geographically located in the Himalayan foothills in the east. Once a summer resort for the British, it is known for the narrow-gauge Darjeeling Himalayan Railway, or Toy Train, completed in 1881.

It still runs and goes up to Siliguri at its own slow pace and has a charm all its own as filmed in various Bollywood films.

Darjeeling tea known for its various flushes – first, second



A homestay in Tinchuley



Teesta riverbed which is popular for white water rafting

and third - are exported worldwide and have gained the GI tag, the first Indian product to do so.

The many tiered tea shrubs add a lush beauty to the already green landscape. The entire region is hard to define as a single homogenous identity – the Nepali culture dominates but relics of the British Raj linger on, with many iconic houses belonging to the Bengali elite. Churches, temples and gumfa co-exist.

Almost every cottage has rows of tubs of colourful flowers adorning the balcony in front. Tea is served in a cup that comes with a cover so it does not get cold and with every night fall, strains of the guitar mingle with pahari songs.

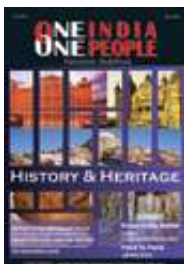
Watching the sun rise and set in stills a sense of calmness. It is all about acceptance of life with all its trials and tribulations. The hills are alive with the sound of music. Are we listening?

Manjira Majumdar is an independent journalist, part time researcher, guest lecturer and gender activist. Now surrounded by books, house plants, cats, she has recently edited an anthology of stories on partition and displacement: NO RETURN ADDRESS. She hopes to bring all her experiences together to write more books, both fiction and non-fiction.

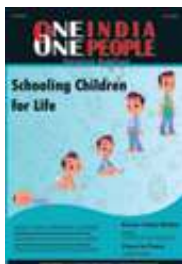
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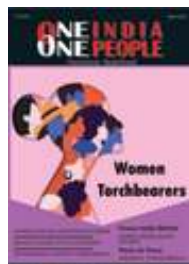
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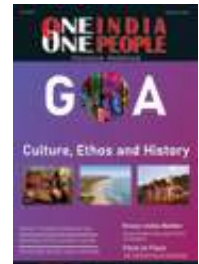
February 2023



January 2023



December 2022



“Basu Chatterji remains a very underrated and underappreciated filmmaker”.

Anirudha Bhattacharjee's first book 'R.D. Burman: The Man, the Music' won the National Award for Best Book on Cinema. His second book, 'Gaata Rahe Mera Dil - 50 Classic Hindi Film Songs' was the winner of the inaugural MAMI Book Award for Excellence in Writing on Cinema. S.D. Burman – 'The Prince, the Musician' came after this followed by 'Kishore Kumar – The Ultimate Biography'. This year saw the release of his new book, 'Basu Chatterji And Middle-of-the-Road Cinema'. This book is the first he has authored without a co-author. Also, this is his first on a film personality away from the world of film music in a direct way.

Anirudha is an amateur musician and an alumnus of IIT Kharagpur who lives in Kolkata. He has no direct link with films, Indian or otherwise. Professionally, he belongs to a world that is not even remotely linked to films. Yet, his love for Hindi films and film music in particular has pushed him to write four books focused on Hindi film music.

Your earlier books were on certain kinds of music and music composers in Indian cinema. What made you choose a multi-faceted filmmaker like Basu Chatterjee for this book?

My parents were film buffs, and it is courtesy their interest that pushed me to go with them to watch films as a little boy. I would tag along, often to have *chanachur* and ice cream. The good part is that they saw very sensible films, and I got to learn names like Satyajit Ray, Tapan Sinha, Tarun Majumdar, Hrishikesh Mukherjee, et al. By the time I was twelve, I had developed a taste for good cinema, specially from class IX through to class XII. I spent my childhood in Bihar, so naturally, my exposure was more to Hindi films. When I started writing quizzes and features on cinema and music (from mid-1986), it was mostly on Hindi cinema and music. Music comes naturally to me; I am known for my musical (especially singing) abilities. Hence my initial books were all on music.



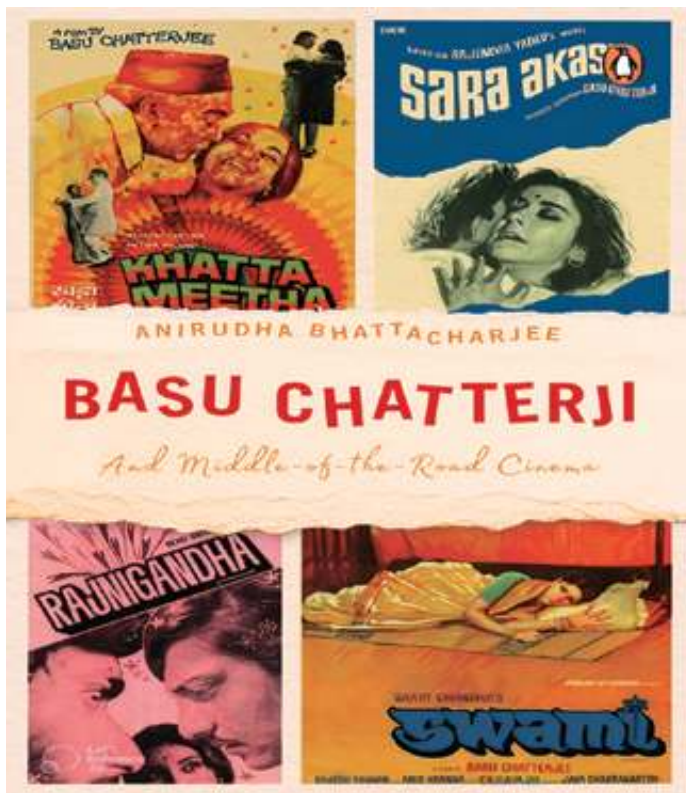
Anirudha Bhattacharjee

Why Basu Chatterjee then?

Basu Chatterji is a filmmaker I admire a lot. His films Chitchor, Chhoti si Baat, Khatta Meetha, etc made me laugh out loud during my adolescence. Incidentally, I found that there was very little literature on him, while his contemporaries like Hrishikesh Mukherjee and Gulzar were the toast of the media. I thought – why don't I write a book on Basu da? I had seen almost all his Hindi films, some of them many times.

How long did it take for you from choosing the subject till sending the final draft to your publishers?

I first met Basu da in 2014 and floated the idea of writing a book on him via his daughter Rupali. I had the habit of taking notes from newspapers and magazines (unfortunately all gone due to shifting between cities) and had in my collection a few interviews



'Basu Chatterji And Middle-of-the-Road Cinema'- the book jacket

he had given. I interviewed him in 2015. During 2020-21, I managed to interview over 50-60 people who were related to Basu da or his cinema in some way or the other. The actual writing happened after I got the contract, in late 2021. It was completed by December 2021. It took approximately 5-6 months.

What do you think Penguin Vintage to accept your proposal and then your manuscript?

The proposal was accepted maybe because my previous books, especially the R D Burman one, had done well. I am not very sure. There were hardly any changes to the manuscript that I submitted. Except for ironing out anything which could have had legal complications.

How would you, in your own words, describe Basu Chatterjee as a filmmaker, a television serial maker, and a human being?

To me, he will remain an excellent filmmaker who could have done better by making fewer films. TV serials – I think he was quite good. I Loved *Rajani* and *Darpan*. Also, his *Byomkesh Bakshi* carried the old-world innocence we miss today. I found him to be very unassuming and simple. He had absolutely no airs. He also had a child-like streak. I remember him crying when talking about Basu Bhattacharya and singing out loudly in memory of S D Burman.

'Basu Chatterjee Wall' at the National Film Archive of India

Can you elaborate on your description of Rajani as "the female reincarnation of Amitabh Bachchan" of the 1970s. Is it because of Priya Tendulkar and the image she projected as a rebellious housewife, or was it was the very character conceived of by Chatterjee that led you to draw this conclusion?

Both. The concept was extraordinarily strong. It touched a raw nerve. And Priya looked the determined housewife with nerves of steel who would tolerate no nonsense. Basu da's sense of casting was wonderful. There were many contenders for the role – Moushumi Chatterjee, Anita Raj, Bharti Achrekar, et al. But there was something in Priya which gave Basu Chatterji the feeling that she was the lady who would look the character he wanted to depict on the screen. Like Rajit Kapur for Byomkesh. He spoke to him for only 10 minutes... and finalised him for such a significant role.

This is perhaps the first time for you to have taken on such a voluminous work all by yourself without a co-author. May I ask why?

Actually, I started the book with my friend and frequent collaborator Balaji Vittal. After some time, he got busy with the book *Pure Evil* (Harper Collins, 2021). Hence, I decided to do it myself. But he did some major interviews for the book and helped in framing a few chapters.

I am shocked that there is no detailed info on his National Award-winning film *Durga* anywhere across the NET though it won the National Award. Can you please give some details about this film as I have not watched it at all and had not even heard of it till I read about it in your book?

Unfortunately, it is not there at NFAI (National Film Archive of India) as well. I searched for this film during my visit in 2021. The heroine Sukanya Kulkarni too is not sure if the film is there or not. I have not seen the film. She plays a maid who washes dishes for a living in the film. It is about her and how society deals with her. It was shot at location in Chattisgarh. That's about it.

After having researched so much on Basu Chatterjee and his cinema, how would you personally rank the best five feature films and also the best five television serials he made during his lifetime.

This is a very tough question. Listing my ten favourite films, in chronological order – *Sara Akash*, *Piya ka Ghar*, *Rajanigandha*, *Chhoti si Baat*, *Chitchor*, *Swami*, *Khatta Meetha*, *Apne Paraye*, *Shaukeen*, *Chameli ki Shaadi*. Among my favourite serials I would like to choose *Rajani*, *Darpan*, *Byomkesh Bakshi*.

One of your chapters is titled - MIDDLE OF THE ROAD OR END OF THE ROAD. Can you elaborate why you say this?

I feel that the middle of the road cinema took a nosedive in the mid-1980s. There were no *Rajanigandhas* or *Chitchors* or *Naram Garams*. Except for the films by Sai, like *Chasm-e-Buddor* and *Katha*, all we had were hardcore commercial stuff (the Amitabh

Bachchan / Dharmendra variety of films) or the Jeetendra-Sridevi films from the south where vulgarity / double entendre ruled. Or pure art / parallel films like *Bazaar*, *Damul* or *Kamla*. There was nothing in between that the middle class could identify with and smile / sing along. People were more glued to the television sets after Asiad 1982, and serials like *Hum Log* and *Yeh Jo Hai Zindagi* were huge favourites. Hrishikesh Mukherjee and Gulzar also struggled during the phase 1983-1990. They too, especially Gulzar had shifted to TV serials.

What is your take-away from this work?

Just that Basu Chatterji remains a very underrated and underappreciated filmmaker. Not even a Padma Award. Don't you feel it is ridiculous? Thankfully, the audience remembers him. And most of us who have grown up on his cinema love him. He was also someone who appreciated his technicians and would have the best to work for him in the first 10-12 years of his film career. KK Mahajan, Narinder Singh, Bansi Chandragupta, A K Bir... all added value to the cinema of Basu Chatterji. And he understood that.



Shoma A. Chatterji is a freelance journalist, film scholar and author. She has authored 17 published titles and won the National Award for Best Writing on Cinema, twice. She won the UNFPA-Laadli Media Award, 2010 for 'commitment to addressing and analysing gender issues' among many awards.



(contd. from Pg 16)

not used at all. So natural materials and products such as cow dung are used to restore soil quality and replenish it with the necessary nutrients.

Agroforestry is also used by many farmers to retain soil quality. Here, a balance of different nutrient cycles is created by growing different kinds of trees and plants along with the crops. Also, emphasis is laid on growing multiple crops rather than a single plant which is often seen in commercial agriculture. Growing multiple crops at the same time restores essential soil nutrients.

So, the process of desertification – where a fertile piece of land becomes arid and useless – is expedited due to climate change. Sustainable agricultural practices and intelligent cropping methods are slowing down desertification successfully.

Developing resilience

It's not possible for humans to stop climate change or reverse it, at least not soon enough. But it is possible to develop climate resilience. Fortunately, several agricultural practices used by farmers in rural India are climate resilient. Ensuring food security is a major challenge today as climate change constantly threatens it. But climate resilient agricultural practices ensure there's food security to alleviate malnutrition, hunger and poverty.

In order to adapt to climate change, it is imperative that mitigation technologies and techniques are implemented in the right manner and in the appropriate sectors. There are many aspects of climate change adaptation including water and nutrient management, growing tolerant crops, effective soil management, access to timely information, etc., that can be implemented on a larger scale.

Climate resilient agricultural practices help in achieving desired results despite the variations caused by climate change, and over a long period of time. So, for example, these practices will help ensure higher productivity of a native food crop which in turn will make sure the farmer is able to earn despite the uncertainties of climate change.

Growing tolerant crops is a very effective technique for climate change adaptation. At the same time, indigenous livestock and poultry are more resilient to climate change. They have great instincts and have been guiding their owners for ages. The local breeds have many advantages – resistance to diseases and droughts and a highly adaptive nature.

Another important aspect of climate change resilience is managing the soil well. During the cropping process, the soil often loses essential nutrients and organic matter. By using conservation methods in agriculture, the soil can be protected. These include planting cover crops, practising rotation of crops, reducing tillage, etc., to maintain the protective cover on soil.

Soil quality and nutrients are also maintained by using natural soil fertilizers such as crop residue, crop rotation using legumes for nitrogen richness, vermicompost, natural manure, etc., instead of harmful chemical fertilizers.

Saving water

Effective water management and conservation is one of the best ways to ensure climate change adaptation and resilience. In many villages across India, natural water preservation and conservation practices are in use. For example, in many villages in Maharashtra, effective water management practices

tion and conservation practices are in use. For example, in many villages in Maharashtra, effective water management practices have ensured they grow more than one crop in the wet season. This ensures food security and economic resilience in times of climatic uncertainty.

Water is an essential component for agriculture and for almost every activity. Climate change is endangering availability of water for agriculture, drinking and other processes. Water is used for irrigation and unavailability or paucity will threaten food security.

Climate resilience promotes adoption of smart technologies for water management and irrigation such as micro irrigation, reusing waste water, constructing rainwater harvesting structures and check dams, effective drainage management, groundwater recharge, etc. These practices mitigate the effects of climate change on water bodies and help achieve desired crop yield even when rains have been insufficient.

Developing a robust advisory system is necessary to empower those engaged in agriculture. Timely access to local weather information and advisories has helped many farmers in protecting their crops from damage. Here, technology, access to technology and education and awareness are needed for a fool-proof advisory system.

Holistic approach

Livestock are an important part of the agricultural set up in villages and adaptation in these practices is also important. To improve the efficiency of livestock production, improvement in feeding systems is recommended. This helps in reducing malnutrition, decreasing heat load, etc.

Other practices that further climate change adaptation and resilience are livelihood diversification, improved watering techniques, ecosystem conservation and use of renewable and sustainable sources of energy such as solar.

In the last few years, with increased extreme weather events, some tribal farmers in Madhya Pradesh and Maharashtra are returning to cultivating what they would earlier. These crops are more resilient and more likely to withstand erratic rains and high temperatures, guaranteeing income to the farmer.

In February 2023, PM Narendra Modi inaugurated a 12-day mega National Tribal Festival called Aadi Mahotsav. He said that India's tribal traditions and lifestyle offered a solution to challenges of climate change and global warming faced by the world today. He added it is their connect with and reverence for nature and its elements such as the trees, rivers, animals, etc., that makes them protect nature.

Nandini Rao is a media researcher with The History and Heritage Project – A DraftCraft International Initiative to document details, analyse facts and plug lacunae generated by oversight or to further national or foreign agenda in History and Heritage Across India and Beyond Borders.

Time we recognised 'climate migrants'

*Attributing forced displacement as a strong trigger in climate change impact, **Tuhina Banerjee** avers that such migration will mount pressure on resources in urban areas and there will come a time when the capacity of countries and cities to accommodate climate migrants (refugees) would get exhausted. India is the fourth worst hit country in this dubious list.*



As climate change worsens, India must consider a policy on environmental migration

A large part of forced displacement or migration is the fallout of climate change impact. This was often less talked about earlier. However, it is set to take centre stage at climate change discussions in the next few years as more and more people move within their country or beyond the borders due to extreme weather events.

The migration will put more pressure on resources in urban areas and there will come a time when the capacity of countries and cities to accommodate climate migrants (refugees) would get exhausted.

By 2050, climate change could force 216 million people across six world regions to move within their countries, the World Bank estimates. Sudden onset of weather events – like cyclones, floods, forest fires, draughts and hurricanes – will continue to trigger the displacement. However, what will exacerbate the situation are gradual environmental changes like desertification, attrition of biodiversity, declining crop productivity, air pollution and sea-level rise. Many South Asian cities – including

Mumbai and Bangkok – are already losing land to sea and inching towards the risk of being submerged.

Over the next 30 years, 143 million people are likely to be uprooted by rising seas, drought, searing temperatures and other climate catastrophes, according to the UN's Intergovernmental Panel on Climate Change report published this year. In 2021 alone, extreme weather events led to the displacement of 23.7 million people, another report revealed.

By 2020, new internal displacements took place across 42 countries due to conflict and violence and 144 countries because of natural disasters, a report pointed out.

There are almost 20.4 million officially designated refugees under the protection of the United Nations High Commission for Refugees (UNHCR). But there is an additional group of 21.5 million people who flee their homes as a result of sudden onset weather hazards every year. They are yet to be recognised as 'environmental migrants'. Climate migrants are

not accorded refugee status under the 1951 Refugee Convention, which provides legal protection only to people fleeing persecution due to their race, religion, nationality, political opinion or particular social group. No country in the world offers asylum to migrants displaced by a weather-related event. This is despite the number of climate refugees being three times higher than that of conflict refugees.

At COP 21 in Paris in 2015, the term 'climate migrants' was acknowledged in the preamble of the agreement, giving the issue some impetus. In the following COP summits, the issue of human mobility and climate change and its dynamics were discussed. But these discussions didn't make much headway.

How it will hit India

A report, titled 'State of India's Environment', published by Down To Earth in June last year, revealed that India is the fourth worst-hit country when it comes to climate change-induced migration. In 2020, 14 million people in India were estimated to have migrated as a consequence of extreme weather events.

Coastal states are witnessing surge in floods and cyclones caused by the impacts of climate change while interior regions are seeing slower effects such as droughts.

Extreme weather events in India are on the rise and this is triggering migration. It is mostly the poor, including the marginal farmers, who bear the brunt of severe weather events like sea levels, heatwaves and cyclones. And these are getting more frequent and fiercer. This is challenging the resilience of people. The damage sometimes is irrevocable.

The frequency of heatwaves will be up to four times higher, cyclone intensity will increase and sea level will rise by 30 cm (12 inches) if action is not taken, revealed a climate change assessment report, published in 2020. Seasonal migration is growing not just because of loss of livelihood, but also owing to climate changes. And it is fast becoming permanent. This trend is disconcerting.

According to a report by the Internal Displacement Monitoring Centre, between 2008 and 2019, 3.6 million people were estimated to have been displaced annually due to cyclones, floods, and storms within the country. Rising sea levels pose a threat to 36 million people living in India's coastal regions. Farmers from coastal Odisha and West Bengal, for instance, are migrating as agricultural land turns infertile due to sea-level rise and salination, while fishing communities are struggling to survive due to frequent cyclones and storms. In the north, water scarcity and erratic rainfall is forcing communities from the Himalayan region to move to the plains. Annual

flooding of the Brahmaputra in Assam and Bihar is causing significant loss to lives and livelihoods.

In addition to internal displacement, India needs to think about the climate refugees from neighbouring countries as well. Cyclones and floods in Bangladesh, deforestation and desertification in the Himalayan region, and rising sea levels are increasingly threatening neighbouring nations. Cyclone Amphan in 2020 killed over 128 people and left millions homeless and impoverished across India, Bangladesh, and Sri Lanka. According to the UNHRC, as of 2011, India had about 2,04,600 refugees, asylum seekers, and 'others of concern' due to various factors from Afghanistan, Sri Lanka, Bangladesh, and Myanmar. Over 62 million South Asian people may have to migrate from their homes due to slow onset climate disasters such as sea-level rise, water stress, crop yield reductions, ecosystem loss and drought by 2050, according to a new report by Climate Action Network South Asia (CANSA) and Action Aid International.

Some climate hot spots will experience displacement due to rising temperatures, eroding rivers and rising seas like the Sundarbans or the Mahanadi delta.

What needs to be done

Strong adaptation and mitigation policies are need to reduce the impact of climate changes and build resilience. These policies have to take into account the new climate migrants, who are vulnerable.

It is imperative that a climate refugees' policy is chalked out. India must recognise climate refugees as a vulnerable group, and grant them climate refugee status.

A climate-resilient infrastructure keeping the local issues in mind is need of the hour. Such infrastructure should give livelihoods to the dislodged people. Cross-border migration can be effectively managed if proper protection and resettlement plans are put in place.

A separate climate refugee fund must be created, with public and private contributions. Migration is not a problem in itself, if it's managed well.



The writer is a freelancer who specialises in lifestyle and wellness issues.

Paying the price of development

*Population explosion coupled with clogged cities are witnessing a lopsided development. **Nimisha Lakhia** paints a picture of an India witnessing continuous migration to cities where some have become giant economic hubs with attendant issues/pitfalls like rising construction activity, pollution and paucity of land among many others. Result: Every aspect of swelling urban habitation is causing untold burden.*



Increasing pressure on utilities and resources in cities are causing untold problems

The population in Indian cities is increasing with each passing day. As per some estimates, by 2030, more than 40 per cent of the country's population will be living in urban areas. Migration from rural areas and from smaller towns and cities to big cities and metros is happening at a very fast pace. This makes the cities more crowded and puts a pressure on the available resources.

More people also mean more vehicles and more construction activity and that is a major cause of pollution in India's urban centres. Cities are where most of the development takes place and over time urban centres have become major economic hubs. With more people coming into the cities, there is a lot of pressure on land resources and infrastructure. Space is limited and more people must be accommodated every day.

Urban India

Presently, the urbanisation level in India stands at 31 per cent and more than 75 per cent of the urban population is concentrated in ten states including Uttar Pradesh, Tamil Nadu,

Andhra Pradesh, Maharashtra, Gujarat, Karnataka, Madhya Pradesh, Rajasthan, West Bengal and Kerala.

The highest number of people living in urban area in any state is in Maharashtra with more than 50 million people that amounts to 13 per cent of India's urban population. Among the north-eastern states, Mizoram has the highest level of urbanisation with more than 51 per cent of the population living in urban pockets.

After Maharashtra comes Uttar Pradesh with 44 million urban population, then Tamil Nadu with 35 million people in urban areas. Goa, with more than 62 per cent urban population, is the most urbanised state.

Uttar Pradesh, Bihar, Odisha, Assam have lower level of urbanisation as compared to the national average. Among the Union Territories, NCT of Delhi and the UT of Chandigarh are most urbanised with 97 per cent urban population each.

There are many initiatives taken by the government

and schemes released to increase urbanisation. These include SMART Cities, Swachh Bharat Mission (Urban), Pradhan Mantri Awas Yojana (Urban), Pradhan Mantri Garib Kalyan Yojana, HRIDAY, etc.

The burden

While living in a city has several benefits such as availability of basic amenities, easy access to facilities, better avenues for education, jobs and business. On the other hand, the increasing number of people in India's cities is a cause of concern as well.

Apart from the paucity of space that leads to overcrowding in slums and insufficient housing options, there's a lot of pressure on public utilities that results in unplanned development. India has a huge population living in urban slums – more than 13 million households in slums are home to about 65 million people.

Increasing pressure on utilities and resources in cities are causing health problems, damaging the environment, causing pollution, disharmony and more.

Inadequate housing and lack of housing are big problems in cities. This also leads to improper sanitation and open defecation that pollutes the environment, water bodies, land, etc. To build more houses for the ever-increasing population in cities, trees that were growing for decades are cut down.

To create more land, floodplains of rivers are used for construction that not only obstructs natural flow of the river but endangers human lives. In coastal cities, there is a lot of reclamation done to create more land and that again changes natural dynamics of the ecosystem there.

The menace of pollution

Living in the city has its own set of problems, the biggest one being pollution – air, water and land. Air pollution in India is a cause for concern. The air quality in most cities in India is worrisome and a cause for myriad health problems especially among the children and the elderly.

As per some estimates, in India, 51 per cent of pollution is caused by industries, 27 per cent by vehicles, 17 per cent by crop burning and five per cent by other sources.

Vehicular pollution poses a serious health risk in cities. Emissions from vehicles contribute 20 – 30 per cent of the Particulate Matter (PM) 2.5 at the breathing level of air quality. About eight per cent of the total Greenhouse Gas (GHG) emissions in India are from the transport sector.

Particulate Matter exposure causes respiratory and cardiovascular conditions such as COPD, asthma, bronchitis, lung cancer and heart attack. A study revealed that in India, outdoor air pollution was the fifth-largest killer.

Apart from air, water pollution is also a big problem in cities. Disposal of untreated water into freshwater bodies is a menace. The Central Pollution Control Board states that more than 50 per cent of 351 river stretches are polluted. Untreated water and improper sanitation pollute water bodies. This not only risks human health but damages aquatic life as well.

More than 72,300 million litres per day (MLD) of sewage is generated in urban areas in India and 39,604 MLD in

rural India in the year 2020-21. Compare this with the population – 65 per cent of people live in rural India and 35 per cent in the cities. Only 28 per cent of the sewage generated in cities is treated while the rest goes directly in water bodies.

Waste management

The overburdening of cities with people and infrastructure pollutes the land as well. Waste management is a big challenge in urban India, specifically solid waste management. Waste, when not treated and/or disposed properly can release harmful gases into the atmosphere, pollute groundwater and other water bodies, infect humans and animals, etc.

The annual report (2020-21) on Implementation of Solid Waste Management Rules, 2016 by the Central Pollution Control Board (CPCB) states that India generates more than 1.6 lakh tonnes of solid waste in a day.

The waste collection mechanism is efficient in most cities but treatment and disposal are not. Owing to shortage of dumping grounds in cities, waste is not disposed of properly and becomes an environmental hazard, risking human lives as well.

Addressing problems

On 2 October 2014, to accelerate the efforts to achieve universal sanitation coverage and to put the focus on sanitation, PM Modi launched the Swachh Bharat Mission – under this all villages, Gram Panchayats, Districts, States and Union Territories in India declared themselves open-defecation free (ODF) by 2 October 2019, the 150th birth anniversary of Mahatma Gandhi, by constructing over 100 million toilets in rural India. Under Swachh Bharat Mission Urban 2.0, emphasis was laid on transforming garbage dumps in urban centres and protect the environment.

To contain vehicular emissions and resulting air pollution is a very challenging task. Efforts are being made across cities at governmental, community and individual levels to promote clean sources of energy, encourage walking, public transportation and other modes that reduce pollution. In Mumbai, for example, cycling tracks are being laid out and more efficient public transportation by way of local trains, buses, etc., are being promoted. Urban planners are focusing on sustainable buildings and greener streets.

As for keeping the water bodies clean, there's a need to reduce the burden on land, provide proper housing to people with sanitation facilities and make efforts to stop open defecation. Cities also need to upscale and upgrade treatment facilities to keep up with the demand.

Hyderabad in Telangana is aiming to become the first city in India to have 100 per cent sewerage facilities, for which the government is constructing 31 new STPs (sewage treatment plants). Climate change is putting and will continue to put pressure on infrastructure and resources in cities. So, building sustainable and climate-resilient cities is the need of the hour.

Nimisha Lakhia is a trainee with DraftCraft Media Network - an initiative of DraftCraft International – a platform for media students, experts, and professionals to quash populist trends and help create unbiased and independent news.

Icon on Indian cinema's desktop

Shoma A. Chatterji pays a centenary tribute and takes a look at the phenomenon called Mrinal Sen who shunned the beaten path and did not hesitate to disturb his audience and stir them into investigation, questioning and debate. Legends like him are born but only once.



Mrinal Sen

Mrinal Sen represented an era that survives and reflects itself through him - the lone ranger in a track now filled with other people, other cinemas. His alacrity and his nervous energy were amazing. He spiked his answers with the right dose of barbed smiles and caustic one-liners and filled them with wonderful anecdotes. He recalled how, when he went to Bangladesh to prepare for *Amar Bhubon*, he visited his home town and the place where one of his little sisters, who died, was buried. "It was a trip back to nostalgia. The tragedy had happened a long time ago. But when I reached the place, I broke down," he recounted.

Few Indian filmmakers can boast of several books written on them in several languages. Mrinal Sen is one of them while the other two are Satyajit Ray and Ritwik Ghatak. They laid the foundations of scholastic work on Indian films and filmmakers. Mrinal Sen made his presence strongly felt at every serious seminar or festival of films, never mind whether the festival included his films or not. What appeared to sustain him was his ever-youthful approach to life and people. He was a very good conversationalist, holding forth for hours on end on every topic

under the sun, peppering them with his bubbly sense of intelligent humour. With the making of *Ek Din Pratidin* in 1979, Sen marked a turning point in his career as a film-maker. "I have been trying consistently to pull my characters by the hair and then make them confront reality. This is a ruthless experience. But once you survive this confrontation, you come out of it a stronger person. This helps you to sustain a life of decency and dignity" he said.

Through each film of the 28 and a few documentaries he made over four-and-odd decades, Sen managed to disturb his audience and stir them into investigation, questioning and debate. He experimented with the non-narrative form in *Chorus* and *Calcutta 71*. But they left the audience cold. Perhaps the audience were conditioned to his angst of anger unfolded through a story, or an incident, or a character, such as *Ek Din Achanak* (based on a novel), *Ekdin Pratidin* (based on an incident) and *Bhuvan Shome* (based on two characters). *Khandhar* (based on a setting) blended to produce a different, cohesive whole, as seen in *Antareen*. These are based on original literary works by noted writers. Sen is one of the first filmmakers in



Bhuvan Shome



Kharij Poster



Shabana Azmi in Khandhar

India to have made films in languages he does not know, like Oriya and Hindi. He did not believe in confining his creativity to an exclusive linguistic identity.

Just when cinebuffs had begun to wonder whether Mrinal Sen had called it a day, he surprised them with *Amaar Bhubon*. It was internationally premiered at the Locarno International Film Festival. Based on a 1993 Bengali novel, *Dhanjyotsna*, penned by Afsar Amed in 1992, the film had a charity premiere at Nandan drawing full house, the proceeds ear-marked for the victims of the Gujarat genocide.

When the British Council held a grand launch of British Film Institute's thick volume in celebration of 50 years of *Pather Panchali* with Nemai Ghosh's photographs along with texts, the only Indian (Bengali) director who was present was Mrinal Sen. When I asked him what had made him come where one director's work was being felicitated and no director from Bengali cinema was present, he was surprised. He said, "How can you ask me such a question? *Pather Panchali* is a film that changed the image of Indian cinema on the world map. And Manik Babu (Satyajit Ray) has directed the film. How can I not be there?"

Mrinal Sen's *Khandhar* (1984) was screened at Cannes in May 2010. It was earlier screened in the *Un Certain Regard* section at the 1984 Cannes Film Festival. On his 91st birthday, Mrinal-da said, "Every day is my birthday. I am born every day because we grow every single minute of our lives. I do not need to remember my birthday on just one day in a year. I consider my birth a disaster." You never knew when he was serious and when he was joking. This legend of world cinema who held Bengali cinema by its hand and took it to find its place in the world map along with his two contemporaries Satyajit Ray and Ritwik Ghatak. In a manner of speaking, people like him never die because they leave behind them not only their films but also their approach to life and their memories among their audience – national and international.

Sen picked awards left, right and centre and they did not really matter to him over time. Most of his archival clippings,

posters, press coverages and photographs are in France which bestowed on him the honour of *Commander de L'orde des Arts des Letters* and also held a retrospective of his films, a rare honour for an Indian film-maker. USSR gave him the Soviet Land Nehru Award and he has won numerous awards for his films at international film festivals like Cannes, Berlin, Moscow, Karlovy Vary, Chicago, Montreal and Carthage. The Government of India bestowed on him the Padma Bhushan in 1980 while the West Bengal Government gave him the Satyajit Ray Memorial Award in 1994. Over the years, his films won several Golden Lotuses and he himself won several Silver Lotuses as Best Director at the National Film Awards topped by the Dadasaheb Phalke Award. He represented India at the UNESCO Commission to celebrate the centenary of cinema was also the president of the International Federation of Film Societies.

Mrinal Sen's filmography reveals a deep obsession with the basic survival needs of people, some of who adhere to their native simplicity and innocence (Bhuvan Shome, *Mrigaya*) through the tragedy of politics and poverty in an environment rid with every kind of inequality between and among human beings, (Calcutta'71, *Ek Din Pratidin*, *Parasuram*, *Padatik*). Towards the end of his life, especially after his wife Gita Sen passed away, he wearied of socio-political causes, and gravitated inwards, into the minds of people and by his own admission, into his own mind. Mrinal Sen is not just a name. He is a legend. He is a cult figure. He is forever.



Shoma A. Chatterji is a freelance journalist, film scholar and author. She has authored 17 published titles and won the National Award for Best Writing on Cinema, twice. She won the UNFPA-Laadli Media Award, 2010 for 'commitment to addressing and analysing gender issues' among many awards.



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RAM CHANDER MVC (1921-1998)

The valiant civilian

Ram Chander was born to Faqir Chand in 1921 in Kot Kishan Chand, Jalandhar, Punjab. He joined the 14 Field Company Engineers of the Madras Engineering Group in May 1947. He was a civilian in the Indian Army and a washer-man by profession.

The suzerainty of UK over the Indian states lapsed after Independence. Lord Listowel, the Secretary of State for India made it clear to the princes of Indian states that they should accede to India or Pakistan. The Maharaja of Kashmir was toying with the idea of Independence. The population of Kashmir had Muslim majority and Jinnah strongly wanted Kashmir to accede to Pakistan. The Maharaja of Kashmir did not comply with the demand of Jinnah and Pakistan decided to launch military action.

Hari Singh, the Maharaja of Jammu and Kashmir, was already facing an uprising in Poonch. On 22 October 1947, Pakistan's Pashtun tribal militias and irregular Pakistan forces crossed the border to take the capital city of Srinagar, but upon reaching Baramulla, they took to plunder. Maharaja Hari Singh made a plea to India for assistance and help was offered subject to his signing of an Instrument of Accession to India. The war was initially fought by the Jammu and Kashmir State Forces. Following the accession of the State to India on 26 October 1947, Indian troops were airlifted to Srinagar, the state capital.

Civilian Dhobi Ram Chander was part of a convoy proceeding to Jammu under the command of Lieutenant F.D. W. Fallon on 18 December 1947. When the convoy reached Bhambla, it was ambushed by the enemy who had created a roadblock by removing the decking on a bridge. Ram Chander helped the convoy commander to replace the decking while the bridge was under continuous fire. On Lieutenant Fallon being wounded, he took the officer's rifle and helped in holding the enemy. He provided cover fire to Lieutenant Fallon's vehicle when it got over the bridge and was responsible for inflicting five to six casualties on the enemy.

However, the convoy commander was forced to abandon his vehicle due to heavy firing and in the process both he and the convoy commander got separated

from the rest of the convoy. He helped Lieutenant Fallon, who was in a state of collapse due to loss of blood, to the nearest post which was eight miles away. He refused to leave him and acted as an advance scout to see that the way was clear. His devotion to the officer was far beyond the call of duty. His calmness and courage under fire were unequalled by any of the enrolled personnel in the convoy.



He was awarded Maha Vir Chakra (MVC) for his courage in escorting the wounded officer to the next Post which was 13 kms away. Ram Chander, displayed outstanding skills in negotiating the almost impassable snow-covered slopes swept by Medium Machine Gun (MMG) fire. By a superb physical effort, he got the wounded man, bundled him up in his blanket and brought him to safety.

His tale of courage is as old as the history of Independent India. While it is rare for a civilian to be decorated for gallantry in war, it is not so rare for the government to forget such tales and leave them in the lurch.

The Punjab government is yet to fulfil its promise of allotting 10 acres of land to late Ram Chander (now to his family) who was awarded the MVC in the 1947 operations against Pakistani intruders. He is one of the only two civilians to have been awarded the MVC.

Ram Chander unsuccessfully struggled for the next 50 years to get his dues from the government. After he passed away in 1998, his widow, Tara Devi continued to make several representations to the state government and even met the Jalandhar District Commissioner but to no avail.

Tara Devi, in 2016 along with her son Mukesh attended the Triennial convention of the War Decorated India, at Chandigarh, an association of gallantry award winners. She lived in penury and managed her affairs with a monthly financial assistance of just ₹ 5,000 that is given to spouses of MVC awardees.

Brigadier Suresh Chandra Sharma (retd.)

KESHUB MAHINDRA (1923-2023)

The man who saw it all

Keshub Mahindra, a pioneer of the Indian automobile industry, was India's oldest billionaire businessman and Chairman Emeritus of the Mahindra Group.

Keshub was born in present-day Shimla, Himachal Pradesh. A Wharton University of Pennsylvania, USA graduate, he was the son of Kailash Chandra Mahindra, a co-founder of the Mahindra Group (1945) and joined the group in 1947 and assumed the role of Chairman in 1963.

Under his watch, over the next 48 years, the group metamorphosed from a steel trading company to a \$15 billion diversified conglomerate, expanding from being just a car manufacturer to IT, real estate, financial services, logistics, and hospitality. He retired in August 2012, handing over the reins to his nephew Anand Mahindra, then Vice President and Managing Director.

Keshub's life was an epitome of rare virtues. A man of principles and a source of inspiration, he led from the front. A gentleman and a patriot, he was an acclaimed philanthropist who redefined good corporate governance in India. He was an exemplary statesman, respected for his vision, business acumen, leadership and uncompromising professional integrity.

Keshub introduced empowerment and confidence before they became buzzwords. He presented his employees as colleagues, not as subordinates. He did not see a setback as a failure, but as a risk avoidance. He also had a knack for figuring out which business would bring in the money; one of the reasons why the group did not enter the fixed network space.

His mentors were JRD Tata from the business world and Nanaji Deshmukh, social activist. One thing they had in common was their passion and commitment to supporting the less fortunate. An avid golfer, he also enjoyed skiing and was a tennis champion at Wharton. In his Lonavala bungalow, he enjoyed cooking continental food.

He led several commissions, including the Sachar Commission on Company Law and the MRTP and the Central Advisory Council on Industries. He was also a member of Apex Council of ASSOCHAM, President Emeritus of Employers Federation of India, Honorary Member of All-India Management Association, New Delhi and Member of United World Colleges (International) UK Council. He has also served

on several boards and councils in both the private and public sectors,

In 1947, when the government was thinking about the need for an indigenous automobile industry, Keshub felt he knew nothing about the industry. At that time, India only had Premier Automobiles, Hindustan Motors and the steel trading company Mahindra and Mahindra (M&M), which later began assembling Willy Jeeps. Because the government relied on them, the company had to make everything from scratch because there were no suppliers. When M&M started to engage in car manufacturing, the Tata Group was already a pioneer in this field and innovated on its own without collaboration. That's where this journey began. Keshub entered into corporate partnerships with global giants such as Mitsubishi, British Telecom and Ford.

Keshub was the non-executive chairman of Union Carbide India Limited when the Bhopal gas tragedy occurred in 1984, killing 3,787 people. In June 2010, he was sentenced to two years in prison and fined 1,00,000 rupees along with six other employees of the former Union Carbide subsidiary, many in their 70s, but were released shortly after their convictions.

In 1987, the French government awarded him the Chevalier de l'Ordre National of the Legion of Honor for his contribution to that field.

Keshub left behind a legacy that transformed the company from an assembler of Willys Jeeps in India in the 1940s to a \$12 billion diversified conglomerate. His net worth, according to Forbes Rich List 2023, was \$1.2 billion.

Aged 99, Keshub passed away in Mumbai. The industrial world lost one of its greatest personalities. He is survived by two brothers, three daughters and seven grandchildren.



A. Radhakrishnan is a Pune based freelance writer, poet and short story writer.

JAMUNA (1936-2023)

A star and a legend!

Veteran Indian actress, politician, and filmmaker Jamuna nee Jana Bai worked primarily in Telugu cinema. Her roughly 200-film resume also included Tamil, Kannada, and Hindi films.

Born in Hampi, Karnataka, and raised in Duggirala, Guntur district, A.P., she completed her high school education privately.

After seeing her performance in her school play Maa Bhoomi in 1952, Garikipati Raja Rao, a director of IPTA (Indian People's Theatre Association), offered her a role in his Telugu film Puttillu (1953). Only 16 then, she was hired for the project for ₹ 500 per month. A photographer captured her shots without any makeup since they thought she resembled Nargis. Hero Raja Rao was much older than her, therefore the movie didn't work, but it worked for her.

Comedy films *Vaddante Dabbu* and *Iddaru Pellalu*, directed by B. S. Ranga, and *Maa Gopi* were released in 1954. But her big break came with L.V. Prasad's *Missamma* (1955), for her supporting part with Akkineni Nageswara Rao, Savitri, and N. T. Rama Rao in the starring roles. Then came the 1955 film *Bangaru Papa*, the 1957 political drama *Tenali Ramakrishna* and the 1958 Hindu mythological picture *Bhookailas*. In 1964, she starred in the Battle of Bobbili-based movie *Bobbili Yuddham*.

She was adored by Telugu fans for immortalising the roles of Kaikeyi, the wife of King Dasaratha in Sampoorana Ramayanam, and Satyabhama, the wife of Lord Krishna in mythical films like *Srikrishna Thulabharam*. She played a range of female lead parts for a four-decade career alongside great performers.

She made her film debut in Tamil in 1954 with *Panam Paduthum Padu*. Then followed *Missamma* (1955), a romantic comedy; *Thiruttu Raman* (1957); *Thangamalai Ragasiyam* (1958); and *Kadan Venango Kalyaanam* (1959), a drama; and comedy. In the 1961 swashbuckler movie *Marutha Nattu Veeran*, she portrayed a princess. *Nichaya Thamboolam* followed in 1962, and in 1973, she played the lead in *Anbu Sagodharargal*, followed by *Thoongatheey Thambi Thoongatheey* in 1983.

Her Kannada film debut was in 1955 with *Aadarsha Sathi*. Then came the drama films *Bhookailasa* (1956),

Rathnagiri Rahasya (1957) *Sakshatkara* (1971), *Mayeya Musuku* (1979), and in 1980, *Guru Sarvabhowma Sri Karune, Raghavendra*. She was chosen for a supporting part in the action movie *Police Matthu Dada* in 1991.

Jamuna acted in 11 Hindi films. Making her cinematic debut in 1957 with the comedy *Miss Mary, Ek Raaz, Hamrahi, Beti Bete* (1963), *Milan* (1967), *Rishte Nate* (1965), *Dulhan* (1974), *Raaj Tilak* (1984), and *Lady Tarzan* (1990) followed.

She was elected president of the Andhra Pradesh Mahila Congress in the 1980s. She represented the Congress in the Rajahmundry constituency in the 9th Lok Sabha in 1989. She lost the 1991 election and resigned from politics, but she briefly canvassed for the BJP in the late 1990s.

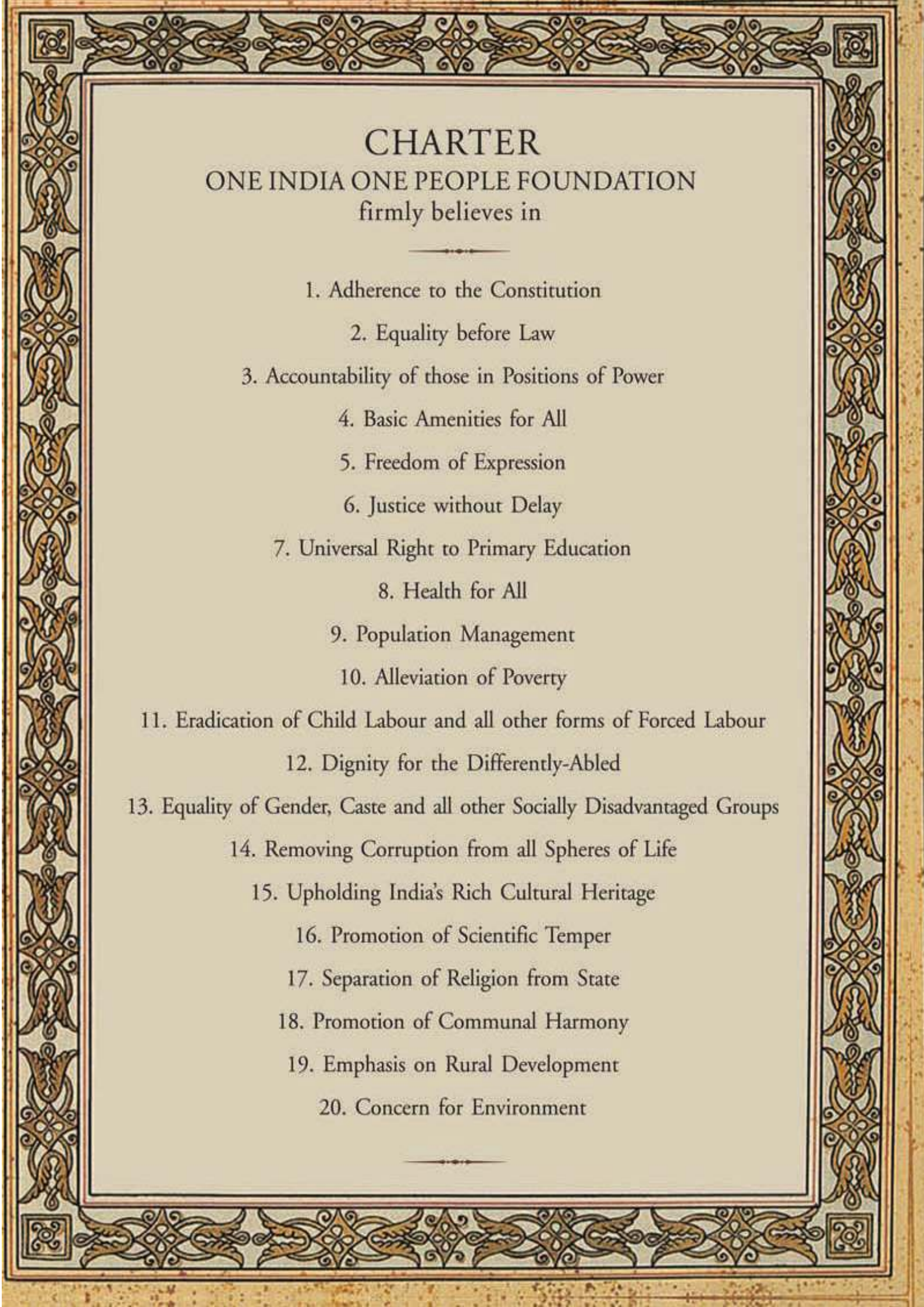
In the 1965 Telugu film *Sri Krishna Tulabharam*, Jamuna was cast in the character of Satyabhama opposite N.T. Ramarao (NTR), who was portraying Krishna. She had to kick him in the song *O Cheli Kopama*. NTR fans found this unacceptable, though it was part of the script. Actors NTR and ANR also boycotted Jamuna for more than three years over disagreements on equal pay and respect.

She received numerous honours. - 1972: Filmfare Special Jury South award for Telugu film *Pandanti Kapuram*; 1968: Filmfare Best Supporting Actress Award 1967 for Hindi film *Milan*; 1999: Tamil Nadu MGR Award, 2008: Andhra Pradesh government's NTR National Award; the Padma Bhushan B. Saroja Devi National Award for Lifetime Achievement; the 17th Santosham Film Awards' Lifetime Achievement Award; etc.

When she started receiving roles for elderly characters, she stopped acting because she wanted to be remembered for her glitz as an *andala tara* (beautiful star)! She passed away aged 86 in Hyderabad, survived by son Vamsee and daughter Sravanthi.



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Am I a Hindu first or an Indian first?

Am I a Muslim first or an Indian first?

Am I a Christian first or an Indian first?

Am I a Buddhist first or an Indian first?

Am I a Brahmin first or an Indian first?

Am I a Dalit first or an Indian first?

Am I a South Indian first or an Indian first?

Am I a North Indian first or an Indian first?

Am I the President of India first or an Indian first?

Am I the Prime Minister of India first or an Indian first?

Am I the Commander-in-Chief first or an Indian first?

Am I a supporter of any 'ism' first or an Indian first?

Am I a white-collar/blue collar worker first or an Indian first?

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Sadanand A. Shetty, Founder Editor
(October 9th, 1930 – February 23rd, 2007)
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