

WEBINAR REPORT

MAKE BENGALURU CLIMATE FRIENDLY

**A BLUEPRINT FOR INTEGRATED,
PARTICIPATORY AND INCLUSIVE URBAN
GOVERNANCE**

SEPTEMBER 2021

ESG

Environment Support
Group - Trust



Environment Support Group (ESG) is a not for profit public interest research, training, campaign and advocacy initiative that responds to a range of environmental and social justice concerns across India, work that is undertaken in collaboration with project impacted communities, regulatory agencies, Local Government, State and Union Government agencies, academia and student organisations, media, the wide public, etc.

Active since 1998, ESG has worked to advance inter-disciplinary, inter-sectoral and inter-sectional interventions in deepening public involvement in environmental decision making and fore-staging environmental and social justice concerns and risk assessments in decision making, particularly those relating to mega projects.

ESG is registered as a Public Charitable Trust, and secured clearances per Foreign Contribution Regulation Act and tax exemptions per Sec. 80G and 12A of the Indian Income Tax Act.

Making Bengaluru Climate Friendly is the outcome of ESG's voluntary initiative in partnership with representatives of multiple sectors who volunteered their time and expertise in evolving this strategy. We are hopeful every ward of Bengaluru, a metropolis with over 14 million, will engage with this strategy critically and with the intent of leaving the world better than when we all came into it.

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Dedicated to the memory of

Dr. (Capt.) Shirdi Prasad Tekur,

**a dear friend and Trustee of Environment Support Group,
a panellist in this webinar series, and who as a doctor
relentlessly worked to save hundreds from Covid-19, only
to unfortunately succumb to the disease on 16th May
2021.**

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Background

In January 2021, then Commissioner of Bruhat Bengaluru Mahanagara Palike (BBMP), Mr. N Manjunatha Prasad, IAS, in a letter to Mayor Eric Garcetti of Los Angeles, the Chair of ‘C-40 Cities’ network, announced the decision to “support the implementation of the Paris Agreement” and to “commit the City of Bengaluru to develop and begin implementing a climate action plan (or series of plans) that will deliver action consistent with the ambitions of the Paris Agreement, and addresses both the need to reduce greenhouse gas (GHG) emissions and adapt to the impacts of climate change”.¹ The decision required Bengaluru to take steps necessary to achieve the targets of the Paris Climate Agreement: i.e., to take local action that would help the world contain global temperature rise to at least 2 degrees Celsius, and preferably 1.5 degrees Celsius, compared to pre-industrial levels.²

To assist the metropolis in developing the strategies essential for meeting the Paris Agreement targets, on the occasion of World Water Day (22nd March), ESG initiated a webinar series to discuss and debate steps needed to make the metropolis climate friendly. Held every Monday (with interruptions during May as we lost our beloved Trustee and speaker in the webinar

¹ Bosky Khanna, *BBMP Commits to Paris Agreement on Climate Change*, The New Indian Express, 22 January 2021, available at <https://www.newindianexpress.com/cities/bengaluru/2021/jan/22/bbmp-commits-to-paris-agreement-on-climate-change-2253378.html>.

² Article 2(a), Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104, accessible at https://unfccc.int/sites/default/files/english_paris_agreement.pdf; United Nations Framework Convention on Climate Change, May 9, 1992, S. Treaty Doc No. 102-38, 1771 U.N.T.S. 107, accessible at https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf.

Dr. Shirdi Prasad Tekur³ to Covid), multiple thematic issues, concerns and imaginaries were deliberated upon by leading officials of the State, BBMP and regulatory agencies, with subject matter experts, youth, representatives of various sectors and also residents from diverse sections of the city.

In coming together this way, we were able to interrogate and explore viable solutions to build the climate action plan in a participatory manner, while also furthering key objectives to promote holistic well-being for all residents of Bengaluru. These imaginaries and solutions are assembled in the form of summarised reports and video recordings of every one of the nine webinars.⁴

In Part I of this document, we present visions for climate action in the city that can also contribute to protecting our commons, building universal food and water security, safeguarding public health and managing waste in an effective and just way.

In Part II, we propose steps that can be taken to build climate-resilient and socially just infrastructure, provide safe housing for all, promote inclusive and climate-friendly mobility, and ensure that energy use is increasingly non-extractive and not based on fossil fuels.

Some of the suggestions may already exist on paper as part of various public schemes and policies. But they are highlighted here as well given their relevance to combating climate change, and to emphasise the urgent need for their implementation.

³ An obituary to Dr. Shirdi Prasad Tekur is accessible at <https://esgindia.org/new/campaigns/covid-19-pandemic/dr-shirdi-prasad-tekur-left-us-on-16-may-2021/>

⁴ For detailed session-wise reports and recordings, visit <https://esgindia.org/new/category/events/media/webinars/bengaluru-climate-action-plan/>.

ESG circulated a draft⁵ of this Blueprint widely for comments for a few weeks. All suggestions we received were appropriately integrated in preparing this final climate action plan.

Organising this webinar series and developing this Blueprint for Climate Action is a voluntary initiative of ESG. We wish to clarify that It was not in any manner sponsored by any agency, be it government or corporate.

We are most grateful to everyone who participated willingly and voluntarily in this endeavour, especially panellists who with their deep insights and reflections assisted in evolving this Bengaluru Climate Action Plan.



⁵ This draft shared can be viewed here: bit.ly/2Z7Ui7o

Part I: Protecting our Commons, Building Food and Water Security, and Safeguarding Public Health

Climate action yields many synergies with important governance goals such as public health, waste management, biodiversity protection, food and water security, creation of socially inclusive and environmentally friendly community spaces, and protection of livelihoods. For instance, wetlands are a major carbon sink if they are ecologically functional, and also provide shelters for biodiversity, contribute to water security, and provide common spaces where people can build mental and physical health. Similarly, food diversity and local sourcing of food not only helps in promoting soil health, but mitigates the carbon footprint of food, while ensuring adequate nutrition for all.⁶ This section highlights important actions that must be taken to maximise these synergies.



⁶ The recent unprecedented collaborative workshop between the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) highlights that biodiversity conservation and climate action can be mutually supporting goals. It stressed that policies that address synergies between mitigating biodiversity loss and climate change, while also considering their societal impacts, help maximize co-benefits and meet development goals. Pörtner et al, *Scientific outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change*, IPBES Secretariat, Bonn, Germany, 2021, DOI:10.5281/zenodo.4659158.

Making climate action a component of the public health effort

Healthcare planning should be holistic and focus on physical, mental, emotional and social wellbeing.⁷ Some key steps that should be taken to strengthen healthcare are:

- Health policy should be strategized to combat the effects of different forms of pollution (air, water, soil and noise) and also effects of climate change like heat waves, worsening allergies, water-borne diseases that spread during floods and rains, etc.
- The healthcare and nutritional needs of children, disabled, aged and women, and vulnerable communities must be prioritised.
- Easy and affordable access to general physicians is critical in protecting public health. All private secondary and tertiary care hospitals should contribute to public health by providing certain hours of free ‘Outpatient’ services. More *Jan Aushadhi* (Peoples Medicines) medical stores must be set up to increase access to affordable medicines.⁸
- All workers involved in dealing with environmental consequences of urbanisation, be they solid waste workers, sanitation workers, those attending to sewerage systems, etc., must be fully protected from the environmental and health impacts of their hazardous occupations.
- Public health disparities are significantly contributed to by caste and other forms of oppression and exclusion,

⁷ *Jan Swasthya Abhiyan* (Peoples Health Movement – India) has substantially interrogated multiple dimensions of health, and provided clear and practical solutions in securing Health for All. More details are accessible here: <http://phmindia.org/about-us/>

⁸ These are being promoted under the Pradhan Mantri Jan Aushadhi Yojana to “bring down the healthcare budget of every citizen of India through providing “**Quality Generic Medicines at Affordable Prices**”.”. *Vision, Bureau of Pharma PSUs of India*, accessible at <http://janaushadhi.gov.in/index.aspx>.

and any climate strategy must forestage the need to attend to and reform such social exclusions.



Protective equipment for waste workers is often of poor quality, infrequently replaced and often unavailable. Photo Credit: Sana Huque

Securing socially inclusive, economically viable, biodiversity-rich commons

Commons are critical spaces to combat the impacts of disasters resulting from climate change. Besides, commons enhance wellbeing of all, provided they equally and equitably accessible to all.

Our common spaces are held in public trust by the government in accordance with the Doctrine of Public Trust.⁹ Their wise use

⁹ The public trust doctrine was first explained by the Supreme Court of India in *M.C. Mehta v. Kamalath*, (1997) 1 SCC 388.

can be sustained by following principles elucidated by Nobel Laureate late Prof. Elinor Ostrom:¹⁰

Keeping this in view:

- Civic and state administration must ensure that people from various neighbourhoods, wards and institutions can directly engage with maintaining, protecting and conserving natural commons such as lakes, urban forests, and other open spaces, as well as community spaces like gardens, parks, playgrounds, libraries, performance spaces, museums, etc, and other heritage spaces.



An ecologically functional and socially inclusive lake near Doddaballapur, north of Bangalore. Photo Credit: Leo Saldanha

¹⁰ Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, (Cambridge University Press, 1990).

- Custody of commons and community spaces must be in the custody of a Local Government, such as the Bruhat Bengaluru Mahanagara Palike (BBMP), or in an agency which has public oversight. Local governments must also be directly involved in their management, as is the Constitutional mandate. Ownership and control of commons must never be privatised.
- Clear statutory frameworks outlining the roles and responsibilities of local governments for managing commons need to be created. These must provide local governments powers of delineating boundaries of commons, removal of encroachments, and regular monitoring of ecosystem health where necessary.
- Sectors on governance of various commons, such as water bodies, urban forests, etc., must be integrated, focussing on issues like replenishing groundwater across regions and protecting biodiversity corridors between open and common spaces.

Accessibility of commons, and protection of traditionally-linked livelihoods

Accessibility to commons must be regarded as an integral part of the fundamental right to a healthy environment and the right to life.¹¹

- Access to common spaces like lakes and parks should not be commercialised.
- Livelihoods traditionally linked to common spaces such as street vending must be protected through enforcement of legal frameworks for their protection, such as the Street Vendors Act, 2014,¹² and removing any punitive prohibition on their use of commons.

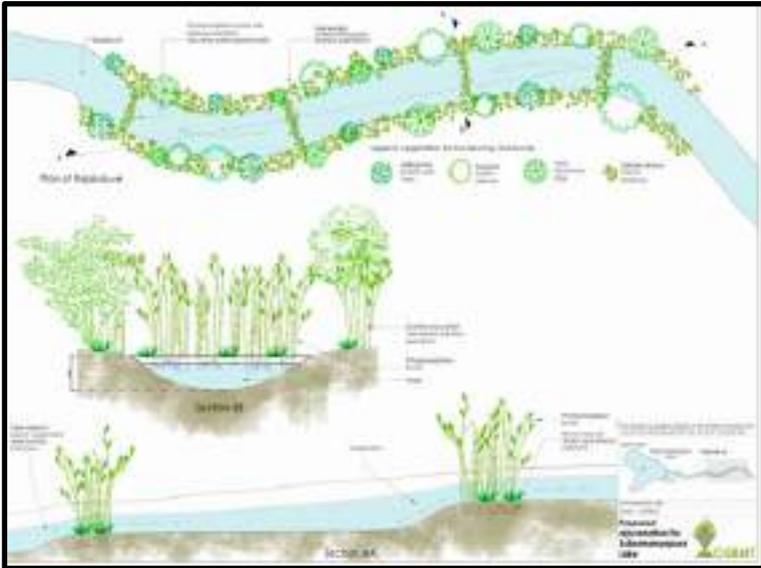
¹¹ The right to a healthy environment has been recognised as integral to the right to life under Article 21 of the Constitution of India. A.P. Pollution Control Board v. Prof. M.V. Nayudu (Retd.), (1999) 2 SCC 718.

¹² The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014.

- Where commons have been encroached by people from vulnerable groups, and their eviction is necessary for safeguarding the commons, rehabilitation should be ensured before undertaking any eviction.
- Policies and schemes linked to employment generation must be used to promote local livelihoods in relation to the rejuvenation and upkeep of common resources like tanks, lakes, *raja kaluves* (canals), parks and such other public spaces.
- Age-old practices, like seasonal farming of local crops around lakes should be revived wherever possible, especially in urban areas, to supplement nutritional and food security to local communities.

Management and protection of commons as biodiversity-rich spaces

- When reviving commons, indigenous species of plants and trees must be preferred, so local biodiversity has a chance for revival. Fruiting trees and plants should also be preferred to support local nutritional needs.
- Commons like wetlands and urban forests should be restored as functional ecosystems, and their contamination should be controlled and prevented. To meet these aims, traditional knowledge-based and modern scientific methods of ecosystem management should be used together. For instance, *raja kaluves* of lakes can be turned into constructed wetlands so they can serve as green wedges crisscrossing the city, as biodiversity corridors and aid in reducing water pollution and the contamination of lakes.



A proposal for rejuvenating Subramanyapura Lake and its Raja Kaluve in South Bengaluru.

Concept: Centre for Green Building Material and Technology, Bengaluru

- The existing statutory framework governing tree protection and tree felling needs to be reformed to enhance public oversight, and also must be strictly implemented. The focus needs to be on protecting mature trees, and tree lines, rather than undertaking transplantation or new plantation drives. This is essential to maximize their ecosystem services such as temperature-proofing, serving as biodiversity corridors, improving micro-climatic conditions, etc.

Advancing water and food equity

Large sections of the population continue to suffer from adequate access to safe water and nutritious food. Remedying this situation and guaranteeing equitable access to water and food are critical to securing universal public health especially

given how climate change accentuates disparities in access to food and water.

Advancing water security for all

Decentralising supply of water is possible with widespread adoption of rain water harvesting and rehabilitation of lakes. This will also help secure equitable access to water and reduce dependence, or the need to, draw water from faraway rivers.

- Ward-level water supply can be augmented with rain water harvesting in every built structure and also by diverting surface water flows into recharge wells everywhere.¹³ Besides, water recycling must become a norm, not an exception. Such environmentally sustainable practices need to be encouraged with economic incentives.
- The following practices need to be adopted everywhere possible, particularly in parks and open spaces:
 - rooftop and ground-level rainwater harvesting,
 - blackwater/greywater recycling,
 - use of chemical-free alternatives for cleaning,
 - use of phytoid plants for wastewater processing,
 - discourage water-intensive lawns and greening.
- Water must first be provided to support drinking water needs and only then diverted for commercial, entertainment and industrial purposes.

¹³ More details on how to rainwater proof all built structure and common spaces can be accessed at:
https://www.kscst.org.in/rwh_files/rwh_basics.html



*Phytorid plants at Bhoomi College, Bengaluru.
Photo Credit: Ms. Rema Kumar.*

Promoting food security sustainably

Farmers should be incentivised to transition away from chemical agriculture and towards traditional sustainable agroecological practises which promote nutritional security, crop diversity and soil health apart from increasing resilience to droughts and floods. Some examples are:

- Practices like *Akkadi Saalu*, which are widely used across Karnataka, and need to be popularised¹⁴
- Water conservation strategies in farms, such as building contour bunds to arrest soil

¹⁴ *Akkadi Saalu* is an agricultural practice which involves the usage of zero chemical fertilizers, zero chemical pesticides and minimal groundwater. As a part of studies conducted by *Revitalising Rainfed Agriculture Network*, several positive impacts have been observed in plots that practise *Akkadi Saalu*.

- erosion and water runoff, and by mulching biomass to improve soil carbon,
 - Adoption of drought-resistant crops, such as millets, and promoting agroforestry with involvement of local governments and communities.
- Gram Panchayats and other local governments should be strengthened to oversee the transition to sustainable farming. Similar linkages can be developed with various wards of the metropolis, especially in promoting urban farming to provide locally grown and healthy and affordable foods.



Photo Credit: Kshitij Urs

Ensuring an equitable food system

- Fruit and vegetable vendors should be encouraged to create cooperatives through public schemes and programmes, so they have greater financial security and bargaining power to secure their livelihoods and provide affordable food for all.

- Organic food identification and certification procedures should be simplified to assist farmers and consumers.
- Access to and consumption of organic food by all should be promoted with policy-level efforts that sustain farmers gains but reduce price at the consumer end. This could be achieved by extending subsidies for organic farming inputs.
- State-backed horticulture shops, the PDS system and mid-day meal schemes should also be used to promote locally grown, nutritious and organic foods, while ensuring prices are reasonable.
- Dialogues on locally appropriate food policies must be held frequently and initiated through multi-institutional collaborations.

Re-envisioning waste management in Bengaluru

Public sanitation and solid waste burdens have major impacts on public and ecological health.¹⁵ Their management through centralised systems increases their carbon footprint. Ensuring social justice in the entire waste management stream, particularly of workers handling waste, is crucial.

Such objectives can be achieved in the following ways:

- Waste management must be decentralised and tailored to meet varying needs of different wards, especially by promoting self-sustained waste treatment methods such as composting, bio-

¹⁵ Environment Support Group, *Bangalore's Toxic Legacy: Investigating Mavallipura's Illegal Landfills*, (2010), accessible at <http://esgindia.org/sites/default/files/education/community-outreach/legal/esg-report-bangalore-toxic-legacy-jul-20.pdf>.

methanation, segregation and shredding of recyclable waste, and also promoting least generation of waste.



Waste dumped at the Mavallipura landfill.

Photo Credit: Leo F. Saldanha, 2003.

- Statutory mechanisms¹⁶ and judicial orders on waste management need to be strictly implemented. These include directives on:¹⁷
 - Decentralised governance of waste management
 - Segregation of waste at source and their management locally
 - Scientific management of legacy waste, especially by booming taking care of environmental health risks

¹⁶ These include rules such as the Solid Waste Management Rules, 2016, Plastic Waste Management Rules, 2016, Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016, Bio-medical Waste Management Rules, 2016, E-Waste Management Rules, 2016, and Construction and Demolition Waste Management Rules, 2016.

¹⁷ The detailed orders of the High Court of Karnataka in W.P. No. 46523/2012 c/w W.P. No. 24739 of 2012 can be accessed at <https://drive.google.com/file/d/1aF6-Erg25VAYNkwyLNHSLuhxBzIFYMt/view>.

- Awareness-building on waste minimisation and incentivising waste recycling locally
- Ensuring local and regional waste processing plants function effectively
- Acknowledging role of pourakarmikas and other informal waste workers in management of the waste stream and treating them with dignity
- Job security and occupational health of waste management workers must be guaranteed. Their social mobility should be assured by ensuring they receive good wages, and also access to free housing, health and education, benefits that must be extended to their families.
- Corporate waste producers (especially consumer goods manufacturers) must be required to take back and recycle waste generated in the city.

Educational initiatives

Consistent environmental education and awareness-building are essential to foster public participation in environmentally wise and sustainable governance, and this must take place on multiple fronts:

- Education curricula must include a holistic understanding of human ecology and environmental consequences of human activities, incorporating practical learning of how to heal the planet.¹⁸ Encouraging children, both urban and rural, to learn to grow their own food is one example.
- The public at large must be educated on prudent consumption and need for reducing waste generation. The importance of segregation and processing of waste at source, promoting waste handling and

¹⁸ An example of popularizing environmental communication is ESG's environmental film *Nagara Nyrmalya*, accessible here: <https://esgindia.org/new/?s=Nagara+nyrmalya>

treatment to recover value from waste as and where generated, needs emphasis.

- A comprehensive and consistent strategy must be adopted to educate communities on environmental laws and norms and promotion of sustainable practices. Some ways for this could be through educating on prudent use of water, energy and material, and by organising local level experiential workshops, nature trails, etc.



“How to understand and comment on the Revised Draft Master Plan 2031 for Bengaluru”: A workshop conducted by ESG in 2017.

Photo credit: ESG

Part II: Building Climate-Resilient and Inclusive Infrastructure for Bengaluru

Cities are an amalgamation of a diversity of ideas, peoples, places, networks, cultures, landscapes, flora and fauna. It is critical that all aspects of infrastructure, including housing, commercial spaces, mobility and energy are designed in a socially just and ecologically sound manner, protecting the city's cultural heritage. This will make substantial contribution in promoting resilience to impacts of climate change from extreme weather events, and mitigating natural and planning disasters.

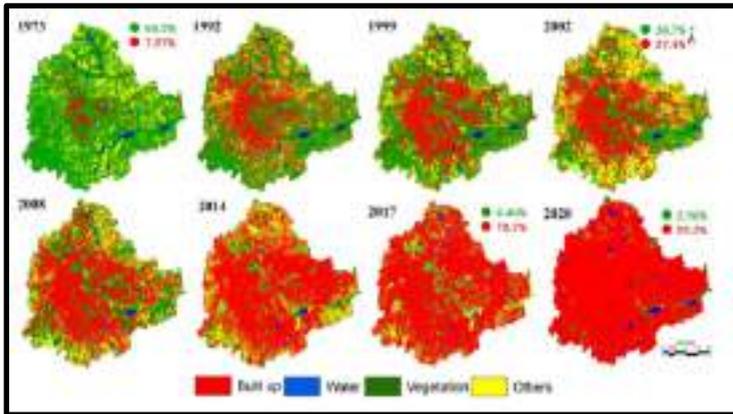
Impacts of climate change vary across neighbourhoods of the city and amongst various socio-economic groups. It is important to address such unique needs and challenges that arise specifically when planning infrastructure to climate change.

The idea of a climate resilient city should never be separated from the idea of people friendly cities. Some key steps to align these objectives are:

- Planning should be a process where local communities can engage through Ward Committees to envision their futures, and collation of such imaginaries must shape the visions for the metropolis, as is required by the Nagarpalika Act, 1992.¹⁹
- The planning approach should be to encourage jobs that maximise distribution of wealth, increase social capital and decrease carbon emissions. It should also be carefully woven into providing housing for all, of a reasonably good and healthy quality, for every resident of the metropolis.

¹⁹ Constitution 74th Amendment (Nagarpalika) Act, 1992.

- To create a sustainable city, appropriate and affordable housing of the large and migrant workforces is imperative.
- Decentralised governance bodies like ward committees must undertake local surveys and conduct local consultations to understand various social, public health and environmental needs of different socio-economic sections of the population within their jurisdiction.
- Ward-level plans must evolve from this process. When there are inter-ward issues and concerns that need to be addressed, the process must ensure every affected ward has had its fair share of participation in the evolution of the scheme.
- New infrastructure projects, including residential and commercial complexes, should also be planned with due consultation with communities from the ward-level up and considering comprehensively their environmental and social impacts.
- Every effort should be made to avoid needless destruction of the built environment, particularly heritage spaces. Greenery, open spaces and the commons must be protected for posterity.
- The expansion of the metropolis should be so planned that it ensures interconnectivity of commons, such as watersheds, forests, lakes and *kaluves*.



*Changing land use dynamics in Bangalore.
Envis -Sahyadri Environmental Information System et al (2017).*

Designing less resource-intensive built environment

Green techniques in construction, intelligent use of energy and substantial use of local material must be incentivised and incorporated into the city's building bye-laws.²⁰ These could include:

- Substituting water and energy intensive materials with natural and locally available materials for buildings
- Efficient material and water management at construction sites
- Ensuring water prudence, particularly by using low-flow fixtures in toilets and kitchens
- Promoting landscaping with low water requirements and inclusion of natural elements, and promoting green-roofing

²⁰ This must be done by comprehensively updating the Bangalore Mahanagara Palike Building Bye-Laws, 2003.

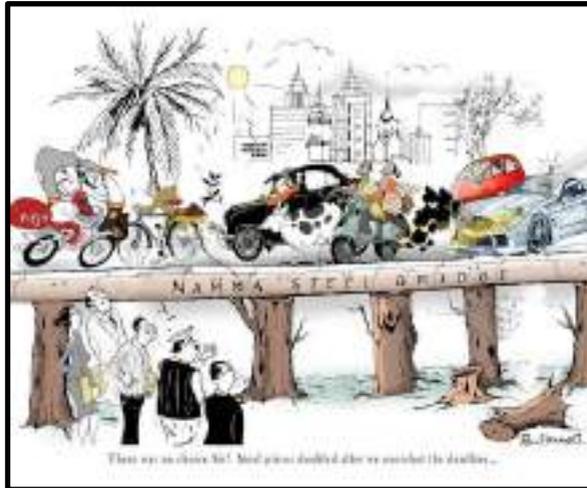
- Promoting incorporation of vertical green spaces for low income housing projects
- Making efforts to redevelop and repurposing old buildings instead of constructing new ones
- Substantially advance the use of natural light and ventilation in all buildings

Promoting inclusive and climate-friendly mobility

Mobility is a direct contributor to emission of greenhouse gases, besides adding various toxic pollutants that greatly affect public health. Cities are being designed and redeveloped primarily for automobiles, resulting in destructive infrastructure projects such as road widening and flyovers. Such infrastructure threatens the livelihoods of various constituencies that depend on streets as commons for their livelihoods, such as street vendors, and also destroys the character and greenery of the city. Moreover, it contributes to increase in energy use, and consequent heat islands,²¹ which in turn further induces high energy dependence.

It is critical to forestage public transport as the main mode of mobility for all by ensuring it is accessible everywhere, affordable to everyone – especially poor and working classes, and by guaranteeing safety and comfort of all users, particularly women, children, the elderly, and the differently abled.

²¹ See K C Deepika, *Urban green spaces in Bengaluru are 2.23 degree Celsius cooler: Study*, The Hindu, 8th April 2021, accessible at: <https://www.thehindu.com/news/cities/bangalore/urban-green-spaces-in-bengaluru-are-223-degree-celsius-cooler-study/article34273584.ece>



*Steel flyovers are not the way forward.
Illustration: Paul Fernandes*

- Organisations should be incentivised to adopt work-from-home practices to reduce the carbon footprint of mobility and also reducing air and noise pollution through traffic congestion.
- Efforts must be constantly made to stagger flexible timings of various sectors, corporate bodies, schools, etc. to reduce congestion. Efforts must also be made to assist employee housing close to the workplace as far as possible.
- A comprehensive public mobility plan needs to be created integrating the bus, metro and suburban railway effectively with various other privately extended public transport services such as auto rickshaws and taxis, to facilitate seamless transition and ease of commuting.
- Public transport, especially through buses, must be promoted and prioritised through a variety of measures such as:
 - Enhancing infrastructure for buses

- Introducing bus priority lanes on all major roads
- Making bus fares affordable
- Widening the network of buses to reach out to neighbourhoods which currently do not have easy access to public transport
- Increasing Bengaluru Metropolitan Transport Corporation's (BMTCL) fleet size, and ensuring new buses run on cleaner fuels and/or renewable energy
- Imposing an environmental cess on personal vehicles that enter the central business district to disincentive their use, and use the fund to build and expand bus infrastructure.
- Working conditions of public transport workers must be improved in consultation with unions.
- Walking and cycling must be made safe and possible everywhere.
- Infrastructure for non-motorised transport must be incentivised, through measures such as:
 - Introduction and regular maintenance of dedicated bicycle lanes, footpaths, and pedestrian crossings
 - Planting shade-giving avenue trees to encourage more walking, cycling, and street vending which also helps increase street security, while decreasing heat island effects
 - Assigning priority of movement and right-of-way privileging non-motorised transport first, public transport second, and private mobility last.
- All types of highly polluting, high space and low occupancy vehicles need to be discouraged.
- Measures such as congestion charging, the odd-even rule, a strict parking policy, and slashing speed limits need to be adopted to improve smooth flows of traffic, and substantially reduce air and noise pollution.



*A clear cut case for prioritising bus lanes.
Illustration: Dasarathi G. V*

- Busy areas and market streets should be pedestrianised while ensuring safety of walkers.
- Multi-agency coordination for safe, environmentally friendly and economically viable urban mobility needs to be integrated with efforts to tackle climate change. This can be achieved through representative decision-making involving citizens' groups, such as those representing commuters' interests, and the public at large.

Reforming energy production and consumption

It is imperative that transition to environmentally viable renewable energy must be undertaken in a manner that is socially just and ecologically sound. It is simultaneously

critical that frugal use of energy becomes fundamental to building and use of built environment. How we travel, work, and live must be based on maximising energy efficiency.

Ensuring a just transition to renewable energy

- Decentralisation of energy production, particularly adopting appropriate solar energy systems, can bring greater equity in access and distribution of energy, and also avoid adverse socio-ecological impacts, particularly from utility-scale solar parks.²²
- Farmers must be encouraged to avail the PM-KUSUM scheme for solarisation of irrigation pumps by building awareness about savings in power-purchase and transmission costs.²³ Such easing in demand of electricity will also increase its accessibility and affordability by all.
- Electricity distribution agencies like BESCOM must incentivise rooftop solar generation amongst construction companies, contractors and architects.
- Households, especially those of middle class and low income communities, must be provided additional support in such transitioning by extending technology support and subsidies.
- The use of the wet waste fraction from municipal solid in generating energy through biomethanation plants must be promoted.
- Incineration of dry/mixed waste should be rejected as it releases highly toxic dioxins and furans into the air, and the power generated is also super expensive.

²² See Bhargavi Rao, *How just is the transition to solar?*, Law School Policy Review, 18 March 2019, accessible at <https://lawschoolpolicyreview.com/2019/03/18/how-just-is-the-transition-to-solar/>.

²³ Ministry of New and Renewable Energy, *Guidelines for Implementation of the Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan*, 22 July 2019, accessible at <https://mnre.gov.in/img/documents/uploads/8065c8f7b9614c5ab2e8a7e30dfc29d5.pdf>.



*Discarded solar panels repurposed as a table top and notice board.
Photo Credit: Mr. Chockalingam*

- Solar waste processing plants need to be set up to promote refurbishing of e-waste from solar panels into furniture, etc.

Reducing energy consumption and increasing energy efficiency

- The price of energy should be staggered based on consumption, to disincentivise wasteful use of electricity.
- Building codes must institute the promotion of green buildings that are energy efficient.
- Creating localised markets, provisioning of daily needs close to home, promotion of green lighting, are some of the ways of advancing sustainable use of renewable energy.

Conclusion

The proposals submitted above are sectoral and suggestive. They are clearly not comprehensive. They are meant to inspire and make real involvement of local communities and local governments in advancing such ways of managing cities to make them climate friendly and socially just.

We suggest that the actions proposed could be undertaken as part of an integrated deeply democratic governance mechanism of BBMP in conformance with Article 243 ZD/E of the Indian Constitution.²⁴ Such a process would involve the oversight of representative Metropolitan Planning Committee. In addition, the following steps are needed to make Bengaluru climate friendly:

- The institution of an inter-departmental/inter-agency coordination committee to oversee conceptualisation, formalisation and implementation of Bengaluru's climate action plan
- Such a plan should be evolved based on ground-up discussions and debate at the Area Sabha and Ward Committee levels, so that it could be part of evolving Ward-level scheme as envisaged in Section 13I and 13G of the Karnataka Municipal Corporation Act, 1976.²⁵
- The plan so evolved would serve as a model for other districts and cities across Karnataka so they too could evolve such climate action plans. It is possible to imagine that a collation of such district/city climate

²⁴ Article 243ZE provides for a Metropolitan Planning Committee in every metropolitan area to prepare a draft development plan for the Metropolitan area as a whole.

²⁵ Section 13I of the Karnataka Municipal Corporations Act, 1976 pertains to the functions of Ward Committees. Section 13G pertains to the duties and functions of Area Sabhas. Under the BBMP Act, 2020, the functions of the Ward Committees are dealt with under Section 86 and those of Area Sabhas under Section 93. The Bruhat Bengaluru Mahanagara Palike Act, 2020 envisages similar action under Sections 86 and 93.

action plans,²⁶ developed to meet the object of the Articles 243ZD and 243ZE of the Constitution, can also be an exercise that deepens and matures democratic decision making.²⁷ Such a process can thus help inform, reform and update Karnataka State's Climate Action Plan and through democratic mechanisms.

- The process of keeping such plans relevant and responsive to emergent needs will require that constant review by Panchayat Raj and Nagarpalika institutions, and the oversight of agencies such as Karnataka Department of Forest, Ecology and Environment, the Karnataka State Disaster Management Authority, Karnataka State Pollution Control Board, the Karnataka Forest Department, Karnataka Town and Country Planning Department, Karnataka Tank Conservation and Development Authority, Karnataka Water Resources Department, Karnataka Energy Department, Karnataka Revenue Department, Police Department, etc.
- Such plans, collated at the state level, could be presented as the state's contribution to National Climate Action Strategy and consequent compliance with India's commitments to the Nationally Determined Contributions under the Paris Agreement.
- Strengthening participation through awareness and capacity-building of the wide public should be a consistent part of the city's and state's climate action initiatives.

The credibility of any climate action plan is a combination of deeply democratic processes and rational decision-making backed by an evolving scientific understanding of the impacts and implications of global warming. A useful index for success would be to compare progress of implementation of the plans

²⁶ Karnataka consists of 31 districts grouped into 4 administrative divisions: Bengaluru, Belgaum, Kalaburgi (Gulbarga) and Mysore.

²⁷ Article 243ZD of the Indian Constitution provides for District Planning Committees in every district to consolidate the plans prepared by the Panchayats and the Municipalities in the district and prepare a development plan for the district as a whole.

across cities, towns and districts with mapping of their greenhouse gas emissions and mitigation measures taken. Such localisation of understanding of how each district and city contributes to global warming will also hasten adoption of responsibilities to limit the damage being done, and locally.

To conclude, we stress that all such measures need to be accountable and transparent at all levels. This would require governmental authorities and agencies setting high standards of transparency and accountability by constantly sharing information with the public of its own accord. Systematising such mechanisms will also compel the corporate sector to follow suit.

Over time it is possible to imagine everyone needs to be involved and everyone has due responsibility, in tackling climate change.

For there is NO PLANET B.



Climate Action Protest in Bangalore during May 2019.

Photo courtesy: The News Minute

Week 1: Inaugural Session.



Mr. Ganesh Gupta, IAS
Administrator, BBMP



Ms. Soumya Reddy, MLA
Bengaluru



Dr. S.R. Venkatre Gowda, IPS
Joint Commissioner, DCP YSRV



Mr. Srinivasulu, IPS
Member, BBMP



Ms. Anjali Dattini
Nurtur, Bengaluru

Week 2: Public Health, Sanitation And Waste Management: Is A Decentralized Approach The Way Out?



Sri Bandaru D. Lakshmi
Special Commissioner, SDA & Urban, BBMP



Sri S. Venkatesh Shekar
Chief Executive Officer, BBMP



Sri. Srinivas
Chief Sanitation Officer, Bengaluru



Smt. Gangamma
BBMP, Prakashnagar, Bengaluru



Smt. Shobana Gir Varadar
Member, BBMP



Dr. Shivaji Prasad Tanna
Member, BBMP



Mahayati Krishnan
BBMP, Prakashnagar, Bengaluru

Week 3: Making Bengaluru Water Secure.



Mr. S. R. Ashwaj, IAS
Principal Secretary, COPD, Govt



Mr. A. R. Shykhumar
Former Director, ICIST,
Indian Institute of Science



Ar. Neelam Manjunath
Founder, Centre for Green Building
Materials and Technology



Ms. Jayna Rathi
Senior Associate, Supreme Court of India



Mr. Sagar Nambiar
Deputy Resident



Ms. Rama Kumar
Director, BSRM College

Week 4: Food For Thought. Towards an environmentally sustainable and socially just food system.



Dr. T.R. Purnan Rajendran
The Tamil Nadu Agricultural University,
Coimbatore



Mr. A.R. Chirappu
Co-ordinator, Karnataka Organic
Farmers



Ms. Yashini Padmanabhan
Consultant, Organic Farm Systems



Dr. Rajaling Gita
State Head, Karnataka Certified
Agricultural Network

Week 5: Securing Biodiversity Rich, Healthy, Socially Inclusive and Economically viable commons in Bengaluru.



Mr. Anant Hegde
Chairman,
Karnataka Biodiversity Board, Srir



Ms. Hema K.
Past Member, S.A.P.M.,
Climate Matters



Dr. S. Subramanya
Methodologist & Technical Specialist



Dr. Nandhya
Governed Professor,
Bengaluru Chapter

Week 6: Making Bengaluru Energy Independent.



Mr. H. D. Rajesh Gowda
MD, Planning Division, SEDCOA



Mr. Nagesh Hegde
Former Senior, Sustainable Program



Mr. Chokkalingam
Member, Green Bengaluru



Dr. Tajal Karthik
Associate Professor, IISc, Bengaluru

Week 7: Securing Clean Air and Inclusive Mobility for Bengaluru.



Dr. Ashish Verma

Convener, IISc Sustainable Transportation Lab



Mahesh Kashyap

Air and Noise Pollution Expert



Vinay Sreenivasa

Bengaluru Bus Playaratoro Verifier

Week 8: Securing Clean Air and Inclusive Mobility for Bengaluru.



Mr. Vijay S. Harimogil

Founding Partner, vishy@PRUSS



Ms. Tara Kishorewastey

Co-founder, Citizens for Bengaluru



Dr. Jyotsna Jha

Director, Centre for Budget and Policy Studies



Mr. B. Ganesh

President, Sudhina Film Society

Week 9: Consolidating Visions for Bengaluru's Climate Action Plan.



Dr. Janki Nair

Retired Professor of History, INU



Ms. Vandita Sharma

IAS, Additional Chief Secretary/ Development Commissioner, Government of Karnataka



Mr. Prem Chandavarkar

Managing Partner
DRT Architects, Bengaluru

This report is the outcome of collective efforts of Shrestha Chowdhury, Malvika Kaushik, Ashwin Lobo, Karthik Anjannapa, Ayush Joshi, Sana Huque and Satvika Krishnan, with inputs from Leo Saldanha and Bhargavi S. Rao.

Kannada Translation: Rajashekhar Akki and Eshwarappa M.

This report is also available in Kannada.

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Please follow outcomes of
Bengaluru's Climate Action Plan
Making it Participatory and Inclusive
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