

# HIGHLIGHTS OF CONFERENCE ON “CLIMATE CRISIS: ACTION FOR TROPICAL COASTAL CITIES”

27-28 February, Taj Mahal Hotel, Mumbai

The ‘Strategic Partnerships for the Implementation of the Paris Agreement’ (SPIPA) project funded by the European Union (EU) and the Federal Minister for the Environment, Nature Conservation, and Nuclear Safety (BMU) organised a two-day conference titled “Climate Crisis: Action For Coastal Cities” in partnership with Mumbai First, a not-for-profit organization. The conference was organized in collaboration with the Ministry of Environment, Forests and Climate Change (MoEFCC), the Government of Maharashtra, Municipal Corporation of Greater Mumbai (MCGM) and National Environmental Engineering Research Institute (NEERI). The conference comprised of six technical sessions with presentations, followed by panel discussion and facilitated interaction with the audience.

This conference involved participation from around 200 stakeholder including key government department representatives, scientific experts, social workers, practitioners, students and citizens. The main objectives of the conference were:

1. To highlight the significance of city level action plans for addressing adverse impacts of climate change by showcasing best practices from both Indian and the European cities.
2. To enable exchange of learning and experiences from tropical coastal cities in India (Surat, Cochin and Trivandrum) and the cities in Europe (Venice, Italy) on policy and technical interventions to tackle adverse impacts of climate change particularly urban flooding.
3. To enable development of new initiatives for collaboration among stakeholders from India and EU on issues related to climate change.

## The relevant takeaways from the conference are as follows:

- The event contributed to increased awareness on the impacts of climate change on coastal cities including increased frequency of flooding, higher extreme temperatures, higher vulnerability of low-income households and adaptation measures based on case studies from Europe and India.
- Mumbai became the 16<sup>th</sup> Indian city to join the initiative of Global Covenant of Mayors for Climate and Energy (GCOM) thus committing to enhanced climate action. <https://www.globalcovenantofmayors.org/>
- The Financing Sustainable And Climate Resilient Urban Development In India Manual was released, developed by the European Union International Urban Cooperation programme.
- McKinsey report on ‘Impact of Climate Change on Coastal Cities’ was also released during the inaugural session highlighting the adverse impacts of climate change including high temperatures, flooding, reduction in food production etc along with measures that can address these challenges.

<https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/Climate%20risk%20and%20response%20Physical%20hazards%20and%20socioeconomic%20impacts/MGI-Climate-risk-and-response-Full-report-vF.ashx>

## Key learnings from technical sessions of the conference are as follows:

### 1. Addressing Urban Flooding Linked to Climate Change in tropical coastal cities

- The Mumbai Metropolitan Region (MMR), suffers from chronic flooding and a cyclic loss of property, productivity and human life due to extreme rainfall events like the ones that occurred in 2005 and 2019.
- This region is especially vulnerable, given its high population densities, and large investments situated in low lying areas, and predominantly reclaimed land that is surrounded by the ocean on three sides

- The long-term economic benefits of investing in coastal protection structures as an adaptation strategy will benefit 90% of coastal population
- Multi-level flood risk reduction approach involving flood protection, flood robust spatial planning, effective early flood warning and emergency action plans should be promoted.
- Digital technological solutions like a flash flood forecaster: a web based early warning alert tool, Tsunami and Cyclone modelling tool (TCM) and Flood risk economic damage (FRED) tools etc. were presented.
- Case studies of practical solutions in the cities of London, Hamburg, Venice and Indian cities including Trivandrum and Surat were presented.
- Need for cities to include climate change issues in urban planning along with allocating enough financial and technical resources to implement the relevant adaptation options was highlighted.

## **2. Enabling Climate Adaptation through Finance and Policies**

- Presently most development and infrastructure projects do not consider climate risks which increases the risk of project failure,
- Refurbishing and retrofitting the existing infrastructure can also play a very crucial role in enhancing resilience with minimum investment.
- Natural solutions for climate change adaptation are better than finance intensive high-tech engineering solutions considering their indirect benefits in enhancing resilience
- There is a need for supportive policies to encourage mobilization of private sector financing for adaptation and climate proofing
- 'Blended Finance models' which involves combining government grant finance with long term investments from the private sector
- Green Bonds is another instrument that could be used for mobilizing finance for climate change adaptation and climate proofing

## **3. Climate Change and Human Health and Ecological Aspects**

- Climate change is a multiplier of existing health vulnerabilities.
- Insufficient access to safe water, improved sanitation, food insecurity, limited access to health care and education further increases adverse impacts of climate change.
- Climate change is projected to increase the burden of malnutrition with the highest impact expected on children.
- There is an urgent need for scaling up of integrated disease surveillance program and capacity building activities for different stakeholders.
- Unique marine ecosystems in inter-tidal zone and rich biodiversity are under threats posed by the development projects in the coastal cities.

## **4. Addressing vulnerability of Low-Income communities:**

- Low income households face significant challenges due to climate change as they have limited adaptive capacity
- As around 55% of the Mumbai Metropolitan Region (MMR) population lives in informal housing and have poor access to basic urban services they are very adversely impacted due to extreme weather events and climatic conditions
- As the population in urban centres becomes denser, climate change impacts such as heatwaves, water scarcity, and floods could make the standard of living in cities fall drastically, especially for the poor.
- This will threaten the lives of millions of people and make outdoor work, which accounts for about half of GDP today, far more challenging.
- Measures including early-warning systems, cooling shelters to protect those without air-conditioning, shifting working hours for outdoor workers and implementation of albedo heat-

management efforts should be implemented to reduce the adverse impacts of climate change on vulnerable populations.

- Women are more vulnerable to adverse impacts of climate change and have an important role in increasing the resilience.
- Considering social justice and gender equality by including gender issues in urban planning, gender budgeting and promoting involvement of women in climate action is urgently required.

The inaugural session involved address by Mr. Ugo Astuto, European Union Ambassador to India highlighting the collaboration between EU and India in the area of climate mitigation and adaptation, including the SPIPA project. He referred specifically to the European Green Deal with the objective to have a climate neutral Europe by 2050. Mr. Shirish Sankhe from McKinsey India presented key points from the report published by McKinsey titled 'Impact of Climate Change on Coastal Cities' highlighting the adverse impacts of climate change expected in Mumbai by 2030 and 2050 in case adaptation measures are not implemented. Mr. Praveen Pardeshi, Municipal Commissioner, Municipal Corporation of Greater Mumbai (MCGM) delivered a presentation on the climate change related challenges being faced by the city of Mumbai and its plans to address those challenges. He also shared the ambitions plans of Mumbai to move towards a circular and low carbon economy in addition to measures for building resilience at the city level. The Municipal Commissioner on behalf of the city of Mumbai also signed the Global Covenant of Mayors for Climate and Energy (GCOM) commitment. Thus, Mumbai is now part of an international coalition of cities committed to raising the global ambition for climate action. The inaugural session was followed by a panel discussion of Consul Generals of Netherlands, Italy and Sweden. They shared information about the initiatives in their respective countries and strategies that can be replicated in Indian coastal cities for adapting to the risks posed by climate change.

The first technical session started with a presentation about the SPIPA project activities by Mr. Edwin Koekoek, Counsellor - Energy & Climate Action, EU Delegation to India. The topic of the first technical session was 'Urban Flooding and Risk Management in Coastal Cities. Scientific Evidence and Policy Review'. The session was moderated by Dr. Ashish Chaturvedi, Director-Climate Change, GIZ-India. It involved presentations from Dr. Alexander Bisaro from Global Climate Forum highlighting that adaptation financing across several cities has reasonable return on investment and should be promoted. The session included a presentation on technological solutions for urban flooding by Mr. Vikas Goyal, Director Resilience & Water, from RoyalhaskoningDHV India which has developed a Flash Flood Warning App Service that provides precipitation images, 24-hour rainfall forecast and the flash flood information. He presented other tools including Cyclone and Tsunami models and X-band radar systems with resolution of 100 m for urban flooding related early warning systems followed by panel discussion.

The second technical session was focused on "City Climate Action Plans – Best Practice" where case study of water plaza being implemented in Surat was presented by Dr. Jagdish Patel, the Mayor of Surat and Mr. Dipak Gandhi, Executive Engineer of Surat. Case study of operation Anantha from Trivandrum involving revival of city level drainage system using historical maps was highlighted by Mr. Jiji Thomson, Former Chief Secretary, Government of Kerala. The initiative is now being replicated across several cities in Kerala. Dr. Umgiesser Georg, Senior Scientist, ISMAR presented case study of Venice and shared example of "mobile barriers: MOSE" which has been implemented to address climate change linked urban flooding in Venice. Dr. Philipp Rode, LSE Cities presented case studies of cities focusing on promoting public transport and urban planning focusing on developing resilience to climate change.

The third session chaired by Dr. Rakesh Kumar, Director, NEERI focused on specific issues facing the city of Mumbai. Mr. Sanjay Bhatia, Chairman, Mumbai Port Trust highlighted measures like allocation of open areas and development of water bodies to address challenges related to urban flooding. The session involved presentation from Dr. Mohanasundar Radhakrishnan, IHE Delft emphasizing the essential principles for urban adaptation including flexible adaptation responses, models to enable understanding and decision making and need for stakeholders to work and learn together. Mr. Mahesh Narvekar, Disaster

Management Unit of MCGM presented the disaster management planning process and preparedness in Mumbai. Prof. Kapil Gupta from IIT Mumbai presented about non-structural measures like using sensors for rainfall, water level and flow measurement to trigger alerts and structural measures to address urban flooding linked to climate change. The panellists concluded that climate risk-informed planning should be an integral part of the development plan of Mumbai.

Day two of the conference started with the technical session on 'Enabling climate adaptation through finance and policies' chaired and moderated by Mr. Ajay Deshpande, Ex-Member, Maharashtra Pollution Control Board. Dr Donal Cannon, Head of European Investment Bank in South Asia talked about legal frameworks and strategies for mobilising finance for disaster resilience in infrastructure sector. He concluded that prevention is not only better than cure, it's cheaper too. Ms. Naman Gupta, Climate change advisor, Government of Maharashtra presented the vulnerability assessment of the State of Maharashtra to climate change. She emphasised on the need of realigning development strategies to address new vulnerabilities posed by the climate change. She highlighted measures like integrated coastal zone management plan, ban on single-use plastics, water for all campaign, village level water budgeting, state action plan on water, water literacy campaign etc. Mr. Anirban Ghosh, Chief Sustainability Officer, Mahindra group highlighted that new development plans should consider future risks along with the learnings from dealing with the extreme weather events in the past. He further emphasized on the need to protect natural ecosystems like Mangroves that help address adverse impacts of climate change.

The next session focused on "Ecological Impacts –Human Health and Marine Life". Ms. Shweta Wagh, Associate Professor KRVA highlighted the importance of local community consultations prior to commissioning any major infrastructure projects like coastal roads. Mr. Pradip Patade, representing an NGO called Marine Life of Mumbai talked about his journey of documenting unique marine ecosystem in inter-tidal zone of Mumbai coast through photographs for the past 15 years. From a conservationist point of view, he expressed his concerns on losing out on this rich biodiversity for the development projects. Dr. Amita Athavale, Professor & Head of Department (HoD) - Pulmonary Medicine and Environmental Pollution Research Centre, KEM Hospital shared information about health risks due to adverse impacts of climate change. She emphasised on the need for creating awareness and public participation in fighting vector borne diseases the spread of which is being accelerated due to climate change.

The next session on "Urban Climates – Group specific vulnerabilities" focused on issues related to climate change impact on urban poor, women and youth. Dr. Janaki Andharia, Dean, Jamsetji Tata School of Disaster Studies highlighted that out of 22 million people in Mumbai 55% are residing in slums with limited or no access to basic amenities like toilets, water supply electricity etc.. Therefore, there is a need to focus on adaptation measures addressing the needs of urban poor. Ms. Shloka Nath, Executive Director, India Climate Collaborative (ICC) presented about the linkage between air pollution and climate change. She informed that ICC aims to serve as a catalytic platform that helps build a broader community around climate and development in India with involvement of private sector. Dr Nandita Shah from Akshara Centre highlighted the need to consider social justice and gender equality by considering gender issues in urban planning, focusing on gender budgeting and promoting involvement of women in climate action.

In the Valedictory Session Dr. Naresh Kumar, Director, NEERI presented key highlights and learning from all sessions organized as part of the conference. Mr. Nadir Godrej, Managing Director, Godrej Industries Ltd. addressed the conference highlighting the need for avoiding the adverse impacts of climate change through implementation of mitigation measures while preparing for adaptation to unavoidable changes.

Photographs from the Conference on “Climate Crisis: Action for Tropical Coastal Cities”:



Video Recording of the Conference:

Day 1: <https://www.youtube.com/watch?v=I5KLTj5sDns>

Day 2: <https://www.youtube.com/watch?v=1CyC28z6fTI>

## Media Coverage:

<https://www.theweek.in/news/india/2020/02/27/climate-crisis-conclave-in-mumbai-focuses-on-significance-of-coastal-roads.html>

<https://www.hindustantimes.com/cities/mumbai-and-its-suburbs-are-vulnerable-to-climate-change/story-umGXMYnhTQFHTZcp8GtKuL.html>

<https://www.theweek.in/wire-updates/business/2020/02/24/pwr18-mumbai%20first.html>

<https://economictimes.indiatimes.com/news/politics-and-nation/climate-change-could-cost-indias-financial-capital-920-billion/articleshow/74387865.cms>

<https://thedraftworld.blogspot.com/2020/03/coastal-road-will-be-eco-friendly-add.html>

### 'Coastal Road will be eco-friendly, add space to Mumbai'

The Draft | [Sayaji](#) | Coastal Road, Conference, CSR, CSR-NEERI, Disaster Management, Environment, European Union, Maharashtra, MoPT, MCDM, MUFEC, NEERI

A Draft Correspondent | Mumbai

Quashing the allegations of an environmental lobby flaying the proposed Coastal Road as being 'useless' and a waste of public funds besides being 'bad for the environment' Brihanmumbai Municipal Corporation Chief Praveen Pardeshi confidently asserted, "besides building new land, by using eco-concrete material for the Coastal Road, we are actually enhancing the environment."



Mr Pardeshi was speaking at a two-day conference 'Climate Crisis: Action for Tropical Coastal Cities' organised by think tank Mumbai First that concluded on 28 February, 2020 in Mumbai. Other speakers at the conference included European Union Ambassador to India Ugo Astuto, NEERI Director Dr Rakesh Kumar, McKinsey & Co, Sr Partner Shishir Sankhe, Consul Generals of Netherlands, Italy and Sweden, NMMDA Commissioner R A Rajeev, BPT Chairman Sanjay Bhatia, Jamsetji Tata School of Disaster Studies Dean Dr Janaki Andharia, India Climate Collaborative's Executive Director Shloka Nath, industrialist Nadir Godrej, Former Chief Secretary of Kerala Jiji Thomson, LSE Cities Executive Director Dr Philipp Rode and more.

### Climate crisis conclave in Mumbai focuses on significance of coastal roads

By Priya Brinda Joshi | February 27, 2020 09:05 IST



In December last year, the Supreme Court stayed a Bombay High Court order that had granted Coastal Regulation Zone clearance granted to the southern part of Mumbai's coastal road project.

The project—estimated to cost Rs 14,000 crore—which is proposed to be a right-lane, 28.2km long freeway that would run along Mumbai's western coastline connecting Marine Lines to the south and Kandivli to the north, has been moved to construction. At present, work work has been going on despite the apex court's stay on the reconstruction work done for the BMC's ambitious coastal road project.

Speaking about the same at a climate crisis conclave hosted by Mumbai First in collaboration with the governments of Maharashtra and European Union today, Praveen Pardeshi, municipal commissioner of Mumbai, asked, "Can a population of 18 million in Mumbai survive with just 15 per cent area and public streets? Coastal roads is the only way to add space and provide transportation connectivity, given the geography of the city. Also, the project goes through a regulatory zone clearance for the marine infrastructure, which was in itself a laborious process. The risks have been factored in and we are still open if anyone wants to revisit the technicability."

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## Climate change could cost India's financial capital \$920 billion

A McKinsey study shows that economic damage incurred by Mumbai from flash floods could almost double by 2050.

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By 2050, economic damage incurred by Mumbai from flash floods could almost double, a McKinsey Global Institute report has found.

As part of an ongoing assessment, McKinsey studied the impact of a 40-year-flood — a severity that has a 1-in-40 chance of occurring any year — under a scenario of rising temperatures and sea levels by 2050.

The report found that such an event would cause damage worth \$920 billion in Mumbai in 2050, up from \$580 billion currently. The average flood water level could rise to 62cm, up from less than 50cm today, while the area of the city affected by flood would jump from 46% to 60%.

The figures were shared by Shishir Sankhe, senior partner at McKinsey, at a climate change event. He highlighted the importance of integrating climate risk into developmental planning, claiming that we are stepping outside the zone of climate stability and we are not prepared for it, reported the Times of India.

The report also found that almost 3 million people, living within a kilometre from the city's coastline (high-side line), are currently under "severe" threat from flooding, storm surges and rise in sea level.

The analysis builds on a global report titled 'Climate risk and response: Physical hazards and socioeconomic impacts' released by McKinsey & Company at the World Economic Forum in January 2020.

## Mumbai To Witness 25 Per Cent Increase In The Intensity Of Flash Floods: McKinsey India Report

A study report released by McKinsey India states that the sea level will increase by 0.8m and these changes would affect millions of Mumbaiites living along the coastline of the city.

By Anandharaj Sankar | 9:00 AM IST



The city of Mumbai is at sea, with declining environmental conditions, the report in Mumbai will increase over the next few years, a study report released by McKinsey India states that the city will witness a 25 per cent increase in the intensity of flash floods, however, it is also that the sea level will increase by 0.8m and these changes would affect millions of Mumbaiites living along the coastline of the city.

The study was presented at the first day of a conference titled Climate Crisis: Action for Tropical Coastal Cities, where officials from Mumbai signed the Global Council of Leaders for Climate and Energy (GCLCE) on Thursday, which brings leaders' voices across cities globally, raising their voice and ambition for climate action. With this event, Mumbai became the first Indian city to be a part of the GCLCE initiative.

Roberts discussed the concerns Indian and European coastal cities will face over the next few years on the pattern of climate change would be the same level, the report flooding risk management in coastal cities, ecological impact effects on human health and marine life were discussed by panelists, the city's leadership, Mumbai.

Comparing the condition of coastal cities, Dr. Shishir Sankhe, senior partner of McKinsey India, said, "We expect that by 2050 in Mumbai, less than three million people living within 1km of coastline will be affected by floods, a 0.8-metre rise in sea level, a 25-per cent increase in probability of 100 mm or more, 25% increase in the number of days with 100 mm or more of rain."

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