CLIMATE RESILIENT AND INCLUSIVE CITIES PROJECT
Triangular cooperation between Europe | South Asia | Southeast Asia

POLICY RECOMMENDATIONS

Topic 1: Sustainable Urban Development

- Strengthen climate-dependent measures for the city to adapt to floods and other risks.
- Develop patterns for Sustainable urban design to cope with the city's recovery and future urbanization (including sanitation, slums).
- Strengthen Green spaces/RTH reforestation, adaptive buildings, water catchment areas and restore marine ecosystems.

Topic 2: Circular Economy and waste

- Develop a joint program with NGOs, the population and businesses on waste management to avoid illegal dumping and water pollution.
- Develop 3Rs and waste management programs.
- Increase composting sites and work with coastal communities to reduce coastal abrasion and the depletion of the ocean.

Topic 3: Early Warning systems

- Apply the early warnings also to floods.
- Develop smart technologies.

Topic 4: Water and Sanitation

- Find technology solutions to increase the coverage of access to piped water.
- Develop cooperation to ease investment in sanitation.

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CLIMATE RESILIENT AND INCLUSIVE CITIES

Policy Brief based on the Urban Analysis Report for the city of

Mataram

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Key Features

- Mataram is a coastal city facing disasters risks, including sea-level rise, extreme waves, abrasion, earthquakes, and droughts. An earthquake in 2018 triggered a tsunami wave and resulted in human casualties, injuries, damages in large city's areas and displacements of the population.
- The city has a strong potential in tourism, but coastal areas are also located in disaster-prone areas.
- Investment is being undertaken in waste Management programs with strong potential.
- There is an opportunity to develop more preparedness and early warning for floods.

Key Numbers

- Population 486 715 inhabitants (2019)
- Surface: 61.30 km² divided into 6 district areas
- Density: 7.940 inhabitants per km²
- Population growth: 1.91% between 2010 and 2019
- Economic growth: 5,8% in 2019 (a slight decrease because of the earthquake)
- Unemployment rate: 5,51% in 2019
- Poverty rate: 8.92 % in 2019.
- Life Expectancy: 71,59 years (2019)

Key numbers on the environment:
- Air Quality Index: 88,80 (59-65 on air-quality.com)
- The water coverage was 59.2% in 2019
- Waste generated (2019): 1,106 m³/day (13% is not managed)
- Number of motorcycles: 288,894 units (82% of total vehicles)

The Urban Analysis Report identifies several key problems, challenges, and Opportunities in priority sectors:

1. Mataram is a coastal city facing disasters risks, including sea-level rise, extreme waves, abrasion, and droughts. An earthquake in 2018 (6 events), 6,9 scale located 47 km away from the city, triggered a tsunami wave and resulted in 460 deaths, 77 333 injuries, 417 529 people displaced, and 71 962 houses damaged.

2. Rivers floods also occur. More water catchment areas are needed. There are an early warning system and disaster management plans for earthquakes and tsunamis but not for floods.

3. The city has an underused potential to develop and attract tourism.

4. The slum settlements cover 97.2 ha and lack basic infrastructure and services. The city implemented 2 programs "the city without slums" and the local program, to reduce the areas of slums, including the ones devastated by the earthquake. The poverty rate is still 8.92 %.

5. The air quality is decreasing with the rise of road traffic, and although figures show that the industry affects air quality more than transportation (AQI: 88,80).

6. The solid waste tripled from 2011 to reach 1106 m³/day. The organic waste still represents 76,85% of the waste.

7. The provision of water is served through Persedora Air Minum Giri Menang (PT AMGM) a local business public-owned agency. The water coverage is only 59.2% in 2019, while others rely on drilling wells.

8. Around 5% of the population does not have access to adequate septic tanks (sanitation). Sanitation needs to be improved, as it is currently responsible for part of the river water pollution.

9. There are around 1 million daily trips to and from Mataram city.

10. The city has increased access to electricity and is investing in green energy (LEDs for public lighting) . There is a strong potential in the waste to energy project. A cooperation with Chengdu is in place.

11. The coastal areas are threatened by climate change (tidal waves, tsunamis and rise in ocean temperature), and are also prone to coastal abrasion. There is also a lack of coastal green infrastructures like mangrove, coral reefs, and seagrass beds. Coastal communities are more vulnerable.

12. There is a current program to rehabilitate slums.

Recommendations on Air Quality - Pilot4DEV and AIILSG

1. Renew the Blue Sky Program with more ambition, by scaling up commitment from the city administrations, including the engagement with the stakeholders.
2. Map the pollutants (SO2, NO2, O3, HC, CO) and the monitoring of particle matters PM 2,5 and PM 10. Specific programmes can be made to implement the measures to reduce the emission from shipping activities and from the port zone based on the guideline of European Union and International Maritime Organisation (IMO)
3. Create a health monitoring system for the vulnerable population.
4. Develop vehicles emission tests as a future green investment opportunity. Fuel quality control and new generations fuels introduction with more collaborative R & D cooperation between university and industries need to be explored with cities as LAB to pilot the programme.
5. Invest in mass transit transportation and in green lanes (for bikes, sidewalks for pedestrians).
6. Develop an Awareness Raising program targeted at the population on the impacts of traffic.
7. Invest in Green plantations able to absorb pollutants ad work jointly with the land planners.

Recommendations on Waste Management - ACR+

1. Monitor the implementation of the Zero Waste Program, highlighting challenges and opportunities to further develop it, setting proper targets and involving the whole stakeholders' ecosystem. Awareness-raising campaigns and education activities in local communities are essential elements of a comprehensive strategy. Special efforts to be given towards reaching women.
2. Prioritize the management of the organic fraction, implementing source-separated collection schemes and valorizing the treatment output (e.g. compost, digestate, biogas). This may apply both to households and businesses. Local markets and commercial areas should be put in the focus.
3. Implement source separated collection schemes for recyclables (e.g. packaging), taking into consideration the role of the informal sector.
4. Extend operational activity to maximize the capture of the generated municipal waste, focusing on settlement areas that may lack waste collection service. Introduce a set of parameters to define more precisely the waste streams under the responsibility of the local authority.
5. Revise the local taxation on waste management, introducing incentives and rewarding schemes for waste prevention and source separation.
6. Implement the life cycle thinking in waste management by going beyond the weight-centred approach. This may help to address the priority sectors assessing different impact categories (GHG emissions, land use, water consumption, etc.) and designing specific actions focused on waste prevention and reuse.
7. Effective training programme on waste management with a focus on circular pathways, innovations, technology can be prioritized to scale up the capacity towards implementing National Commitment on NDCs and other Multilateral conventions.

Recommendations on Governance and Links with Civil Society - ECOLISE

Continue the work towards more healthy livelihoods, by implementing and strengthening bottom-up approaches (such as the Musrenbang) and connect these with the local authorities, putting in place a clear and efficient channel of communication between the two. Achieve this by:

1. Trusting your people and their creative power to solve simple issues and to self-organize in order to co-create with the local authorities.
2. At the scale of neighbourhoods identifying natural leaders of the community (citizens, associations, ...) and assist them in mobilizing citizens participation, paying attention to the importance of diversity (ethnic, ideology, religious, age, gender, disabled), in the communitarian planning sessions.
3. Building trust among neighbours and building their capacity to engage actively in the development planning of their neighbourhood, sharing organizational and decision making tools such as Sociocracy 3.0 and Open Space Technology (Community and Village empowerment).
4. Invite and hire external facilitators to guide these community meetings, especially in the first years. Once the culture of meeting collaboratively is in place, the community will take the facilitation in its hands, not requiring the external input.
5. Consider the support and implementation of regular Citizen's Assemblies (3-6 per year).
6. Include children in the planning process partnering with schools, conducting regular gatherings (3-6 per year for example) to discuss their needs and desires for their villages/city. Example of Children's Parliament in India using Sociocracy.
7. Consider the support and creation of regular inquiry and reflection gatherings for women only in order to create a safe space for them to speak freely.
8. Create in the municipality the role of a "Civil servant of the citizens" - Someone whose sole function would be to regularly interact with the citizens, attend and support these meetings and communicate developments to the local government.
9. Identify and invite local NGOs to work regularly with your municipality (eg. Wahana Lingkungan Hidup Indonesia) using the Municipalities in Transition system aimed at bringing systemic thinking and a better collaboration between the two for sustainable development.
10. Create or designate public spaces outdoor and indoor for these formal meetings and for leisure activities.
11. Establish good communication channels with neighbouring municipalities and territories, so that there is a general overview and understanding of common issues, cooperation in the prevention of disasters and facilitate the replication of good practices. Create or strengthen Intermunicipal Forums or networks that meet bimonthly. These can follow, for example, the model of the Eco District or reen City program but including cultural and economic issues. Ecoregions are a good example of a model that tackles local culture, ecology and economic issues around agroecology.

Tool specific proposals

It is proposed to work jointly with the partners to **improve waste management** (Pilot4dev with ACR+), to study further waste to energy programs and the circular economy, but equally to work with the partners on the other priorities (governance and coordination, drainage and sanitation, disaster risks and early warnings, smart technologies, the rehabilitation of coastal areas and sustainable urban design, as well as on funding opportunities.

Areas for further research, indicators and expertise needed

The CRIC project could develop capacity building in governance and the coordination of different stakeholders (including experience from recovery and rebuild programs).

The CRIC partnership could extend expertise on urban design adaptive to climate change and especially floods.

There are opportunities to seek additional funds to clean the rivers' water and develop environmental awareness programs with both communities and businesses.

The project could support the restoration of the coastal areas to fight against soil abrasion, depletion of the ocean, and the displacement of the populaton.

The CRIC partnership could create more ambitious programmes to build and support blue growth opportunities in the cities and for similar cities within the project framework and for future opportunity.