

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 strong winds, floods, and other risks.
- Strengthen Green spaces/RTH reforestation, adaptive buildings, water catchment areas.
- Restore marine ecosystems.

Topic 2: Circular Economy and waste

- Develop a joint program with NGOs the population and businesses on waste management to avoid open dumping and burning of waste.
- Develop 3Rs and programs to reduce plastic use.
- Work with coastal communities to reduce coastal abrasion and the depletion of the ocean.

Topic 3: Early Warning system

- Develop contingency plans for droughts.
- Develop smart technologies to counter the disasters' impacts (flooding, landslides).

Topic 4: Water and Sanitation

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

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

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Key Features

- Located in the South-Eastern part of Indonesia (East Nusa Tenggara), Kupang city is prone to disasters such as drought, strong winds, storms houses, and land fires. The UNDP enacted a local disaster management program in 2015.
- Traffic is increasing with a proliferation of motorized vehicles and exposure to NO₂ close to roads.
- Investment is needed to strengthen access to clean water (PADAM) and sanitation.
- There is a potential to improve waste management and the reduction of plastic waste.

Key Numbers

- Population :466.193 inhabitants (2019)
- Surface: 260.12 km² divided into 6 district areas
- Density: 2.570,31 inhabitants per km²
- Population growth: 2.58 % between 2018 and 2019.
- Unemployment rate: 9,78% in 2020.
- Poverty rate: 9.22 % in 2019 (down from 10.21% in 2015)
- Life Expectancy: 71,59 years (2019)

Key numbers on the environment:

- Air Quality Index: 92,03 NO₂ exposure next to roads.
- Access to proper sanitation: 88.02%
- Waste generated: 382 m³/day (only 268 m³ can be transferred to landfills)
- Number of motorcycles: 220,303 units including 197 211 motorbikes (+ 7.1 growth between 2018 and 2019)



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Further analysis

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

1. Kupang city is vulnerable to climate disasters, including strong winds, heavy rainfall, and droughts (causing well levels to drop). The tropical storms will increase in frequency and intensity due to climate change. Strong winds are affecting tourism, food supply, shipping, property, and housing units. Drought is recurrent. The city is also prone to coastal abrasion, floods, and landslides.
2. The level of poverty is slightly declining and may be due to inflation in the transportation, communication and in the foodstuffs sectors.
3. The city has the potential to attract and to develop tourism.
4. The air Quality in Kupang is quite low (AQI is 92.03), which is classified as a medium category where it can impact the health of vulnerable groups. There is a high NO₂ exposure close to road levels.
5. Energy production relies on fossil fuels such as diesel and coal, which also impacts GHG emissions and air quality. Kerosene is still the main fuel used for cooking (above the use of wood).
6. 67% of the community in Kupang has not experienced adequate waste management. The method of open dumping is still widely used. 61.30% of the community is still burning household waste. There is also a potential in developing waste management of hazardous waste (e.g. Medical hospital waste).
7. 88.02% of the city has access to water sanitation. The quality of surface water is increasingly declining. 2% of the population uses bottled water (with the question of plastic waste), 24% access water from private wells, while others rely on the purchase from companies with water tanks.
8. Drought has become a recurring seasonal phenomenon.
9. There is a potential in strengthening waste management and 3Rs at the household level, to rehabilitate mangrove areas, to increase water catchment areas, to strengthen engagement, and to find a drought emergency response.
10. There is a potential in developing a master plan for clean water and sanitation to know the length of the water distribution network, in developing a master plan on the city's drainage, and in controlling the private sector's use of groundwater.
11. Kupang is highly dependent on diesel and coal for power. There is a strong potential in developing solar energy, solar power, biomass stoves, and the use of biogas digester through 3R systems and garbage banks.
12. Food supply is at stake during the dry season.

Policy recommendations

Recommendations on Air Quality - [Pilot4DEV and AILSG](#)

1. Map the impacts of coal production and cooking stoves on the air quality, implementations of effective pollution control measure during the mining, coal beneficiation and processing would be desirable for effective control of black carbon. Effective programme could be formulated to study the impact of household energy derived from coal, biomass and solid fuels More improved cookstoves with options of low carbon fuels could be financed to address environmental health (a crowdfunding option would be possible).
2. Prevent the households' burning of waste by informing the population about the health hazards it represents, More structured studies needs to be commissioned by cities to study and formulate effective strategies to address the issues of environmental health due to solid fuel burning.
3. Map the pollutants (SO₂, NO₂, O₃, HC, CO) and the monitoring of Particle matters PM 2,5 and PM 10.
4. Create a health monitoring system for the vulnerable population.
5. Develop vehicles emission tests as a future green investment opportunity.
6. Invest in mass transit transportation and in green lanes (for bikes, sidewalks for pedestrians).
7. Develop an Awareness Raising program with the population regarding air pollution and its impact on health.
8. Invest in Green plantations able to absorb pollutants and work jointly with the land planners.

Recommendations on Waste Management - [ACR+ and AILSG](#)

1. Raise the awareness and implement educational activities in communities about waste management are crucial, engaging the whole stakeholder ecosystem with special efforts to be given towards reaching women.
2. Prioritize the management of the organic fraction, implementing source-separated collection schemes and valorising the treatment output (e.g. compost, digestate, biogas). This may apply both to households and businesses.
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 maximise 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. Develop a circular economy action plan may help to change the perspective with regards to waste management. As part of the plan, the promotion of low carbon-intensive initiatives is essential to attract investments. It would be desirable to identify and map the plastic and solid waste hotspots within the cities and to address the programme to eliminate plastic by signing circular pact as multi-stakeholder initiative.
7. Implement the life cycle thinking in waste management, by going beyond the weight-centred approach. There is a need for waste policies to take into account "upstream" opportunities for reducing waste generation at the source. Thus, life cycle studies should explore further this direction to enable a reflection on how to introduce the idea of demand-side management alongside recycling and improved handling of the waste finally produced.

Policy recommendations

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](#).
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 using the [Municipalities in Transition system](#) aimed at bringing systemic thinking and 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 [Ecoregions](#) that tackle local culture, ecology and economic issues around agroecology.

Tool specific proposals

It is proposed to work with the partners to improve **water and sanitation and the involvement of stakeholders (ECOLISE)**, waste management and the reduction of the use of plastics, disaster risks and early warnings, smart technologies, possibly on a **drought disaster management plan**, the rehabilitation of coastal areas, the sustainable urban design, and the funding opportunities.

Areas for further research, indicators and expertise needed

- The CRIC partnership could develop capacity building in governance and the coordination of stakeholders.
- The project could support expertise on urban design adaptive to climate change and especially strong winds and droughts.
- The CRIC partners could seek additional funds to develop pilot actions.
- CRIC could equally support to set up environmental awareness programs with both communities and businesses.
- The city has a strong potential in green energy.
- The partners could also study further together with the experts, how to strengthen the restoration of the coastal areas and the fight against soil abrasion.

CRIC Project is co-funded by European Union, and implemented by the following partners:

