

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 disaster risks and climate events.
- Strengthen Green spaces/RTH reforestation, adaptive buildings, and the drainage system.
- Replete and protect marine ecosystems.
- Find smart, inter-island transportation solutions.

Topic 2: Circular Economy and waste

- Develop a joint program with NGOs the population and businesses on waste management to avoid open dumping of waste.
- Strengthen 3Rs programs and waste banks.
- Work with coastal communities to further reinforce coastal areas and relaunch mangroves and seagrass beds restoration.

Topic 3: Early Warning systems

- Strengthen the contingency plans for droughts, floods, earthquakes, landslides, storms, and the volcano.
- Develop smart technologies for preparedness and recovery (flooding, landslides).

Topic 4: Water and Sanitation

- Develop cooperation to ease investment in infrastructure.
- Work with the current sanitation programs to reduce water pollution (from waste and wastewater).
- Work with communities.

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

Coordinated by: [PILOT4DEV](#)

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Key Features

- Ternate is an island city spanning 8 islands (3 are not inhabited).
- Ternate Island is the main island. It is a major transportation and trading hub for the province of North Maluku and East Indonesia.
- Ternate is in the first 6 areas with the highest potential for disaster in Indonesia (an active volcano, floods, earthquakes, landslides, storms, floods) and needs strengthening in early warning systems.
- The city has a strong potential in improving the waste collection and the sanitation system, and in continuous work on coastal restoration.
- The city is facing urbanization problems with needed strategies to accommodate urban growth, disaster management, infrastructure, environmental concerns and smart cities programs.

Key Numbers

- Population: 233.209 inhabitants (2019)
- Surface: 5,795.4 square kilometers, consists of 5,633.565 square km of sea and 161.84 square km of land
- Density: varies from 105 to 4.825 hab/km² depending on the district
- Population annual growth: 2.21%
- Unemployment rate: 5.91% in 2019
- Life Expectancy: 70.8 years

Key numbers on the environment:

- Waste generated (2019): 300 t/day (55% is collected)
- Access to clean water: 85 %
- 89% of households have access to private restrooms, of which 36% have safe septic tanks
- The electrification ratio is 97% (in Annex II although 65% in Annex I)
- The increasing traffic in Ternate's island can result in air pollution in the long run (while the air quality remains good with the minimal presence of industry and infrequent land fires)



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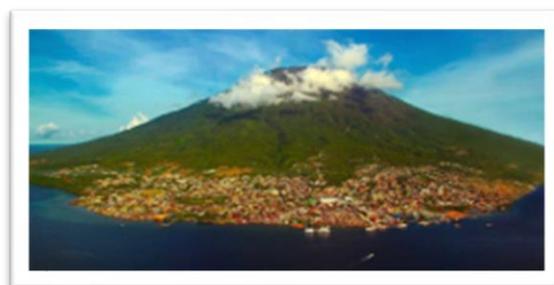


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Further analysis

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

1. Ternate is an island city, spanning 8 islands, 3 of which (Maka, Mano and Gurida Islands) are uninhabited.
2. The city is prone to disasters while specific infrastructure (such as bridges) are vulnerable to climate disasters events. Coastal areas are also particularly exposed to sea-level rise (some coastal areas concentrate the urbanization).
3. The city has recorded 34 disasters occurrences resulting in fatalities, injuries, material losses in the period 2010-2016 (9 floods, 7 tornados and rogue waves, 4 landslides). Volcanic eruption (Gamalala volcano) and earthquakes also add to the risks.
4. There are city's contingency plans for earthquakes, volcanic eruption, tsunamis, landslides, forests fire water abrasion at the beach, flash flood, lava flood. According to the city disaster agency, there is a need for non-infrastructure mitigation efforts such as standard operating procedures, and training.
5. The city is facing urbanization problems with needed strategies to accommodate urban growth, disaster management, infrastructure, environmental concerns, and smart cities programs. The land for urban growth is very limited and cannot accommodate the population growth and demand for housing. This results in informal settlements.
6. The city has the potential to attract and to develop tourism. The unemployment rate of 5,91% is relatively low. The poverty rates are fluctuating between 2 and 4%, while life expectancy tends to rise.
7. The waste production is increasing of 5% every year. Organic waste is recycled into fertilizers. Landfill management still mainly involves open dumping systems.
8. The drainage network covers a vast territory and is released to the sea. The Ake Gaale Spring has decreased by 42%. In addition to this, the water becomes polluted because of seawater intrusion and wastewater.
9. Ternate city mainly relies on groundwater for its water provision (which may result in groundwater depletion and land subsidence). Ternate would be more prone to flooding due to its "sinking state", rainfalls and sea-level rise.
10. Land-use change, as well as the energy sector, are key areas for GHG reduction.
11. Increasing traffic is becoming a problem on the island.
12. Based on 2014 data, 56.67 of the produced waste is collected, while 26% of household waste is still disposed of in water bodies or open field (11.54% of the waste is sorted).
13. There are already strong existing initiatives and strong potential in the multi-stakeholders' dialogue.



Policy recommendations

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

1. Map the impacts of the traffic on the air quality by installing AQMS stations.
2. Map the pollutants (SO₂, NO₂, O₃, CO) and the monitoring of Particle matters PM 2,5 and PM 10, air pollution due to particulates could be considered as a social hazard and could be included as an emergency measure with a specific provision of finance and government assistance
3. Create a health monitoring system and preventive solutions for the vulnerable population, surveillance programme shall be made for environmental health & air pollution issues to have more effect Non-Communicable Disease (NCD) and Public Health Programme.
4. Further develop vehicles emission tests as a future green investment opportunity, progress and status on alternative fuels research & development information need to be made accessible to municipal leaders by international organizations.
5. Invest in public transportation and in green lanes (for bikes, sidewalks for pedestrians), green fuel policies and programme shall be evaluated by the cities to create a project to address pollution on land and sea
6. Develop an Awareness Raising program with the population regarding air pollution and its impact on health, specific aware pollution risk communication strategies may be required to be integrated through scientific and evidence-based approaches.
7. 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. Cooperation with CSOs in this field could increase contributions to the quality of the campaigns. Result based campaign, lead by CSOs, but with multi-stakeholder partnerships could be promoted to address specific concerns from waste. Ex: Bio-CNG projects
2. Due to its very high share, management of organic waste should be prioritized. Existing attempt towards sorting and separation of organic and inorganic waste on the district level should be stimulated and enhanced. Organic waste and manure management may be looked at from the lens of air emission from the sector. Technologies based on organic fraction of waste streams shall be promoted as alternative fuel sources. Ex: Bio-CNG, a cleaner fuel with no soot content.
3. Implement source separated collection schemes for recyclables (e.g. packaging), taking into consideration the role of the informal sector. All the existing waste banks should be reactivated while possibilities for increasing the number of recyclable treatment facilities should be explored. Manufacturers, service providers, packaging industries and retailers shall work with citizens, Local Government and Regulators could reduce and ultimately eliminate unsustainable packaging and thus keep the unsustainable waste minimum.
4. Waste collection services should spread, in order to increase the percentage of collected waste. Minimum service standard for waste handling should be introduced for commercial areas. Number of temporary disposal sites should be increased and the frequency of waste transportation should be increased. Logistics value chain in waste could be planned to keep the waste management and transportation minimum.

Policy recommendations

5. Local regulation on waste production, both for households and business activities, revise the local taxation on waste management, introducing incentives and rewarding schemes for waste prevention and source separation. Explore possibilities for introducing PES (Payment for Ecosystem Services) in the field of waste management. Waste management and recycling facilities could be considered to implement and adopt a long-term view of the green growth agenda.
6. Implement the life cycle thinking and circular design 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.

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. Suggestions and examples of methodologies to 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. Identifying the local natural leaders of the community (citizens, associations, ...) and assisting them in mobilizing citizens participation in the communitarian planning sessions, paying attention to the importance of diversity (ethnic, ideology, religious, age, gender, disabled).
3. Building trust among neighbours and building their capacity to engage actively in the development planning of their neighbourhood by sharing and helping implement 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. Komunitas Sadar Sampah Kota Ternate, Komunitas Peluk Bumi Kota Ternate, Komunitas Pecinta Laut, Save Ake Gaale, Komunitas Peduli Air Hujan) using the [Municipalities in Transition system](#) aimed at bringing systemic thinking and better collaboration between the two for sustainable development.

Policy recommendations

10. In your community involvement for green open-space development include the organization of celebration and leisure activities. Designate these public spaces outdoor and others indoor for the formal meeting.
11. Establish good communication channels with neighbouring municipalities and territories, so that there are a general overview and understanding of common issues, cooperation in the prevention of disasters and facilitate the replication of good practices. In your Regional Working Units (SKPD) related to sanitation, better governance models such as the already mentioned Sociocracy 3.0 would be very beneficial. Also, the [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 on **disaster risks and early warnings**, including smart technologies, (Pilot4dev with UGE), the rehabilitation of coastal areas and sustainable urban development (Pilot4dev) as well as on water and sanitation in cooperation with the current programs and with the involvement of stakeholders (ECOLISE), on waste management and the reduction of open dumping (ACR+), and well as on funding opportunities (AILLSG)

Areas for further research, indicators and expertise needed

- Information on early warnings and disasters preparedness could benefit from further information, to be able to propose the right diagnosis for the tool.
- Further data could be collected on the environment in addition to the tool's implementation (waste, air etc...).
- The CRIC partnership could develop expertise on urban adaptive design, applied to an archipelagic context.
- Capacity building on sanitation and waste management could equally be proposed as an additional action to be developed by the project.

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