

CLIMATE RESILIENT AND INCLUSIVE CITIES PROJECT

Triangular cooperation between Europe | South Asia | Southeast Asia

POLICY RECOMMENDATIONS

Topic 1: Sustainable Urban Development

- Strengthen the stilt houses with concrete, and better infrastructure, and identify priority zones.
- Strengthen Green spaces/RTH reforestation, adaptive buildings, and the drainage system
- Solve the land issue to enable the government to clean the rivers and develop open space

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 existing programs to curb on river pollution.

Topic 3: Early Warning system

- Tackle floods and residential fires systematically
- Develop smart technologies for preparedness and recovery (flooding, fires)

Topic 4: Water and Sanitation

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

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

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Key Features

- Located 16 cm below sea level, Banjarmasin is the capital of the province of South Kalimantan and is nicknamed “the city of a thousand rivers”.
- The tidal waves are affecting the stilt houses on the riverbank areas.
- The stilt houses are prone to both floods and to residential fires.
- The city has a strong potential in systematic disaster prevention, the improvement of riverbank areas, and adaptive capacity.
- The pollution of rivers is caused by open dumping and upstream mining activities, while their overflow is a direct consequence of both climate change (sea rise) and human activity.

Key Numbers

- Population: 708.606 inhabitants (2019)
- Surface: 98,46 km² divided into 5 districts
- Density: varies from 105 to 7,196 hab/km² depending on the district
- The economic growth: reached 6% in 2019
- Unemployment rate: 9.13 % in 2019
- Poverty rate: 4.19% poverty rate
- Key numbers on the environment:
 - 102 rivers with a total length of 184 km run through the city (half of them require cleaning, while some are dried up)
 - Waste generated (2018): 490-558 t/day (70% is transported to the landfill). 3,4% is dumped on vacant land, and 1,7% (or 8,5 tons) are dumped into rivers
 - Access to clean water: 99 % but the city faces a problem of declining water quality especially river water due to pollution upstream
 - 89% of households have access to private latrines, of which 36% have safe septic tanks
 - Air quality in Banjarmasin scores 17 on the Air Quality Index, which is good. 75% is caused by motorized vehicles on land
 - Energy comes from crude oil (82,5%), coal (9,8%), the renewables 6,3%.
 - Disaster risk index: 96,4 (2019). % of green spaces (RTH) is only 5-6%



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Further analysis

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

1. Air quality in Banjarmasin scores 17 on the Air Quality Index, which is relatively good. 75% is caused by motorized vehicles on land. However, the presence of industry and coal mining may also have an impact on the city's air pollution.
2. GHG emissions come from fuel combustion, and energy (followed by transportation) is the largest GHG emitter.
3. Energy comes from crude oil (82,5%), coal (9,8%), the renewables 6,3%. There is a strong potential in the development of renewables as the energy mix will tilt towards renewables (hydroelectric, micro-hydroelectric, Biogas from manure and solar...) and coal. The proportion of coal plants is dominant, considering the high source of coal in the province.
4. Access to clean water: 99 % but the city faces a problem of declining water quality especially river water due to pollution upstream (e.g. Greenpeace report on the impacts of large-scale coal mining on water quality in South Kalimantan), aside from the waste dumping and wastewater. Cleaning the rivers would require the designation of Rivers as public facilities and assets from the city government. The government had also improved the drainage system in 2018.
5. The waste produced is equivalent to 490-558 tons/day. 3,4% is dumped on vacant land, and 1,7% (or 8,5 tons) are dumped into rivers.
6. The disaster risk index of Banjarmasin was 96,4 in 2018. Fires and Floods are the highest-risks disasters in Banjarmasin. The floods are caused by the height of the city below sea level, its position downstream of rivers but also by the littering into the water which is causing water overflows and the drainage system to clog. The rise of the sea level also directly has an impact on the Barito River to overflow. Another high-risk disaster is fire, and mainly residential fires (in stilt wooden housing). The fires are caused by short circuits, defect materials and unattended cooking stoves.
7. The city government has renewed the sanitation system. However, most of the households rely on individual septic tanks, most of which do not meet the requirements.
8. The response to tidal floods is formulated in different policy response: build concrete embankment along with the riverbank areas, spatial clearance of informal settlements with an intensive social approach to residents), collection of data on the main points which are prone to tidal waves and flooding to prioritize actions (while the less affected areas can be preserved). This normalization work is done by the Banjarmasin City Public works and Spatial planning office (with 2,8 billion Bp). Since 2009 a regulation also applies to stilt building not to retain the functions of water (however this regulation is not always respected).
9. The response to residential fires involves the presence of 279 firefighter units, equipped with a disaster contingency plan.
10. There are 9 BRT transport systems in Banjarmasin.
11. There are opportunities in increasing spatial planning, and government-owned lands to develop green spaces, and redevelop/improve river banks areas. Coordination with provincial, local governments on mining-related pollution could be an opportunity, while the enhancement of technologies and the private sector could also help.
12. Existing initiatives include the Pro Klim climate village (bio food, organic fertilizers, ...), and the construction of a water reservoir (transforming seawater into clean water) with the Netherlands.



Policy recommendations

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

1. Map the impacts of the road traffic and the industry (including mining) on the air quality,
2. Carry out pre-mining degasification, recovery and oxidation of methane from ventilation air from surrounding coal mines
3. Map the pollutants (SO₂, NO₂, O₃, CO) and the monitoring of Particle matters PM 2,5 and PM 10. Major source of air pollution in the dry and wet seasons should be studied, similar studies can be commissioned for all cities.
4. Create a health monitoring system for the vulnerable population,
5. The CRIC project could engage with local government, citizens, public health experts, and journalists to shape up more robust strategies to roll-out cooperation on environmental health issues
6. Further, develop vehicles emission tests as a future green investment opportunity (e.g. For startups and young investors).
7. Develop green lanes (for bikes, sidewalks for pedestrians) and green corridors.
8. Develop an Awareness Raising program with the population. Citizens' engagement and association with vulnerable groups shall be established to provide more security to vulnerable populations
9. 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. A Campaign based approach to bring behaviour-based change through visual media/social media and nudging. Best practices and national campaign from other Asian countries ex: India's clean India mission could be a good example.
2. Strengthening of implementation of the regulation on the reduction of plastic bags, special attention to be given to enforcement of the regulation in traditional markets. Programmes to target citizens and tourist could be formulated to reduce plastic footprint from the sector.
3. Prioritize the management of the organic fraction, implementing source-separated collection schemes and valorising the treatment output (e.g. compost, digestate, biogas). Local markets and commercial areas should be put in the focus. Emphasis on good manure management organic waste diversion and capturing of methane from the landfill needs to be emphasised to slow down the contribution of waste into air pollution and climate change.
4. Implement source separated collection schemes for recyclables (e.g. packaging), taking into consideration the role of the informal sector. Explore the possibilities of further enhancing of waste bank and 3R TPS programs to minimize the amount of waste that ends in the landfill. Efforts towards increasing of community participation are necessary.
5. Number of temporary waste collection points (TPS) should be increased, in order to enlarge their combined capacity.
6. Increased cooperation with the private sector; defining the way of stimulation of private entrepreneurs to control their waste according to the requested standards.

Policy recommendations

7. Technical guidance and training to improve knowledge and skills of employees in waste management operations.
8. 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

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 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. In your community involvement for green open space, development includes 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 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. [Ecoregions](#) is 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 **water and sanitation** with the engagement of stakeholders as well as on sustainable urban development (Pilot4Dev), disaster risks and early warnings, including smart technologies, (UGE), as well as, on waste management and the reduction of open dumping (ACR+) (Pilot4dev), and well as on funding opportunities (AILLSG).

Areas for further research, indicators and expertise needed

- Further data could be collected on the impacts of coal mining not only on water but also on-air pollution. The draft plan for the redevelopment of the riverbanks would facilitate the understanding on the next milestones.
- Capacity building and use of smart technologies could be developed on sanitation and waste management.
- More information on the current early warning systems would be helpful to develop the tools proposed by the partnership.
- Capacity building on the engagement with the different stakeholders would be an asset, and could be developed by the partnership throughout the implementation of the CRIC project.

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