Flood Resilience Alliance

Mercy Corps Indonesia

POLICY BRIEF

TO RISE FROM FLOOD IMPACTS IN PEKALONGAN: THE NEED FOR A TRANSFORMATIVE POLICY

In partnership with

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SINKING AREA, HIGH VULNERABILITY OF THE COMMUNITY AND SIGNIFICANT LOSSES

» The dynamics of coastal flooding in Greater Pekalongan Area (Pekalongan City and Regency) is highly complex as different factors are contributed to its occurence and risks. For the past 10 years, coastal flood risks and impacts in the area have increased significantly. Flash flood and urban flood events that occur in a more frequent manner have added to the severity of the impacts. Kupang Watershed which covers more than 18,000 hectares area that stretches from Petungkriyono sub-district in Pekalongan Regency to the estuary of Pekalongan River in the northern part of Pekalongan City is one of the landscape that faces this dynamic. Mercy Corps Indonesia's (MCI) Climate Risk and Impact Assessment (CRIA) conducted in collaboration with several researchers in 2020 in the Kupang Watershed shows that 24 villages were affected by coastal and flash flood. With the absence of effective and comprehensive policy on flood risk management, the risks and impacts of flooding is predicted as will increase. Fourty-two (42) villages are projected to be in a high and very high flood risk situation in 2035, with inundated area that is estimated to be at around 5,700 hectares in the same year. Some villages are even projected to be permanently inundated.

» Disaster trends due to climate variability as an implication of global climate change (e.g. extreme rainfall intensity and sea level rise) as well as non-climatic factors (e.g. geological and anthropogenic factors) contribute to the increase of flood risk in coastal areas. One of the findings in MCI's CRIA shows that the high land subsidence rate at a range of 0-34.5 cm/year (median 16.5 cm/year) to be highly affecting the coastal flood risks, aside from the increase in extreme rainfall and changes in coastal characteristics. This land subsidence rate is considered as significant in comparison to the rate of land subsidence in Semarang which is at 15 cm/year[1], and Jakarta 1-15 cm/year[2].

» Livelihood Vulnerability Index (LVI) analysis carried out in high flood risk areas in the Kupang Watershed further provides an overview of the vulnerability level related to components: socio-economic, livelihood, disaster, health, food, and water resources; in which those components determine the sensitivity of the disaster-affected households. The LVI indicates that the livelihood component has the highest vulnerability level, so that a particular attention should be given to this component to prevent chain impact on other components/sectors. Other aspects that also show a high vulnerability are the incidence of diseases, socio-economic issues and clean water availability.

» Considering only the high and very high flood risk area, the loss associated to flooding in the Greater Pekalongan Area is estimated to reach Rp. 1.55 trillion/year in 2020. These losses include material losses such as devaluation and loss of assets and income, as well as additional costs for basic services (incl. clean water, food, energy, and waste treatment). Meanwhile the calculated non-material losses are in the form of mental health disorders, including due to household conflict; and also decreased land productivity and ecosystem services. This loss is projected as will significantly increase in 2035 to reach Rp. 31.28 Trillion/year or 20 times the loss in 2020. The largest share of material losses is in the costs of adaptation and asset repair, decreased income and increased capital; while the largest non-material losses are in the decline in productivity of agriculture and ponds.

1 Abidin, Hasanuddin Z. & Andreas, Heri & Gumilar, Irwan & Sidiq, Teguh. (2010). Studying Land Subsidence in Semarang (Indonesia) Using Geodetic Methods

2 Abidin, Hasanuddin Z. & Andreas, Heri & Gumilar, Irwan & Fukuda, Yoichi & Pohan, Yusuf & Deguchi, T.. (2011). Land subsidence of Jakarta (Indonesia) and its relation with urban development. Natural Hazards. 59. 10.1007/s11069-011-9866-9

ADAPTATION STEPS TOWARDS A SUSTAINABLE FUTURE

» Adaptation is a response to recover to its original condition or changes to adapt and change one behavior in coping with the imminent threat of flood. Community adaptation in the face of flood risk is crucially needed in order to be able to build their flood resilience. Adaptation measures thus need to be developed by taking into account climate risks and impacts context in the Kupang Watershed and also considering the vulnerable component of people's lives, including:

1. Floods have a major impact on **livelihoods**.

   a. People whose livelihoods are agriculture and aquaculture have lost their productive land, which then force them to continually switch their livelihoods, including as laborers. In this case, the community needs alternative sources of livelihood or an adaptive and sustainable form of livelihood.

   b. Communities with non-agricultural livelihoods (batik entrepreneurs, traders, services, and transportation) experience an increase in the capital and operational cost to carry out their original activities. They are also faced with income decreases due to disruption of access to business locations. Actions are needed to minimize the impact of flood event on the business operations of the affected community.

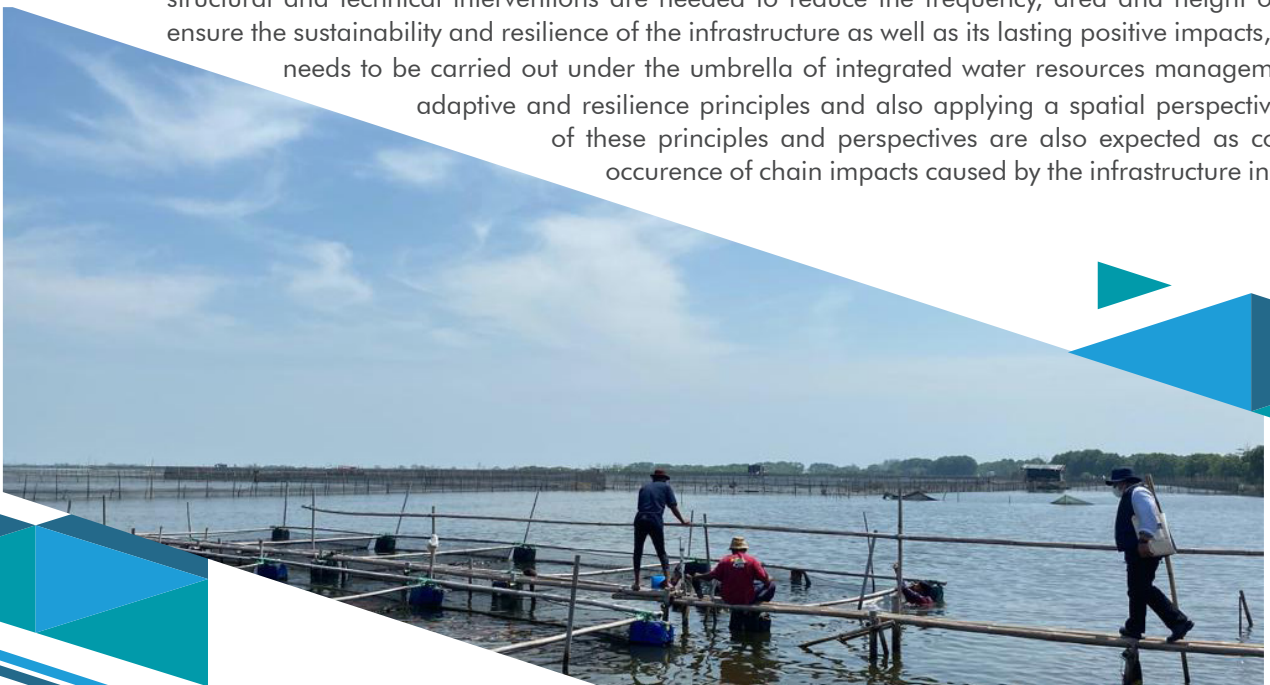
2. Floods have also **disrupted values and culture in society.**

Several socio-economic problems faced by commmnities such as low level of education (predominance of family heads with elementary school education), a large population of non-productive age, a culture of mutual assistance that is starting to fade, and the large number of female heads of household. Not only that, the unplanned urban and population dynamics also have socio-economic consequences. Without a proper development (and population) planning and control, the implications of population growth and its interaction with the economic sector is a choice between a rock and a hard place. These problems need intervention from different stakeholders, including through facilitation and support (both material and moral) for the vulnerable communities.

3. Floods increase the chance of **disease spread/transmission due to poor environmental conditions.** The COVID-19 pandemic has worsened people's quality of life. These health problems need intervention from stakeholders in the health sector, in collaboration with those actors in environmental and sanitation sectors.

4. Provision of **clean water** is important for flood-affected communities, especially considering the fact that the communities' well at the moment has become brackish. In the midst of inoptimal clean water services and the absence of alternative water sources, the community is forced to continually use the brackish ground water. Not only does it have an impact on public health, but the use of ground water can also have a negative domino effect on the physical environment. Extensive ground water extraction was notorious as among the contributing factor for land subsidence in the area. For this reason, it is necessary to improve clean water access, particularly in the affected areas, by utilizing more sustainable alternative water sources. Problem-solving initiatives such as the Development of the Petanglong Regional Water Supply System Reservoir are important.

5. **The frequency of coastal flooding has increased** increased in recent years, even reaching more than 9 times a year with flood heights above 0.5 meters and in some places reaching above 1 meter. Therefore, structural and technical interventions are needed to reduce the frequency, area and height of inundation. To ensure the sustainability and resilience of the infrastructure as well as its lasting positive impacts, its development needs to be carried out under the umbrella of integrated water resources management by adopting adaptive and resilience principles and also applying a spatial perspective. The adoption of these principles and perspectives are also expected as could prevent the occurence of chain impacts caused by the infrastructure in other areas and sectores.



» THE URGENCY OF TRANSFORMATIVE POLICIES TO BUILD FLOOD RESILIENCE

» Coastal flooding in Greater Pekalogan Area is a cross-administrative issue, namely Pekalongan City and Pekalongan Regency. Central Java Province also has a crucial role and authority in the flood management since cross-administrative issue as well as coastal and marine areas are under the provincial authority. Geographically, flooding cannot be separated from upstream and downstream management of a watershed which balance of functions and ecosystems must be maintained throughout the region. Floods also have an impact on all aspects of life, so that cross-sectoral and cross-regional integration are critical points. The complexity of this coastal flooding issue also apparent in other areas on the North Coast of Java, such as Jakarta, Semarang and Demak. As an implication, the policies taken are not only limited to the district/city government level, but are also the shared responsibility of the provincial and central governments. While the issue of climate disasters has become the concern of stakeholders at various levels, flooding in the Greater Pekalongan Area with its intricate web of issues then can propel multi-stakeholder and multi-level collaboration in the field of climate resilience.

» MCI in collaboration with the government, universities, local communities, and related organizations have formulated the following policy recommendations for flood management:

1. Regional Adaptation through Spatial Planning

Spatial planning is a comprehensive strategy across sectors and regions. The alignment of the spatial pattern, spatial structure as well as the Zoning Regulation between the Regional Spatial Plan (RTRW) of Pekalongan City and Pekalongan Regency is needed to formulate a proper Space Utilization Guidance under both area's RTRW. Additionally, the RTRW of Central Java Province, which in 2022 is in the process of being revised, needs to pay attention to disaster risk scenarios and projection for their coastal area. A balance of functions approach in the watershed management should also be considered in spatial planning in this area.

2. Flood Control through Water Resources Management and Conservation

The increased risk of flooding is projected to occur not only in the downstream (coastal) area but also in the middle of the watershed. For this reason, it is necessary to integrate upstream-downstream watershed management and to improve infrastructure in the context of flood control, such as a well-operated and well-maintained drainage system which currently lacking in the area. The development of this physical infrastructure must go hand-in-hand with integrated water resources management, including application of water conservation principles, to ensure that flood control can be carried out in an effective, targeted and impactful manner. Management of conservation areas needs to be improved, not limited to upstream areas such as protected forest areas and water catchments, but also downstream such as mangrove ecosystems.

3. Strengthening Human Resources (HR) and Institutional Capacity in Disaster Risk Reduction

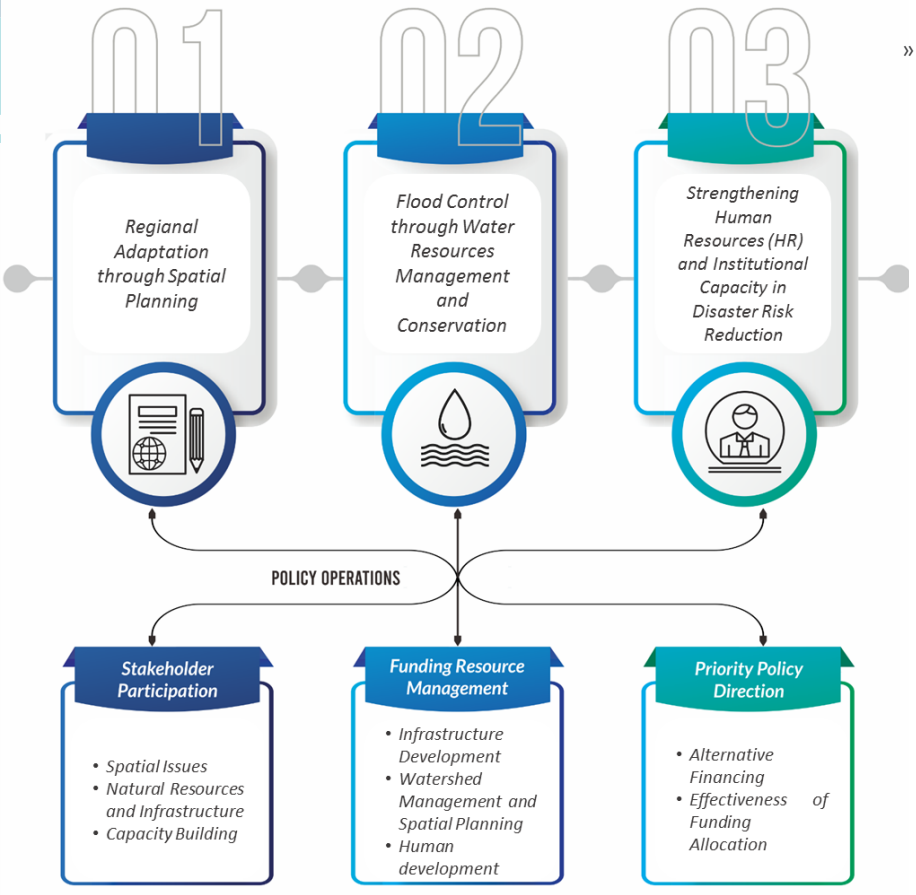
Strengthening of human resources and institutions is needed in order to increase the capacity of the community to adapt to coastal flooding (resilient communities). Various programs of emergency response assistance and coastal flood disaster mitigation are also needed, including measures that could increase socio-economic capacity such as sustainable livelihood alternatives and provision of basic infrastructure (clean water and sanitation). The operationalization of the above policy alternatives certainly requires a clear and targeted long-term roadmap.

» The operationalization of the above policy recommendations requires a clear and targeted long-term roadmap.

◊ In the context of **the parties involved**, multi-stakeholder involvement from different background and authority is needed, including but not limited to actors with a role on spatial issues (professional associations, academics, and the central government), watershed management issues and natural resource management and infrastructure (provincial government, central government, NGOs and think-tanks), and capacity building (NGOs, local government, city district government and business community). Each of the actor should support the policy implementation by carrying out their respective roles and responsibilities with the same flood resilient perspective.

◊ For this reason, **directions of priority policy** are also needed, which not merely surviving from the impacts (responsive infrastructure development, such us flood defense mechanism) but alas move to a more resilient paradigm (including the development of alternative livelihoods for a more adaptive community).

◊ Above all, the role of **effective and efficient financial management** becomes very important. The limits of fiscal capacity of the local government can only be answered through the exploration of alternative financing schemes. This innovation in financing needs to be explored in collaboration with non-governmental institutions such as international donors, United Nations institutions, development partners, financial institutions, as well as the private sectors.



» To be able to answer this complex and highly dynamic issue, the policies developed must be transformative and adaptive. Transformative policies are encouraged to build collective and innovative strategies and adaptive measures from various actors and fill the current coordination gap. Transformation should be a well-planned process that focuses on potential risk drivers, taking into account social and ecological thresholds and also the required changes and effects, as well as highly considering the governance dynamics, to ensure compatibility with sustainable development. Not only that, this transformative perspective must also be based on the adaptability of various parties to provide continuum responses to risks and uncertainties that could potentially arise.













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