ADAPTATION FUND

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~~PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND~~

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PART I: PROJECT/PROGRAMME INFORMATION

Project/~~Programme~~Program Category	:	SMALL-SIZED PROJECT/PROGRAMME
Country/ies	:	INDONESIA
Title of Project/Programme	:	**EMBRACING THE SUN:**Redefining Public Space as a Solution for the Effects of Global Climate Change in Indonesia's Urban Areas
Type of Implementing Entity	:	NATIONAL IMPLEMENTING ENTITY
Implementing Entity	:	~~Resilience Research Institute, the University 17 Agustus 1945 Surabaya, Indonesia~~Kermitraan
Executing Entity/ies	:	1. Resilience Research Institute, the University 17 Agustus 1945 Surabaya, Indonesia 2. School of Design Office, Creative Industries Faculty, Queensland University of Technology
Amount of Financing Requested	:	$ 710.000(in U.S Dollars Equivalent)

1. PROJECT/PROGRAMME BACKGROUND AND CONTEXT

This project aims to prepare the Indonesian people to be resilient in the face of the current climate crisis by increasing awareness of climate change. The New Urban Agenda1 ~~recognises~~ recognizes the strategic role of public space in supporting communities located in urban environments. Recent research addresses issues of vulnerability in public spaces and explores resilience strategies that ~~reducethe~~reduce the impacts of extreme weather events2. Frequently, design interventions within and through public space aims to address the effects of environmental hazards caused by climate change3 through water sensitive design, which is adopted to ~~minimise~~minimize or ease flood impacts, trees and vegetation to curb heat island effects and systemic approaches to promote the creation of ecological corridors that support urban flora and fauna4. All the measures described are reactive by nature; aiming to cope with the effects of climate change.

This project adopts a different approach to face climate change, focusing on public space as an urban condition that is ideal for encouraging community engagement and education about the root causes of climate change. We will develop a new typology of public space, which will ~~be tested through the construction of an integrated network of interconnected public spaces in Samarinda, Indonesia as a pilot city. This new public space typology proposed will~~ form a kind of infrastructural support for local communities facing imminent complexities and challenges of climate change~~. The design interventions in the city of Samarinda will be developed in consultation with~~, in particular flood preparedness. The project will support communities in adapting to the social impact of floods and support communities, before, during, and after the flood event. This project is grounded in the positive development

1 Can be found in: http://habitat3.org/the-new-urban-agenda/

2 Maria Matos, S. (2018). Urban Floods and Climate Change Adaptation: The Potential of Public Space Design When Accommodating Natural Processes. Water, 10(2), 180. doi: 10.3390/w10020180

3 Williams, K., Gupta, R., Hopkins, D., Gregg, M., Payne, C., Joynt, J. L. R., Bates-Brkljac, N. (2013). Retrofitting ~~England's~~ England's suburbs to adapt to climate change. Building Research & Information, 41(5), 517-531. doi: 10.1080/09613218.2013.808893

4 Shane, G. (2003). The Emergence of ~~'Landscape Urbanism'.~~ 'Landscape Urbanism'. Harvard Design Magazine.

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paradigm and aims to address climate change and its challenges through an integrated approach dealing with the multilayered complexities of this phenomenon. The project directly supports communities to adapt to climate change addressing the social impact of floods in urban environments.

The new typology of public space is going to be tested through the construction of one multipurpose public space in Samarinda, Indonesia, as a pilot city. The city of Samarinda has provided input in the process indicating priorities for the local communities and suggesting possible locations for the intervention. The design process relies on the engagement and involvement of local communities, as well as local governments, and will provide structures and systems to deal with critical environmental issues that are relevant to Indonesia as well as a global context. ~~These~~The new public ~~spaces~~space will integrate and enhance the current urban environments in which ~~they are~~it is situated and will establish an ecological-social "~~corridor~~anchor" to support ~~sustainable community development~~communities prone to flood. The social dimension of public space will be augmented with environmental values to help communities ~~coping~~cope with the effects of climate change and contribute to reduce the impact of a community on the local environment. The overarching axiology of the proposed project is to pursue concrete adaptation actions according to three strategic goals, (1) resilience; (2) response; and, (3) recovery. Through these actions a broad systems-level adaptation strategy will be achieved by *thinking global and acting local*. The project will address the social impact of floods on urban communities, it will engage with several hazards connected to climate change, ~~prioritising~~prioritizing flood adaptation~~,~~ through construction of ~~two~~one pilot public ~~spaces~~space. It is anticipated that findings from this project will be applicable to other cities in Indonesia, as well as international programs. Findings can be adapted to other communities who face similar environmental problems related to climate change.

~~2. INDONESIA AND CLIMATE CHANGE~~

1.1. Indonesia and climate change

Indonesia is the largest archipelagic country in the world with more than 17,500 islands and 80,000 ~~kilometres~~kilometers of coastline[5] and is highly vulnerable to the effects of climate change. Indonesia is also the fourth most populous country in the world and has extremely rich ecosystems and high levels of biodiversity. Rising sea levels, increasing mean temperatures, changing rainfall patterns and the increased frequency and magnitude of extreme weather events are some of the main climate change impacts the country faces[6].According to a global risk analysis conducted by the World Bank, Indonesia ranks 12th out of 35 countries, facing high mortality risks from multiple hazard types[7]. Increasing disaster risk caused by floods, droughts, storms, and forest fires are being exacerbated by climate variability and presents a growing strain on public expenditures. For instance, the 2007 Jakarta floods amounted to more than US$ 900 million due to resulting damages[8].

Climate change adaptation activity in Indonesia over the past six years ~~hasbeen~~has been marked by increasingly widespread awareness-building campaigns about climate change and its impacts, including vulnerability assessment activities in several provinces, regional and city areas. Although the program is still operated sectorally, it achieves its objectives by ensuring that communities continue

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5 Ministry of Environment, 2007. National Action Plan Addressing Climate Change.

6 ~~NationalAction~~ National Action plan for ~~ClimateChangeAdaptation~~Climate Change Adaptation (RAN-API). ~~SynthesisReport~~Synthesis Report, (2013).

7 World Bank. Indonesia: ClimateRisk and Adaptation Country Profile, (2011). Found online at: http://sdwebx.worldbank.org/climateportal/countryprofile/doc/GFDRRCountryProfiles/wb_gfdrr_climate_change_country_profile_for_IDN.pdf

8 Idem.

programs independently and sustainably. In this way, these programs provide additional benefits in capacity strengthening and climate change adaptation.

According to Ari Muhamad, a leading Indonesian environmental researcher, there are three things that have enabled the effective mainstreaming of climate change adaptation across several cities in Indonesia. First, regional leaders give attention to the issue of climate change. Second, the presence of conservation and environmental activists, who work together to provide assistance to local governments so that their activities maintain existing sustainability benchmarks and local government commitments. Third, climate change adaptation is becoming a mainstream concern due to the increasing severity and frequency of disaster events. There is growing awareness that climate change is exacerbating such events, well as the loss of a number of natural springs that communities have been reliant upon.

According the fifth *Assessment Report* by the Intergovernmental Panel on Climate Change (IPCC) released in 2013, the south region of Indonesia will experience a decline in rainfall and, conversely, the north will experience increased rainfall. The threat of drought due to El Niño effects will be a driving factor for wildfires, which have so far destroyed millions of hectares of forest land in Indonesia. Climate change also poses a major threat specific to Indonesia's unique geographical conditions. Namely, rising sea levels threaten to submerge entire islands across the archipelago. This outcome is predicted as a certainty unless both climate change adaptation and mitigation strategies are urgently implemented.

A report published by the Ministry of Public Works in collaboration with the Ministry of Environment (2007) states that the impact of climate change for Indonesia –namely rising sea levels –poses threats to several industries such as offshore oil and gas platforms, transportation, fisheries, agriculture and ecotourism as well as coastal communities. The report also states that a sea level rise of about 1 meter is estimated to flood approximately 405,000 ha of coastal land, including small islands. Another aspect of climate-related impacts in Indonesia relates to crop failure due to drought. The Department of Agriculture monitored drought conditions on rice crops over 10 years from 1993-2002. Results indicated that the average amount of agricultural land affected by drought was 220,380 ha with land deemed as “crop-failed” reaching 43,434 ha. In the El Niño Southern Oscillation (ENSO) years, the volume of water in reservoirs dropped significantly, far below normal levels. This was observed especially during the dry season, which occurs from June - September, and resulted in lower electricity generation. Meanwhile, data from Wetlands International (Burke et al., 2002) reported that an El Niño destroyed coral reef ecosystems across Southeast Asia. Additionally, coral bleaching has been observed in eastern parts of Sumatra, Java, Bali and Lombok. Further, in the Thousand Islands, around 90-95% of coral reefs at depths of 25m are partially bleached. These impacts on coral in ~~theregion~~the region have been attributed to increased sea water temperatures, especially during the 1997 El Niño, which have caused serious problems ~~tothe~~to the coral reef ecosystem.

I. Economic Context

~~2.1.~~

Various studies conducted by the IPCC and other research institutions located both nationally and internationally show that vulnerability levels in developing and underdeveloped economies are high and that these economies are likely to have low adaptation capacity. Indonesia cannot escape its responsibility in reducing activities that cause global warming. As part of a global community, attention needs to be given to the urgent threat of climate change. In regard to carbon emissions, as the leading cause of global warming, Indonesia is rated as a significant contributor, ranked as the fifth

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largest emitter of greenhouse gases[9], while at the same time being highly vulnerable to the impacts of climate change. Agriculture, plantations and fisheries are the main industries that draw upon Indonesia's power generation economy, while also acting as pillars to support national food security. Other critical areas that have been identified as vulnerable to the impacts of climate change include the energy sector, forestry industries, coastal management, water resources, infrastructure, and health. Microeconomic disruption to livelihoods is another important consideration, where ~~localised~~localized threats also exist as a result of climate change impacts. Extensive research enables relatively accurate predictions to be made when it comes to the impacts of climate change. As such, there is enormous potential to enact influential macro-economic measures to ~~minimise~~minimize disruption and increase national security.

Serious efforts must be made to ensure the Indonesian people not only survive but thrive in the face of climate change and its impacts. The most vulnerable populations are those where communities depend on predictable climatic patterns. It is essential that the most vulnerable communities are identified, both in urban and rural areas, especially where people lack agency in relocating or adapting to issues such as erosion, abrasion, rising sea levels, flooding and landslides during high intensity rain. Indonesian communities also face threats of wildfire, drought and lack of access to clean water during long dry seasons. In extreme cases, annual growth of the economy of the country or a region is lost due to disaster events or climate variability. It is critical that we reduce embedded vulnerabilities in Indonesian communities and build resilience through development that pays attention to environmental management. Such development must account for ecological impacts, offsetting losses through strategies that build resilience across multiple domains.

~~2.2.~~ II. Socio-Economic Context

Indonesia is the largest economy in Southeast Asia[10]. Furthermore, the country´s economy has recently grown due to faster export turnarounds, strengthened investment and increased consumption[11]. Despite levels of poverty and inequality having decreased in rural and urban areas, almost 10% of Indonesia's population (approximately 25.9 million people) lives below the World Health ~~Organisation~~Organization (WHO) "poverty line", and approximately 20.78% remain vulnerable to falling into poverty[12]. The ADB estimates that costs related to the impacts of climate change will constitute between 2.5 and 7% of Indonesia's Gross Domestic Product (GDP) by 2100[13]. It is the country's poorest communities and vulnerable groups – such as women, children, the elderly and those with disabilities – who are expected to bear the greatest burdens of the impacts of climate change.

Indonesia´s biodiversity is extremely rich, accounting for 15.5% of the world's flora and 10% of fauna[14]. Biodiverse ecosystems are essential in supporting livelihoods and industry, as well as driving economic growth. Biodiversity ensures resilience of natural systems and is the backbone of Indonesia's ability to bounce back in the case of disasters. Climate change has been recognized as one of the main threats

[9] World Resources Institute. Retrieved from: https://www.wri.org/our-work/project/forests-and-landscapes-indonesia/climate-change-indonesia

[10] OECD Economic Survey: Indonesia, (2018), p. 9. Online at: http://www.oecd.org/eco/surveys/Indonesia-2018-OECD-economic-survey-overview.pdf

[11] AsianDevelopment Outlook, (2018), p. 255. Online at:https://www.adb.org/sites/default/files/publication/411666/ado2018.pdf

[12] World Bank. Indonesia: ClimateRisk and Adaptation Country Profile, (2011).

[13] Idem.

[14] The FifthAnnualReport of Indonesia to the Convention on BiologicalDiversity, 2014. Online at: https://www.cbd.int/doc/world/id/id-nr-05-en.pdf

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to biodiversity[15] and ecosystem services[16]. Furthermore, studies show that global climate change will have a negative effect on the agricultural sector[17]. In 2017, agriculture, forestry and fishing accounted for approximately 13% of Indonesia's total GDP[18] providing the main source of employment in rural areas[19]. This will not only result in a negative impact on rural incomes but will also affect food prices and food security (IFPRI).

~~2.3.~~III. Climate Change Projections

Indonesia experiences a tropical climate with two major seasons – the rainy monsoon season from November to April (with regional variations), and the hot dry season. Average annual temperatures range from 23-32°C[20] (27.7°C in 2007 and 27.9°C in 2008). Observed climatic changes indicate a mean annual temperature increase of about 0.3°C. This is projected to continue increasing by 0.2 - 0.3°C per decade. Indonesia's average rainfall levels are 1.7-3.1 cm in the lowlands and up to 6.1cm in mountainous regions (per year). Precipitation changes, being less uniform, project an increase in annual rainfall across most of the country. At the same time, precipitation in the southern regions is projected to decline by up to 15%. The risks faced across the country exist at opposite ends of a spectrum. Where some regions are anticipating decreased rainfall, and therefore possible drought, other regions face flood risk from a predicted increase in rainfall.

Table 1. *Amount of Precipitation and Number of Rainy Days by Month in Samarinda Municipality, 2018*[21]

Bulan/*Month*	**Curah Hujan/*Precipitation* (mm³)**	**Hari Hujan/*Rainy Days***
(1)	(2)	(3)
Januari/*January*	215,9	18
Februari/*February*	97,7	18
Maret/*March*	154,1	17
April/*April*	180,2	20
Mei/*May*	296,3	21
Juni/*June*	197,0	15
Juli/*July*	136,9	12
Agustus/*August*	47,9	10
September/*September*	127,4	9
Oktober/*October*	151,9	20
November/*November*	126,7	20
Desember/*December*	169,5	16
~~Rata-rata~~Average 2017	**158,5**	**16**

[15] Idem
[16] WWF, (2007). Climate Change in Indonesia. Implications for Humans and Nature. Found online at: http://awsassets.panda.org/downloads/inodesian_climate_change_impacts_report_14nov07.pdf
[17] IFPRI, (2011). The Impact of Global Climate Change on the Indonesian Economy. Online at: http://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/126762/filename/126973.pdf
[18] The World Bank, (2017). Online at: https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=ID
[19] ADB, (2015). Summary of Indonesia´sAgriculture, Natural Resources, and Environment Sector Assessment
[20] University of Indonesia, (2007).
[21] Meteorology, Climatology, and Geophysics Board, Samarinda

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There is currently a 30-day delay projected delay in the annual monsoon season, which raises the chances of up to a 10% increase in rainfall later in the crop year (April-June). Additionally, this can cause up to a 75% decrease in rainfall later in the dry season (July-September)[22]. Furthermore, extreme weather events are expected to increase, leading to additional stressors, particularly in coastal areas[23].

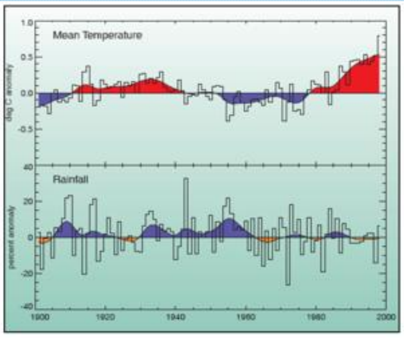

Figure 1. *Changes in annual mean temperature, 1901-1998 (top) and annual rainfall, 1901-1998 (bottom), across Indonesia.*[24]

~~2.4.~~IV. Expected Impacts of Climate Change

In recent years, hazards such as floods, landslides and droughts, have caused substantial loss of life, economic loss and damage to infrastructure in Indonesia. Between 2001 and 2007, 4000 disasters impacted the country, of these, 37% were floods, 24% drought, 11% were landslides and 9% were windstorms[25]. It is anticipated that changes in precipitation, seasonal shifts and timing of rainfall will lead to unpredictable and uncertain water availability, which will in turn influence agriculture and food security. Exacerbated droughts and ~~floodinghave~~flooding have the potential to cause ~~widespreadcrop~~widespread crop failure and water shortages, triggering a cascade of impacts – such as health emergencies, social instability, conflict, and population displacement – stemming from food and water insecurity.

Sea-level rise is expected to drastically impact many regions in the country. With anticipated global sea-level rise of about 2mm per year, which is projected to increase to about 5 mm per year over the next century[26], significant loss of coastline and islands are expected[27]. Between 140 and 220 million people live within 100 km of the coast[28] and, of these, 115 to 160 million rely on marine sources for their livelihoods[29]. Valuable ecosystems such as coastal mangroves are threatened by projected increases in sea-level rise, among other aspects of climate change. Warming sea-surface temperatures, which are expected to lead to the loss of coral reefs and to cause changes in oceanic circulation patterns and salinity, will result in a reduction in fish in tropical oceans. Projected climate

[22] WWF, (2007). Climate Change in Indonesia. Implications for Humans and Nature
[23] Indonesia ClimateChangeSectoralRoadmap ICCSR. SynthesisReport, (2009). Found online at: https://adaptation-undp.org/sites/default/files/downloads/indonesia_climate_change_sectoral_roadmap_iccsr.pdf
[24] WWF, (2007). Climate Change in Indonesia. Implications for Humans and Nature
[25] The World Bank, (2017).
[26] Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.
[27] The World Bank, (2017).
[28] Idem.
[29] Idem.

models indicate that ~~thislarge~~this large-scale change in fish habitat will impact on one of Indonesia's primary industries; a main food supply source, which will lead to economic losses.

Another aspect that requires consideration is the possible adverse effect of climate change on human health, both directly and indirectly. Direct effects relate to projected increases in temperature, changes in precipitation, sea-level rise, and extreme weather events leading loss of life. Indirect impacts on human health as a result of climate change include an increase in the spread of diseases such as malaria, dengue fever, diarrhoea, cholera, and vector-borne diseases. This increased health risk is also exacerbated by weather variations caused during the ENSO. The World Health Organization (WHO) states that the spread of malaria is triggered by the occurrence of rainfall above normal levels and is further impacted by unstable weather patterns. The combination of the aforementioned negative effects on human health, with limited public health capacity, will greatly impact Indonesia´s population, particularly poor and vulnerable group[30].

Part 2 Technical Summary: Indonesia and Climate Change	
a)	Indonesia is especially vulnerable to the impacts of climate change, notably, rising sea levels, increasing in mean temperatures, changes in rainfall patterns and the increased frequency and magnitude of extreme weather events.
b)	Indonesia is ranked 5th in the world for carbon emissions, highlighting the urgent need for mainstreaming sustainable development and climate change mitigation.
c)	Unless action is taken, Indonesia faces widespread biodiversity loss, economic losses, increased magnitude and frequency of both flood and drought events, and negative social and public health impacts.

~~3.~~1.2. ~~URBAN DEVELOPMENT IN INDONESIA~~Urban development in indonesia

The New Urban Agenda[31] approved in Quito in 2016, and subscribed to by Indonesia, as well as the Sustainable Development Goals[32]provide directions for sustainable development over the next 20 years. The Wuhan declaration[33]issued in 2018 promotes the needs of development focused on placemaking. These important documents advocate for people-centred development and recognize the important role that natural landscapes and public spaces serve in supporting contemporary urban lives. Indonesia is undergoing urban development at an unprecedented scale and pace, often adopting paradigms typical of western countries that do not appropriately reflect the local culture, society, environment and landscape. Currently, over 50% of Indonesians live in urban areas and up to two-thirds of the population are expected to live in cities by 2035[34] (figure 2).

[30] Idem.
[31] Can be found in: http://habitat3.org/the-new-urban-agenda/
[32] Can be found: https://www.un.org/sustainabledevelopment/sustainable-development-goals/
[33] Can be found in: https://www.placemakingweek.org/wuhan
[34] ~~AsianDevelopment~~ Asian Development Outlook, (2018).

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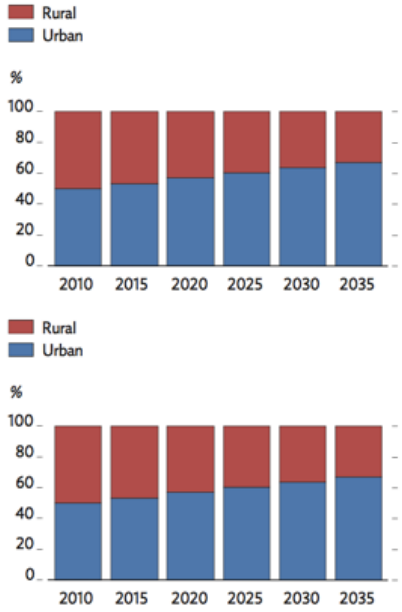

Figure 2. *Population projections*[35]

Rapid urbanization in combination with other issues such as a lack of adequate planning, service provision and financing pose serious challenges. Many urban centres in Indonesia are experiencing social and environmental challenges due to the application of development paradigms ill-suited to the local landscape, society and culture. Cities, traditionally structured through a recognisable pattern of public spaces and with a clear representation of local culture, morph in congested environments, facing serious environmental issues due to climate change and uncontrolled commercial development. Water management, waste management, sewerage systems, food security, pest control, energy production, affordable living, shelter in case of extreme weather events, provision of affordable and safe housing, and sense of community are all emerging issues in Indonesian cities. These issues are intensified by unpredictable weather, extreme temperatures and recurrent flood events. According to the Asian Development Outlook 2018[36], only 1 in 3 urban households have access to clean water, and 1 in 100 water sources are directly connected to a sewerage system. The problem of this already deficient access to water infrastructure is further exacerbated by the impacts of natural hazards –in particular, floods and landslides – posing high risks to public health[37].

While major urban centres like Jakarta, Surabaya, and Yogyakarta have access to resources to face these challenges, second and third tier cities often rely only on the resourcefulness of their communities to face current climate and environmental challenges. As in many other emerging economies, Indonesia has often adopted a development paradigm that is typical of western temperate cities, often resulting in negative outcomes for established urban centres and communities. Car-based infrastructure, high-rise development and limited investment in public transport and public space challenge, not only the environmental sustainability of Indonesian cities, but also their social and

[35] BadanPusatStatistik, 2013. *Indonesia PopulationProjection.*Retrievedfrom: AsianDevelopment Outlook, (2018), p. 259.

[36] ~~AsianDevelopment~~ Asian Development Outlook, (2018).

[37] Idem.

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economic viability. The traditional urban pattern of Kampong – a self-sufficient urban village – is today challenged by commercial development that leaves little to no space for public space and traditional community living. Some Kampong, as well as several communities in Jakarta and Surabaya, have demonstrated creativity and innovation in adapting to contemporary challenges. These communities have implemented programs that include urban agriculture, street beautification, waste recycling and community engagement. All these programs adapt existing in-between spaces within the city's urban form, contributing to the vibrancy of a Kampong. Despite the observed successes of such local communities and programs, there is currently a lack of structural capacity in cities to drive the necessary changes in mindset to move away from inappropriate westernised approaches to development. These paradigm changes could enable more traditional modes of development that are supportive of localised long-term sustainability, climatic conditions and resilience strategies for urban centres in Indonesia.

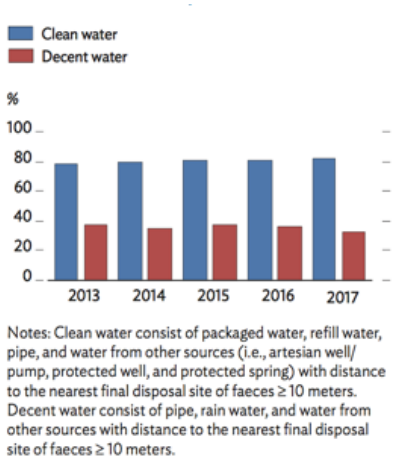

Figure 3. *Access to clean water and decent water (urban households)*[38]

~~3.1.~~1.3. National Policy and Strategy for "Adaptation" Activities in the Context of Climate Change in Indonesia

Limitations of funding, technology and human resources make Indonesia especially vulnerable to climate change. The level of policy intervention must be approached through the real needs of the country, region and islands. Therefore, the analysis and response of the impact of ecosystem, socio-economic and cultural changes (including exploring and using local wisdom and knowledge) is a priority that is essential in creating a prosperous future for Indonesia.

Proactive measures have already been initiated through climate change research and exploration of opportunities for adaptation and mitigation of its impacts in several regions of Indonesia. This is done at the level of framework for developing policy strategies and implementing climate change adaptation activities in Indonesia. These activities are being carried out by ministries, institutions, non-governmental organizations and universities and regional governments, both funded by the state

[38] BadanPusatStatistik, 2013. *Indonesia PopulationProjection.*Retrievedfrom: AsianDevelopment Outlook, (2018), p. 259.

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budget and through the support of donor organizations / institutions or other foreign government assistance.

In 2009, the National Development Planning Agency (Bappenas) published the Indonesia Climate Change Sectoral Roadmap (ICCSR). One of the thematic issues included detailed directions for responding to, and anticipating the threat of climate change. The report emphasised the strategic importance of sectors, such as coastal and fisheries, agriculture and health within the framework of national policy preparedness. The ICCSR document is expected to influence the National Medium-Term Development Plan (RPJMN) for 2009 - 2014. In 2010, Bappenas issued a 2010 Development Work Plan (RKP) that set the priority focus on increasing climate change adaptation capacity and mitigating disasters. Currently there are 5 main sectors with climate change adaptation policies and strategies, namely; the agricultural sector, coastal sector, marine, fisheries and small islands, health sector, public works sector and disaster sector through the National Disaster Management Agency (BNPB).

There are two examples of policies within a number of policies from the Ministry of Agriculture, which have been issued in response to climate change, or considered to be related to adaptation efforts. One of these includes *The National Law No. 41 Year 2009 concerning Sustainable Food Agricultural Land Protection and Ministerial Regulation No. 39/Permentan/OT.140/6/2010,* which outlines *Guidelines for Licensing of Food Crop Cultivation Businesses*. The action program of these policies seeks to develop water harvesting technology and efficiency of water use, such as drip irrigation, mulch and the development of land and plant management technologies to improve crop adaptability[39].

In the coastal and marine sectors, 20 policies were issued in the context of climate change adaptation (DNPI, 2012) which were then translated into action programs. For the national level, there are provisions regarding the management of coastal areas and small islands (National Law No. 27 Year 2007),*National Law No. 31 Year 2004* concerning Fisheries, *National Law No. 27 Year 2007* concerning Extension System and *National Law on Fisheries No. 31 Year 2004*.

In the health sector, the Ministry of Health has issued *Ministerial Regulation No. 1018/MENKES /PER/V/2011* concerning the Strategy for Adapting the Health Sector to the Impact of Climate Change. This is followed by the issuance of action programs which include socialization and advocacy for climate change impacts vulnerable populations and regions of climate change, improvement of climate change response systems, increased community empowerment in climate change adaptation according to local conditions and other action programs (DNPI, 2012).

Meanwhile, the public works sector is divided into 4 sub-sectors, (1) Water Resources; (2) CiptaKarya (Building); (3) Roads and Bridges; and, (4) Spatial Planning. Water resourcing focuses on water balance including needs and availability, adequate water resources infrastructure, provision of alternative water sources, complete data and research, and water conservation. In the CiptaKarya (building) sub-sector there are 3 strategic goals, (1) contribution of infrastructure services to economic growth; (2) contribution of infrastructure services to improving community welfare; and, (3) contribution of infrastructure to improve environmental quality. Some of the activities are assigned to the Roads and Bridges sub-sector, including roadside tree planting, drainage construction through the extension of run-off time, relocation of roads to areas that are less likely to be impacted by sea level rise and building levees or dykes in coastal areas.

Finally, Indonesia is seeing climate change adaptation activities in the sub-field of Spatial Planning. Here, adaptation efforts are carried out through the mainstreaming of climate change issues across the national spatial planning system. Thus, it can guarantee that spatial planning is undertaken with climate change projections taken into account, ensuring that spatial planning does not increase

[39] Sector Action Plan Document in Response to Climate Change Adaptation (2012).

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vulnerabilities in a region or locality to the effects of climate change. Instead, the objective is to increase regional resilience to the impacts of climate change in the future (DNPI, 2012).

The implementation of various laws and regulations across the four sub-sectors have become policies and action plans for climate change adaptation in the public works sector. For example, *National Law No. 7/2004* concerning *Management of Water Resources* forms the basis for action programs such as improved management of natural resource infrastructure to support water supply and food security. There are 6 implementation provisions made at the level of *Government Regulations and Ministerial Regulations*, each of which has its action program. The policy and action program of the Spatial Planning sub-sector is *National Law No. 26/2007* concerning Spatial Planning which is then formulated into action programs such as, (1) providing access and processing of data and information related to climate change to spatial planning; (2); (3) space utilization; (4) space control; (5) institutional capacity building; and, (6) spatial planning and supervision (DNPI, 2012).

Concrete activities in Indonesia that translate the attention and commitment of climate change issues, especially in developing adaptation strategies, must be placed as a top priority. Awareness of the impacts that have already been felt must be in the efforts of stakeholders, as well as those that are predicted in the future. This is especially important in sectors and departments that are directly affected by climate change. At a policy level, the goal is to strengthen the role of the development sector to achieve targets and objectives through coordination between sectors. This adaptation effort requires strong collaboration especially between development sectors.

At present there remains a great deal of work to be done in adapting to the impacts of climate change. In particular, responsibility lies with governance and environmental management of sectors that are a strategic priority when it comes to resilience-building. This includes, (1) protection of the Indonesian economy; (2) a focus on coastal areas under pressure due to various factors such as population growth; (3) exploitation of natural habitats for resources, including destruction and illegal deforestation; and, (4) reducing pollution caused by industry and housing activities. Addressing these issues will contribute toward resilience for Indonesian communities in the face of threats and impacts of climate change.

Part 3 Technical Summary: Urban Development in Indonesia	
a)	Indonesia is undergoing an unprecedented scale and pace of urban development
b)	Urban development in Indonesia frequently adopts western approaches that are often inappropriate to the local culture and climate. There are lost opportunities to adopt locally-responsive strategies, which are more sustainable.

4.2. BRINGING IT ALL TOGETHER: FORGING NEW WAYS FORWARD FOR CLIMATE-RESPONSIVE URBAN PUBLIC SPACE

The challenges of Indonesia today and in the future regarding climate change adaptation must focus on local preparedness through the establishment of clear strategies, information and measurable

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outcomes. This is achievable only if the tasks and functions of each sector are understood through a spirit of collaboration between different government sectors, agencies, and local communities. This project proposes a new typology of public space for the Indonesian context –focussed on people-centred development –addressing climate change ~~throughout~~through a coordinated and integrated approach. This new type of public space will strategically address multiple current issues experienced by local Indonesian communities. Current strategies and policies aim to reduce the effect of climate change, minimise impact of development on local environments and prepare communities for future extreme weather events as well as environmental hazards[40]Redefining settlements patterns in Indonesian cities through an integrated and interconnected network of multiple public spaces will improve living conditions and wellbeing for local communities, while proactively tackling urgent issue of climate change. The aim of this to generate positive momentum that improves environments and ecosystems alongside sustainable urban development.

Table 2 summarises the main hazards and risks faced by Indonesians as a result of climate change. These data will inform the strategic priorities and vision developed through this project and the design of a new typology of public space.

Table 2. *Summary of main hazards and risks connected to climate change in Indonesia*

Climate-Related Hazards and Risks		Level of Risk
	***Flood and Drought***[41] *Extreme events including droughts and floods are projected to increase in southern regions of Indonesia due to rainfall patterns. Droughts during El Niño events are expected to have more serious impacts on the south than temporary rainfall increases. Shorter and more intense rainy seasons will probably lead to more intense floods.*	Severe
	***Access to Clean Water***[42] *Water availability could be impacted by climate change in Indonesia in a number of ways:* • *Decrease in freshwater availability in coastal zones due to saltwater intrusion* • *Decrease in inland water availability and saltwater intrusion in the rivers due to river flow reductions* • *Limited water availability due to a decrease in rainfall during the dry season.*	Severe
	***Access to Reliable Energy Sources*** *The power sector in Indonesia is vulnerable to many effects of projected climate change, such as increasingly intense weather events, higher air and water temperatures, changes in rainfall and river discharge patterns, and sea level rise*[43]*. The power grid is considered to be overextended and potentially vulnerable to the impacts of extreme weather events and sea-level rise*[44]*.*	High

[40] Santos Nouri, A., & Costa, J. P. (2017). Placemaking and climate change adaptation: new qualitative and quantitative considerations for the "Place Diagram". *Journal of Urbanism: International Research on Placemaking and Urban Sustainability, 10*(3), 356-382. doi: 10.1080/17549175.2017.1295096

[41] Ministry of Foreign Affairs of the Netherlands (2018). Climate Change Profile Indonesia. Retrieved from: https://reliefweb.int/sites/reliefweb.int/files/resources/Indonesia_2.pdf

[42] ~~Ibid~~ Idem.

[43] Asian Development Bank (2015). Indonesia Country Water Assessment. Manila.

[44] Asian Development Bank (2015). Summary of Indonesia's Energy Sector Assessment https://www.adb.org/sites/default/files/publication/178039/ino-paper-09-2015.pdf

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	***Community Vulnerability and Safety*** *Community vulnerability to climate change, including climate variability and extremes, is related to social vulnerability as a pre-existing condition[45]. Despite existing progress, poverty is still significant[46]. Almost 10% of its population (approximately 25.9 million people) lives below poverty line and approximately 20.78% remains vulnerable of falling into poverty[47]*	High
	***Food Security[48]*** *Food security could be affected by climate change in Indonesia in a number of ways:* • *Limited crop productivity due to rising temperatures* • *Increase in crop failure risks due to reduced durations and unpredictable starts of the rainy season and decreasing rainfall predictability* • *Decrease in food production due to increasingly severe floods across the country* • *Decrease in food production in southern regions (including Java, Bali and Nusa Tenggara) due to an increasing frequency and intensity of droughts* • *Decrease in production of specific crops due to projected decrease in number of cold nights during the planting season* • *Increase in crop pests and diseases as a result of increased temperatures* • *Challenges related to preservation of crops and seeds due to erratic and intense rainfall* • *Decrease in availability of fish for consumption due to rising sea water temperatures and levels*	High
	***Waste Contamination*** *Waste contamination is a pressing environmental issue in the country. It is associated with a lack of public awareness and investment in adequate waste management systems. Open burning of waste and solid waste disposal are amongst the major sources of GHG related to the waste sector[49] and are still common practices in the country.*	Severe

~~4.1.~~2.1. Focus of the Proposal

The aim of this project/~~programme~~program is to develop a new typology of public space that promotes building solutions and techniques that improve the environment, harvest resources and contribute positively to the overall ecology of its local area. In doing so, the objective of this new typology is to strengthen climate change adaptation and resilience within Indonesian communities. The project vision is to establish a network of multiple interconnected public spaces that support

[45] Cutter and Emrich (2006). Social vulnerability to climate change variability hazards: a review of the literature. Final Report to Oxfam America

[46] Asian Development Bank (2018). Indonesia Member fact sheet. Retrieved from: https://www.adb.org/sites/default/files/publication/27769/ino-2018.pdf

[47] World Bank. Indonesia: ClimateRisk and Adaptation Country Profile, (2011).

[48] Ministry of Foreign Affairs of the Netherlands (2018). Climate Change Profile Indonesia. Retrieved from: https://reliefweb.int/sites/reliefweb.int/files/resources/Indonesia_2.pdf

[49] https://www.bappenas.go.id/files/8913/5022/6069/climate-change-roadmap-waste-sector__20110218181950__0.pdf

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communities in coping with the effects of climate change. The project addresses multiple environmental challenges connected with climate adaptation; preliminary research has outlines a hierarchy in these challenges and flood preparedness has been identified has the most strategic issue to tackle in the context of our pilot city; other conditions connected with climate adaptation will be addressed within the overall strategy to adapt to increasing extreme flood events.

Table 2 outlines the hierarchy of interventions and illustrates how these public spaces must necessarily focus on, (1) flood and drought; (2) access to clean water; (3) access to reliable energy sources; (4) community vulnerability and safety; (5) food security; and, (6) waste management. It is anticipated that the new network of public spaces will reduce the impacts of climate change through **flood preparedness**, energy and food production, water harvesting, and waste management. To achieve this, the project will focus on one pilot city where ~~twomain~~two main interventions and a series of low-cost high-impact design tactics, based on the template of the new typology, are planned. In this way, a new social and ecological system will be created to face climate change and its challenges. The selected city is Samarinda, capital of the East Kalimantan province; its position in the broader Indonesian context is shown in figure 4.

Samarinda is the capital city of the Indonesian province of East Kalimantan on the island of Borneo/Kalimantan. The city lies on the banks of the Mahakam River with a land area of 718 km^2. It is the most populous city on the entire Borneo/Kalimantan Island, with an estimated population of 842,691, up from 726,223 at the 2010 Census. Although it is the capital of East Kalimantan, some central government institutions such as the Police, Indonesian Army District VI of Tanjung Pura, and Pelabuhan Indonesia (Port Transportation) are also located in the city. The city also has a bridge connecting its river banks, Mahakam Bridge, with the city centre on one side and the Samarinda ~~Seberanglocality~~Seberang locality on the other.

Samarinda City is divided into ten districts known as *kecamatan*; the city's population in 2017 was 843,446, with approximately 52%male and 48%female. The average annual growth rate was 0.018%

between 2016-2017. The majority of the people of Samarinda are of ~~NativeIndonesian~~Native Indonesian and Chinese descent. There are also Americans, Canadians, Japanese and Koreans working in Samarinda. Life expectancy in Samarinda is 73.6 years as of 2014.

Figure 4. *Satellite Image (Left) andMap (Right) of Samarinda City*

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The city of Samarinda has a wet tropical climate, with rain year–round. Air temperatures range between 20-34°C with an average rainfall per year of 1980 mm, while the average humidity is 85%. The coldest months occur in January and February, while the hottest months occur in April and October.

The name Samarinda originates from the description of the way in which the Bugis houses were constructed. At that time houses were customarily built on a raft and generally had the same height. This provided important social symbolism of equality between residents; no person's house, and thus no person, was seen as higher as or lower than another. They named the settlement 'Samarenda', meaning 'equal in height'. After hundreds of years of use the pronunciation of the name changed slightly and the city became known as Samarinda.

The economy of Samarinda is driven by the large amount of logging and oil extraction companies based there. There are many abandoned coal mines in Samarinda. Previously, coal mining was very popular in Samarinda, however the Indonesian government revoked many mining licenses due to the use of illegal chemicals and machinery. Due to all these economical activities in Samarinda, it is one of the richest cities in East Kalimantan. Samarinda is connected to the Trans-Kalimantan Highway Southern Route, with the Samarinda-Balikpapan Expressway now under construction and expected to be operational by the end of 2018. The city is served by ~~AjiPangeranTumenggungPranoto~~Aji Pangeran Tumenggung Pranoto International Airport, one of Kaltim's busiest airports in terms of passenger and cargo movements. It is the primary hub of Kaltim Airlines. The prominent coal loading port of Tanjung Bara (TBCT) lies about 160 kilometres to the north of Samarinda.

At the beginning of 2020, Samarinda received several national awards in the City Category of the Performance Division of the Regional Administration (LPPD) award: (1) E-Government Management; (2) Public Information Openness; (3) Trade Sector; (4) Labor Sector; (5) Social Welfare Division; (6) One Stop Integrated Services Sector; (7) Division of Population Administration; (8) City Category Civil Registration; (9) Regional Financial Management; and, (10) Science and Technology Development and Innovation.

THE MAHAKAM RIVERS

Samarinda city has many rivers. There are 27 natural rivers that flow within the city of Samarinda and are spread across several districts and sub-districts. The main river is Mahakam River, which flows 980 km from the district of Long Apari in the highlands of Borneo to its mouth at the Makassar Strait. The city of Samarinda – the provincial capital of East Kalimantan – lies along the river, 48 km from the river mouth. The delta Mahakam River consist of specific micro climates, which are influenced by high and low tides. The Mahakam River is the largest river in East Kalimantan, Indonesia, with a catchment area of approximately 77,100 km^2. The catchment lies between 2˚N to 1˚S latitude and 113˚E to 118˚E longitude and originates in Cemaru from where it flows south-eastwards, meeting the River KedangPahu at the city of MuaraPahu. From there, the river flows eastward through the Mahakam lakes region, which is a flat tropical lowland area surrounded by peat land. Thirty shallow lakes are situated in this area, which are connected to the Mahakam through small channels. Downstream of the connection with the Semayang and Melintang lakes, the Mahakam meets three other main tributaries – the rivers Belayan, KedangKepala, and KedangRantau– and flows south-eastwards through the Mahakam delta distributaries, to the Makassar Strait.

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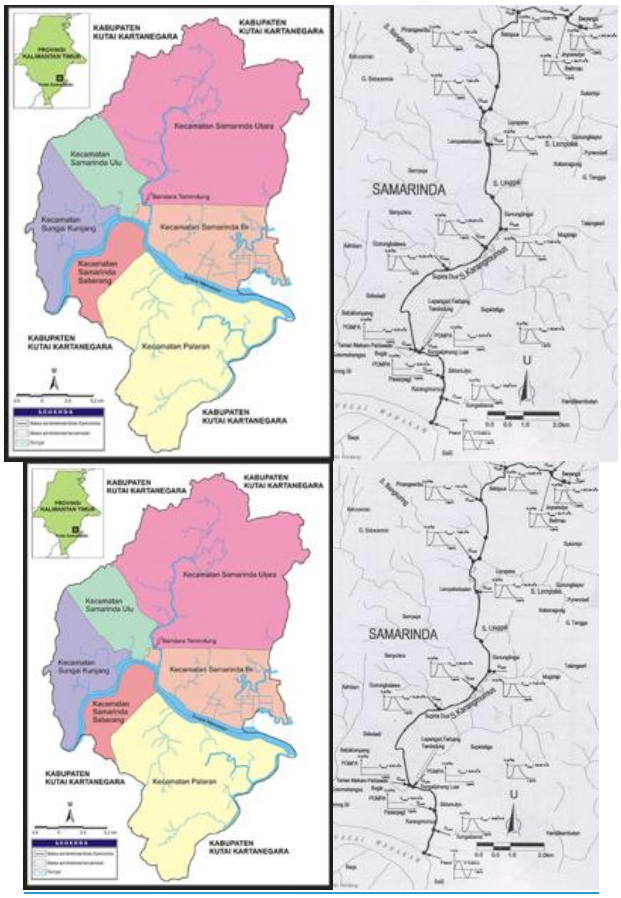

Figure 5. *Mahakam River and Samarinda rivers system*[50]

There are about 76 lakes spread in the Mahakam river basin and about 30 are located in the middle Mahakam area, including the three main lakes (Lake Jempang 15,000 Ha; Lake Semayang 13,000 Ha; Lake Melintang 11,000 Ha). The lake levels fluctuate seasonally from 0.5 m – 1 m during the dry season to 7 m during rainy season. The Mahakam lakes and surrounding wetlands act as water storage, as well as a trap of sediment contained in the water flowing into the lakes, which are now known to become shallower. This condition is presumably the result of an imbalance between sediment input and slow subsidence. Fishing is the primary source of livelihood in the Mahakam lakes area, with most of the men around the lakes involved in the fishing industry. The middle Mahakam lake area is an area of intensive fishing activity with a productivity of 25,000 to 35,000 metric tons of fish sourced per year since 1970.

The Mahakam delta is a mixed fluvial-tidal dominated delta. The delta covers about 1800 km^2, consisting of mangrove areas near the shore, Nypa swamps in the central areas, and lowland forest near the apex, corresponding to the first bifurcation. However, recent fishery development in this area has converted a vast area of mangrove into shrimp ponds, known as tambak. The delta has three main

[50] Source: http://kehidupan-disamarinda.blogspot.com/2008/12/peta-butut-hulu-hilir-sungai.html

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distributaries directed northeast, southeast and south. The area between these distributaries consist of a series of tidal channels that are generally unconnected to the main distributaries. The distributary channels are narrow and linear, with depths ranging from 8 to 15 m and distributary channel bifurcations appearing every 10 to 15 km. This lower Mahakam area is the second most productive hydrocarbon basin of Indonesia, which contains around 3 billion barrels of oil and 30 Tcf of gas reserves. Field geological investigations in this area were started in 1888, and in 1897 exploration drilling discovered oil at a shallow depth of 46 m on the Louise structure. Oil production started in 1898 followed by expansion of exploration to the entire Mahakam.

Mahakam and its floodplain is an ecologically important region. A total of 147 indigenous freshwater fish species had been identified in Mahakam. The Mahakam hosts the freshwater Irrawaddy dolphin *Orcaellabrevirostris*, called Pesut by local people. The dolphin is a critically endangered species, which is included in ~~theConvention~~the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix I. The Mahakam river basin is also an important breeding and resting place for 298 bird species, among which, 70 are protected and 5 are endemic species. These include the Borneo dusky manikin *Lonchurafuscans*, Borneo whistler *Pachycephalahypoxantha*, Bornean peacock-pheasant *Polyplectronschleiermacheri*, Bornean blue-flycatcher *Cyornissuperbus* and Bornean bristlehead *Pityriasisgymnocephala*.

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FLOOD

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Floods in Samarinda occur almost every year and are always recurring, especially in the rainy season. Duration, height and extent of inundation happens to vary greatly. The duration of the flood that occurred ranged from 3-10 hours to the water height between 0.3-1.5 m, while the largest inundation area is in the Lempake area, with a pool area of ± 200 ha. Samarinda itself included in the Karang Mumus Sub-watershed where this sub-watershed is also part of the Mahakam watershed, in length the main river namely Karang Mumus River is ± 17 km long. Watershed Karang Mumus itself has an area of ± 36 thousand ha, about 50.9% of the area Samarinda. The critical land area in the Karang Mumus Sub-watershed is ± 28.3 ha or around 63.8% of the total Sub-watershed area. The average rainfall that occurs in this sub-watershed region it reaches> 150 mm / year. Besides that, Karang Mumus Watershed classified as a flat area (flat), thereby causing the flow velocity on this river is relatively low. Of the various conditions in the Karang Mumus Sub-watershed area, flooding is natural disasters most often occur in this sub-watershed. Because of this sub-watershed is a large part of Samarinda, which automatically floods happens will have an impact on the city of Samarinda itself.

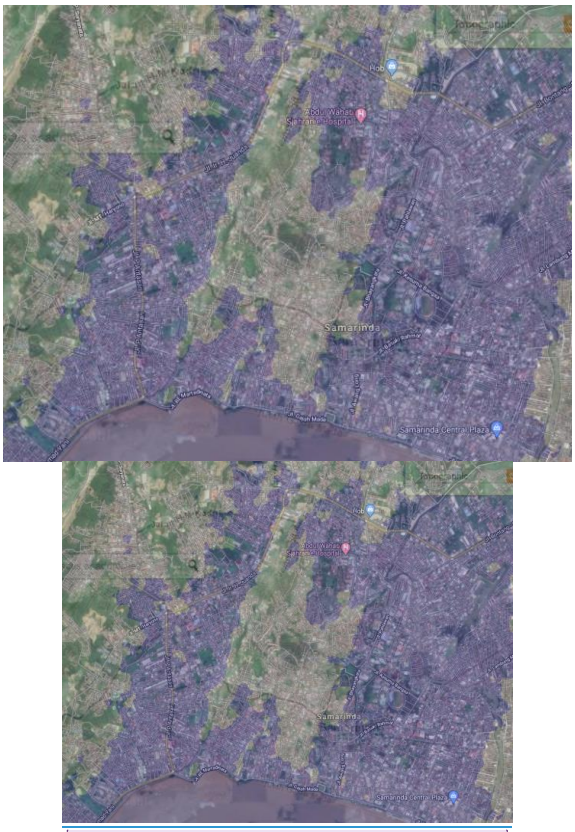

Figure 6. *Flood projections in the Centre of Samarinda*

Table.3*. Flood Prone Areas in Samarinda.*

No.	Sub District/Street Name	Inundation Height (m)	Inundation Area (Ha)	Duration (Hour)
1	Sempaja Selatan	0.4 – 0.6	20	4
2	Sempaja Utara	0.5 – 1.5	50	8
3	Lampa ko	0.4 – 0.6	200	8
4	Gunung Lingai	0.4 – 0.6	50	8
5	Sungai Pinang Dalam	0.4 – 0.6	30	5
6	Sungai Siring	0.4 – 1.0	50	10
7	Lempake (Simpang 3)	0.3 – 0.6	3	3
8	Temindung Permai	0.3 – 0.6	5	6

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9	Bandara Temnidung (Jl. Gatot Subroto)	0.3 – 0.8	5	6
10	Simpang Pinang Dalam	0.5 - 0.8	15	8
11	Simpang 4 Jl. Agus Salim	0.3 – 0.5	1	4
12	Sidomulyo	0.3 – 0.5	1	4
13	Sidodamai	0.3 – 0.5	1	4
14	Jl. Mulawarman	0.3 – 0.6	0.2	4
15	Simpang 4 Jl. Pang. 5 Batur	0.3 – 0.5	0.2	4
16	Jl. Awang Long	0.3 – 0.5	0.5	3
17	Rapak Dalam	0.4 – 0.7	40	6
18	Tani Aman	0.4 – 0.8	30	6
19	Sungai Kaledang	0.3 – 0.6	3	5
20	Loa Bakung	0.3 – 0.6	10	6
21	Karang Asam Ilir	0.3 – 0.5	0.5	5

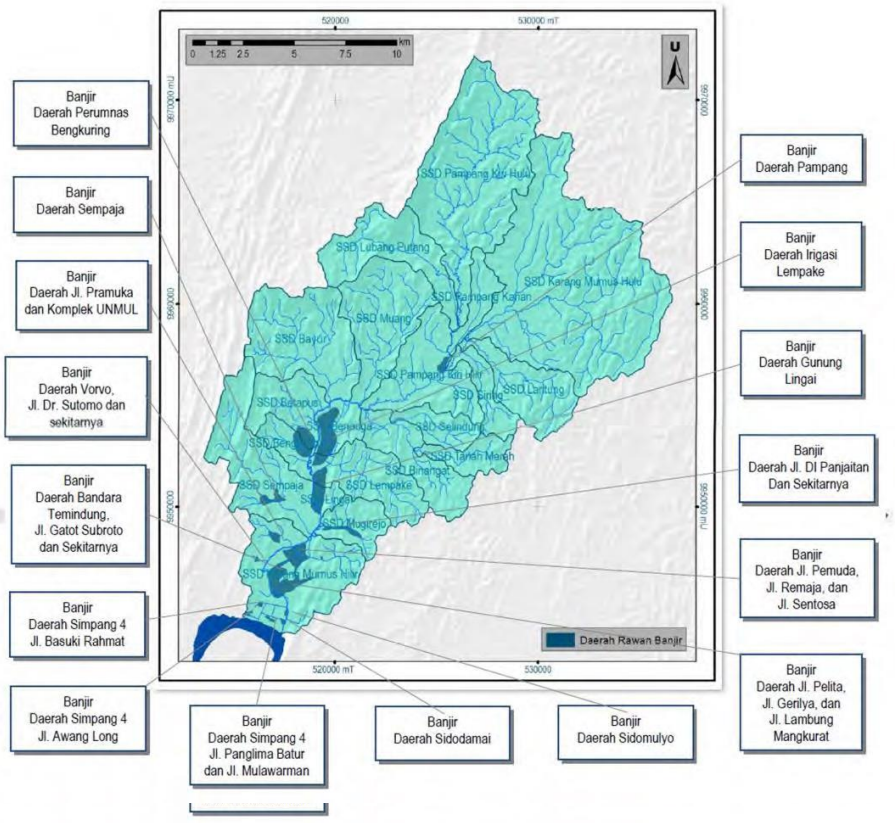

Figure 7. *Map of Potential Flood Inundation Areas in the Karang Mumus Sub-watershed, Samarinda*

Table 4. *Maximum Average Rainfall at SSD Karang Mumus Hulu*

~~**Table 4.** Maximum Average Rainfall at~~ SSD Karang Mumus Hulu

No	Date	Average Rainfall

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SSD Karang Mumus Hulu

No	Date	Average Rainfall						Thiessen Average Score	Maximum Rainfall
		Rain Station Sei Siring		Rain Station Pampang		Rain Station Tanah Merah			
		R1	C1	R2	C2	R3	C3		
River Area : 69.53 Km2									
1	07-May-04	0	0,995	74	0,005	91	0	0,39	
2	03-Dec-04	96	0,995	0	0,005	0	0	95,49	95,49
3	12-Apr-04	0	0,995	0	0,005	112	0	0	
4	07-Jul-05	36,7	0,995	77	0,005	31,5	0	36,91	
5	28-Jan-05	81	0,995	0	0,005	14	0	80,57	80,57
6	03-Oct-05	28	0,995	68	0,005	118,9	0	28,21	
7	04-Nov-06	14	0,995	75	0,005	14	0	14,32	
8	25-Mar-06	99,5	0,995	74	0,005	15	0	99,36	99,36
9	24-Mar-06	0	0,995	0	0,005	71,1	0	0	
10	06-Nov-07	10	0,995	78,5	0,005	57	0	10,36	
11	10-Nov-07	86,7	0,995	79	0,005	61	0	86,66	86,66
12	11-May-07	86	0,995	0	0,005	100,1	0	85,55	
13	10-Oct-08	47,5	0,995	85	0,005	0	0	47,69	
14	22-Apr-08	86	0,995	33,5	0,005	0,9	0	85,72	85,72
15	04-Jun-08	0,8	0,995	3	0,005	63,9	0	0,81	
16	28-Nov-09	52,6	0,995	80	0,005	11,8	0	52,74	
17	16-Apr-09	91	0,995	0	0,005	48,5	0	90,52	90,52
18	24-Oct-09	20,6	0,995	52	0,005	53,9	0	20,76	
19	28-Oct-10	59,6	0,995	81,8	0,005	7	0	59,71	
20	17-Dec-10	82,3	0,995	0	0,005	0	0	81,86	81,86
21	31-Mar-10	12	0,995	0	0,005	90,3	0	11,94	
22	24-Apr-11	6,3	0,995	96,4	0,005	2,5	0	6,77	
23	05-Jan-11	93,4	0,995	0	0,005	14,7	0	92,91	92,91
24	31-Mar-11	0	0,995	0	0,005	90,3	0	0	
25	10-Jun-12	0,2	0,995	77,2	0,005	8	0	0,6	
26	24-Oct-12	53,6	0,995	10	0,005	1	0	53,37	53,37
27	06-Jul-12	15,1	0,995	11,1	0,005	67,5	0	15,08	
28	03-May-13	0	0,995	96,1	0,005	0,5	0	0,5	
29	18-May-13	128,5	0,995	0	0,005	2,5	0	127,82	127,82
30	19-Sep-13	0	0,995	0	0,005	115,7	0	0	

Source : Sukmara, Riyan Benny (2014), Master Thesis "Flood Control Analysis of Karang Mumus River, Samarinda"

POLLUTION

Logging and mining activities have contributed to what has been termed an "alarming rate" of pollution of East Kalimantan's Mahakam River. Tests of water pollutants show that levels have increased sharply between 2009 and 2011. Despite the growing pollution, it is claimed that "the water is basically still safe for consumption." Unsafe concentrations of heavy metals have been observed in Mahakam fish. A 2015 study found lead concentrations in excess of 1000 times safe levels along with unsafe levels of copper, zinc, and cadmium[51].

Table ~~3~~5. *Data on principal element analysis on surface sediments in the Mahakam delta Water (Darlan, Yuli et al., 2009)*

NO	SAMPLE	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	CaO (%)	MgO (%)	Na_2O (%)	K_2O (%)	TiO_2 (%)	MnO (%)	P_2O_5 (%)	SO_3 (%)	H_2O (%)	HD (%)
1	BH-01	64.16	14.30	5.71	0.64	1.18	0.43	1.26	0.81	0.12	0.17	0.01	1.88	11.18
2	BH-03	59.09	15.23	6.25	0.46	1.81	1.29	1.42	0.76	0.06	0.14	0.10	1.94	12.91
3	BMH-03	52.60	17.01	6.69	1.35	2.60	2.85	1.89	0.78	0.08	0.22	0.10	2.34	13.55
4	MH-09A(GC)	79.80	7.04	3.56	0.52	0.78	1.29	0.63	0.39	0.05	0.12	0.08	1.01	5.81
5	MH-09B(GC)	56.60	16.63	6.96	0.29	1.74	1.29	1.58	0.83	0.08	0.20	0.03	2.74	14.13
6	MH.11(GC)	67.00	12.39	5.47	0.67	1.57	1.72	1.26	0.76	0.06	0.18	0.08	1.38	9.23
7	MH-12A(GC)	59.80	12.96	6.00	0.82	1.76	2.15	1.26	0.71	0.08	0.16	0.15	1.77	14.10
8	MH-15A(GC)	56.10	14.35	6.12	3.83	1.99	1.72	1.58	0.75	0.08	0.21	0.10	1.87	13.24
9	MH-17B(GS)	80.00	6.39	4.30	1.53	0.98	1.29	0.63	0.46	0.07	0.20	0.05	0.57	4.35
10	MH-02(GS)	79.50	6.37	4.84	1.00	0.70	0.86	0.79	0.55	0.06	0.20	0.08	1.04	4.85
11	MH-13(GS)	55.20	13.38	6.19	4.23	1.89	1.67	1.51	0.73	0.07	0.22	0.11	1.93	12.87
12	MH-10(GS)	57.20	16.43	6.75	0.39	1.65	1.31	1.49	0.68	0.07	0.19	0.09	2.54	11.21
13	MH-14(GS)	58.80	11.95	6.11	0.79	1.72	1.95	1.13	0.69	0.06	0.16	0.12	1.68	14.84
14	MH-16(GS)	53.10	16.90	6.72	1.25	2.59	2.71	1.79	0.71	0.07	0.20	0.09	2.23	11.64
15	MH-07	78.90	6.32	4.78	0.09	0.71	0.82	0.77	0.52	0.08	0.19	0.10	1.01	5.71

SOCIAL ASPECTS

The River Mahakam is an economic resource for fishermen and farmers, and as freshwater source, as a waterway since ancient time until today. It is in this river basin where the Kutai kingdom evolved. The Kutai history is divided into two periods, KutaiMartadipura (around year 350-400) and KutaiKartanegara period (around year 1300). KutaiMartadipura, a Hindu kingdom founded by Mulawarman at Muara Kaman, is regarded as the oldest kingdom in Indonesia. KutaiKartanegara was founded by settlers from Java at Kutai Lama near the mouth of Mahakam. In year 1565, Islam was extensively spread in Kartanegara by two Moslem preachers from Java, TunggangParangan and RiBandang.

The Dayaks are the indigenous people inhabiting Kalimantan beside the Kutais and the Banjars. Since the 1970s, transmigration of people to East Kalimantan was ~~organised~~organized by the Indonesian government, especially in areas near River Mahakam. Transmigration aims to migrate people from overpopulated Java, Bali, and Madura islands to stimulate greater agricultural productivity in outer islands. By 1973, almost 26% of the land under cultivation in East Kalimantan was being worked by transmigrants.

Another social aspect that is also related to the issue of social vulnerability is the issue of gender in Samarinda. Gender Problem Identification in Samarinda is included optimization needed for: (a) Gender Mainstreaming Working Group's role; (b) The role of women in development (c) reporting system for women and children abuse; (d) Implementation of activities towards a children friendly city; (e) Services in accordance with the Convention Children's rights; (f) information about children's forums at school, and community; (g) The role of social institutions as a forum community participation; (h) public awareness in preventing violence towards women and children. All those issues cause high poverty rates includes the high of (1) The number of poor families due to limited

[51] Data on principal element analysis on surface sediments in the Mahakam Delta waters (Darlan, Yuli Et al., 2009)

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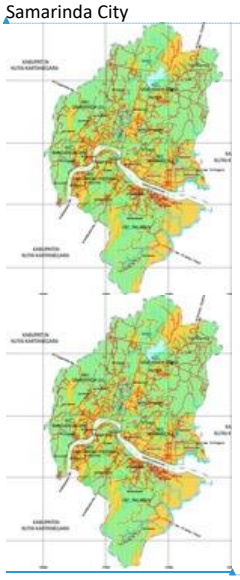
access in utilizing development resources; as well as (2) The lack of adequate facilities and infrastructure for performance and service improvement.

The table below lists some of the main issues being faced in Samarinda City. These include from social to environmental or development issues, that exacerbate the community´ vulnerability to climate change.

Table 46. *Vulnerable Communities issues in Samarinda City*

City Territory	Ethnicity	Vulnerable communities issues	Vision and Mission
Samarinda City 	*The first ethnic group living in this area was the Banjar and BugisWajo. Furthermore various kinds of ethnic groups began to arrive and settle in Samarinda City including:* *• Paser* *• Javanese* *• Madurese* *• Sasak* *• Dayak* *• Chinese* *And others.*	*• Environmental problems that arise are floods, and poor waste management, thus making the quality of health worse.* *• Lack of infrastructure development mainly related to the construction and maintenance of roads and other facilities. This resulted in the difficulty of connecting between one city area and another. Throughout 2017, the ~~highesttemperature~~highest temperature of Samarinda Municipality is 28.30-°C with ~~thehighest~~the highest humidity of86%. When viewed from rainfall ~~andrainy~~and rainy days, the Municipality of Samarinda has the highest rainfall and rainfall in April and June in 2017.* *● Protection and support for vulnerable populations: women, children, elderly, disabled. Gender Problem Identification in Samarinda is included optimalization needed for: (a) Gender Mainstreaming Working Group's role; (b) The role of women in development (c) reporting system for women and children abuse; (d) Implementation of activities towards a children friendly city; (e)*	*Focus (2018-2023) on:* *• Realizing the quality of East Kalimantan's human resources that are independent, highly competitive and noble;* *• Realizing a reliable economic structure with broadest community participation;* *• Realizing equity and proportionality of basic services, for the community;* *• Realizing effective, efficient, participatory and law-based governance;* *• Realizing integrated and harmonious development with an economic and ecological based regional development approach.* *9 Priority Agenda Samarinda City:* *• Priorities 1. Optimizing flood control.* *• Priority 2. Increasing the degree of public health.* *• Priority 3. Development of education to produce human resources professional character and religious.*

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City Territory	Ethnicity	Vulnerable communities issues	Vision and Mission
		Services in accordance with the Convention Children's rights; (f) information about children's forums at school, and community; (g) The role of social institutions as a forum community participation; (h) public awareness in preventing violence towards women and children.	• *Priority 4. Development and improvement of infrastructure, urban facilities and utilities supporting leading sectors and environmentally sound.* • *Priority 5. Poverty alleviation based on community economic empowerment.* • *Priority 6. Disaster prevention and management, collaboratively and effectively.* • *Priority 7. Improvement of religious life, arts and culture; increasing the role and achievements of youth, and sports; and increasing the empowerment of women.* • *Priority 8. Strengthening regional income and development expenditure in the region.* • *Priority 9. Improving good governance.*

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~~4.2.~~2.2. Climate mitigation in Samarinda and East Kalimantan province

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•*National Urban Development Project*" (NUDP) (Project ID: P163896)
•the "*Improvement of Solid Waste Management to Support Regional and Metropolitan Cities*"(Project ID: P157245) coordinated by the World Bank

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In 2010, the East Kalimantan government committed to sustainable development by launching the Green East Kalimantan focused strategy on improving natural resource governance. To reach its goal, the provincial government engaged various local stakeholders in East Kalimantan and requested support at national and international levels. Governor Awang Faroek Ishak launched *Green Growth Compact (GGC)* in September 2016 as a tool to bring together initiatives from the public and private sectors, local and national governments, communities, NGOs and universities. During the annual meeting of the Governor's Task *Force on Climate and Forests (GCF)* 2017 in Balikpapan, an agreement was signed by several of the stakeholders containing seven pilot initiatives, namely: (1) implementing

an emission reduction program carbon for the FCPF scheme; (2) strengthen social forestry efforts (targeting 660,782 Ha); (3) strengthen 21 KPHs; (4) strengthen management of Wehea-Kelay's Essential Ecosystem (KEE) for corridors Orangutan; (5) developing partnerships for the management of the Territory Delta Mahakam; (6) supports the development vision of Berau Regency (Berau Forest Carbon Program); and, (7) developing plantations sustainable in all districts. Since the launch of the East Kalimantan strategy Green, KLHK at the national level has supported it as a model sustainable development for Indonesia.

Within the framework of the *Forest Carbon Partnership Facility (FCPF) Carbon Fund program*, the East Kalimantan Environmental Service relied on several tools to assess the status of the local environment, for example it introduced a system for measuring, reporting and monitoring (MMR) greenhouse gas (GHG) emissions and the National Registration System (SRN). This program was endorsed by the Government of Indonesia in order to participate in the *Forest Carbon Partnership Facility (FCPF) Carbon Fund program*. Currently East Kalimantan is in the negotiation stage of the Emission Reduction Payment Agreement (ERPA), to be ~~finalisedin~~finalised in 2020. This program also engages other institutions, namely: Research and Development Center for Socio Economic Policy and Climate Change (P3SEKPI); Climate Change Regional Council; and WWF (World Wide Fund for Nature).

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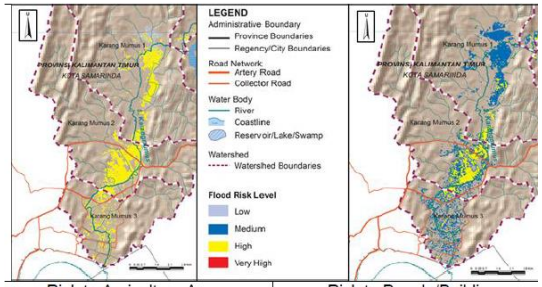
CLIMATE KAMPONG PROGRAM

East Kalimantan Province has endorsed a green development model as the key to future sustainability in the region. Climate Change in East Kalimantan is not a figment of people's imagination. The Balikpapan Meteorology and Climatology Agency show that in the last 30 years there has been an increase in the average temperature of 0.043 °C per year in Samarinda, and 0.02 °C per year in Balikpapan. The Regional Council for Climate Change in East Kalimantan stresses how collaboration between stakeholders, government and citizens is a strategy to maximise efforts toward a Green Kalimantan. Currently, through the Green Development Agreement scheme, 11 pilot initiatives have been built, including emission reduction interventions through the *Forest Carbon Partnership Facility (FCPF) scheme*, covering an area of 660,782 hectares. Other interventions include the management of the Essential Ecosystem Area (KEE) for the orangutan corridor in the Wehea-Kelay Landscape, the development of the Delta Mahakam partnership, the Berau Forest Carbon Program (PKHB), the sustainable plantation development, land and garden fire control, SIGAP Program Prosperity and Climate Change Adaptation in the city of Balikpapan, and the Climate Kampong Program. Climate kampong program or PROKLIM is a national program by the Ministry of Environment and Forestry, aiming to increase the involvement of the community and other stakeholders in strengthening the capacity of adaptation to the effects of climate change and the effects of greenhouse gases. The purpose of the climate kampong is to encourage communities to adapt and take steps to address the impacts of climate change on their respective environments. Sindang Sari and Makroman Sub-districts at Sambutan district, Samarinda City, were selected to participate in the 2019 Climate Kampong Program. Sindang Sari Sub-district is a small example of Samarinda City's efforts to be pro-environment. The goal of this program is to facilitate citizens' engagement facing climate change and climate adaptation. The program has also a focus on educating new generations and preparing them for the future.

For the Samarinda City government, kampong development within the *Clean and Healthy Green Program* is very important as a practical and effective way to create an understanding of the importance of personal and environmental health for communities. Both selected kampongs in Samarinda City are expected to work towards creating a village that is in accordance with shared ideals. The climate kampong program actually aims to endorse how people try to protect their environment, adapt to climate change disasters and also to get ecological and economic benefits, in order to increase people's income and liveability.

Table 57. *Local Action for overcomes the issue in Samarinda City*

No	Hazard and Risk	Climate-Related Hazards and Risks for Samarinda City	Samarinda Local Action	Stakeholder
1	**Flood and drought**			
		▪ *Floods in Samarinda is happen annually. Length, height and spacious* ~~The problem of flooding in the Samarinda City is complex and driven by~~ ~~i) fluvial floods along the Karang Mumus River,~~ ~~ii) pluvial floods in the city, and~~ ~~iii) coastal floods due to the high-water levels in the Mahakam River.~~ ~~Flooding cause frequent inundation of buildings, temporary relocation of people and associated health hazards. The river is a significant source of community activities despite the river pollution.~~  Risk to Agriculture Areas | Risk to People/Buildings	➢ *Flood prevention programs in Samarinda (Astuti, 2014; Sari, 2015): (1) The development of a retention pond as a water reservoir from rainfall runoff, (2) The development of drainage subsystems as the smooth management of the water discharge from residential unit toward the primary channel, (3) The development of floodgate on a tributary of the Mahakam River especially KarangMumus river and water pumps in flood area, (4) The City Rivers Normalization program for increasing water flows, (5) Development of Bendalis (a ~~small water~~small water reservoir).* ➢ *The city government is less involved in the social aspects of the flood control programs. Only the physical infrastructure development of flood control is optimized (Sodik, 2015)* ➢ *Improve the comprehensive and preventive flood mitigation planning* ➢ *Repair the flood control infrastructure* ➢ *Improving the Quality of Riverbank Settlement* ➢ *Consolidating the sustainability of protected areas to support sustainable ~~citiesdevelopment~~cities development* ➢ *Flood control systems development*	*Samarinda Municipality*

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		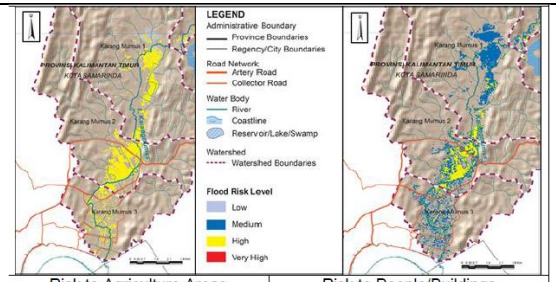 Risk to Agriculture Areas | Risk to People/Buildings *The problem of flooding in the Samarinda City is complex and driven by* *i) fluvial floods along the Karang Mumus River,* *ii) pluvial floods in the city, and* *iii) coastal floods due to the high-water levels in the Mahakam River.* *Flooding cause frequent inundation of buildings, temporary relocation of people and associated health hazards. The river is a significant source of community activities despite the river pollution.*	➢ *Drainage network system ~~development~~and development and improvement* ➢ *Increase public and private green space*	*Samarinda Citizen*
2	**Access to clean water**			
		▪ *The community does not understand the essence of the existence of swamps on the left and right sides of the river that flow through the city of Samarinda, even though this can be an alternative source of clean water. Samarinda has lost swamps in the size of thousands of hectares and will continue to grow due to the decline of swamps in the interests of settlements and opening trade areas. (source: "Tidakadakebijakandibuatuntukmenghentikanokupasiatasrawa-rawa , https://www.niaga.asia/mengapa-air-menjadi-masalah-di-samarinda/). water scarcity is classified as very low or non-existent based on modelled flood information currently available to the tool of ~~http://thinkhazard.org~~http://thinkhazard.org*	➢ *Clean Water Services through Regional Water Companies.*	*Samarinda Municipality*

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3	**Access to reliable energy resources**			
		▪ *The number of households served by PLN connections has almost doubled in the period 2011-2015. However, there are still 70% of households that have not been served (BPS Samarinda, 2015)*	➢ *Electricity Services by the State Electricity Company.*	*Samarinda Municipality*
4	**Community vulnerability and safety**			
		▪ *From 2010-2018 there was no significant reduction in the percentage of poverty, namely from 5.21% in 2010 to 4.59% in 2018 (BPS Kota Samarinda, 2018).* ▪ *East Kalimantan is faced with environmental problems due to uncontrolled mining exploitation. During the last 10 years, in addition to 32 fatalities, he said there were 632 excavated holes. Former mining excavations in East Kalimantan continue to take casualties in the past seven years. The number reached 32 people, 27 of whom were children.* ▪ *In the notes of the One Earth Forum, East Kalimantan is one of the deadliest provinces for its citizens. Because, since the Dutch colonial era, around 1894, this province, formerly called Borneo Land, has extracted itself. Through the dismantling of oil and natural gas and until this happens, natural wealth continues to be dredged. To this day, East Kalimantan is still relying on the economy for logging, coal extraction, and the opening of oil palm plantations. After Kaltara was expanded, the area of East Kalimantan became 12.7 million hectares. Of that number, 46 percent or equivalent to 5.2 million hectares are destined for mines. Meanwhile, the plantation area is only 3.37 million hectares. No more than 4.27 million hectares are living spaces that must be shared for houses of worship, hospitals and schools, roads and markets, as well as playgrounds and settlements for a population of 3.4 million. This all creates a living space that is of poor quality*	➢ *Demand lawfully issues related to the management of coal mining environment.* ➢ *Monitor mining business activities* ➢ *Protection and support for vulnerable populations: women, children, elderly, disabled*	*Samarinda Municipality*

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		(https://www.mongabay.co.id/2017/03/27/masyarakat-kalimantan-timur-menderita-akibat-lingkungan-yang-rusak/) ▪ *Protection and support for vulnerable populations: women, children, elderly, disabled.*		
5	**Food security**			
		▪ *As of July 2019, at least there have been numerous forest fires which have burn an area more than 60 Ha (https://merdeka.com/peristiwa.html,) Indigenous people in that lived in East Kalimantan have continued to lose their main livelihoods since the presence of coal and mineral mining, the oil and gas industry, and palm oil plantations. The vast area of land needed investment has led to narrow areas of management of indigenous people (https://money.kompas.com). As a result of uncontrolled mining, the agricultural sector in East Kalimantan was hit. Rice fields must be shifted because of being forced by mining sites.*	➢ *Until now, Samarinda City is only able to fulfill 18 percent of Samarinda's food needs. The remaining 82 percent must be brought in from outside East Kalimantan by the city government.* ➢ *Synchronizing and sharpening the role of extension agents in the field plus increasing the capacity of education counseling in the field of agriculture.*	*Samarinda Municipality*
			➢ *Diversification of food and utilization of land owned by the community.* ➢ *Coaching through the use of home yards to help fulfil household food needs*	*Samarinda Citizen*
6	**Waste Contamination**			
		▪ *Every day, Samarinda City produces 800 tons of garbage. These organic and non-organic wastes are collected from various points. If added up every month, the city produces 24 thousand tons of waste. On certain days the amount of garbage in the capital has increased dramatically. For example on weekends, school holidays, Eid al-Fitr, Christmas and New Year. At that moment, garbage increases 30 percent compared to the usual day* ▪ *(Source: http://bontang.prokal.co/read/news/18363-astaga-sehari-samarinda-dipenuhi-800-ton-sampah).* ▪ *The number of Final Disposal Sites is only one that is qualified. Namely Bukit Pinang Final Disposal Site on JalanPangeranSuryanata, Samarinda Ulu. Even then the capacity is only up to 500 tons per day. In other words*	*Processing waste into recycled goods that are worth selling.*	*Education Institution*
			➢ *At certain times, where waste is very disturbing, the government invites Non-Governmental Organizations to clean up Waste together.*	*Samarinda Municipality, NGO, Citizen*
			➢ *Form a junk cyber team that is tasked with spurring the community to maintain cleanliness.*	*Samarinda Municipality*

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		there are still 300 tons of waste volume that meets the capital city. The alternative is the Sambuta Final Disposal, which is district scale. However, because of the problem of land, the volume of garbage that can be accommodated is only enough for the surrounding residents. *(Source: http://samarinda.prokal.co/read/news/11758-volume-sampah-meningkat-tajam.html)*	➢ *The Government of Samarinda City has begun to formulate and issue policies related to the condition of solid waste in Samarinda such as the issuance of Perwali Number 1 Year 2019 concerning Reducing the Use of Plastic Waste.* ➢ *Socialize the rules to the public to dispose of waste according to the place provided and the time determined according to Perda Number 2 Year 2011 namely, from 6 pm to 6 am local time.*	
			▪ *Organic Waste Management.*	*Samarinda Municipality and Citizen*

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Part 4 Technical Summary: New ways forward for climate-responsive urban public space	
a)	The project vision is to create a new typology of public space, conceived as a series of public spaces that form an interconnected network within the pilot city of Samarinda.
b)	Key priorities for the project include solutions and education about (1) flood and drought; (2) access to clean water; (3) access to reliable energy sources; (4) community vulnerability and safety; (5) food security; and, (6) waste management.
c)	Each of the designed public spaces will encourage the local community to engage with the 6 key priorities. They will provide access to essential resources such as clean water, food and energy, provide educational opportunities to learn about sustainability and demonstrate how to reduce climate change impacts.

~~5.~~3. PROJECT/PROGRAMME OBJECTIVES

UNDERSTANDING OF THE TITLE:

EMBRACING THE SUN: Redefining Public Space as a Solution for the Effects of Global Climate Change in Indonesia's Urban Areas

Indonesia is a tropical country consisting of 5 large islands surrounded by many small islands. As a tropical country, of course the sun is the main daily companion for people in Indonesia, and is an icon of the climate. But lately, we have found and witnessed many changes in people's attitudes towards our natural climate. Mainly related to the effects of climate change. Climate change is something that cannot be avoided all over the world. Including in Indonesia. At present, people prefer to avoid and ignore climate issues which are considered to be unfriendly and disturb the comfort of daily lives.

Through this proposal, we want to raise awareness of the threats and the potential of our Indonesian environment and our tropical climate; we want to increase awareness of the impacts of Climate Change and the main strategy to achieve this is rethinking Public Space.

The objective of this ~~programme~~program is to prepare Indonesian communities to cope with the effect of climate change as well as ~~reducethe~~reduce the causes of the current environmental crisis. The focus is on addressing the social impact of floods on urban communities. This is achieved through the development of a new typology of public space and its implementation ~~to establish an integrated network of public spaces~~ within a pilot city, Samarinda city, and with the objective to address in ~~ahierarchical~~a hierarchical way different challenges, ~~prioritising~~prioritizing flood adaptation and preparedness. The ~~programme~~program is based on an action research participatory methodology. The theoretical framework adopted is the *Positive Development* paradigm[52], which promotes building solutions and techniques that improve the environment, harvest resources and contribute in a positive fashion to the overall ecology of an area. Positive development advocates interventions on

52 Birkeland, J. (2008). Positive development: from vicious circles to virtuous cycles through built environment design. London: Earthscan.

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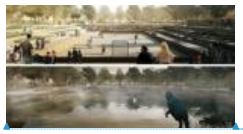
the triple bottom line of economy, environment, and society, to improve the overall net performance of systems in different fields. Going beyond sustainable development, positive development advocates interventions that contribute a positive gain to the system and that instead of depleting resources, generate improvements on ecosystems, communities, and economic systems. In this paradigm, interventions instead of requesting continuous inputs to function, would produce outputs to support communities and better the overall environment[53]. The Positive Development paradigm is implemented in this project through a systemic approach[54], aimed to create a resilient ecosystem within the city of Samarinda. The systemic approach aims to establish a network of infrastructures that respond in a coordinated way to different challenges connected to climate change. The systemic approach ~~aim~~aims to address in first instance the main challenge of flood adaptation; the proposed public ~~spaces~~space will then also address ~~also~~ other climate related challenges ~~throughthe~~through the detailed design of the new ~~infrastructures.~~infrastructure. The systemic approach allows to ~~maximise~~maximize the resources and possibility of an ecosystem, spreading the load of current challenges, ~~maximising~~maximizing the gains of the interventions, outreaching different communities within the selected pilot city[55]. The creation of public spaces based on the new proposed typology, will also foster dynamics aimed to connect, enhance, and integrate existing public spaces. The long-term vision is to create a network of public spaces that will support a new ecosystem that will provide benefits to the entire city. Although the ~~interventions~~intervention will be spatially limited to ~~two~~one specific ~~communities~~community, the creation of a network in the long term, including existing and proposed public spaces, green areas, water bodies, community and social infrastructure, will ~~maximise~~maximize the environmental and social benefits of the ~~programme~~program. The network will be established through low-cost high-impact design solutions to be progressively implemented in the urban tissue. Design guidelines for bottom-up or middle-out interventions will be developed building on learnings from this project. To provide an idea of the overall approach to the creation of this new typology, some relevant case studies are summaries in table 6. These case studies address one specific issue, contextually creating a public space addressing also secondary social and environmental issues.

Table ~~6~~8. Preliminary case studies for the development of a new typology of public space

Case Study	Location	Project
	Brisbane, Australia	Rainbank is an integrated system to collect rainwater in a 30h urban basin, treat the water through vegetation and store it for the use of the local area needs. The project relies on existing infrastructure and public spaces to collect and treat water, which is then stored underneath South Bank parkland, Brisbane main public space.
	Copenhagen, Denmark	Enghaveparken is a public park that is undergoing refurbishment so to accommodate the need of local communities as well as serve as a 24,000 cubic meter retention basin for water during major flooding events

53 Idem.

54 Maser, C. (2012). Decision-making for a sustainable environment: a systemic approach. Boca Raton: Taylor & Francis.

55 Idem.

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	Sydney, Australia	Ballast Point Park in Sydney accommodates a structure built out of a recycled tank; this structure support micro wind turbines to produce clean energy for the local community
	Bangkok, Thailand	Urban farming is an activity that is taking place in several cities; Suanluang 1 community in Bangkok has taken this activity to a new level; public spaces in the urban village are used to grow food, which is then used to prepare traditional food. This is sold once a week in a unique Muslim market, the larger of its genre in Thailand. This project has provided positive outcomes to residents in terms of quality of public space, access to food, and in terms of economic return through the markets.
	Bogotá, Colombia	Mayor of Bogotá, Enrique Peñalosa has invested in the creation of an integrated network of bikeways, public spaces, supported by a Bus Rapid Transit. These interventions have provided a reduced reliance on private transportation and increased accessibility to the urban core reducing its congestion.
	Tirana, Albania	Since 2000, Tirana has invested in rejuvenating its public space creating a series of colourful interventions. This cost-effective project was able to engage the community in rediscovering their city; public spaces were revitalized with a positive effect on street security and commercial activities.

Within this theoretical framework, this ~~programme~~program suggests a strategic role for public spaces[56]. Public space is for definition communal space and a stage where private interests are generally negotiated for a greater common good. The disperse and interconnected nature of public spaces allow them to act as ecological corridors as well as social spaces[57]. Looking at public spaces as opportunities to connect different parts of a city, different ecosystems, different communities, can contribute to face in a networked way emerging challenges, to distribute access to resources, to integrate opportunities for positive development within the urban fabric and social life.

~~This programme~~The case studies reviewed individually address one specific issue connected to climate change; they all suggest the idea of public space as an infrastructure that links societal, economical, and environmental dynamics. This project recognizes the interconnected nature of flood

56 Wikantiyoso, R., &Suhartono, T. (2018). The role of CSR in the revitalization of urban open space for better sustainable urban development. International Review for Spatial Planning and Sustainable Development, 6(4), 5-20. doi:10.14246/irspsd.6.4_5

57 Guaralda, M., &Kowalik, M. (2012). Negative space and positive environment: mapping opportunities for urban resilience: REAL CORP.

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events, their impact on communities at multiple levels, limiting access to resources and services. Flooding disrupts supply chains challenging food security and community sustenance; flooding affects access to clean water and power; flooding threatens the physical environment and undermines the social structure. This program aims to deliver a public space that will address the multilayered issue of floods. It will mitigate in first instance the effect of flooding within the selected community and provide access to resources to sustain the community during recovery. The public space will function as a community hub also outside flood season, maximizing the impact of the infrastructure on the local community.

Imagine the following scenario, you live in Samarinda and you find yourself in need of protecting yourself, your family, and your house from an incumbent flood. In first instance, you need to secure your house, building a physical barrier to contain water using sandbags (where to find the sandbags?). During the flood, you find yourself and your family cut out from the broader city and you can rely only on resources in your proximity. You might need food and water to cover the basic needs of your family. You also might need access to power to charge your phone so to stay connected and updated about the situation (where to find these resources?). After the flood, you need to clean up, store debris, manage waste, reinstate your access to distribution lines and resources (how to do this?). Our rationale is that the physical impact of floods on a community are just one aspect of the issue and that there are several other factors to consider in order to foster community resilience and preparedness to embrace climate adaptation. The public space we envision addresses one issue, the social impact of floods on communities, proposing an integrated system that can cope with the nuances of this situation. The strength and innovation of this project is not limiting the intervention to one specific action, for example managing the physical hazard caused by floods. The strength of this project is to bring together existing solutions and technologies into an integrated system to address one complex issue through multiple integrated actions. The improvement of integrated actions, through a systemic approach, will be able to support communities before, during, and after a flood event, supporting them to adapt to climate change. The different actions will be co-located and integrated within the same public space, so to maximize the impact of the intervention and its cost-effectiveness.

This program, in the long-term, aims to have a positive impact on the enhancement of lives quality and life expectancy of communities within Samarinda city in Indonesia, through the development and construction of an integrated network of public spaces that will function as infrastructure to increase community resilience and provide communities with basic access to resources. The first and main aim of the network is to adapt and to prepare to face disruptive flood events. ~~Two~~One public ~~spaces~~space will be developed to pilot this approach; ~~their~~its design and structure will provide communities with a space that will support the community before, during, and after flood events. The new ~~two~~ public ~~spaces~~space will act as a hub ~~were~~where communities will learn about flood and will access resources and materials to face flood (for example ~~sand bags~~sandbags) in preparation ~~to~~for a flood event. During a flood event, the public space will act as a floodable landscape to harvest flood waters and mitigate the impact on surrounding communities. It will also provide communities with access to food, clean water, and power. After the flood, the public space will act as a hub ~~where to access power, water, and food~~ to support recovery, temporarily store debris, organize clean-ups and community recovery. Overall, the proposed public spaces will increase community safety during flood events. The physical interventions will address current and emerging issues linked to climate change through passive systems, community engagement, and affordable low-tech solutions. ~~The pilot project in Samarinda City will provide then~~Food production is seen as an important secondary component of this project, which can foster economic activities and social engagement also outside hazardous events. Local women will be a fundamental partner in the success of the intervention; they will ensure the redefinition of public space in the concept of positive development is achieved. The aim is no longer merely to bring women's voices to the public sphere for the benefit of women and children but to further transform the existing power relations structure as a result of patriarchal culture that

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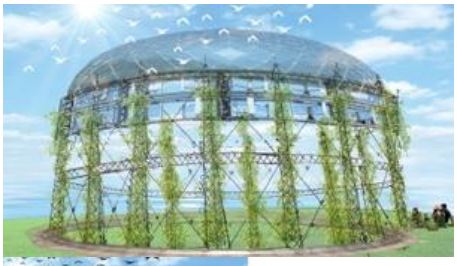
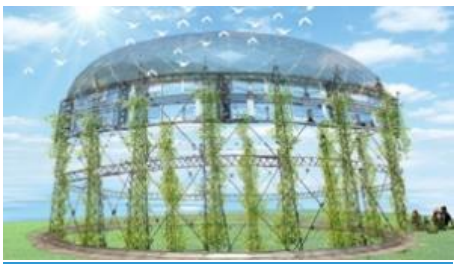
marginalizes vulnerable groups. The new public space will provide women with a space where to be economically active with the production of food and leading communities in adapting to climate change. The pilot project in Samarinda City will provide the template for interventions in other Indonesian cities through the development of implementation guidelines. These guidelines might also be implemented in other national contexts, taking in consideration local needs and conditions.

The nature of the physical intervention and the character of the methodology to design and deliver them will be a fundamental component in the long-term sustainability of the project. The use of passive technologies and design will ensure that the new public spaces will be maintained with the requirement of minimal investment in the long-term. The co-creation approach – through engagement with the local community during the design of public spaces – is aimed to foster a sense of ownership within the interested communities, who will then be entrusted with the day-to-day maintenance and activation of the public space system. The design of the new public space, will rely on the use of passive technologies and, where possible, off-the-shelf technologies. In order to identify suitable solutions and technologies for the city of Samarinda and the selected location, as part of the first component of the program, a contextual review will be developed. The selected solutions will be then discussed with community stakeholders and used as building blocks of the new public space. This approach will ensure cost effectiveness of the intervention; coupling existing technologies in the design of the pilot project will also allow to address specific issues of flooding on the social milieu, as identified with the community.





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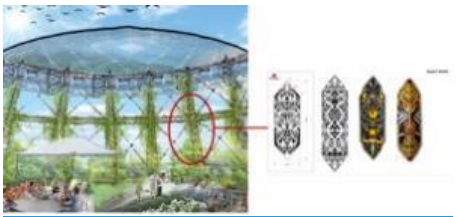

Figure 7. *Artist's indicative impressions of one type of public space*

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~~5.1.~~3.1. Integrated Approach to Public Space Design and Climate Change Adaptation

The proposed typology aims to create a space that will be socially inclusive, culturally appropriate, vibrant to support the local economy, and have physical attributes to positively impact the local environment while increasing climate resilience. The project will address the need to prepare and adapt local communities to flood hazards, it will focus on five key elements to achieve a successful public space typology: water, energy, materials, social, and green. Water management and harvesting, food production, processing and storage, waste management and biodiversity enhancement will be by-product of the interventions related to each of these elements. The resulting public space network will be realised with dispersed low-tech design intervention built-in the day-to-day practices of local government and citizens (some examples provided in figure 08). This approach aims to promote social inclusion and diversity by enhancing activities that target people from different genders, ages and ethnicities. High impact low cost interventions across ~~two~~one public space ~~sites~~site will foster an integrated and Water Smart approach[58] to flood adaptation. The new public space typology will provide Samarinda with tangible adaptation strategies and tools including:

(1) Resilience
- Public community space for markets, gatherings, play and education including shade structures.
- Solar power generation for mobile phone charging and lighting at night, ensuring passive surveillance of space at night and safe access for all members of the community.
- Perpetual access to clean safe water.
- Waste management

(2) Response
- Emergency distribution point for community access to crisis provisions, electricity for phone charging, sandbags etc.
- Access to reliable water and energy sources during a flood emergency.
- Evacuation and shelter management point for displaced people.

(3) Recovery
- Ongoing community resilience building following a flood event.

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[58] Tsakalides, P., Panousopoulou, A., Tsagkatakis, G., & Montestruque, L. (2018). Smart water ~~grids~~ grids : a cyber-physical systems approach. Boca Raton, FL: CRC Press/Taylor & Francis Group.

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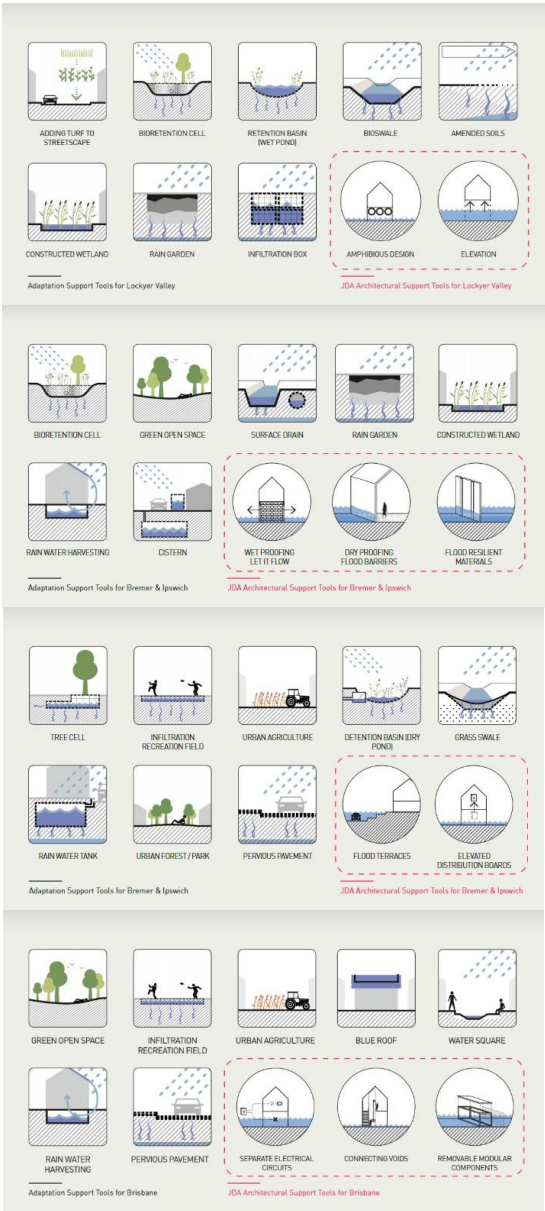

~~***Figure 8- Design tactics for flood management and mitigations***~~[59]

Briefly, the project will deliver:

[59] ~~James Davidson Architects (2019) The Water Futures Book. https://issuu.com/jamesdavidsonarchitect/docs/water_futures_book__digital_versio~~

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- ~~Two~~A palette of technologies and technological solution to inform the design of the pilot project, developed through a co-design approach with the interested communities.
- One pilot public ~~spaces~~space in Samarinda
- ~~.~~A~~D~~Design guidelines consist of a palette of low-cost high-impact design tactics to be implemented in time within the urban environment, so as to enhance flood water management and establish a cohesive network of interventions to manage floods through adaptation of existing public spaces and development of new ones.

The ~~two~~selected public ~~spaces~~space, identified in consultation with Samarinda City Government, will act as multipurpose spaces within the specific framework of being in the first instance designed to support local communities to adapt to floods~~.~~ not just in terms of physical response, and mainly focusing on the social response to flooding. Detailed design of the proposed public spaces and their locations will be negotiated with local government and local communities, on the basis of preliminary research, their main feature should anyway be:

- Sections of the public space have to act as a floodable landscape and work as a flood water retention basin during flood ~~event~~events. Flood water from surrounding areas ~~have~~has to flow to this space, where it can be safely managed. From the public space, water will be then safely ~~managedthrough~~managed through ground infiltration and discharge in the Mahakam River through a swale.
- The retention basin will be filled with sand during the dry season; residents will be able to collect this sand and sandbags from the public space to protect their houses ahead of the flood. Basically, the space will function as sand storage and local residents will be able to access sand stored here to form ~~sandbag~~sandbags to protect their properties. The community will therefore actively ~~engaged~~engage in the management of the public space and its preparation towards a flood event.
- Low-tech tactics in existing and proposed public spaces, including streetscapes, will facilitate the management and dispersion of flood waters. The network of public spaces will direct flood water from high ground towards the proposed public space, which will act as a retention basin, and in the second instance from the public space to the river when it will be safe to do so.

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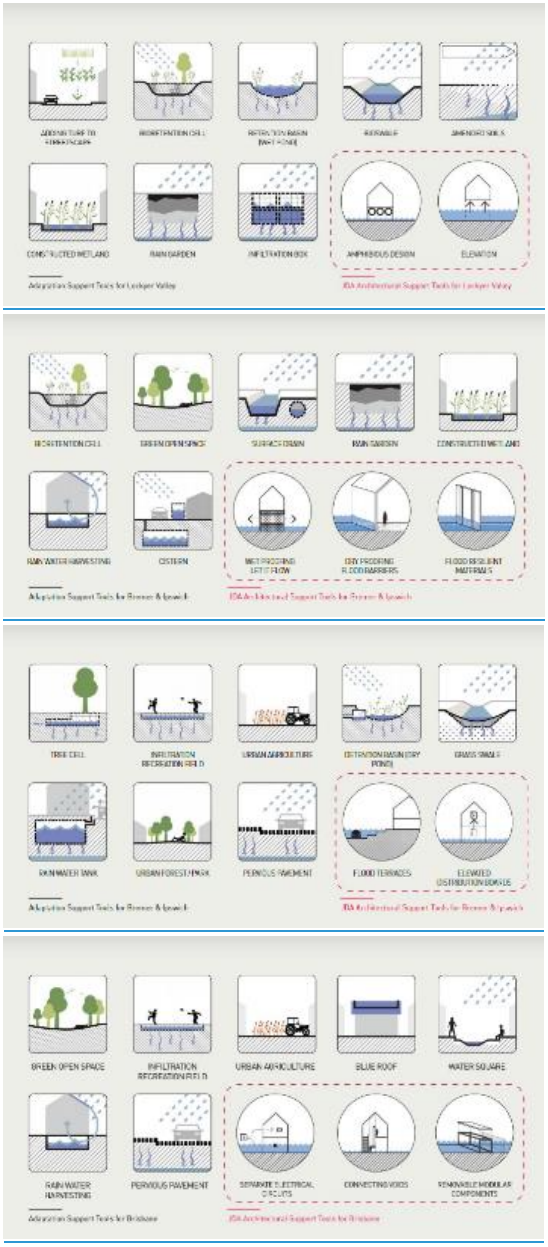

Figure 8. *Design tactics for flood management and mitigations*[60]

[60] James Davidson Architects (2019) The Water Futures Book. https://issuu.com/jamesdavidsonarchitect/docs/water_futures_book_-_digital_versio

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- Rainwater will be harvested through shelter structures included in the space and stored in water tanks on site. Access to clean water will also be fundamental during the recovery phase of the flood as well as to support the day-to-day life of the community.
- The public space will be fitted with ancillary items to support the recovery and also the day-to-day life of the local communities. Wind turbines and solar panels will facilitate the production of affordable electricity. Access to an off-grid power source will be strategic for the recovery phase after the flood.
- Landscaping of the public space will be ~~realised~~realized as an edible landscape. The inclusion of greenery will have positive effects on the local microclimate and provide access to green areas for ~~thelocal~~the local community, with benefits for their mental health. The edible landscape will be a feature engaging the local community daily, through production and harvest of produce. This feature will also assist recovery providing access to fresh food or to mean to produce fresh food in the recovery phase of the flood.
- The public space will also be fitted with ~~component~~components for composting and wet waste management. Areas will be dedicated to safe recycling of materials and these materials will also be implemented to improve and expand this public space.
- The space will provide areas to support social entrepreneurship, with a specific focus on women and minorities.

Figure 7 provides a preliminary artist impression of the proposed public space; its functions will be multiple:

- Safe shelter point during flood
- Retention basin for flood water
- Emergency distribution point
- Community hub

The design of the public space will be articulated so to have floodable sections to collect water and store sand outside flood events; sections that will provide shelter to residents and protection from rain and flood water; collection points for items to prepare for floods, for example sandbags or tarps, and to recover after the flood. Recovery will be supported providing access to fresh water and off-grid electricity, as well as to food produced on site. The response to flooding events will support local communities to adapt to climate change integrating into the space a series of existing technologies and solutions, so to maximize the effects of the intervention and address multiple dimensions of the social impact of floods.

The approach to the design of the public space ~~apply~~applies the concept of the recovery cycle illustrated in figure 9.

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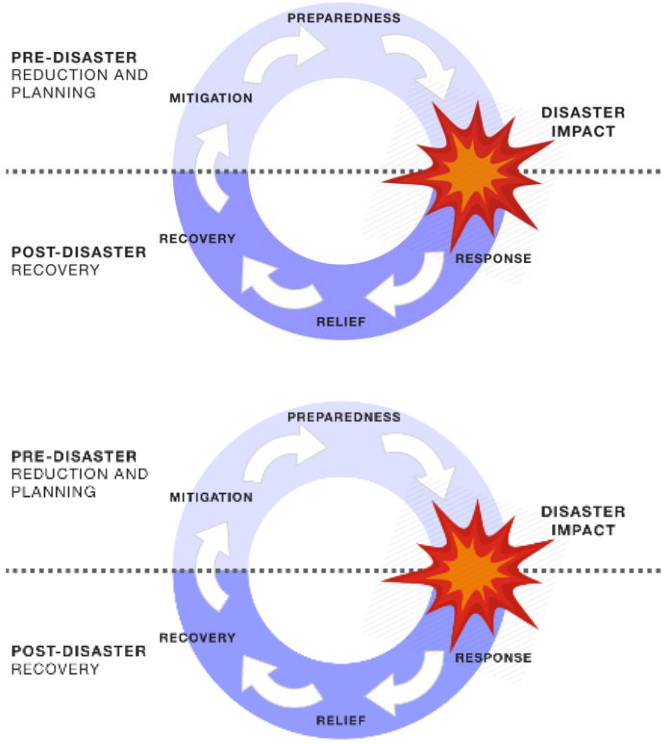

Figure 9. *Recovery cycle*

The goal of this project is to design and implement facilities to support flood adaptation and act also as vibrant high-quality public spaces that invite a wide range of users to stay and enjoy, ensuring equal access to project benefits to various groups such as women, the youth and indigenous groups. Urban design plays an important role in finding synergies between climate resilience strengthening options and strategies that build social cohesion. For example, the creation of water buffers and water collection spaces can be designed as sports areas that benefit a wide range of groups of different ages and genders. Furthermore, interventions that increase greenery and vegetation in the city will not only help alleviate heat stress, offering refreshing spaces where people can find shelter during extreme hot days, but it can also enhance biodiversity in the city. Creating a diverse type of spaces that allow for water infiltration, vegetated areas that combine humid and dry spaces, shady and sunny areas, creating a rich environment for a more diverse flora and fauna will benefit urban communities, increasing their health and well-being while building their adaptive capacity.

Local citizens will be engaged in the design and construction of the proposed public spaces as a way to educate them in low-tech tactics to manage floods. It is hoped that by learning simple tactics to design open spaces so to be flood resistant and flood smart, citizens will be able to progressively improve the local urban landscape. Being engaged in the construction of the public spaces will enable participants to transfer into their broader community their learnings and to contribute to make their community more flood prepared through disperse, day-to-day interventions.

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Participatory approaches, including community consultations will support community ownership of the project process and of the created spaces. A holistic approach to build climate resilience by making use of a range of physical urban elements such as water, green spaces, energy, sustainable materials and social dynamic will be employed. Consultative processes will be embedded in the project plan prior to nominating site/s and to ensure proposals are aligned with community and stakeholder priorities. At this stage, consultation has ~~commences with the local government of Samarinda and local stakeholders.~~commenced with the local government of Samarinda and local stakeholders, who have provided the specific location for the intervention. Broader community consultation will be undertaken in the co-design phase of the program. Local community members will be engaged in providing ideas, sharing suggestions, and actively participate into the design of the space. This will be achieved through a series of workshop and collecting community data through situated installations, as well as

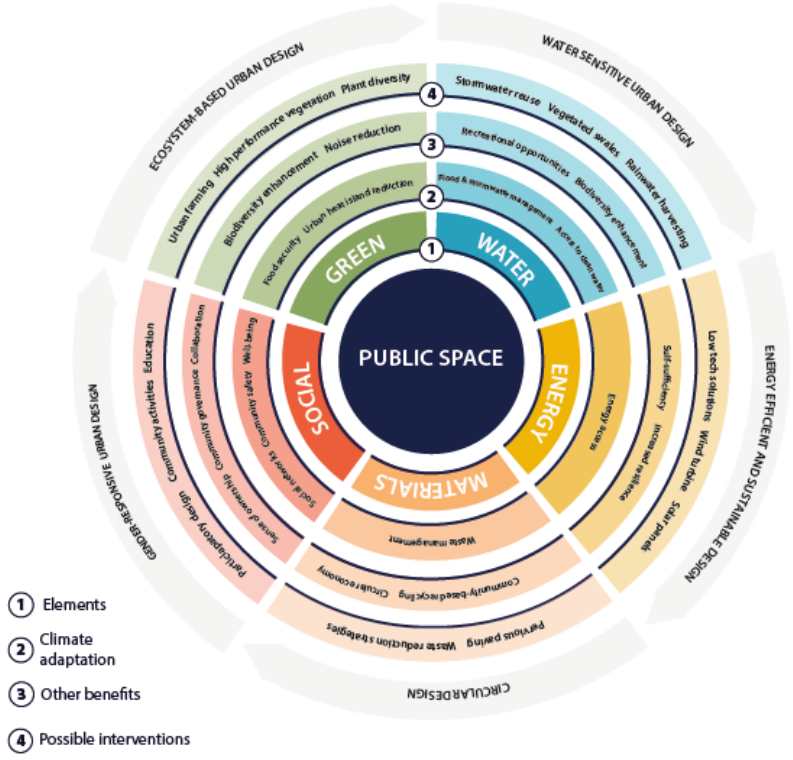

Figure 10. *Diagrammatic representation of the integrated approach to public space design and climate change adaptation*

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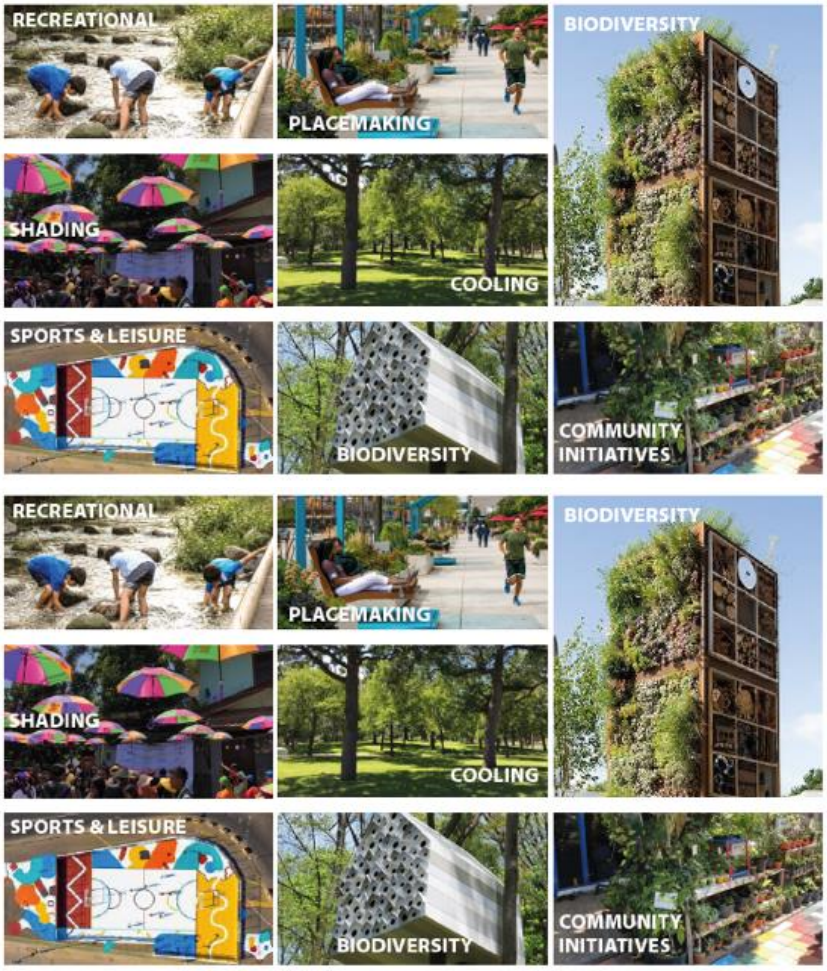

Figure 11. *Urban elements and benefits*

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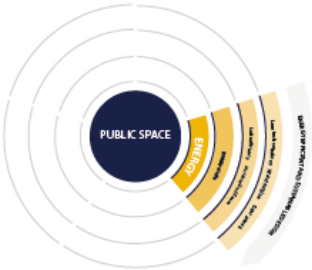
WATER SENSITIVE URBAN DESIGN

Water-sensitive urban design integrates the urban water cycle (i.e., stormwater, groundwater, water supply, waste water) into urban design. It sustainably manages water resources, enhances ecosystems and provides recreational opportunities for communities. Examples of water sensitive design options include: stormwater reuse solutions that can be employed for irrigation, vegetated swales (or drainage swale) that are designed to slow, filter and infiltrate water, rainwater harvesting to collect, store and use water for future needs, and rain gardens that provide localized stormwater and flood control.



~~Stormwater Reuse & Rainwater Harvesting~~

~~Vegetated swales~~

~~Rain Garden~~

~~Energy Production~~

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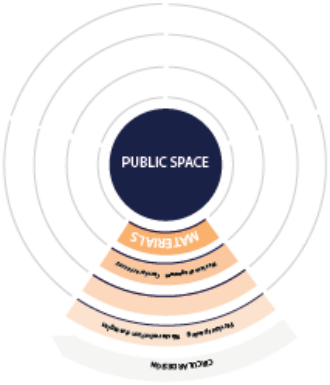
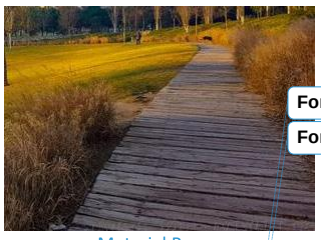
ENERGY EFFICIENT URBAN DESIGN

Access to reliable and renewable energy sources is essential to support community growth and contrast the effect of climate change. Low tech solutions that produce and distribute energy to communities such as solar panels, whirlpool turbines, and wind turbines are some of the technologies that can be explored to produce electricity locally, in conjunction to batteries and other system to store power.

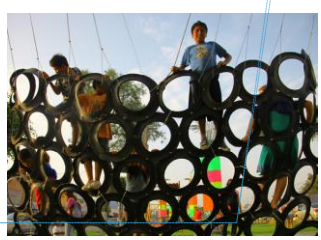


CIRCULAR DESIGN

A sustainable approach towards materials for the construction of public space can bring many benefits in terms of waste management. This component will stretch the potential of this approach to identify techniques and tactics to create building materials from waste. Furthermore, choosing adequate materials will help build climate resilience to hazards such as floods. The use of pervious paving materials and green surfaces that allow for water infiltration will contribute to this.



~~Material Reuse~~



~~Community-based recycling initiatives~~

~~Social network spaces for encounters~~

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GENDER RESPONSIVE DESIGN

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Sense of community will be enhanced through participatory processes. Communities will be requested to co-create the public spaces and engage in the design, development and construction phases. This will allow communities to have agency on their space and develop a sense of attachment to the new public space proposed. Gender-inclusive approaches will be integrated into the process. Appropriately designed public spaces will enhance social networks through the provision of spaces for encounter, will be designed to be safe and to promote health and well-being by providing a large variety of spaces activities such as sports, leisure, etc.

ECOSYSTEM-BASED URBAN DESIGN

Greenery and vegetation help alleviate heat stress, offering refreshing spaces where people can find shelter during extreme hot days. The use of high-performance vegetation with significant water uptake via transpiration can improve stormwater management. The integration of greenery through diversification strategies will enhance biodiversity. Furthermore, food production, processing and storage can be integrated into the public space through urban farming. This will help achieving food security and self-sustainability for the communities involved. The aim of the program is also to provide community with common spaces where to process harvest together and store produce for community consumption.

~~Pervious Paving~~

~~Urban Farming~~

~~High-performance vegetation~~

~~Plant Diversity~~

~~Integration of vegetation with overall design~~

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~~5.2.~~3.2. Measuring Impact

In order to evaluate the actual impact of the intervention on the local environment and the local community, a framework based on three intertwined areas will the adopted, these being (1) Adaptation; (2) Innovation; and (3) Education.

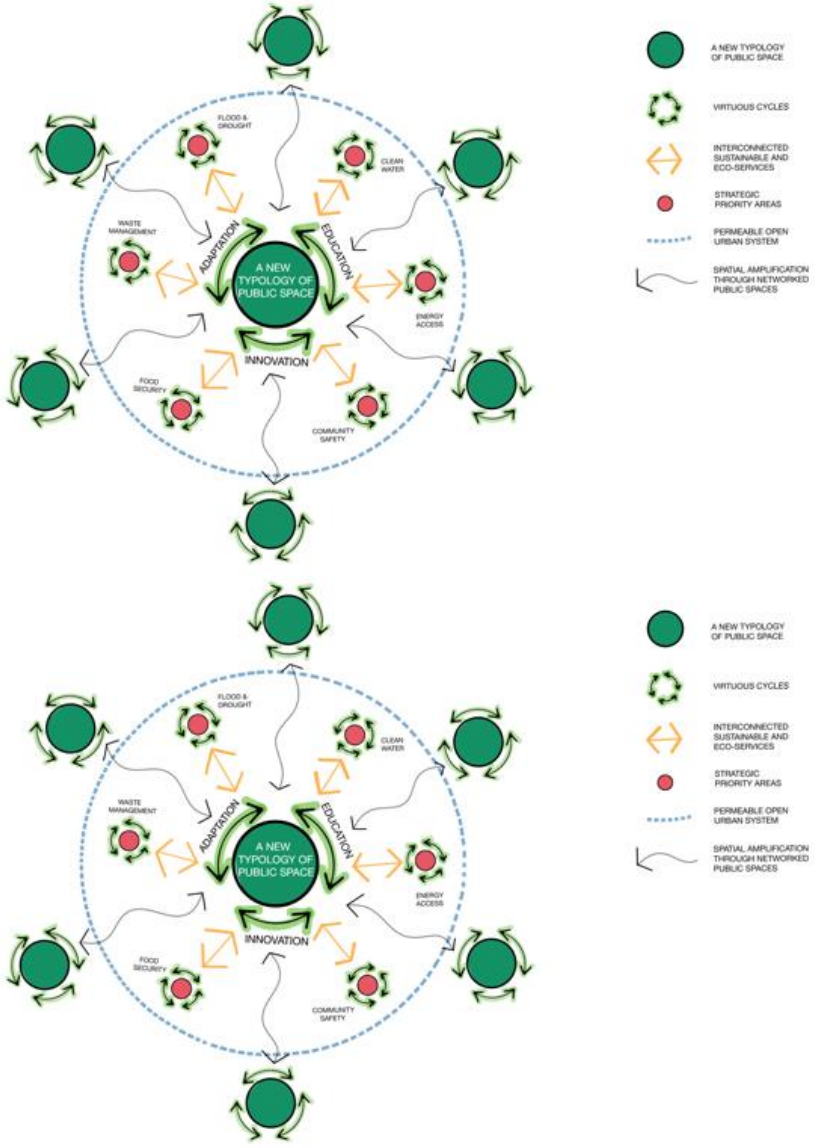

Figure 12. *Conceptual diagram for the evaluation framework*

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In terms of **adaptation**, *Flood and Drought* are relevant issues for Samarinda; the project aims to manage flood water as well as harvest and store rainwater. The integrated system of public places intends to act as a water management system during floods. The ~~two~~ proposed public ~~spaces~~space will be floodable landscapes and include retention basins, so to contain water during floods and reduce the impact on surrounding communities. The proposed public spaces will include storage for sand, to be used to fill sandbags; citizens will be able to freely access this resource in preparation to flood events. The 5C-4R measurement framework (or similar freely available tool) will be used to measure flood resilience[61]. During flood events, the performance of the proposed public space will be monitored to assess the effectiveness in retaining stormwater and reducing overland flow. In addition to this, the number of people using the space as a refuge during hazardous events will be measured. *Access to Clean Water* will be evaluated through the average quantity of water harvested and used for civic uses is used as an impact of the intervention in this field.

Whilst flood adaptation is the main line of action of this project, the proposed public spaces will be designed so to address also a number of secondary outcomes. The strategic role that ecosystems play is recognised in the literature[62]. While forestation is adopted in rural setting as a strategy for carbon sequestration, within urban environments public spaces can play a fundamental role to reduce CO_2 emissions and provide opportunities to sink carbon. Thinking of public spaces as part of an integrated ecological system can provide concrete and measurable indicators for climate adaptation. The biomass of the vegetation integrated in the proposed new typology of public space can provide a quantitative measure of carbon reduction. A first indicator of the impact of the project therefore is the variation in the biomass of vegetation in the areas of intervention. Corollary from this indicator is the measurement of vegetation canopy; the project aims to increase the average shaded area in the location. A longitudinal record of temperature in selected points will also be used to measure the impact on the urban heat island.

Wind turbines and solar panels are included in the concept design for the new typology of public space; the *average power produced* by the intervention will address *Access to Reliable Energy Sources* as well as contribute to reduce CO_2 emissions providing a reliable alternative to fossil fuel combustion.

Community resilience will be fostered by engaging community groups and community members in every stage of the project. Impact on *Community Vulnerability and* ~~*Safety*~~ ~~will~~ *Safety* will be assessed, measuring daily use of the public space and their engagement in the activities afforded by the structure. Data will be collected through *survey tools* and "*counters*" to collect quantitative data on the number of people using the spaces. A longitudinal research study measuring attitudes and beliefs about climate change in the local community will also be implemented through a survey of the general population. Statistical data will also be used to evaluate a longitudinal impact on the citizens' ~~liveability~~livability (health improvements, energy consumption, infant mortality rates, water-borne disease, and hospital admissions).

Food production is a key component of the new typology of public space. Food will be produced in situ, and facilities such as communal kitchens will also guarantee that the public space can also be used to process food. Markets are also planned as one of the social activity for the pace. The quantity of food produced in situ will be monitored as well as citizens' use of the communal facility for social uses.

[61] https://floodresilience.net/frmc

[62] Morecroft, M. D., Duffield, S., Harley, M., Pearce-Higgins, J. W., Stevens, N., Watts, O., & Whitaker, J. (2019). Measuring the success of climate change adaptation and mitigation in terrestrial ecosystems. *Science, 366*(6471), eaaw9256. doi: 10.1126/science.aaw9256

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The proposed public space will act as a community hub where suitable waste is collected and recycled. The quantity of waste recycled in situ and the potential economic profit from this activity will also be monitored. As is common in several Indonesian Kampong, recycling can form the basis of a flourishing commercial activity where new artefacts are produced recycling and reusing waste.

In terms of **Innovation**, impact in this field is assessed measuring the ability of a system to produce a steady stream of opportunities. The replicability of the solutions adopted in the new typology of public space will be assessed through focus groups with residents and stakeholders. The project will also be proposed for independent scrutiny via academic publications and conference presentations. Community members participating in these construction and development of the new typology will be engaged in devising innovative solutions to achieve climate adaptation through low-tech approaches. Solutions developed during the process will provide participants with know-how that can be applied to start-ups or other medium scale enterprise. The new public space is intended to foster social entrepreneurship, so the economic system generated by the new space will be monitored and measured (number of start-ups, co-working opportunities, commercial activities). The engagement of some disadvantaged stakeholders such as women or those with a disability will also be an important indicator of the impact of the innovation component of the project. The Suanluang 1 community in Bangkok is an example of food markets ~~organised~~organized and driven by women; the new public space will afford women agency to grow and cook food as well as to start other small commercial activities, taking advantage of the structure of the space.

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In terms of **Education**, the planning, design and construction of the new typology is envisaged as an opportunity to train locals in a number of skills. The focus of the project will be on recycling and reusing materials with a low-tech approach to mimic the performance of the public space at a domestic scale. Participants in the project will learn about water harvesting, water sensitive planting, energy generation, and building techniques that can be transferred to domestic environments. The number of participants to the process will be monitored to assess how learnings from this experience have impacted daily lives and employability. Entry and exit surveys will also ensure measurement of the impact of the learning experience on participants. The new typology of public space is also designed to be a learning space; schools will be monitored and surveyed to assess how they engage with the space in terms of their formal and informal learning.

These are preliminary indicators to monitor the project and assess its impact; more specific indicators will be negotiated also with the local community so that they can be the main actors to manage, monitor and assess how the new typology responds to their needs, and the needs of climate adaptation. The program is intended to operate according to a dual benefit model, using materials and construction methods typical of public space. E.g. soft and hard landscaping and rudimentary shelter structures for ordinary use. Through considered design, these will function effectively during periods of flood, serving to both shield water flow from areas of the site while retaining water in other parts to protect surrounding areas.

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In its current development state, the project directly addresses the following Sustainable development goals:

- **SDG3 Good Health and Wellbeing**

3d: Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

- **SDG5 Gender Equality**

5.1. End all forms of discrimination against all women and girls everywhere.

- **SDG 6 Clean Water and Sanitation**

6.1By 2030, achieve universal and equitable access to safe and affordable drinking water for all

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6b: Support and strengthen the participation of local communities in improving water and sanitation management

- **SDG 7 Affordable and Clean Energy**

7.1 By 2030, ensure universal access to affordable, reliable and modern energy services
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

- **SDG 9 Build Resilient Infrastructure**

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

- **SDG 11 Sustainable Cities and**
- **Communities**

11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities
11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels

- **SDG 13 Climate Action**

13.1 Strengthen resilience and adaptive capacity to climate- related hazards and natural disasters in all countries
13.2 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

~~Part 5~~ Technical Summary: Project Objectives	
a)	The objective of this project is to prepare Indonesian communities to cope with the effect of climate change as well as mitigate the causes of the current environmental crisis.
b)	The project is informed by a Positive Development Paradigm of Global Climate Change and Sustainable Development which is ~~...~~including the growing understanding of innovation processes, developed to address technological change, but applicable to social innovation.
c)	The creation of public spaces will also foster community connection, enhance, and integrate existing public spaces. The vision is to create a network of public spaces that will support a new ecosystem that will provide benefits to the entire city.
d)	The project's impact will be measured according to the following outcomes: ▪ Adaptation ▪ Innovation ▪ Education

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~~6.~~4. PROJECT LOCATION

The Location:

THE LOCATION OF PUBLIC SPACE

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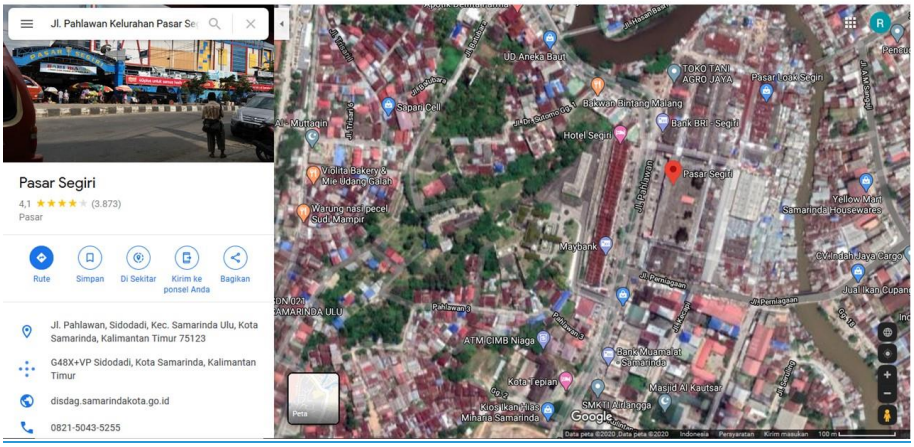

Size of the land: 54.090 m2
Status: Belong to Samarinda Local Government
Other information:

(1) Located on the banks of the Karang Mumus River
(2) The government's plan to make it a Green Open Space on the banks
(3) Located near the Traditional Market (Pasar Segiri)

The location for implementation of the project has discussed with the City Government of Samarinda with specific criteria that will in line with the city's strategic plan. This location located in the city center of Samarinda, near the Segiri Market, and the total area is 54.090-meter square.

The City Government of Samarinda's strategic plan explains that the location has a significant social problem. Based on that, this project hopefully will answer not only the climate change problem but also a social problem.

~~7.~~5. PROJECT/PROGRAMMES COMPONENTS AND FINANCING

In Indonesia, informal public space is unconsciously found in many places. From urban to rural areas, people have their own terminology to describe communal space. The Indonesian Government itself doesn't use phrase "public space", but promotes open green space with some thematic models. In Jakarta, at the moment use the name of *RPTRA (~~RuangPublikTerpadu~~Ruang Publik Terpadu Ramah Anak)* or Integrated Child Friendly Public Space and will be change soon to *Taman ~~MajuBersama~~Maju Bersama* and became to political more then became city policy to provide place for public. Another case is in Bandung City, a place that was meant to provide for people and that became a very artificial environment, with many marketing ~~twistsproviding~~twists providing thematic ~~flavours~~flavors, for ~~example*Taman*~~example *Taman Jomblo* (Park for Single) and several others similar instances. All of this

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triggers questions and challenges us to re-define public space. Can a new typology of public space enhance our places and communities? Space for public often doesn't have any real meaning, which results in empty public spaces, unsafe, underused, and overall not felt as the hearth of the community. Public spaces are often the product ~~ofbureaucracy~~of bureaucracy and the compromise between private interests and public needs. ~~Commercialisation~~Commercialization of public spaces and competition for urban spaces are some of the complex fights and tensions that we experience in the contemporary city. Adding to these a risk adverse culture, the overall result is that "public space" became an expensive ~~endeavour~~endeavor, it is not uncommon for a project to budget more than USD 20.000just to make feasibility studies, often neglects the participation of people and community engagement. This project aims also to use this new typology of public space as an example of a process to integrate participatory process for the future development in a flexible, innovative, and democratic way

Lesson Learned from Surabaya:

CakMarkeso Cultural Centre in ~~*Kampong*~~Ketandan*Kampong* Ketandan, Surabaya, was inaugurated by the Mayor of Surabaya, Wednesday, 07/27/2016. This cultural center, which represents the public space for connecting people, was inaugurated with several delegates, The Third Session Preparatory Committee (Prepcom) 3 for Habitat III. The ~~*CakMarkeso*~~*Cak Markeso* Cultural Centre in the form of *Joglo* (traditional Javanese building) is located in the middle of the settlement, and becomes a venue for discussion about all things related to the environment in which it lives. Its construction is the result of cooperation between the United Cities Local Government of Asia Pacific (UCLG ASPAC), UN-Habitat, and the Surabaya City Government.

This development is an important thing for the Surabaya City Government in realizing Surabaya's development into a sustainable developing city. For Surabaya, public space is not just a green open space, but also in the form of buildings that people can gather and strengthen social interaction. With the existence of this public space, the community's enthusiasm is maintained and still supports each other to improve the *kampong*.

Kampong Ketandan is one of the old *kampongs* at Surabaya. Its location is surrounded by modern buildings. This *Kampong*, in the heart of Surabaya City, lives for 24 hours because its citizens actively interact. Unlike the shopping area that was closed at 10:00 p.m., the people guarded the city for 24 hours when the shops were closed. Therefore, it is important to maintain the *Kampong* Ketandan.

The components of this project are:

Component 1: this component focuses on the development of a new typology of public space. Current best practice case studies, literature, policies, technologies and tactics will be reviewed evaluating their feasibility for the Indonesian context, their accessibility, cost-effectiveness, and their overall potential impact in mitigating climate change hazards and causes. This component will be ~~formalised~~formalized with a series of guidelines, tactics, solutions and spatial relationships that will be then applied in the different communities involved in the ~~programme~~program. The new typology of public space will be defined through review and evaluation of:

a. water sensitive urban design tactics

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b. water treatment processes using natural landscape
c. rainwater harvesting, treatment and storage solutions
d. urban agriculture and edible landscape options
e. community based processes for food production, processing and storage
f. waste reduction strategies
g. recycling programs
h. production of building materials through waste recycling
i. off-grid solutions for energy production and storage
j. synergies and processes to support community resilience and economic viability
k. local social and cultural practices
l. community dynamics, needs and aspirations

Component 2: This component will engage communities in Samarinda city to apply the findings of component 1 to the actual co-design of public spaces and the creation of an integrated system of public spaces. This will be achieved with an inclusive participatory design approach structured through a series of workshops and interactive debates. A first workshop will be delivered with selected stakeholders to profile the local communities, ~~theircharacter~~their character, and the best way to engage them. Strategic locations for the interventions will be discussed and negotiated with the local government; with the aim to identify key sites that could establish an integrated network, enhance existing public and green spaces, outreach and benefit different communities. Once the sites of the specific interventions are defined, the specific local communities will be consulted and invited to provide their input through formal and informal methods, such as surveys or idea walls. A second workshop will then be delivered to ~~analyse~~analyze data from the community engagement phase and gather a better understanding of the priorities, needs, and desires of the local communities; during this second workshops, participants will be also involved in designing a public space to respond to global challenges as well as local issues.

Component ~~3will~~3 will build on the findings from Component 1 and results from Component 2. Component 3 is the co-development and construction of actual public spaces in ~~twoselected~~the selected communities. The construction site will engage professional builders who will share their knowledge with community members, so to use the construction also as an opportunity for skills development for community members. Inter-generational learning will also be promoted, with the participation of women, youth and the elderly. The component will deal also with the maintenance of the new public spaces and community activations through the establishment of ongoing community groups, community initiatives, and projects to maintain the new areas.

Component 4: This component will develop training for community groups and government officials to divulgate finding of the project as well as ~~publicise~~publicize the methodology of intervention, its benefits, and capabilities. The training will rely on soft resources, such as videos or rich-media contents, hard resources, for example booklets, and face-to-face training.

Component 5: This component will regard the monitoring of the long-term sustainability of the project and the assessment of its impact on the local communities. Data will be collected before the commencement of the project, after completion of the intervention and two years after the completion of the intervention. Data collection will be collected addressing a number of quantitative and qualitative indicators[63] to monitor the actual impact of the new integrated system of public spaces on the relevant communities.

[63] Pancholi, Surabhi, Yigitcanlar, Tan, & Guaralda, Mirko (2018) Attributes of successful place-making in knowledge and innovation spaces: Evidence from Brisbane's Diamantina knowledge precinct. Journal of Urban Design.

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The Budget of the Project as seen below (see table 7):

Table ~~7.~~9. *The Budget of the Project*

Project/Programme Components		Expected Concrete Outputs	Expected Outcomes	Amount (US$)
1	Research and Development on city-wide adaptation to climate change through public spaces	1.1.1. Research conducted on climate-resilient public spaces, including best practices and lessons learned within the Asia-Pacific Region, and South-East cities in particular 1.1.2. Assessment tool and methodology for the evaluation of climate-resilient public spaces developed 1.1.3. Public space guidelines, incorporating new typologies that can be used as a best practice for replication	1.1. Increased urban resilience through the development of a new public space typology and guidelines that can inform planning processes at the city-level	**75.000**
2	Awareness raising and local resilience strengthening through the design and implementation of a new public space typology	2.1.1. Community profiling developed for targeted locations in the City of Samarinda 2.1.2. Targeted communities are engaged in design processes through a participatory approach (e.g. workshops, interactive debates, etc.), focused on climate-resilient public spaces 2.2.1. Climate-resilient public space is co-developed and built in the selected communities (across the four cities) based on previous findings 2.2.2. Community groups are established, based on existing governance structures (if present), to ensure adequate maintenance of the public spaces	2.1. Increased awareness and ownership of design processes ~~2.2.~~ 2.2. Community-based infrastructure developed resulting in a strengthened adaptive capacity	**~~50~~450.000**
~~3~~	~~Public Space construction and project implementation~~	~~3.1.1 Climate-resilient public space is co-developed and built in the selected communities (across the four cities) based on previous findings~~ ~~3.1.2. Community groups are established, based on existing governance structures (if present), to ensure adequate maintenance of the public spaces~~	~~3.1 Community-based infrastructure developed resulting in a strengthened adaptive capacity~~	**~~400.000~~**

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43	Capacity building, knowledge management and communication	43.1.1. Training for community groups to divulgate findings of the project and methodology of the intervention 43.1.2. Training for government officials in key sectors (e.g. planning departments) on project findings, methodologies and approaches applied for replication 43.2.1. Lessons learned and best practices on climate-resilient public spaces and community adaptive capacity building are captured and disseminated for regional replication	3.1. Increased capacity at the city- and community-levels on climate-resilient strategies and design options for public spaces 3.2. Knowledge sharing and increased awareness on project results among targeted audience (communities, governmental bodies, general public)	**75.000**
54	Monitoring	54.1.1. Evaluation of place quality before the intervention, at completion of the intervention, and two years after the completion of the interventions	54.1 Increased understanding and awareness of the impact of the intervention ~~5.2 Knowledge sharing and increased awareness on project results among targeted audience (communities, governmental bodies, general public)~~	**25.000**
	Project / programme execution cost			**85.000**
	Total project / programme execution cost			**710.000**

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***Table 8~~10~~.** Project Timeline*

Milestone	Expected Dates	Expected Duration
Component 1: • Development of theoretical model for the new typology of public space	2020	4 months
Component 2: • Context analysis • Community engagement • Intervention design •	2020	1 month 2 months 3 months
Component 3: • Intervention construction	2021	9 months
Component 4: • Training and findings divulgation	2021	3 months
Component 5: • Monitoring of the impact of the interventions and their sustainability	2020 2021 2023	1 month 1 month 1 month

~~**INDONESIA POLICY FOR CLIMATE CHANGE ADAPTATION**~~

- ~~**Republic of Indonesia Law No. 23 of 1997Concerning Environmental Management**~~

  ~~Article 1 :~~

  ~~1. The environment is a unity of space with all objects, power, circumstances, and living things, including human beings and their behaviour, which affect the survival of the lives and welfare of humans and other living things;~~

  ~~2.1. Environmental management is an integrated effort to preserve the environmental function which includes policies for structuring, utilizing, developing, maintaining, restoring, controlling, and controlling the environment;~~

  ~~3.1. Sustainable development that is environmentally sound is a conscious and planned effort, which integrates the environment, including resources, into the development process to ensure the ability, welfare and quality of life of present and future generations;~~

  ~~4.1. Ecosystems are the elements of the environment which are whole unity and influence each other in forming environmental balance, stability and productivity;~~

  ~~5.1. Preservation of environmental functions is a series of efforts to maintain the continuity of the carrying capacity and capacity of the environment;~~

  ~~6.1. The carrying capacity of the environment is the ability of the environment to support the lives of humans and other living beings;~~

  ~~7.1. Preservation of environmental carrying capacity is a series of efforts to protect the ability of the environment against the pressure of change and/or negative impacts caused by an activity, so that it is still able to support the lives of humans and other living beings;~~

  ~~8.1. Environmental capacity is the ability of the environment to absorb substances, energy, and/or other components that enter or are included in it;~~

  ~~9.1. Preservation of environmental capacity is a series of efforts to protect the ability of the environment to absorb substances, energy, and/or other components that are discharged into it;~~

  ~~10.1. Resources are elements of the environment that consists of human resources, natural resources, both biological and non-biological, and artificial resources.~~

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- **National Action Plan For Climate Change Adaptation 2014 (*RencanaAksiNasionalAdaptasiPerubahanIklim 2014*)**

  By considering the notion of adaptation to climate change and its objectives, adaptation can be said as an effort to increase the resilience of a system to the effects of climate change. Climate change adaptation in Indonesia is directed as:

  1. Adjustment efforts in the form of strategy, policy, management, technology and attitude (negative) impacts of climate change can be reduced to a minimum, and even if possible can utilize and maximize the positive impact.
  2. Efforts to reduce the impact (consequences) caused by climate change, both directly and indirectly, directly, both continuous and discontinuous and permanent and impacts according to their level.

  In short, the action plan is directed so that: (a) the impact of climate change can be reduced to a minimum possible, (b) can increase resilience and reduce the level of vulnerability of a natural system, life records, programs or activities on the effects of climate change.

  To support the field of sustainable living system resilience and resistance to climate change, the main target of the infrastructure sub-sector is to increase the coverage of services and strengthen a reliable and quality infrastructure system in the face of the effects of climate change. The main objectives can be achieved through several targets, as follows:
  1. Development of the concept of infrastructure resilience that is adaptive to climate change
  2. Development of infrastructure that is adaptive to climate change
  3. Provision and adjustment of infrastructure that has a direct impact on the health of the community that has a high level of accessibility, especially for groups of people who are vulnerable and resilient to climate change
  4. Management of integrated infrastructure layout with spatial planning in sustainable development

- **Ministry of Public Work Regulation No. 11/PRT/M/2012 About National Action Plan for Climate Change Mitigation and Adaptation Year 2012-2020**

  In an effort to adapt to climate change, Indonesia faces enormous challenges, especially the characteristics of the territory of Indonesia as an archipelago, geographical location in tropical climates, and between the Asian Continent and the Continent of Australia and between the Pacific Ocean and Indian Ocean, which is why Indonesia very vulnerable to climate change. This is indicated by several facts, including droughts and floods, which harm food security, human health, infrastructure, settlements, and housing, especially in coastal areas and urban areas.

- **Ministry of Environmental and Forestry Regulation No. P.33/Menlhk/Setjen/Kum.1/3/2016 About Development Guideline for National Adaptation Plan**

  The significant to integrating climate change adaptation actions into development policies, plans, and/or programs(Article 4 [letter e], Article 9 [paragraph 3], Article 10, Article 11)

- **Nationally Determined Contribution (NDC) the Republic of Indonesia 2017**

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~~The GOI will implement enhanced actions to study and map regional vulnerabilities as the basis of adaptation information system, and to strengthen institutional capacity and promulgation of climate change sensitive policies and regulations by 2020. The medium-term goal of Indonesia's climate change adaptation strategy is to reduce risks on all development sectors (agriculture, water, energy security, forestry, maritime and fisheries, health, public service, infrastructure, and urban system) by 2030 through local capacity strengthening, improved knowledge management, convergent policy on climate change adaptation and disaster risks reduction, and application of adaptive technology.~~

PART II: PROJECT/PROGRAMME JUSTIFICATION

~~This programme~~

A. Project components

Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

This program adopts an action research participatory methodology; it alternates phases of actions to phases of evaluation and reflection. It is articulated in an initial research phase and in then coordinated projects to design, develop, build, and manage public spaces in a pilot city. The theoretical background of the project is grounded in the *Positive Development* paradigm[64] and on a systemic approach[65]. The hypothesis of the *Positive Development* paradigm is that today we have enough knowledge and know-how to build buildings and structures that not only ~~minimise~~minimize the impact on the environment, but also could produce positive gain for local ecosystems. In the *Positive Development* paradigm, buildings incorporate different technical devices to treat water, clean air, produce food and broadly support an ecosystem. The systemic approach aims to consider the city as an integrated ecosystem, where interventions in a specific site can generate positive benefits for the entire system, through the creation of ecological and social corridors, networks of infrastructures and services.

This approach has already been implemented in the design of some public spaces and ecological corridors, where passive approaches, such as use of vegetation, have been successfully applied to manage rainwater, retain pollutants and contribute to stream and creek overall health[66]. Building on recent experiences of urban farming[67], this ~~programme~~program aims to develop a new typology of public space that will provide a positive impact on community resilience, environment sustainability and economic development.

Public spaces have been ~~recognised~~recognized in the New Urban Agenda as strategic contexts where to address several of the recurrent issues of contemporary cities, including social and environmental issues. Public space requires communities to work together and an integrated approach to negotiate different aspects of public life. Expanding this concept, it is ~~recognised~~recognized that public spaces today can be rethought in a way to accommodate more soft landscapes, not for beautification effects, but for environmental protection[68]. The positive impact of urban greenery on environment is extensively discussed in literature[69]. In addition to environmental gains, greenery has been ~~recognised~~recognized having a positive effect also on mental health and community activities.[70] The

[64] Birkeland, J. (2008). *Positive development : from vicious circles to virtuous cycles through built environment design*. London: Earthscan.

[65] Maser, C. (2012). *Decision-making for a sustainable environment: a systemic approach*. Boca Raton: Taylor & Francis.

[66] Lawson, G. M., & Wang, P. (2009). Water sensitive urban design : landscape planning and design to improve water quality in Shijiazhaung and Yueyang.

[67] Sekiyama, M., Terada, T., & Yokohari, M. (2017). Post-Disaster Food and Nutrition from Urban Agriculture: A Self-Sufficiency Analysis of Nerima Ward, Tokyo. *International Journal of Environmental Research and Public Health, 14*(7), 748. doi:10.3390/ijerph14070748

[68] Kowalik, M., & Guaralda, M. (2011). Mapping resilience : A framework for changing cities: AST Management Pty Ltd.

[69] Climate change adaptation in practice : from strategy development to implementation. (2013). Chichester, West Sussex, UK: John Wiley & Sons Inc.

[70] Holt-Damant, K., Guaralda, M., Taylor Gomez, M., & Nicollet, C. (2013). Urban jungle : making cities healthy places for Australians with neurodiversity: AST Management Pty Ltd.

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incorporation of traditional wisdom in the design of public spaces, plants selections, ~~colour~~color schemes, and material applications, can also contribute to strengthen a community sense of identity providing a contemporary interpretation to ancient knowledge.

The application of western paradigms to the design of contemporary cities has often produced an urban form ~~characterised~~characterized by segregation of function and subdivision of activities. In many contemporary cities we can record a strong contraposition between parks for recreation and hard landscapes for civic activities. Zooning and modernist design have broken traditional pattern of public spaces and imposed a car-based approach that has profoundly impacted lifestyle, resilience, and sustainability[71].

~~a.~~ Components of the ~~Programme~~Program

More than dispersing in the urban fabric different functions and activities, this ~~programme~~program will develop a new typology of public space to support communities 'positive development. In addition to social and cultural values, the new typology will provide an active strategy to cope with climate change. The proposed public spaces will also act as activity hubs and provide communities with a safe place during extreme weather events. Public spaces, being at the ~~centre~~center of community life, should be designed as safe shelter in the case of extreme weather events, provide conditions to face natural hazards in a self-sufficient way, protecting the community and its main assets. The establishment of an integrated system of public spaces, will allow the creation of ecological corridors to improve biodiversity and environmental resilience. The systems will be enhanced by the new public spaces and completed by their strategic role within the broader urban ecology.

The implementation of the new typology of public space is also promoted as an opportunity to educate communities in more strategic approaches to urban development. Learning building techniques, environmentally sustainable and advanced tactics, and a sensitivity to ecological systems, can inform communities to transform their environments and promote better ways to self-construct dwellings and community facilities. Public space is promoted as a space for the community where to exchange, learn and interact for the common good.

Component 1

The first component of the ~~programme~~program will be the theoretical development of this new typology, the parameters, characteristics and specification of this new type of space will be based on an analysis and review of case studies, researches, technologies, tactics, and solutions that have been or are suggested as potentially strategic to support *Positive Development*. The innovative component of this ~~programme~~program sits in the potential of the new typology to be applied to different contexts and be implemented in other cities at least in the Asia-Pacific region.

Public spaces are at the ~~centre~~center of communities. Indonesia today is experiencing a change of meaning in traditional public spaces and a general undersupply of community spaces. Top-down developments often focus on specific infrastructures, like sport facilities and playgrounds, and generally lack informal public spaces that can be appropriated by communities. Bottom-up projects often limit to retrofit existing spaces and beautify available spaces, which often do not have the characteristics to host proper community activity and needs.

The first phase of the ~~programme~~program will ~~analyse~~analyze and evaluate the broader Indonesian context and formulate a new type in the form of a series of design guidelines, implementation

[71] Guaralda, M. (2014). Form-based planning and liveable urban environments. Urban Morphology, 18(2), 157-162.

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processes, and spatial layouts to provide communities with a social communal space, as well as an integrated system to equip citizens to cope with climate change and environmental hazards.

From the environmental point of view, the new typology will have to deal with:

- Water management and harvesting. Access to clean drinkable water, stormwater management, sewerage ~~organisation~~organization, water storage and ~~utilisation~~utilization are all emergent issues in a society experiencing more and more extreme weather events. Current solutions, tactics and technologies will be gathered and evaluated so to develop a model that would afford communities with an infrastructure to provide them with clean water; ~~minimise~~minimize pollutants released in the environment, harvest water for domestic and agricultural uses. In selecting technologies and tactics, preference will be given to passive technologies, to solutions relaying on integrated environments, were plants can be used in the management of natural resources. Several case studies developed in Europe and North America have successfully demonstrated how plants and planting can be used to manage urban water system, urban pollutants, and mitigate effect of climate change. This ~~programme~~program will evaluate the principles of these case studies and develop a series of guidelines suitable for the Indonesian context, in terms of plants selections as well as cultural relevance of the solutions proposed.

  This component of the ~~programme~~program will provide a positive impact on the community resilience providing access to drinkable water. It will also provide a positive impact on the broader environment reducing the release of pollutants in streams and creeks. The use of vegetation will mitigate urban heat island and contribute to the local microclimate72.

- Energy production. It is ~~recognised~~recognized how access to reliable and renewable energy sources is essential to support community growth and contrast the effect of climate change. This ~~programme~~program will evaluate low tech solutions to produce and distribute energy to communities, potentially providing also communities with a source of income selling energy surplus to other areas. Solar panels, whirlpool turbines, and wind turbines are some of the technologies that will be explored to produce electricity locally, in conjunction to batteries and other system to store power.

  This component of the ~~programme~~program will reduce communities' reliance on fossil fuels and reduce carbon emission in the environment. From the social point of view, it will provide communities with a reliable and cheap source of energy to support their viability and growth73.

- Food production, processing and storage. The strategic use of vegetation to manage water systems will also be extended to cover food production. Several communities in Indonesia are already pursuing with success urban agriculture on a small scale. This component of the program aims to achieve food security and self-sustainability for the communities involved. Different technologies and solutions will be reviewed, such us community gardens, hydroponics, green walls and green roofs. The aim of the program is also to provide community with common spaces where to process harvest together and store produce for community consumption.

  This component of the ~~programme~~program will address not only food security, will also address climate change in terms of mitigation of urban heat island. The extensive use of vegetation in the proposed new typology will allow to store carbon and reduce heat reflected by hard

72 Lee, S., & Yigitcanlar, T. (2010). Sustainable urban stormwater management : water sensitive urban design perceptions, drivers and barriers.

73 Sustainable future for human security : environment and resources. (2018). Gateway East, Singapore: Springer.

surfaces. Food production and processing will also allow to enhance spirit of community, preserve communities' traditional practice and provide a stream for local commercial growth[74].

- Waste management. Indonesia is successfully adopting the model Reduce-Reuse-Recycle. This component of the program will stretch the potential of this approach to identify techniques and tactics to create building materials from waste. Some projects have already successfully recycled paper and plastic for the production of bricks, then used in the construction of small buildings. This tactic will be evaluated in the context of the Indonesian society and the process commenced with the construction of the new propose public space, which is envisioned as built with mainly recycled materials[75].

  This component of the ~~programme~~program addressed climate change in terms of reduction of pollutants in current ecosystems, ~~Encouraging~~encouraging reuse and recycle will also limit emissions and provide communities with a potential source of income linked to the production of building materials[~~76~~].

- Economic viability. The first phase of the ~~programme~~program will identify synergies and tactics to support community growth and development. A first set of activities will be linked to the construction of the new public space. Community members will be involved in the actual construction so to learn new techniques and new skills that they can then use in their future life. A pillar of the project is the empowerment of the community, so skills development through the entire process will be fundaments. Participants will learn how to process waste to produce building materials, how to build structures, how to deal with urban food production and processing. A variety of skills will be offered to the community. This would allow participants options about their future life and the community different sources of income.

  This component of the ~~programme~~program will address climate change through education and training. Participants will learn a set of skills aimed to achieve a sustainable positive development. Empowering communities with different kinds of knowledge will also allow them a better agency on their lifestyle and future development. Today many communities in Indonesia are ~~focussing~~focusing on tourism as the predominant source of income, this is anyway not realistic or viable, and so it is strategic that one of the outcomes of the project is providing communities with alternative options and economic models[77].

- Community resilience. Sense of community will be enhanced through the participatory process of the ~~programme~~program. Communities will be requested to provide their input in the design, development and construction of the new public spaces. In the development of Phase 01 guidelines and models, community members will also be consulted so to include provision for cultural symbols and meanings, social practices and ~~communities~~communities' aspirations.

74 Suparwoko, B., &Taufani, B. (2017). Urban Farming Construction Model on the Vertical Building Envelope to Support the Green Buildings Development in Sleman, Indonesia. Procedia Engineering, 171, 258-264. doi:10.1016/j.proeng.2017.01.333

75 Municipal solid waste management in Asia and the Pacific Islands : challenges and strategic solutions. (2013). New York: Springer.

~~76 Municipal solid waste management in Asia and the Pacific Islands : challenges and strategic solutions. (2013). New York: Springer.~~

77 McFarlane, C., & Desai, R. (2015). Sites of entitlement: claim, negotiation and struggle in Mumbai. Environment & Urbanization, 27(2), 441-454. doi:10.1177/0956247815583635

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This component of the ~~programme~~program stretches from phase 01 to phase 02. In phase 01, communities will be consulted to ~~finalise~~finalize the model of new public space, incorporating their aspirations, social practices and cultural values. In the second phase of the project, co-creation will allow communities to have agency on their space and develop a sense of attachment to the new public space proposed[78].

The first component will include activities UNTAG and QUT joint activities, as well as some specific components developed by QUT:

- High level kick-off round table for Urban Climate Adaptation | this seminar aims to launch the program and discuss adaptation to climate change with local stakeholders, experts, and politicians. This activity will be organized by UNTAG with QUT staff attending the event.
- Two Workshops with experts to inform the design phase of the project and gather data on best practice. This activity will be organized by UNTAG with QUT staff attending the event.
- Tool and Method Development | this activity includes desktop research, literature review, contextual review, review of relevant technologies, R&D, prototyping, and preliminary design of components to include in the design of the pilot public space. This activity will be developed by QUT with input from UNTAG.
- Methodology development | this activity covers the development of a methodology integrating mobile technologies and situated installation for community engagement (InstaBooth) to involve local communities in the design and construction of the new public space. The InstaBooth[79] is an approach to community engagement developed at QUT since 2012 and applied in a number of different contexts in Australia, USA, China, Malaysia, and South America. This approach allows community members to engage in an asynchronous debate about emerging topics, provide feedback, share ideas, and develop original contents to inform planning, design and policy developments. This methodology has been successfully applied to a number of projects commissioned by the Queensland Government, community groups, as well as leading industry partners. The instaBooth is a mobile installation that allows participants to engage with a number of different components, to suit interests and attitudes of different community members. The InstaBooth is a key component in data collection and idea generation for the co-creation phase of the project. Prior to each project, the InstasBooth is customized and partially redesigned to suit the needs of the specific community. This activity will be developed by QUT with input from UNTAG.

78 Wikantiyoso, R., ~~&~~and Suhartono, T. (2018). The role of CSR in the revitalization of urban open space for better sustainable urban development. International Review for Spatial Planning and Sustainable Development, 6(4), 5-20. doi:10.14246/irspsd.6.4_5

79 Guaralda, M., Mayere, S., Caldwell, G., Donovan, J., & Rittenbruch, M. (2019) The InstaBooth: an interactive methodology for community involvement and place-making. *Journal of Place Management and Development*, *12*(2), pp. 209-226.

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Figure 13. InstaBooth deployment for Community Engagement projects at Pomona, Brisbane Central Station, RBWH

Component 2

As mentioned under sub-section *Focus of the proposal*, the second component of the ~~programme~~program is based in Samarinda City. Locations of the specific locations for the ~~interventions, indicatively 3~~intervention, one (1) new public ~~spaces, will be~~space, is being discussed and negotiated with local government, stakeholders and communities.

Selected communities within Samarinda City will be identified to pilot the new typology of public space. The pilot will be structured as a co-creation process:

- The community will be engaged in mapping their ~~neighbourhood.~~neighborhood. Opportunities, challenges, conflicts, and possibilities will be recorded~~.~~, through workshops and deployment of the InstaBooth;
- Public workshops will run to discuss ideas, locations and aspirations of the community. The guidelines developed in phase 01 will be discussed and scenarios for their implementation negotiated with the different stakeholders~~.~~;
- The project for the physical new public space~~, one for each community,~~ will be developed with the community support by a local professional who will ensure compliance to local legislation as well as provide creative input in the process~~.~~;
- The community will be then engaged in the actual development of the project. In ~~some cases~~this case, the land ~~acquisition~~and location will be ~~necessary as well as changes in the urban form~~provided by the City Government of ~~the neighbourhood~~Samarinda based on the recommendation and assessment so that the project will ~~have to be negotiated~~in line with the city development plan and strategy[80]. The new public space is meant to be a generator for the new physicality of the space as well as its identity, so as part of the

80 The City Government of Samarinda will give full support and granted access to government data that relevant to this project and will actively involve in the project development and implementation. Note of Meeting with Mayor of Samarinda H.E. Mr. Syaharie Ja'ang attended by Head of Environment Agency, Head of Communication and Informatics Agency, Head of Planning and Development Agency at Jakarta, January 23, 2020.

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development of the public space, plans for the future development of the ~~neighbourhood~~neighborhood will be negotiated~~.~~;

- The physical construction of the space will be done engaging professionals as well as members of the community. This approach is to ensure that community members can learn a set of skills during the process and aspire to future professional opportunities~~.~~;
- Once the project has been completed, the community will take charge of running and managing the public space. Apart from events and ~~festival~~festivals, stress will be put on everyday activities to make the space dynamic, ~~liveable~~livable and sustainable.

The continuous engagement of community in each phase of the process will ensure a sense of ownership for the new public space. The importance of engaging the community in developing everyday activity in this new space will be strategic for the success of the ~~programme~~program. The new typology of public space will have to be a space where to gather, work, play, and learn in a community setting. Participation methods are chosen because, in these phases, the community can involve in the planning and development process that is essential to the project implementation. This activity will trigger strong relationships with space and place

The construction of the new public space will involve a survey of the current urban form and its potential ~~reorganisation.~~reorganization. The local communities will be engaged in a discussion about their future social, environmental, physical, and economic outlook. The proposed process might involve land acquisition, relocation of some activities, new constructions and demolitions of existing buildings. Where necessary, the community will work together in building new dwellings, infrastructures and resources to benefit the entire community. Surpassing the fragmented and individualistic approach of traditional western zoning, the ~~programme~~program suggests a community approach to the development of ~~neighbourhoods~~neighborhoods. With the aid of experts, communities will implement guidelines and tactics developed as a new typology of public space to gain control and agency on their own environment. Regaining the traditional approach to urban development as a coordination and collaboration between citizens and communities, this ~~programme~~program will promote in the medium-long term changes to urban form to achieve a city that could better respond to the current challenges of climate change.

This component will be coordinated by UNTAG; QUT will provide material, data, and support to be used in the workshops. QUT personnel will also aid UNTAG staff in running the co-creation workshops.

Component 3

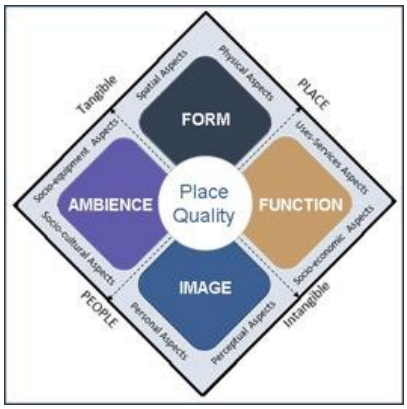
The third component of the program will deal with divulgation of the experience and learnings. Training will be ~~organised~~organized for designers, government officials and community leaders, so to create awareness about the new typology of public space proposed; its principles, its applicability to different contexts. In parallel, publications and event will be ~~organised~~organized to ~~publicise~~publicize the ~~programme~~program, its findings and educate the broader community.

Sharing and divulgating the findings of the ~~programme~~program and its achievement will allow other communities to gain agency on their urban form, to gain an awareness of the potential of public space in terms of building positive, sustainable, resilient communities and structure urban form in a more sustainable and responsive way.

UNTAG will lead this component with QUT input in the development of training and resources for government officials. QUT will lead the development of academic papers to publicize the project and its outcomes.

Component 4

The fourth component of the program will deal with the assessment and monitoring of the interventions. In order to evaluate the impact and effectiveness of the new public spaces developed as well as of the system of public spaces that they will generate, qualitative and quantitative data will be collected before the construction of the new public spaces; at completion of the construction, two year after completion of the construction. The method to collect data and assess the impact of the interventions will be based on the following place quality framework[81][82][83]:



81 Yigitcanlar, Tan, Guaralda, Mirko, Taboada, Manuela B., & Pancholi, Surabhi (2018) Place making for knowledge generation and innovation: Planning and branding Brisbane's knowledge community precincts. In Yigitcanlar, Tan & Bulu, Melih (Eds.) Urban Knowledge and Innovation Spaces Insights, Inspirations and Inclinations from Global Practices. Routledge (Taylor & Fancis), New York, pp. 115-147.

82 Esmaeilpoorarabi, Niusha, Yigitcanlar, Tan, Guaralda, Mirko, & Kamruzzaman, Md. (2018) Does place quality matter for innovation districts? Determining the essential place characteristics from Brisbane's knowledge precincts. Land Use Policy, 79, pp. 734-747.

83 Pancholi, Surabhi, Yigitcanlar, Tan, & Guaralda, Mirko (2018) Attributes of successful place-making in knowledge and innovation spaces: Evidence from Brisbane's Diamantina knowledge precinct. Journal of Urban Design.

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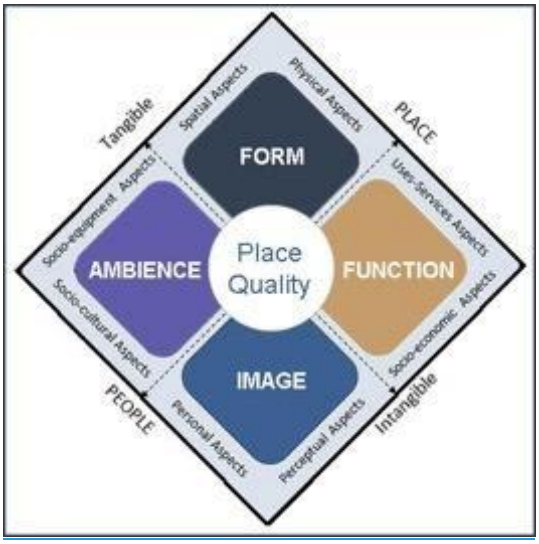

~~Figure 13.~~ Place Quality Framework, based on Pancholi, Yigitcanlar, Guaralda (2018)

This framework considers tangible and intangible characteristics of place and it is articulated in a number of specific sub-indicators to specifically assess performance of public spaces in terms of their contribution to the overall urban form, economic sustainability, social dynamics, as well as experiential and cultural components. This framework will be used to monitor the impact of the intervention collecting statistical data, economic indicators, and assessing the performance of the public spaces in terms of community usage and perception, through surveys and site observations.

This component will be supervised by UNTAG, while QUT will lead publications to publicize the project and its findings.

In summary, this project aims to address specific climate change dynamics typical of Indonesia and relevant also for other geographical areas with similar challenges. The proposed new typology of public space, developed so to generate an integrated system of public spaces, will contribute to prepare Indonesian people to face the hazards of climate change through different tactics, strategies, and processes.

Table ~~9~~11. *Summary of Mitigation Action in ~~regards~~regard to main climate change hazards*

Climate Change Impact	Adaptation Action
Flood or drought	Water sensitive urban design
Access to clean water	Rainwater harvesting and treatment
Access to reliable energy sources	Renewable energy production and distribution
Community vulnerability and safety	Community based interventions
Food security	Urban Farming
Waste contamination	Waste treatment and recycling

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B. Economic, social and environmental benefits

Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The project will bring various economic, social, and environmental benefits to all stakeholders. **The most dominant (economic, social and environmental) impacts of the gains are the citizens of Samarinda that are currently impacted by the impacts of climate change.**

Based on the analysis of the 15 principles under the Adaptation Fund´s Social and Environmental Policy, the project is highly feasible to be implemented economically, socially and environmentally. It will result in multiple socio-economic and environmental benefits without significant negative risks.

Output	Expected Benefits		
	Social	Economic	Environmental
Output 1.1.1. Research conducted on climate-resilient public spaces, including best practices and lessons learned within the Asia-Pacific Region, and South-East cities in particular	Identification and analysis of best practices for social cohesion and safety in public spaces that are relevant in the context of Indonesia.	Identification and analysis of community-based activities that can be developed in the public space and that contribute to the strengthening of community livelihoods, relevant in the context of Indonesia.	Identification and analysis of ecosystem-based adaptation best practices in the urban environment relevant in the context of Indonesia.
Output 1.1.2. Assessment tool and methodology for the evaluation of climate-resilient public spaces developed	Development of a holistic assessment tool that integrates social aspects in the context of public space (e.g., gender safety, accessibility) and which can guide the implementation and other future developments.	Development of a holistic assessment tool that integrates economic aspects in the context of public space (e.g., livelihood sources) and which can guide the implementation and other future developments.	Development of a holistic assessment tool that integrates environmental aspects in the context of public space and which can guide the implementation and other future developments.
Output 1.1.3. Public space guidelines, incorporating new typologies that can be used as a best practice for replication	Promotion of social cohesion in public spaces.	Reduction in economic losses in public space because of increased resilience.	Promotion of ecosystem-based adaptation in the urban environment.
Output 2.1.1. Community profiling developed for targeted location in the City of Samarinda	Provides baseline information to guide the intervention, including social aspects.	Provides baseline information to guide the intervention, including economic aspects.	Provides baseline information to guide the intervention, including environmental aspects.
Output 2.1.2. Targeted communities are engaged in design processes through a participatory approach (e.g. workshops, interactive debates, etc.), focused on climate-resilient public spaces	Public participation will ensure that the needs of communities are met. Special emphasis is put on ensuring fair and equal participation of vulnerable groups.	Community participation in the project design and implementation will benefit the community through cash income as semi-skilled and skilled labour is to primarily be	

Output	Expected Benefits		
	Social	Economic	Environmental
		sourced from the community.	
Output 2.2.1. Climate-resilient public space is co-developed and built in the selected communities (in the city of Samarinda) based on previous findings	New climate resilient public space that is accessible and promotes social interaction of different groups of people, with an emphasis of vulnerable groups.	New climate resilient public space and services that contribute to economic benefits.	Promotion of ecosystem-based adaptation in the urban environment. Increased
Output 2.2.2. Community groups are established, based on existing governance structures (if present), to ensure adequate maintenance of the public spaces	Improved governance at the community-level.	Livelihood opportunities (e.g., urban farming) are expected to contribute to the resident's incomes.	
Output 3.1.1. Training for community groups to divulgate findings of the project and methodology of the intervention	Capacity development of community groups to develop activities in the public space and maintain it, for project sustainability.	Technologies used throughout the project that support climate-resilient strengthening will be imparted and may provide future livelihood opportunities.	
Output 3.1.2. Training for government officials in key sectors (e.g. planning departments) on project findings, methodologies and approaches applied for replication	Capacity development and direct involvement in the design and implementation of the adaptation actions will increase the resilience of vulnerable groups.	Technologies used throughout the project that support climate-resilient strengthening will be imparted and may be used to increase efficiency in future projects implemented by local institutions.	
Output 3.2.1. Lessons learned and best practices on climate-resilient public spaces and community adaptive capacity building are captured and disseminated for regional replication	Awareness is raised and learning experiences are shared on holistic approaches for the improvement of public spaces and their resilience-strengthening.	Promotion of community-based activities developed in the public space and that contribute to the strengthening of community livelihoods.	Promotion of community-based activities in the project public space that are related to the environment.
Output 4.1.1. Evaluation of place quality before the intervention, at completion of the intervention, and two years after the completion of the interventions	An evaluation framework is developed and shared for the quality assessment and improvements of public spaces.	The evaluation framework can be used for future projects.	An evaluation framework is developed and shared for the quality assessment and improvements of public spaces, integrating environmental aspects.

C. Consistency with national and sub-national strategies

Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development

plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

INDONESIA POLICY FOR CLIMATE CHANGE ADAPTATION

- **Republic of Indonesia Law No. 23 of 1997 Concerning Environmental Management**

Article 1:

1. The environment is a unity of space with all objects, power, circumstances, and living things, including human beings and their behaviour, which affect the survival of the lives and welfare of humans and other living things;
2. Environmental management is an integrated effort to preserve the environmental function which includes policies for structuring, utilizing, developing, maintaining, restoring, controlling, and controlling the environment;
3. Sustainable development that is environmentally sound is a conscious and planned effort, which integrates the environment, including resources, into the development process to ensure the ability, welfare and quality of life of present and future generations;
4. Ecosystems are the elements of the environment which are whole unity and influence each other in forming environmental balance, stability and productivity;
5. Preservation of environmental functions is a series of efforts to maintain the continuity of the carrying capacity and capacity of the environment;
6. The carrying capacity of the environment is the ability of the environment to support the lives of humans and other living beings;
7. Preservation of environmental carrying capacity is a series of efforts to protect the ability of the environment against the pressure of change and/or negative impacts caused by an activity, so that it is still able to support the lives of humans and other living beings;
8. Environmental capacity is the ability of the environment to absorb substances, energy, and/or other components that enter or are included in it;
9. Preservation of environmental capacity is a series of efforts to protect the ability of the environment to absorb substances, energy, and/or other components that are discharged into it;
10. Resources are elements of the environment that consists of human resources, natural resources, both biological and non-biological, and artificial resources.

- **National Action Plan For Climate Change Adaptation 2014 (*Rencana Aksi Nasional Adaptasi Perubahan Ikilm 2014)***

By considering the notion of adaptation to climate change and its objectives, adaptation can be said as an effort to increase the resilience of a system to the effects of climate change. Climate change adaptation in Indonesia is directed as:

1. Adjustment efforts in the form of strategy, policy, management, technology and attitude (negative) impacts of climate change can be reduced to a minimum, and even if possible can utilize and maximize the positive impact.
2. Efforts to reduce the impact (consequences) caused by climate change, both directly and indirectly directly, both continuous and discontinuous and permanent and impacts according to their level.

In short, the action plan is directed so that: (a) the impact of climate change can be reduced to a minimum possible, (b) can increase resilience and reduce the level of vulnerability of a natural system, life records, programs or activities on the effects of climate change.

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To support the field of sustainable living system resilience and resistance to climate change, the main target of the infrastructure sub-sector is to increase the coverage of services and strengthen a reliable and quality infrastructure system in the face of the effects of climate change. The main objectives can be achieved through several targets, as follows:

1. Development of the concept of infrastructure resilience that is adaptive to climate change
2. Development of infrastructure that is adaptive to climate change
3. Provision and adjustment of infrastructure that has a direct impact on the health of the community that has a high level of accessibility, especially for groups of people who are vulnerable and resilient to climate change
4. Management of integrated infrastructure layout with spatial planning in sustainable development

- **Ministry of Public Work Regulation No. 11/PRT/M/2012 About National Action Plan for Climate Change Mitigation and Adaptation Year 2012-2020**

  In an effort to adapt to climate change, Indonesia faces enormous challenges, especially the characteristics of the territory of Indonesia as an archipelago, geographical location in tropical climates, and between the Asian Continent and the Continent of Australia and between the Pacific Ocean and Indian Ocean, which is why Indonesia very vulnerable to climate change. This is indicated by several facts, including droughts and floods, which harm food security, human health, infrastructure, settlements, and housing, especially in coastal areas and urban areas.

- **Ministry of Environmental and Forestry Regulation No. P.33/Menlhk/Setjen/Kum.1/3/2016 About Development Guideline for National Adaptation Plan**

  The significant to integrating climate change adaptation actions into development policies, plans, and/or programs(Article 4 [letter e], Article 9 [paragraph 3], Article 10, Article 11)

- **Nationally Determined Contribution (NDC) the Republic of Indonesia 2017**

  The GOI will implement enhanced actions to study and map regional vulnerabilities as the basis of adaptation information system, and to strengthen institutional capacity and promulgation of climate change sensitive policies and regulations by 2020. The medium-term goal of Indonesia's climate change adaptation strategy is to reduce risks on all development sectors (agriculture, water, energy security, forestry, maritime and fisheries, health, public service, infrastructure, and urban system) by 2030 through local capacity strengthening, improved knowledge management, convergent policy on climate change adaptation and disaster risks reduction, and application of adaptive technology.

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At National Action Plan for Climate Change Adaptation (2014), it is stated that:

To support the field of sustainable living system resilience and resistance to climate change, the main target of the infrastructure sub-sector is to increase the coverage of services and strengthen a reliable and quality infrastructure system in the face of the effects of climate change. The main objectives can be achieved through several targets, as follows:

1. Development of the concept of infrastructure resilience that is adaptive to climate change
2. Development of infrastructure that is adaptive to climate change
3. Provision and adjustment of infrastructure that has a direct impact on the health of the community that has a high level of accessibility, especially for groups of people who are vulnerable and resilient to climate change
4. Management of integrated infrastructure layout with spatial planning in sustainable development

The infrastructure also refers to public space as resilience infrastructure. Public space is a place where physical and social resilience meet. Learn from the past, and even innovate to find solutions outside of nature-based solutions to address the risks of climate change. That is why public space must be considered as an important tool for reducing and adapting to rising temperatures and extreme weather.

Until now, Indonesia only has two resilient strategies for the city: City of Jakarta and City or Semarang. Meanwhile, the Badan Nasional Penanggunangan Bencana (BNPB) or Indonesia National Disaster Agency has published National Risk Index for Disaster in 7 priority area, With 71 indicators for Disaster Resilient and the City of Samarinda one of the city that adapts the program on their planning system. In this project, we are working day-to-day with the City Government of Samarinda and its people to develop the strategy of city resilient through the development of Public Space.

This project will involve the City Government of Samarinda from the first place and work closely with the City of Samarinda Development Agency, and this project also will follow their adaptation strategy planning, that stated at Regional Regulation on Samarinda Regional Spatial Planning, No. 2 of 2014-2043.

It is stated that Samarinda City Government has an obligation to provide public space, through related agencies, in realizing government policies to plan, utilize and control, related to regional development planning regarding public space by taking into account the indicators of the stages of supply and utilization public space includes: planning, land acquisition, engineering design, implementation of public space development, utilization and maintenance to be useful for current and future generations and the realization of an urban public space area

D. Compliance with relevant standards and policies

Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The project will follow the technical standards publishes by the Ministry of Public Works and Housing the Republic of Indonesia, e.g., Law No. 28 the Year of 2002 about Building, Law No. 24 the Year of 2007 about Disaster Management, Law No. 26 the Year of 2007 about Spatial Planning, Ministry of Home Affairs Regulation No. 1 the Year of 2007 about Green Open Space Planning In Urban Area, Ministry of Public Works Regulation No. 5 the Year of 2008 about Provision and Utilization Guideline for Green Open Space in Urban Area, etc.

E. Duplication of project

Describe if there is duplication of project / programme with other funding sources, if any.

Currently, there is no duplication of this project with other funding sources. Although projects coordinated by the World Bank such as the "National Urban Development Project" (NUDP) (Project ID: P163896) and the "Improvement of Solid Waste Management to Support Regional and Metropolitan Cities" (Project ID: P157245) also focus on the urban environment, the areas targeted are different. The project "Improvement of Solid Waste Management to Support Regional and Metropolitan Cities" aims to improve solid waste management services in selected cities across Indonesia, supporting solid waste management policy and legislation, financial sustainability, and stakeholder collaboration across all aspects of the sector (e.g., collection, treatment, disposal,

recycling and waste generation)[84]. Although *Embracing the Sun* integrates waste into the proposal, it is with a very different approach. The project aims to identify techniques and tactics to reuse materials that can be incorporated into the design and construction of spaces, with a focus on communities. In this way, the objective in relation to waste will be to raise awareness on the importance of reducing-reusing-recycling model and to find creative solutions that could not only bring environmental benefits but also provide a source of income. It aims to promote and enhance bottom-up and community-based strategies, rather than top-down approaches.

The "National Urban Development Project" aims to improve subnational capacity to prioritize capital investment and help cities achieve more efficient infrastructure development through adequate land use planning. Although there are principles that are presented in both projects, such as the use of spatial tools with landscape carrying capacity to mitigate losses from natural disasters, the project coordinated by the World Bank has a much broader scope. The NUDP interventions aim to lay a foundation for more efficient and effective financing of infrastructure, conducting analyses of land suitability for land use planning and to guide infrastructure investment (referring to a wide range of urban elements, such as water supply, sanitation, schools, etc.), but not specifically public space.

In this way, although the three projects are envisioned within the urban environment, the current project targets public space and focuses on its strategic role as enabler of climate adaptation. In this way, the resulting concrete outputs from this project (i.e., assessment tool and methodology for the evaluation of climate-resilient public spaces, public space guidelines, lessons learned, etc.) aim to increase urban resilience, informing planning processes at the city-level in the area of public space. Therefore, there is no duplication with the aforementioned projects.

Strategic-wise, the project will follow the PPPP (Private - Public - People Partnership) approach. Lessons learned from Surabaya linked to their success in producing public space based on PPPP (i.e Joglo Markeso at Ketandan Kampong, Surabaya) will be taken into consideration. The project draws on lessons learned from several projects funded through UN-Habitat's Global Public Space Programme (e.g., Kampong Ketandan, Tanah Kali Kendinding and Keputih). Aspects such as public participation and the importance of integrating social aspects into the design rather than following only a technical approach mean that these projects can be relevant case studies among best practices that will be researched under component 1 of the project. However, there is no duplication given that this project focuses strongly on the strengthening of climate-resilience of public spaces while incorporating social dimensions to address the underlying causes of vulnerability.

F. Learning and knowledge management

If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Learning and knowledge management is integrated into the project under component 3. The third component of the program will deal with divulgation of the experience and learnings. Training will be organised for designers, government officials and community leaders so to create awareness about the new typology of public space proposed; its principles, its applicability to different contexts. In parallel, publications and event will be organised to publicise the programme, its findings and educate the broader community.

Sharing and divulgating the findings of the programme and its achievement will allow other communities to gain agency on their urban form, to gain an awareness of the potential of public space

[84] http://documents.worldbank.org/curated/en/640491496386470384/pdf/PIDISDS-CON-Print-P157245-06-02-2017-1496386463379.pdf

in terms of building positive, sustainable, resilient communities and structure urban form in a more sustainable and responsive way.

G. Justification for funding requested

Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

The proposed project components, outcomes and outputs fully align with national and local government priorities and gaps identified, and with the results framework of the AF. The table below provides a justification for funding requested, showing the impact of AF funding compared to no funding (baseline) related to expected project outcomes.

No.	Program Component	Baseline	Additionally (with AF)
1	Research and Development on city-wide adaptation to climate change through public spaces	There is a lack of research conducted on climate-resilient public spaces, best practices in the region and assessment tools for the evaluation of public spaces.	Research is conducted on climate-resilient public spaces and best practices in the Asia-Pacific Region, with an emphasis on South-East countries. Based on the research, an assessment tool is developed in order to evaluate their level of climate-resilience. The aforementioned inform the development of public space guidelines that incorporate new typologies and that can be implemented and replicated.
2	Awareness raising and local resilience strengthening through the design and implementation of a new public space typology	The target locations for the development of the project are not climate-resilient, and frequently affected by floods. Public participation is not currently mainstreamed into design processes.	Communities have been fully involved in design processes of the pilot public space. The pilot project is co-developed and built in the selected locations, and community groups are established for the use and maintenance of the public spaces.
3	Capacity building, knowledge management and communication	1. Public awareness of climate change threats is very low. 2. Local authorities have limited understanding of local climate change vulnerabilities and disaster risks and have no plans to address these.	1. Public awareness on climate change threats and the importance of co-creation through participatory design of public spaces is increased. 2. Local authorities have used tools and are capable of implementing the approaches and methodologies.
4	Monitoring	There are no assessment tools for the evaluation of climate-resilient public spaces and no implemented projects that have been evaluated against an assessment framework.	One site is assessed before the intervention, at completion and after the completion of the intervention based on the assessment tool developed under component 1, serving as example on how to evaluate and monitor climate-resilient public spaces.

H. Sustainability of the project

Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.

In terms of the long-term feasibility of the intervention; the public spaces will be designed applying solutions, technologies, and materials that will require minimal maintenance. The planning, design, construction, and maintenance processes of the project will be based on the 4P model[85]: Public-Private-People-Partnership. The engagement of public and private stakeholders, as well as the local communities, will be vital to the success of the project. The aim of the participatory approach is to create ownership by the community, so that in the future the community is empowered with the activation and maintenance of the public spaces in collaboration with the local government. Skills learned by community members during the construction phase will be strategic also for the day-to-day maintenance of the public spaces.

The 4P model[86] ensures a more resilient and sustainable management structure better equipped to face the challenges of climate change, because it relies on a variety of stakeholders and it is grounded in the engagement of end users, the communities where the public spaces will be developed, in every phase of the process. The handover of the space from the local government to the local community will be a key phase of the process, grounded in the participatory design of the project.

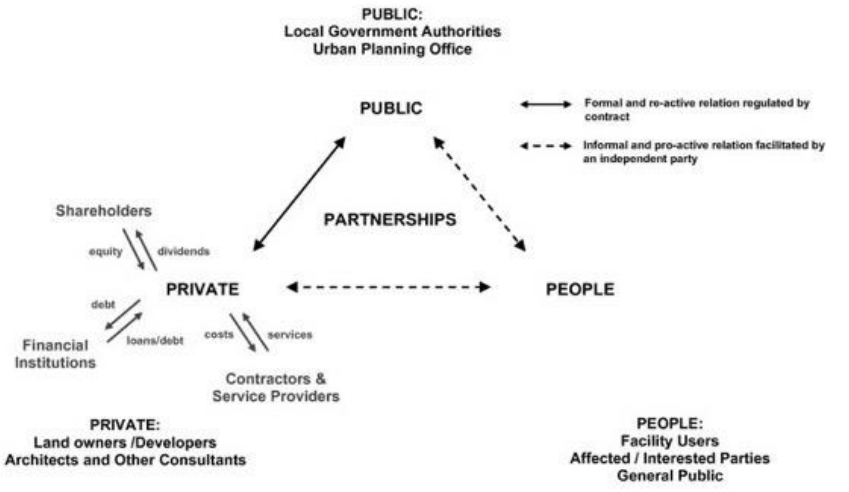

Figure 14. *4P model, based on Wong & Wong (2013)*

I. Overview of the environmental and social impacts and risks

Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

[85] Ng, S., Wong, J., & Wong, K. (2013). A public private people partnerships (P4) process framework for infrastructure development in Hong Kong. Cities, 31(C), 370–381. https://doi.org/10.1016/j.cities.2012.12.002

[86] Marana, P., Labaka, L., &Sarriegi, J. (2018). A framework for public-private-people partnerships in the city resilience-building process. Safety Science, 110, 39–50. https://doi.org/10.1016/j.ssci.2017.12.011

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The proposed project seeks to fully align with the Adaptation Fund's Environmental and Social Policy (ESP) and the Adaptation Fund's Gender Policy. Table 10 summarizes findings of the preliminary assessment process that has been carried out to evaluate environmental and social impacts and risks of the entire project.

~~b.~~ Activities under Component 1 (Research and Development on city-wide adaptation to climate change through public spaces) and component 3 (Capacity building, knowledge management and communication) resilience strengthening) have been categorized as low risk (Category C). The activities under Component 2(output 2.2.1) are still to be defined based on the guidelines and methodology developed under component 1. ~~ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS~~

~~The proposed project seeks to fully align with the Adaptation Fund's Environmental and Social Policy (ESP) and the Adaptation Fund's Gender Policy. Table 10 summarizes findings of the preliminary assessment process that has been carried out to evaluate environmental and social impacts and risks of the entire project.~~

~~Activities under Component 1 (Research and Development on city-wide adaptation to climate change through public spaces) and component 3 (Capacity building, knowledge management and communication) resilience strengthening) have been categorized as low risk (Category C). The activities under Component 2(output 2.2.1) are still to be defined based on the guidelines and methodology developed under component 1.~~ As such, some activities have the ~~potentialtoadversely~~potential to adversely impact the environment and affected people, without an adequate management plan and mitigation measures. For this reason, activities under component 2 (output 2.2.1) are categorized as medium risk (Category B) or low risk (Category C). Given the small scale and localized interventions that are envisaged under this component, category A is not considered.

In this way, the project is regarded as a medium risk (Category B).

Table 10. *Overview of the environmental, social impacts and risks identified as being relevant to the project/programme.*

Checklist of environmental and social principles	Further assessment and management required for compliance	Potential impacts and risks and opportunities	Mitigation
Compliance with the Law	*The activities that have been defined at project preparation phase are aligned with existing laws and normative acts. However, those activities that are still to be defined under component 2 will need to be screened and assessed at a later phase to ensure full compliance with laws, regulations and standards.*	*Insufficient alignment with laws, regulations and standards, particularly for interventions under component 2 (construction of public space).*	*Compliance of project activities will be monitored throughout design and implementation phase. Local technicians will be consulted on this.*
Access and Equity	*The community profiling (Component 2, Output*	*Unequal distribution of project benefits*	*Vulnerable groups in the target communities will*

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	2.1.1.) will provide an in-depth analysis of existing groups and dynamics within the community. This will help assess whether additional measures are required to ensure equal participation and access.	*among target communities.* *Unequal engagement and participation in workshops, consultations, etc. throughout the project process. This could potentially exclude less empowered community members from decision-making processes.*	*be identified. Then, activities will be designed to ensure full participation of vulnerable groups, by conducting specific focus group discussions (if needed).*
Marginalized and Vulnerable Groups	*Ensuring participation of people with disabilities or engaging peak bodies that represent them will be particularly important during the design phase to ensure that the public spaces meet accessibly requirements.*	*Potential risks include that traditionally vulnerable groups such as women, youth, children, the elderly, people with disabilities are not engaged appropriately throughout design and execution phases.*	*Consultations and other participatory approaches will be tailored to the context by for example, conducting women-only / youth-specific focus group discussions or workshops.*
Human Rights	*Consultations will capture issues related to human rights in the target areas.*	*Principle that applies to community-related processes and interventions in public space.*	*Consultations and participatory processes will be designed to follow a human-based approach.*
Gender Equity and Women's Empowerment		*Despite progress made, inequalities between men and women are still present across the country[87]. Among the issues that hinder gender equality are: deficient participation of women in paid employment, gender inequality in access to education, weak institutional framework for gender mainstreaming, low participation of women in decision making and violence against women. Risks identified are related to a potential*	*Women-only focus group discussions or workshops will be implemented if needed in order to ensure equal participation throughout the design phases.* *Gender empowerment and involvement of women in decision-making will be promoted by ensuring that an equal number of female and male representatives are present in the established community groups.*

[87] https://www.adb.org/sites/default/files/institutional-document/32231/cga-indonesia.pdf

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		lack of participation of women.	
Core Labour Rights	*Safety and security measures related to the construction phase under 2 must be in place and are to be monitored throughout the construction phase.*	*Potential lack of adherence to the ILO labour Standards and national labour laws. Communities may not apply safety and security measures during construction works related to the implementation of activities under output 2.*	*Adherence to the ILO labour Standards and national labour laws is to be monitored throughout the process as a standard procedure.* *This includes the eight International Labour Organization Convention (ILO) core labour standards related to fundamental principles and rights of workers, as well as ILO Convention No. 169, which concerns rights of indigenous and tribal peoples. Contracts will be reviewed periodically to ensure compliance with these laws.*
Indigenous Peoples	*Consultations will capture issues and needs related to the different ethnic groups that are present in the target communities.*	*Indonesia is a country of great diversity and complexity in its culture, ethnicity, language, people, and geography[88] There are 500 ethnic groups speaking more than 600 languages across the country[89]. The Javanese form the majority ethnic group at 45% of the population. The Sundanese, Madurese, Coastal Malays, and other ethnic groups make up the rest. Muslims form the majority religious group at 89% of the total population[90]. The complexity of the context will require that this principle is monitored throughout the*	*Appropriate tools translated to the relevant languages within each context will be used to ensure that communities are aware of their rights.* *The project will be consistent with UNDRIP, and particularly with regard to Free, Prior, Informed Consent (FPIC) during project design and implementation.*

[88] https://www.adb.org/sites/default/files/institutional-document/32231/cga-indonesia.pdf
[89] https://www.adb.org/sites/default/files/publication/28024/indigenous-peoples-indonesia.pdf
[90] https://www.adb.org/sites/default/files/institutional-document/32231/cga-indonesia.pdf

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		planning and implementation phases.	
Involuntary Resettlement	*Interventions under component 2 will be designed to avoid resettlement.*	*The design of public spaces could potentially identify the need to demolish existing buildings. This could potentially lead to involuntary resettlement.*	*If involuntary resettlement is identified as a potential risk, related activities will not be approved.*
Protection of Natural Habitats		*Given that the interventions are planned to be executed within an urban context, the risk of negative environmental impacts in natural habitats is low. Furthermore, the project aims to incorporate eco-system based adaptation measures that will provide environmental and socio-economic co-benefits.*	
Conservation of Biological Diversity	*Further assessment will be linked to the enhancement of identified opportunities. These are linked to both planning and implementation processes (e.g. Promoting the enhancement of conservation of biological diversity as part of the Guidelines developed under component 1)*	*Indonesia is considered to be one of the 17 megadiverse countries in the world. However, existing pressures such as habitat degradation, overexploitation, climate change, economic crises in the country, among others, threaten biodiversity conservation[91]. Opportunities identified for the project include the recognition of public spaces as enhancers of biodiversity in urban contexts, potentially acting as ecological corridors.*	*No risks identified*

[91] https://www.cbd.int/countries/profile/default.shtml?country=id

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Climate Change		*Project activities aim to increase climate change adaptation and to promote practices that contribute to climate change mitigation (e.g. renewable energy sources). No risks are identified for this principle.*	*The assessment tool and methodology for the evaluation of climate-resilient public space typologies (activity 1.1.4) will ensure that interventions under component 2 have no negative impacts with regards to this principle.*
Pollution Prevention and Resource Efficiency	*Design and construction phases will prioritize and promote the use of local materials.*	*Construction could lead to inadequate resource management and production of excessive waste*	*Waste management is integrated into the approach in order to raise awareness on the issue and promote good practices. This will be applied throughout the whole process*
Public Health	*Further assessment is related to the enhancement of opportunities.*	*Public spaces have the potential of improving citizens' health and well-being. This can be achieved by creating green spaces, spaces that can be used for recreational and sports activities, etc. Opportunities are identified that can be enhanced through the project.*	*No risks identified*
Physical and Cultural Heritage		*Project activities might affect unidentified cultural sites which exist in the targeted areas and are impacted by project activities*	*The community profiling (Component 2, Output 2.1.1.) will collect local knowledge on physical and cultural heritage in the targeted areas. This will allow analyzing the perceptions on physical and cultural assets that may be highly valuable to the community.*
Lands and Soil Conservation	*Screening of activity 2.2.1. will determine whether additional management is required once the design phase is completed.*	*No risks are identified for activities under components 1 and 3. Component 2 will require further assessment based on the activities that are defined after the designing phase. Given that the project is within an urban context and will*	*No risks identified*

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		promote urban agriculture at a small scale it is highly unlikely that any risks are triggered.	

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PART III: IMPLEMENTATION ARRANGEMENTS

A. Arrangements for project implementation

Describe the arrangements for project / programme implementation.

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In close consultation with the key national and local government partners like the Ministry of Environment and Forestry and the Municipal Government of the City of Samarinda the following mechanisms for project coordination and project implementation were agreed upon.

- **Kermitraan**

Kermitraan (the Partnership for Governance Reform), as a non-for-profit civil law association, will be the implementing entity for the project.

- **The Ministry of Environment and Forestry**

The Ministry of Environment and Forestry is the National Designated Authority.

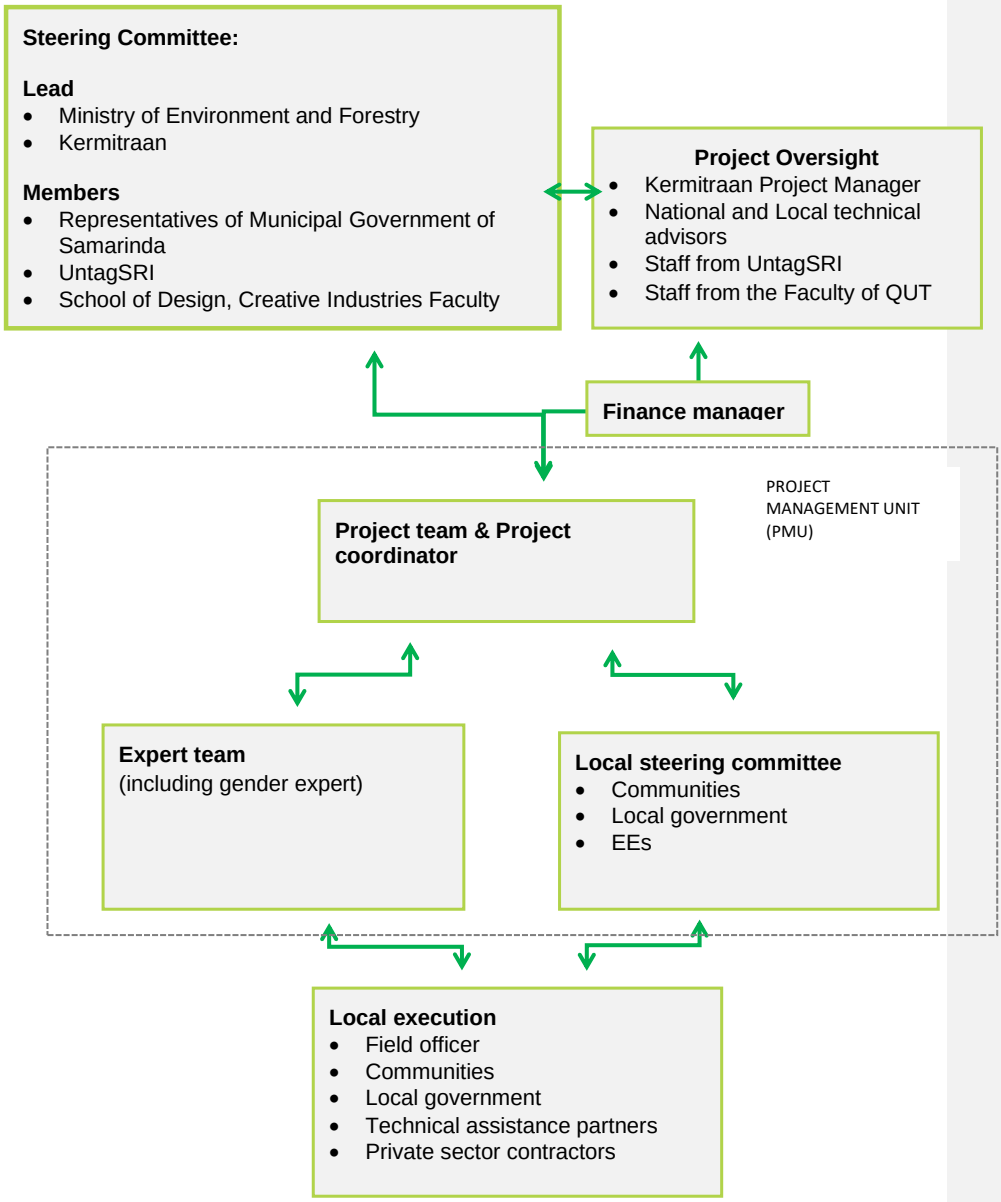
- **Untag Surabaya Resilience Institute (UntagSRI)**

Untag Surabaya Resilience Institute (UntagSRI) is an Indonesian research centre for climate change studies, based in the University of 17 Agustus 1945 Surabaya. Its mission is to empower both tangible and intangible aspects of resilience to address the impacts of Climate Change. UntagSRI will act as executing entity and will provide technical expertise.

- **The School of Design, Creative Industries Faculty. Queensland University of Technology (QUT)**

The School of Design, within the Creative Industries Faculty of the Queensland University of Technology is a world leader in arts, media and design teaching and research, with extensive industry partnerships and a proven track record in growing the creative economy. QUT will act as executing entity and will provide technical expertise.

ORGANIGRAM OF THE PROJECT



B. Measures for financial and project risk management

Describe the measures for financial and project / programme risk management.

All risks in project implementation are analyzed during the design phase with the participation of all relevant stakeholders. A mitigation strategy is established to ensure that the risk is well managed. The table below presents the types of risks, description of risk and risk level and the strategies that have been and will be done to minimize them.

Type of Risk	Description of Risk	Risk category (H/M/L)	Risk Mitigation Strategy
Institutional	Weak commitment from local government due to lack of coordination and communication.	Low	The project will involve government staff that are working on climate change, environment, disaster risk reduction and urban design. There is also a strong community component, to reduce potential impacts that a weak commitment from the local government could have on project beneficiaries.
	Institutional capacity constraints of local institutions may limit the effectiveness of the implementation.	Medium	The project has integrated capacity building and trainings as part of its components, in order to ensure that it is implemented effectively both at the community and local government levels.
Financial	Delays in disbursement of funds, procurement and institutional efficiency that could potentially delay project implementation.	Medium	Active communication will be built with the grant. Financial procedures and Budget disbursement will be fulfilled.
Social	Lack of community support of the project	Medium	The project incorporates will follow a fully participative approach in order to ensure that communities can be co-creators of the design, reducing the risk that the community will not support the project.
	Lack of engagement and community awareness on climate change impacts	Medium	The project components include community awareness raising activities and a training component in order to ensure that the importance of building climate-resilient public spaces is

Type of Risk	Description of Risk	Risk category (H/M/L)	Risk Mitigation Strategy
			well communicated and understood.
	Conflicts in community interests	Medium	The participatory approach followed will ensure that all perspectives are considered in the analysis and design of the project. The grievance mechanism available will also be communicated and available for beneficiaries to communicate their concerns related to the project.
	Lack of technical knowledge in terms of climate change, urban design and project implementation.	Low	Trainings targeting communities are incorporated into the project components, to ensure that there are no gaps. Community facilitators will ensure that messages are communicated in a way that is easy to understand by communities.

C. Environmental and social risk management

Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.

Project/program preparation has identified environmental or social risks, where the proposal should include environmental and social management plans that identify actions necessary to avoid, minimize, or mitigate potential environmental and social risks.

If there are community groups who then become increasingly marginalized as a result of project activities, the PMU will try to solve this problem in a participatory way involving all parties, including the government, and vulnerable groups themselves, through a discussion process, and participatory approaches. The table below describes the environmental and social risk management, in accordance with the Adaptation Fund's Environmental and Social Policy.

Environmental and Social Principles	Description of Risks	Risk category (H/M/L)	Risk Mitigation Strategy
Compliance with the Law	Insufficient alignment with laws, regulations and standards, particularly for interventions under component 2 (construction of public space).	Low	• Compliance of project activities will be monitored throughout design and implementation phase. Local technicians will be consulted on this.

Environmental and Social Principles	Description of Risks	Risk category (H/M/L)	Risk Mitigation Strategy
Access and Equity	Unequal distribution of project benefits among target communities. Unequal engagement and participation in workshops, consultations, etc. throughout the project process. This could potentially exclude less empowered community members from decision-making processes.	Low	• Vulnerable groups in the target communities will be identified. Then, activities will be designed to ensure full participation of vulnerable groups, by conducting specific focus group discussions (if needed).
Marginalized and Vulnerable Groups	Potential risks include that traditionally vulnerable groups such as women, youth, children, the elderly, people with disabilities are not engaged appropriately throughout design and execution phases.	Low	• Consultations and other participatory approaches will be tailored to the context by for example, conducting women-only / youth-specific focus group discussions or workshops.
Gender Equity and Women's Empowerment	Despite progress made, inequalities between men and women are still present across the country92. Among the issues that hinder gender equality are: deficient participation of women in paid employment, gender inequality in access to education, weak institutional framework for gender mainstreaming, low participation of women in decision making and violence against women. Risks identified are related to a potential lack of participation of women.	Medium	• A gender expert will be involved in the project to provide expertise and support all activities that aim to empower women throughout the project development. • Consultations and participatory processes will be designed to follow a human-based approach. • Women-only focus group discussions or workshops will be implemented if needed in order to ensure equal participation throughout the design phases. • Gender empowerment and involvement of women in decision-making will be promoted by ensuring that an equal number of female and male representatives are present in the established community groups.
Core Labour Rights	Potential lack of adherence to the ILO labour Standards and national labour laws. Communities may not apply safety and security measures during construction works related to the implementation of activities under output 2.	Low	• Adherence to the ILO labour Standards and national labour laws is to be monitored throughout the process as a standard procedure. • This includes the eight International Labour Organization Convention (ILO) core labour standards related to fundamental principles and rights of workers, as well as ILO Convention No. 169, which concerns rights of indigenous and tribal peoples. Contracts will be reviewed periodically to ensure compliance with these laws.
Indigenous Peoples	Indonesia is a country of great diversity and complexity in its culture, ethnicity, language, people, and geography93. There are 500 ethnic groups speaking	Low	• Appropriate tools translated to the relevant languages within each context will be used to ensure that communities are aware of their rights.

92 https://www.adb.org/sites/default/files/institutional-document/32231/cga-indonesia.pdf
93 https://www.adb.org/sites/default/files/institutional-document/32231/cga-indonesia.pdf

Environmental and Social Principles	Description of Risks	Risk category (H/M/L)	Risk Mitigation Strategy
	more than 600 languages across the country94. The Javanese form the majority ethnic group at 45% of the population. The Sundanese, Madurese, Coastal Malays, and other ethnic groups make up the rest. Muslims form the majority religious group at 89% of the total population95. The complexity of the context will require that this principle is monitored throughout the planning and implementation phases.		• The project will be consistent with UNDRIP, and particularly with regard to Free, Prior, Informed Consent (FPIC) during project design and implementation.
Involuntary Resettlement	The design of public spaces could potentially identify the need to demolish existing buildings. This could potentially lead to involuntary resettlement.	Low	• If involuntary resettlement is identified as a potential risk, related activities will not be approved.
Pollution Prevention and Resource Efficiency	Construction could lead to inadequate resource management and production of excessive waste	Medium	• Waste management is integrated into the approach in order to raise awareness on the issue and promote good practices. This will be applied throughout the whole process
Physical and Cultural Heritage	Project activities might affect unidentified cultural sites which exist in the targeted areas and are impacted by project activities	Low	• The community profiling (Component 2, Output 2.1.1.) will collect local knowledge on physical and cultural heritage in the targeted areas. This will allow analyzing the perceptions on physical and cultural assets that may be highly valuable to the community.

GRIEVANCE MECHANISM

In alignment to the Adaptation Fund´s Environmental and Social Safeguards Policy, the implementing entity (Kermitraan) ~~will put in place~~has a grievance mechanism in place, available in the target areas, ensuring an accessible, transparent, fair and effective means of communicating concerns during project design and implementation. Project stakeholders affected by the project will be informed of the grievance mechanism for any criticism or complaint of an activity.

This grievance ~~mechanismwill~~mechanism will allow affected stakeholders to raise concerns and will be given the option to remain anonymous. Modalities for raising grievances will include a postal address to which community members can write in any language, an email address and a confidential telephone number. Consultations and workshops held throughout the project implementation will also serve as a means for stakeholders to raise concerns or suggestions.

These mechanisms consider the special needs of different indigenous groups as well as gender considerations. A hotline and mailbox offer an immediate way for affected stakeholders to express their concerns. The ~~hotlinewill~~hotline will be available in local languages and offer the opportunity for

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94 https://www.adb.org/sites/default/files/publication/28024/indigenous-peoples-indonesia.pdf
95 https://www.adb.org/sites/default/files/institutional-document/32231/cga-indonesia.pdf

those that may be affected by the project to complain or provide suggestions on how to improve project design and implementation.

In addition to the grievance mechanism set in place by the implementing entity, the address and e-mail address of the Adaptation Fund will also be made public (i.e., social media, participatory workshops, etc.) for anyone to raise concerns regarding the project:

Adaptation Fund Board secretariat
Mail stop: MSN P-4-400
1818 H Street NW
Washington DC
20433 USA
Tel: 001-202-478-7347
afbsec@adaptation-fund.org

~~In terms of the long-term feasibility of the intervention; the public spaces will be designed applying solutions, technologies, and materials that will require minimal maintenance. The planning, design, construction, and maintenance processes of the project will be based on the 4P model[96]: Public-Private-People-Partnership. The engagement of public and private stakeholders, as well as the local communities, will be vital to the success of the project. The aim of the participatory approach is to create ownership by the community, so that in the future the community is empowered with the activation and maintenance of the public spaces in collaboration with the local government. Skills learned by community members during the construction phase will be strategic also for the day to-day maintenance of the public spaces.~~

~~The 4P model[97] ensures a more resilient and sustainable management structure better equipped to face the challenges of climate change, because it relies on a variety of stakeholders and it is grounded in the engagement of end users, the communities where the public spaces will be developed, in every phase of the process. The handover of the space from the local government to the local community will be a key phase of the process, grounded in the participatory design of the project.~~

~~[96] Ng, S., Wong, J., & Wong, K. (2013). A public private people partnerships (P4) process framework for infrastructure development in Hong Kong. Cities, 31(C), 370–381. https://doi.org/10.1016/j.cities.2012.12.002~~
~~[97] Marana, P., Labaka, L., &Sarriegi, J. (2018). A framework for public-private-people partnerships in the city resilience-building process. Safety Science, 110, 39–50. https://doi.org/10.1016/j.ssci.2017.12.011~~

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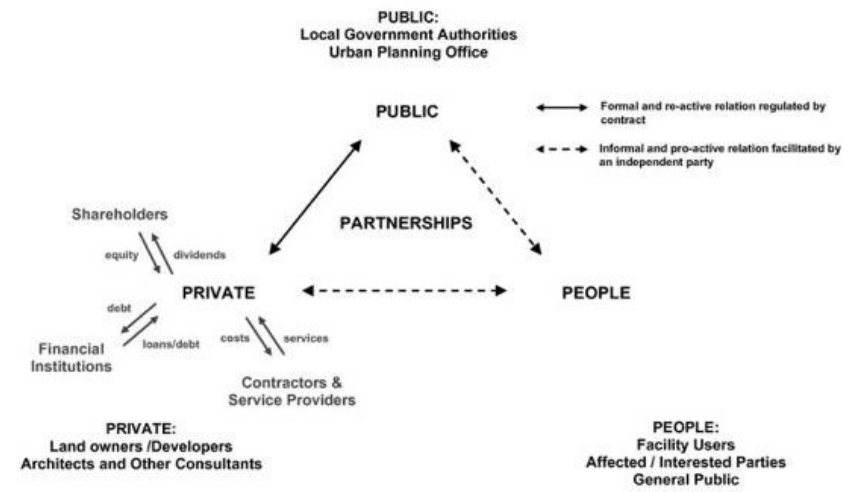

~~*Figure 14: 4P model, based on Wong & Wong (2013)*~~

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INSTITUTIONAL ARRANGEMENTS

The institutional arrangement includes the distribution of roles and responsibilities in the implementation of ESMP. The key players and their responsibilities will be as follows:

Designation	Responsibility
Program Management Unit (PMU)	- Identification of Environmental and Social Problems at the Project Site - Public disclosure - Creation of grievance mechanism at EE level - Reporting and disposal of griavances
Kemitraan (Partnership)	- Monitor and review the process ESMP implementation - Set up the grievance mechanism at IE level - Disposal of grievances

GENDER ASSESSMENT

Gender Assessment Categories	Description relevant with Project
Gender roles	Raising the awareness for public participation on public space
Gender-related activities	• communication initiatives that aim to widely disseminate key messages, involving large-scale media; • public events to convey the message to a specific target group, such as young people; • the possibility of interactivity and the potential for the viral dissemination of the message online; • community-based initiatives in a local context to mobilise communities, empower women and promote community dialogue on gender equality; • static and travelling exhibitions and displays;
Gender needs	• public events in public space e.g. concerts, information booths at festivals, etc.; • social media and social networks, involving large-scale media such as television, newspapers, radio and websites; • public meetings, presentations, workshops, informal social events using interpersonal and participatory approaches; • printed materials — for example brochures, billboards, cartoons, comics, pamphlets, posters, resource books and audio-visual resources;
Opportunities and challenges/risks	• Providing basic facts, evidence and arguments on various topics relating to gender equality to increase awareness and knowledge about gender (in)equality in public space; • fostering communication and information exchange so as to improve mutual understanding and learning about gender (in)equality in public space; • Mobilising communities and society as a whole to bring about the necessary changes in attitudes, behaviours and beliefs about gender equality in public space.

D. M&E PLAN

Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

Project Results	Indicators	Target	Sort by	Monitoring Methods & Tools	Frequency	Responsibility
Project Component 1. Research and Development on city-wide adaptation to climate change through public spaces						
Outcome 1.1 Increased urban resilience through the development of a new public space typology and guidelines that can inform planning processes at the city-level	1 guidelines for the design and implementation of climate-resilient public spaces that reduce the risk of extreme weather events.	1	None	Documentation review	Quarterly	Kermitraan and EEs
Output Level:						
1.1.1. Research conducted on climate-resilient public spaces, including best practices and lessons learned within the Asia-Pacific Region, and South-East cities in particular	1 document including best practices and lessons learned in the region and successful solutions that reduce the risk of extreme weather events in public spaces.	1	None	Documentation review	Quarterly	Kermitraan and EEs
1.1.2. Assessment tool and methodology for the evaluation of climate-resilient public spaces developed	1 Assessment tool and methodology proposed	1	None	Documentation review	Quarterly	Kermitraan and EEs
1.1.3. Public space guidelines, incorporating new typologies that can be used as a best practice for replication	1 document including guidelines and three new typologies	1	None	Documentation review	Quarterly	Kermitraan and EEs
Project Component 2. Awareness raising and local resilience strengthening through the design and implementation of a new public space typology						
Outcome 2.1 Increased awareness and ownership of design processes	Percentage of targeted population aware of climate projections and expected impacts and	50 %	Neighborhood	Documentation review Activity Report review Participation lists Quarterly Report review	Quarterly	Kermitraan and EEs
Outcome 2.2 Community-based infrastructure developed resulting in a strengthened adaptive capacity	Physical infrastructure improved to withstand climate change and variability-induced stress	1 public space	City		Quarterly	Kermitraan and EEs

Output Level:						
2.1.1. Community profiling developed for targeted location in the City of Samarinda	No. of community profiles developed for the targeted location	1	None	Documentation review	Quarterly	Kermitraan and EEs
2.1.2. Targeted communities are engaged in design processes through a participatory approach (e.g. workshops, interactive debates, etc.), focused on climate-resilient public spaces	No. and type of risk reduction actions or strategies introduced at local level	1	Neighborhood	Activity Report review Participation lists Quarterly Report review	Quarterly	Kermitraan and EEs
2.2.1. Climate-resilient public space is co-developed and built in the selected communities (in the city of Samarinda) based on previous findings	No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	1 public space	City	Activity Report review documentation Quarterly Report review	Quarterly	Kermitraan and EEs
2.2.2. Community groups are established, based on existing governance structures (if present), to ensure adequate maintenance of the public spaces	Number of community groups established and number of people	3	Neighborhood	Activity Report review Participation lists Quarterly Report review	Quarterly	Kermitraan and EEs
Project Component 3: Capacity building, knowledge management and communication						
Outcome 3.1 Increased capacity at the city- and community-levels on climate-resilient strategies and design options for public spaces	No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks	1	City	Activity Report review Participation lists	Quarterly	Kermitraan and EEs

Outcome 3.2 Knowledge sharing and increased awareness on project results among targeted audience (communities, governmental bodies, general public)	Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	Number to be defined	None	Quarterly Report review Documentation	Quarterly	Kermitraan and EEs
Output Level:						
3.1.1. Training for community groups to divulgate findings of the project and methodology of the intervention	Number of people aware of predicted adverse impacts of climate change, appropriate responses and project and methodologies implemented in the intervention	1 training (at least 50% women participating)	Neighborhood	Activity Report review Documentation Participation lists	Quarterly	Kermitraan and EEs
3.1.2. Training for government officials in key sectors (e.g. planning departments) on project findings, methodologies and approaches applied for replication	20 staff trained	20 staff trained	City	Activity Report review Documentation Participation lists	Quarterly	Kermitraan and EEs
3.2.1. Lessons learned and best practices on climate-resilient public spaces and community adaptive capacity building are captured and disseminated for regional replication	5 news outlets in the local press and media covering the topic.	5	None	Quarterly Report review Documentation	Quarterly	Kermitraan and EEs
Project Component 4. Monitoring						
Outcome 4.1 Increased understanding and awareness of the impact of the intervention	Evaluation of the project impacts	1	None	Documentation review Baseline survey, end of completion survey, survey two years after the completion of the intervention	Quarterly	Kermitraan and EEs
Output Level:						
4.1.1 Evaluation of place quality before the intervention, at completion of the intervention, and	Evaluation report in the project location	3 surveys	None	Baseline survey, end of completion survey, survey two years after the	Quarterly	Kermitraan and EEs

two years after the completion of the interventions				completion of the intervention		

E. Results Framework

Include a results framework for the project proposal, including milestones, targets and indicators.

Outcome/ Output	Indicator	Baseline	Target	Source of Verification	Risk & Assumption
Project Component 1. Research and Development on city-wide adaptation to climate change through public spaces					
Outcome 1.1 Increased urban resilience through the development of a new public space typology and guidelines that can inform planning processes at the city-level	1 guidelines for the design and implementation of climate-resilient public spaces that reduce the risk of extreme weather events.	0	1	Activity Report, Documentation Copy of assessment tool and methodology Copy of public space guidelines	-
Output 1.1.1. Research conducted on climate-resilient public spaces, including best practices and lessons learned within the Asia-Pacific Region, and South-East cities in particular	1 document including best practices and lessons learned in the region and successful solutions that reduce the risk of extreme weather events in public spaces.	0	1	Activity Report, Documentation	-
Output 1.1.2. Assessment tool and methodology for the evaluation of climate-resilient public spaces developed	1 Assessment tool and methodology proposed	0	1	Copy of assessment tool and methodology	-
Output 1.1.3. Public space guidelines, incorporating new typologies that can be used as a best practice for replication	1 document including guidelines and three new typologies	0	1	Copy of public space guidelines	-
Project Component 2. Awareness raising and local resilience strengthening through the design and implementation of a new public space typology.					
Outcome 2.1	Percentage of targeted population aware of climate	0	50 %	Copy of community profiles Activity Report	There is a lack of interest and engagement from

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Outcome/ Output	Indicator	Baseline	Target	Source of Verification	Risk & Assumption
Increased awareness and ownership of design processes	projections and expected impacts and			Participation lists Documentation	community groups in the project. To be addressed through adequate community facilitation activities.
Output 2.1.1. Community profiling developed for targeted location in the City of Samarinda	No. of community profiles developed for the targeted location	0	1	Community profiles (documentation)	Lack of interest from the community in participating and providing information to conduct the community profile.
Output 2.1.2. Targeted communities are engaged in design processes through a participatory approach (e.g. workshops, interactive debates, etc.), focused on climate-resilient public spaces	No. and type of risk reduction actions or strategies introduced at local level	0	1	Activity Report Participation lists	Lack of interest in participating in the workshops and design process.
Outcome 2.2 Community-based infrastructure developed resulting in a strengthened adaptive capacity	Physical infrastructure improved to withstand climate change and variability-induced stress	0	1 public space	Activity Report, documentation	Length of time for issuance of permits. To be addressed by the PMU. To be addressed through adequate community facilitation activities.
Output 2.2.1. Climate-resilient public space is co-developed and built in the selected communities (in the city of Samarinda) based on previous findings	No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	0	1 public space	Activity Report, documentation	Length of time for issuance of permits.

Outcome/ Output	Indicator	Baseline	Target	Source of Verification	Risk & Assumption
Output 2.2.2 Community groups are established, based on existing governance structures (if present), to ensure adequate maintenance of the public spaces	Number of community groups established and number of people	0	3 (at least 1 with a focus on gender) (at least 1 with a focus on youth)	Activity Report Participation lists	Lack of interest from the community to form groups for maintenance.
Project Component 3. Capacity building, knowledge management and communication					
Outcome 3.1 Increased capacity at the city- and community-levels on climate-resilient strategies and design options for public spaces	No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks	0	1	Activity Report Participation lists	Lack of human resource capacity and/or lack of interest. To be addressed through adequate community facilitation activities.
Output 3.1.1. Training for community groups to divulgate findings of the project and methodology of the intervention	Number of people aware of predicted adverse impacts of climate change, appropriate responses and project and methodologies implemented in the intervention	0	1 training (at least 50% women participating)	Activity Report Participation lists	Lack of interest from the community.
Output 3.1.2. Training for government officials in key sectors (e.g. planning departments) on project findings, methodologies and approaches applied for replication	20 staff trained	0	20 staff trained	Activity Report Participation lists	Lack human resource capacity for the participation in the trainings.
Outcome 3.2 Knowledge sharing and increased awareness on project results among targeted audience (communities,	Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	0	Number to be defined	Documentation	Dissemination of information not available for local communities. To be addressed by targeting specifically local

Outcome/ Output	Indicator	Baseline	Target	Source of Verification	Risk & Assumption
governmental bodies, general public)					communities and preparing material that is translated to local languages.
Output 3.2.1. Lessons learned and best practices on climate-resilient public spaces and community adaptive capacity building are captured and disseminated for regional replication	5 news outlets in the local press and media covering the topic.	0	5 news outlets (local press and media)	Documentation	Dissemination of information not available for local communities.
Component 4. Monitoring					
Outcome 4.1 Increased understanding and awareness of the impact of the intervention	Evaluation of the project impacts	0	1	Documentation Baseline survey, end of completion survey, survey two years after the completion of the intervention	-
Output 4.1.1 Evaluation of place quality before the intervention, at completion of the intervention, and two years after the completion of the interventions	Evaluation report in the project location	0	1 report	Documentation Baseline survey, end of completion survey, survey two years after the completion of the intervention	-

F. Alignment with the Results Framework of the Adaptation Fund

Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

Project Outcome(s)	Project Outcome Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Outcome 1.1. Increased urban resilience through the development of a new public space typology and guidelines that can inform planning processes at the city-level	1 Guidelines for the design and implementation of climate-resilient public spaces that reduce the risk of extreme weather events.	**Outcome 2:** Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	**2.2.** Number of people with reduced risk to extreme weather events	**105.363**
Outcome 2.1. Increased awareness and ownership of design processes	Percentage of targeted population aware of climate projections and expected impacts and	**Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	**3.2.** Modification in behavior of targeted population	**40.000**
Outcome 2.2. Community-based infrastructure developed resulting in a strengthened adaptive capacity	Physical infrastructure improved to withstand climate change and variability-induced stress	**Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors	**4.2.** Physical infrastructure improved to withstand climate change and variability-induced stress	**409.681**
Outcome 3.1. Increased capacity at the city- and community-levels on climate-resilient strategies and design options for public spaces	No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks	**Outcome 2:** Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	**2.1.** No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks	**30.000**
Outcome 3.2. Knowledge sharing and increased awareness on project results among targeted audience (communities, governmental bodies, general public)	Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	**Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	**3.1.** Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	**51.000**

Project Outputs	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
1.1 Research conducted on climate-resilient public spaces, including best practices and lessons learned within the Asia-Pacific Region, and South-East cities in particular. **1.2** Assessment tool and methodology for the evaluation of climate-resilient public spaces developed **1.3** Public space guidelines, incorporating new typologies that can be used as a best practice for replication.	Percentage of population covered by adequate risk-reduction systems	**Output 2.2:** Targeted population groups covered by adequate risk reduction systems	**2.2.1.** Percentage of population covered by adequate risk-reduction systems	**105.363**
2.1.1 Community profiling developed for targeted locations in the City of Samarinda **2.1.2** Targeted communities are engaged in design processes through a participatory approach (e.g. workshops, interactive debates, etc.), focused on climate-resilient public spaces	No. of community profiles developed for the targeted locations No. and type of risk reduction actions or strategies introduced at local level	**Output 3:** Targeted population groups participating in adaptation and risk reduction awareness activities	**3.1.1** No. and type of risk reduction actions or strategies introduced at local level	**50.000**
2.2.1 Climate-resilient public space is co-developed and built in the selected communities (across the four cities) based on previous findings	No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	**Output 4:** Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	**4.1.2.** No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	**409.681**
3.1.1 Training for community groups to divulgate findings of the project and methodology of the intervention	Number of people aware of predicted adverse impacts of climate change, appropriate responses and project and methodologies implemented in the intervention	**Output 3:** Targeted population groups participating in adaptation and risk reduction awareness activities	**3.1.** Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	**15.000**

3.1.2 Training for government officials in key sectors (e.g. planning departments) on project findings, methodologies and approaches applied for replication	20 staff trained	**Output 2.1:** Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events	**2.1.1.** No. of staff trained to respond to, and mitigate impacts of, climate-related events	**15.000**
3.2.1. Lessons learned and best practices on climate-resilient public spaces and community adaptive capacity building are captured and disseminated for regional replication	5 news outlets in the local press and media covering the topic.	**Output 3:** Targeted population groups participating in adaptation and risk reduction awareness activities	**3.1.2** No. of news outlets in the local press and media that have covered the topic	**51.000**

G. Budget

Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Budget is provided in a separate file.

ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

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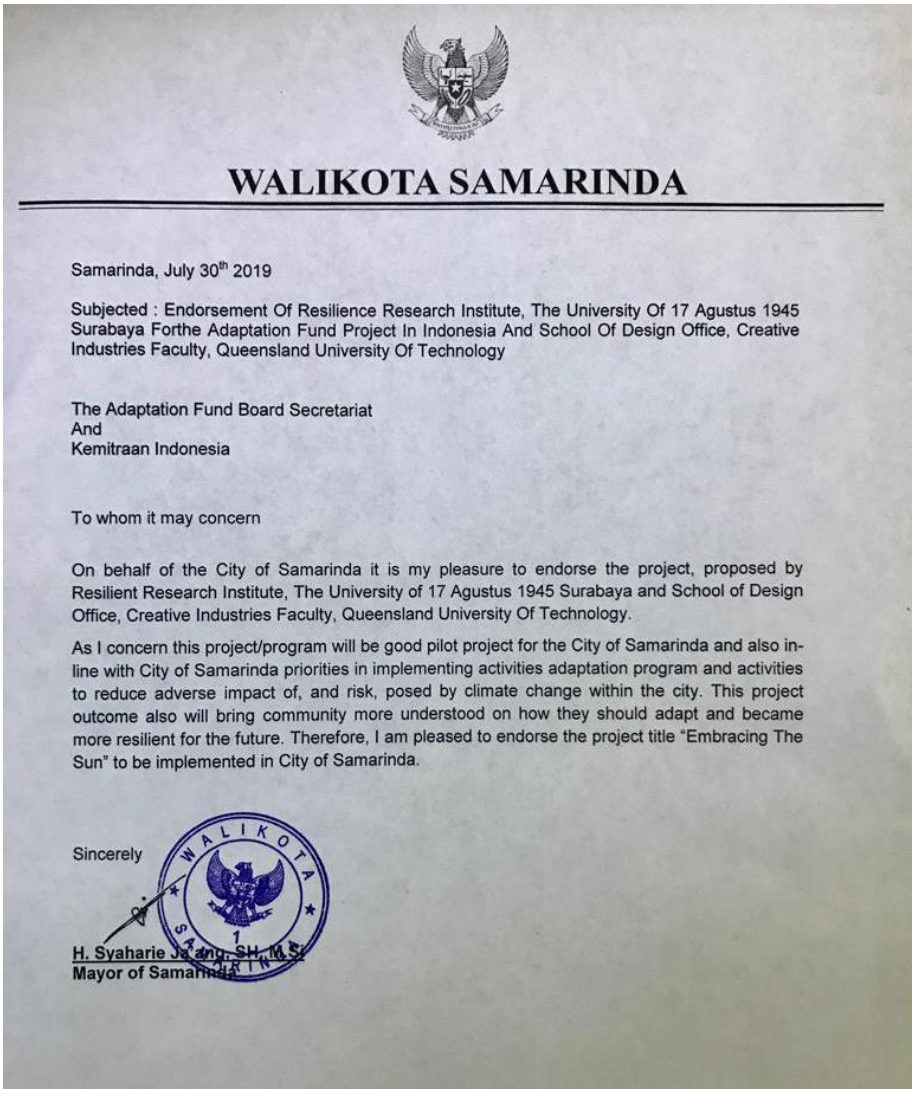

WALIKOTA SAMARINDA

Samarinda, July 30th 2019

Subjected : Endorsement Of Resilience Research Institute, The University Of 17 Agustus 1945 Surabaya Forthe Adaptation Fund Project In Indonesia And School Of Design Office, Creative Industries Faculty, Queensland University Of Technology

The Adaptation Fund Board Secretariat
And
Kemitraan Indonesia

To whom it may concern

On behalf of the City of Samarinda it is my pleasure to endorse the project, proposed by Resilient Research Institute, The University of 17 Agustus 1945 Surabaya and School of Design Office, Creative Industries Faculty, Queensland University Of Technology.

As I concern this project/program will be good pilot project for the City of Samarinda and also in-line with City of Samarinda priorities in implementing activities adaptation program and activities to reduce adverse impact of, and risk, posed by climate change within the city. This project outcome also will bring community more understood on how they should adapt and became more resilient for the future. Therefore, I am pleased to endorse the project title "Embracing The Sun" to be implemented in City of Samarinda.

Sincerely

H. Syaharie Jaang, SH, M.Si
Mayor of Samarinda

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
U.S.A

Surabaya, 20th January, 2019

Subject:
Endorsement of UNTAG Surabaya Resilience Institute (Pusat Studi Resiliensi), Universitas 17 Agustus 1945 Surabaya, Indonesia, for the Adaptation Fund Project in Indonesia

To Whom It May Concern,

On behalf of the Surabaya City Government, it is my pleasure to endorse the project, proposed by UNTAG Surabaya Resilience Institute (Pusat Studi Resiliensi), Universitas 17 Agustus 1945 Surabaya, Indonesia.

Surabaya is one of the largest cities in Indonesia. The city has won various global awards, because it represents the future of the city of Indonesia, with good governance and innovation in overcoming the challenges facing the urban environment, especially related to global climate change, to bring economic and environmental benefits holistically to the people of Surabaya. In developing its benefits, Surabaya hopes to be a role model for other cities in Indonesia.

Therefore, it is necessary to invite other local governments in the potential cities, to learn what has been done by Surabaya, so that it can be duplicated in their cities. Here the role of non-government organizations, such as the UNTAG Surabaya Resilience Institute is needed. This institution is always active and participates in various activities in Surabaya and its surroundings. They participate to building resilience at the local level through advocacy, awareness raising, capacity building, design workshop & implementation and promoting city-to-city collaboration. One of the trusted institutions that are partners is the School of Design Office, Creative Industries Faculty, The Queensland University of Technology. I am confident, through this collaboration; they will produce better and more useful products.

Sincerely,

Prof. Johan Silas
Advisor to the Mayor for City Planning
and Urban Heritage

~~B.~~

A. Record of endorsement on behalf of the government

Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:

H. Syaharie Ja'ang Mayor of Samarinda	Date: July, 30th, 2019
Prof. Johan Silas Advisor to the Mayor for City Planning and Urban Heritage	Date: January, 10th, 2019

B. Implementing Entity certification

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (President Decree No. 16/2015; P.13/MENLHK/Setjen/OTL.0/1/2016; P.33/MENLHK/Setjen/Kum.1/3/2016; Indonesia Intended Nationally Determined Contribution/INDC; COP 21; Paris Agreement signed by Government of Indonesia; Book and Map of Information System of Vulnerability Index Data (SIDIK); Permen-KP No. 2 year 2013; Climate Change Adaptation National Action Plan)and subject to the approval by the Adaptation Fund Board commit to implementing the Project in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this Project..	
 **Laode M. Syarif** **Executive Director Kemitraan** **Implementing Entity Coordinator**	
Date: 17th Jan 2020	Tel. and email: +62-21-7279 9566; Laode.Syarif@kemitraan.or.id
Project Contact Person: **Dewi Rizki**	
Tel. and Email: +62-21-7279 9566; Dewi.Rizki@kemitraan.or.id	

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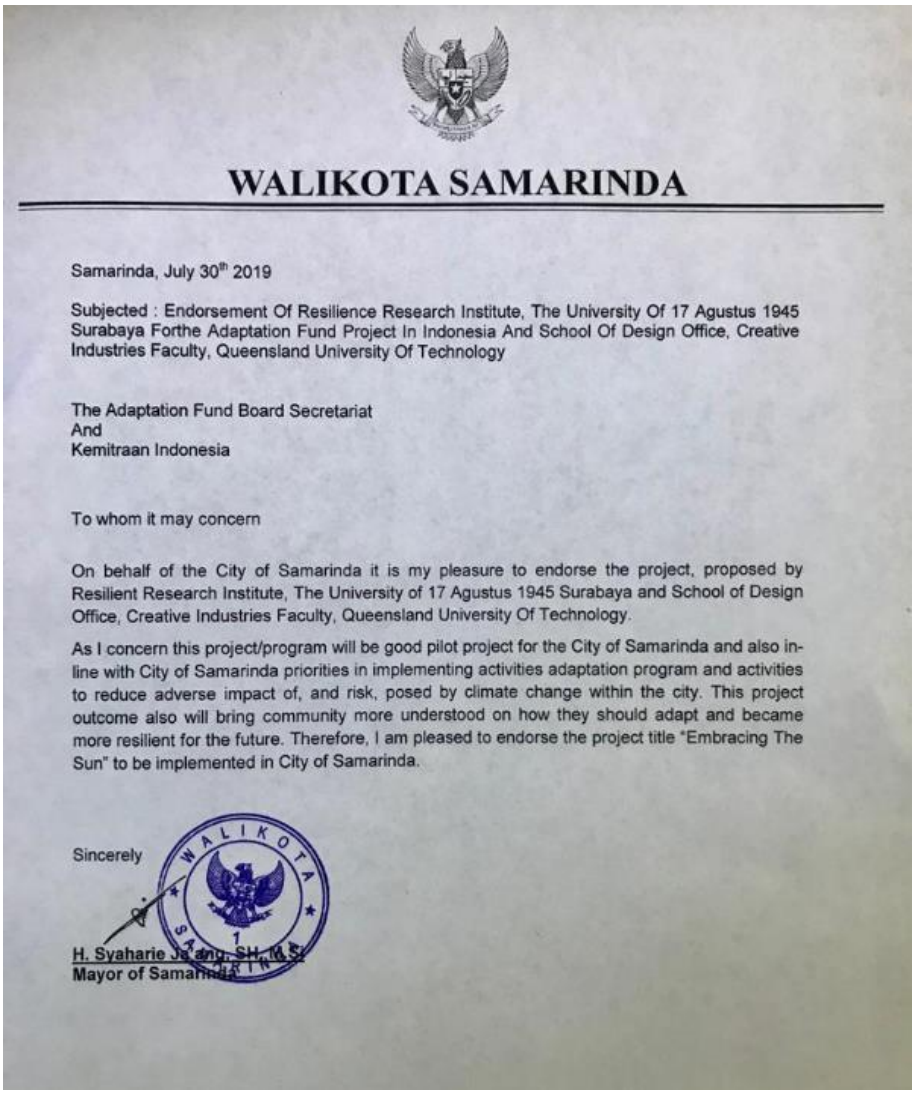
ANNEX A
Endorsement letters

The Endorsement Letter from the Mayor of Samarinda City (Municipal Government City of Samarinda)



WALIKOTA SAMARINDA

Samarinda, July 30th 2019

Subjected : Endorsement Of Resilience Research Institute, The University Of 17 Agustus 1945 Surabaya Forthe Adaptation Fund Project In Indonesia And School Of Design Office, Creative Industries Faculty, Queensland University Of Technology

The Adaptation Fund Board Secretariat
And
Kemitraan Indonesia

To whom it may concern

On behalf of the City of Samarinda it is my pleasure to endorse the project, proposed by Resilient Research Institute, The University of 17 Agustus 1945 Surabaya and School of Design Office, Creative Industries Faculty, Queensland University Of Technology.

As I concern this project/program will be good pilot project for the City of Samarinda and also in-line with City of Samarinda priorities in implementing activities adaptation program and activities to reduce adverse impact of, and risk, posed by climate change within the city. This project outcome also will bring community more understood on how they should adapt and became more resilient for the future. Therefore, I am pleased to endorse the project title "Embracing The Sun" to be implemented in City of Samarinda.

Sincerely

H. Syaharie Ja'ang, SH, M.Si
Mayor of Samarinda

The Endorsement Letter from the Advisor to the Mayor for City Planning and Urban Heritage (Municipal Government City of Samarinda)

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
U.S.A

Surabaya, 20th January, 2019

Subject:
Endorsement of UNTAG Surabaya Resilience Institute (Pusat Studi Resiliensi), Universitas 17 Agustus 1945 Surabaya, Indonesia, for the Adaptation Fund Project in Indonesia

To Whom It May Concern,

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Therefore, it is necessary to invite other local governments in the potential cities, to learn what has been done by Surabaya, so that it can be duplicated in their cities. Here the role of non-government organizations, such as the UNTAG Surabaya Resilience Institute is needed. This institution is always active and participates in various activities in Surabaya and its surroundings. They participate to building resilience at the local level through advocacy, awareness raising, capacity building, design workshop & implementation and promoting city-to-city collaboration. One of the trusted institutions that are partners is the School of Design Office, Creative Industries Faculty, The Queensland University of Technology. I am confident, through this collaboration; they will produce better and more useful products.

Sincerely,

Prof. Johan Silas
Advisor to the Mayor for City Planning
and Urban Heritage

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