



ADAPTATION FUND

## PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND



## PROJECT/PROGRAMME INFORMATION

Project/Programme Category	: SMALL-SIZED PROJECT/PROGRAMME
Country/ies	: INDONESIA
Title of Project/Programme	: <b>EMBRACING THE SUN:</b> 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	: KEMITRAAN
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)

## PROJECT/PROGRAMME BACKGROUND AND CONTEXT

This project aims to prepare the Indonesian people to increase awareness of climate change and become more resilient in the face of the current climate crisis. A new typology of public space will be developed and will then be tested through construction of an integrated system of public spaces within a pilot city. The new typology aims to become an infrastructure to support local communities in facing the complexities and the challenges of climate change. The physical interventions in the selected city, developed in consultation with local communities as well as local governments, will provide structures and systems to deal with a series of environmental issues relevant to the Indonesian as well as to the global context. The new public spaces will integrate and enhance the current urban structure and establish an ecological and social corridor to support communities' positive development. It is hoped that findings from this project will be applicable to other cities in Indonesia, as well as national programs; findings could also be adapted to other communities facing similar environmental problems related to climate change in the global context.

### I. Indonesia and Climate Change

Indonesia, being the largest archipelagic country in the world with more than 17,500 islands and 80,000 kilometres of coastline<sup>1</sup>, is highly vulnerable to the effects of climate change. Indonesia is also the fourth most populous country in the world and is extremely rich in terms of ecosystems and biodiversity. Rising sea levels, increases in temperature, changes in rainfall patterns and extreme weather events are some of the main impacts the country faces<sup>2</sup>. According to a global risk analysis conducted by the World Bank, Indonesia ranks 12<sup>th</sup> out of 35 countries facing a relatively high mortality risk from multiple hazards<sup>3</sup>. Disaster risks, such as floods, droughts, storms, and forest fires, are being exacerbated by climate variability and change, leading to increased risks and a growing strain on public expenditures. For instance, the 2007 flood in Jakarta amounted to more than US\$ 900 million due to resulting damages<sup>4</sup>.

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<sup>1</sup> Ministry of Environment, 2007. National Action Plan Addressing Climate Change.

<sup>2</sup> National Action plan for Climate Change Adaptation (RAN-API). Synthesis Report, (2013).

<sup>3</sup> World Bank. Indonesia: Climate Risk and Adaptation Country Profile, (2011). Found online at: [http://sdwebx.worldbank.org/climateportal/countryprofile/doc/GFDRRCountryProfiles/wb\\_gfdr气候\\_change\\_country\\_profile\\_for\\_IDN.pdf](http://sdwebx.worldbank.org/climateportal/countryprofile/doc/GFDRRCountryProfiles/wb_gfdr气候_change_country_profile_for_IDN.pdf)

<sup>4</sup> Idem.

The development of climate change adaptation activities in Indonesia in the past six years has been marked by increasingly widespread socialization of climate change and its impacts, vulnerability assessment activities in several provinces and Regency/City areas. Although the program is still considered sectoral, it achieves its objectives and is able to make the community continue the program independently and sustainably by the community itself. In this way, these programs provide benefits in capacity strengthening and climate change adaptation.

According to Ari Muhamad, there are three things that cause the process of mainstreaming adaptation in several cities in Indonesia to run well, first because regional leaders have attention to the issue of climate change. Second, the presence of conservation and environmental activists who can work together and provide assistance to local governments, so that their presence always maintains the sustainability of the local government's commitment and attention. Third, the emergence of disasters due to the impact of climate change that will be exacerbated by the pressure of climate change, such as the loss of the number of springs and the increasing intensity of environmental disasters.

According to the latest report released by the IPCC (the fifth Assessment Report 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-Nino symptoms will certainly also be a driving factor for forest fires which have so far eliminated millions of hectares of forest land. The impact of climate change is another major threat when it is associated with Indonesia's geographical conditions, namely rising sea levels and threats to the sinking of the island. Sinking or loss of a small island is one phenomenon that will definitely occur if the effects of climate change are not heeded.

Another report made by the Ministry of Public Works in collaboration with the Ministry of Environment (2007) states that the impact of the threat of climate change, namely rising sea levels, will pose a threat to several industries such as; oil and gas platforms in the sea, transportation, fisheries, agriculture and ecotourism and coastal communities. It was also stated that with an increase of about 1 meter, it was estimated that around 405,000 ha of coastal land including small islands would flood. Another portrait of climate related hazards in Indonesia is crop failure due to drought. The results of monitoring drought on rice plants during the last 10 years (1993-2002) conducted by the Department of Agriculture, obtained an average number of agricultural lands affected by drought reaching 220,380 ha with crop-failed land reaching 43,434 ha. In the El Niño Southern Oscillation (ENSO) years, the volume of water in water reservoirs decreased significantly (far below normal), especially during the dry season (June - September) which resulted in lower production of electricity generation in those years. Meanwhile, data from Wetlands International (Burke et al., 2002) reported that El Niño that year had destroyed coral reef ecosystems in Southeast Asia. Coral bleaching has occurred in many places such as the eastern part of Sumatra, Java, Bali and Lombok. In the Thousand Islands around 90-95% of coral reefs which are at a depth of 25 m have been partially bleached. Increasing sea water temperatures especially during the 1997 El Niño have caused serious problems in the coral reef ecosystem.

The impact on the health sector includes the spread of diseases such as malaria, dengue fever, diarrhoea, cholera, and vector-borne diseases due to variations weather like ENSO. The World Health Organization (WHO) also states that the spread malaria is triggered by the occurrence of rainfall above normal and affected by less stable weather changes. On the other hand, various studies conducted by the Intergovernmental Panel on Climate Change and other research institutions (foreign and domestic origin) show the level of vulnerability developing and underdeveloped economies that are relatively high, plus relatively low adaptation capacity.

Indonesia, as part of the world community, cannot be free from commitment to also play a role in reducing activities that cause warming global because as part of the world community attention is



needed the threat of climate change due to global warming. In this context, Indonesia is rated as a country that contributes significantly in releasing CO<sub>2</sub> from the forestry and peatland sectors.

In the context of the climate change debate, Indonesia is ranked as the fifth largest emitter of greenhouse gases<sup>5</sup>, and is at the same time a highly vulnerable country to the impacts of climate change.

Agriculture, plantations and fisheries are examples of the main fields of power generation economy as well as a pillar to support food security. Other fields of development those threatened with climate change are the energy sector, forestry, coastal, water resources, infrastructure, and health. Within the scope of local threats and the impact of climate change has the potential to cause economic disruption micro. If only the threat of climate change is too late to be anticipated nationally, it can be ascertained that there is an influential macro-economic disruption important to the security and defence aspects of a country.

No fulfilment of steps or efforts does not mean there is no serious effort that must be done because of the threats and impacts of climate change and climate extreme influence is real. The most vulnerable is of course the area where the community depends on the climate and is affected by it climatic conditions, both of which are located in urban and rural areas, especially ones have no choice when the place of residence experiences the impact it causes such as erosion, abrasion, rising sea levels, flooding, and landslides when it rains down with high intensity and the threat of forest fires, drought, the crisis of clean water during a long dry season. In extreme cases, growth the economy of a country or region is lost within a year because of the emergence of disasters due to changes and climate variability.

Therefore, it is important to reduce the level of vulnerability through development that pays attention to environmental management and cares about the impact of losses caused by development of the regional ecosystem. On the other hand, increasing the resilience of infrastructure and community economic resilience and social as a step to strengthen the readiness of the economy and the population to be more resistant to the negative impacts of climate change.

## **II. Socio-Economic Context**

Indonesia is considered the largest economy in Southeast Asia<sup>6</sup>. Furthermore, the country's economy has recently picked up due to an export turnaround, strengthened investment and booming consumption<sup>7</sup>. Despite levels of poverty and inequality having decreased both in rural and urban areas, almost 10% of its population (approximately 25.9 million people) lives below poverty line and approximately 20.78% remains vulnerable of falling into poverty<sup>8</sup>. The ADB estimates that costs related to the impacts of climate change will constitute between 2.5 and 7% of the gross domestic product (GDP) by 2100<sup>9</sup>. It is the poorest communities and vulnerable groups (e.g. women, youth, the elderly, etc.) that are expected to bear the greatest burdens of the impacts of climate change.

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<sup>5</sup> World Resources Institute. Retrieved from: <https://www.wri.org/our-work/project/forests-and-landscapes-indonesia/climate-change-indonesia>

<sup>6</sup> OECD Economic Survey: Indonesia, (2018), p. 9. Online at: <http://www.oecd.org/eco/surveys/Indonesia-2018-OECD-economic-survey-overview.pdf>

<sup>7</sup> Asian Development Outlook, (2018), p. 255. Online at: <https://www.adb.org/sites/default/files/publication/411666/ado2018.pdf>

<sup>8</sup> World Bank. Indonesia: Climate Risk and Adaptation Country Profile, (2011).

<sup>9</sup> Idem.

As mentioned previously, Indonesia's biodiversity is extremely rich. The country accounts for 15.5% of the world flora and 10% of the species on earth being documented<sup>10</sup>. Biodiversity has been essential in supporting livelihoods and the industry, driving economic growth. Climate change has been recognized as one of the main threats to biodiversity<sup>11</sup> and ecosystem services<sup>12</sup>.

Furthermore, studies show that global climate change will have a negative effect on the agriculture sector<sup>13</sup>. In 2017, agriculture, forestry and fishing accounted for approximately 13% of the total GDP<sup>14</sup> and it constitutes the main source for employment in rural areas<sup>15</sup>. This will not only result in a negative impact on rural incomes, but will also affect food prices and food security (IFPRI).

### III. Climate Change Projections and Expected Impacts

Indonesia has 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 temperature ranges from 23-32°C<sup>16</sup>. Observed climate change in terms of mean annual temperature show an increase of about 0.3°C, and are projected to increase from 0.2 to 0.3°C per decade. Average rainfall is about 1.7-3.1 cm in the lowlands and up to 6.1 cm in mountainous regions. 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 (up to 15%). Regions where rainfall is expected to decrease might suffer from drought risk, while regions where rainfall is expected to increase might face high flood risks.

There is a 30-day delay projected in the annual monsoon, which might result in a 10% increase in rainfall later in the crop year (April-June) and up to a 75% decrease in rainfall later in the dry season (July-September)<sup>17</sup>. Additionally, extreme weather events are expected to increase and might lead to significant negative impacts, particularly in coastal areas<sup>18</sup>.

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<sup>10</sup> The Fifth Annual Report of Indonesia to the Convention on Biological Diversity, 2014. Online at: <https://www.cbd.int/doc/world/id/id-nr-05-en.pdf>

<sup>11</sup> Idem

<sup>12</sup> 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](http://awsassets.panda.org/downloads/inodesian_climate_change_impacts_report_14nov07.pdf)

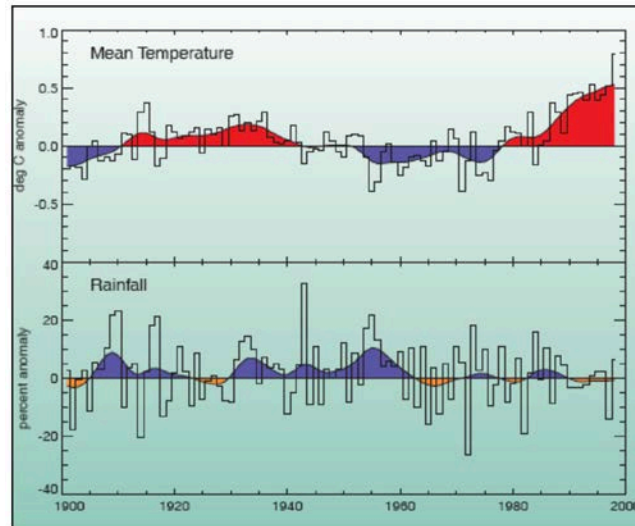
<sup>13</sup> IFPRI, (2011). The Impact of Global Climate Change on the Indonesian Economy. Online at: <http://ebrary.ifpri.org/utills/getfile/collection/p15738coll2/id/126762/filename/126973.pdf>

<sup>14</sup> The World Bank, (2017). Online at: <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=ID>

<sup>15</sup> ADB, (2015). Summary of Indonesia's Agriculture, Natural Resources, and Environment Sector Assessment University of Indonesia, (2007).

<sup>16</sup> WWF, (2007). Climate Change in Indonesia. Implications for Humans and Nature

<sup>17</sup> Indonesia Climate Change Sectoral Roadmap ICCSR. Synthesis Report, (2009). Found online at: [https://adaptation-undp.org/sites/default/files/downloads/indonesia\\_climate\\_change\\_sectoral\\_roadmap\\_iccsr.pdf](https://adaptation-undp.org/sites/default/files/downloads/indonesia_climate_change_sectoral_roadmap_iccsr.pdf)



**Figure 1.** Changes in annual mean temperature, 1901-1998 (top) and annual rainfall, 1901-1998 (bottom), across Indonesia. <sup>19</sup>

### Expected Impacts

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, four thousand disasters occurred: 37% were floods, 24% drought, 11% were landslides and 9% were windstorms<sup>20</sup>. Changes in precipitation, shifts of seasonality and timing of rainfall will lead to unpredictable and uncertain water availability, influencing agriculture and food security. Exacerbated droughts and flooding trends might cause massive crop failures, water shortages, among others.

Sea-level rise is expected impact drastically many regions in the country. With a global sea-level rise of about 2 mm per year that is projected to increase to about 5 mm per year over the next century<sup>21</sup> significant losses of coastline and islands are expected<sup>22</sup>. Between 140 and 220 million people live within 100 km of the coast<sup>23</sup>, and of these 115 to 160 million rely on marine sources for their livelihoods<sup>24</sup>. Valuable ecosystems such as coastal mangroves are threatened by projected increases in sea-level rise, among other aspects. 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 of primary production in tropical oceans. Projected climate models indicate that there could be a large-scale change in fish habitat, impacting food supply and leading to economic losses.

A further key impact from climate change would be on biodiversity and ecosystems. As mentioned previously, Indonesia is not only one of the richest countries in terms of biodiversity, but it also contains some of the world's most endangered species<sup>25</sup>. Climate change impacts pose serious threats to biodiversity and ecosystems. These range from coral bleaching and the consequent loss of coral reefs and biodiversity, to increased forest fires that will significantly impact wildlife habitat.

<sup>19</sup> WWF, (2007). Climate Change in Indonesia. Implications for Humans and Nature

<sup>20</sup> The World Bank, (2017).

<sup>21</sup> Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

<sup>22</sup> The World Bank, (2017).

<sup>23</sup> Idem.

<sup>24</sup> Idem.

<sup>25</sup> Climate Change in Indonesia. Implications for Humans and Nature, (2007). WWF.

Another aspect that will be adversely affected by climate change is human health, both directly and indirectly. Direct effects are related to projected increases in temperature, changes in precipitation, sea-level rise, extreme weather effects, etc., leading for example to higher losses in life. Indirect effects include, for example, increases in vector-borne diseases and water-borne diseases. The combination of the aforementioned negative effects in human health with a limited public health capacity will highly impact Indonesia's population, particularly poor and vulnerable groups<sup>26</sup>.

#### IV. Urban development in Indonesia

The New Urban Agenda<sup>27</sup> approved in Quito in 2016, and subscribed by Indonesia, and the Sustainable Development Goals<sup>28</sup> provide directions for sustainable development in the next 20 years. The Wuhan declaration<sup>29</sup>, issued in 2018, promotes the needs of development focused on placemaking. These important documents advocate people-centred development and recognize the important role natural landscape and public spaces have in supporting contemporary urban lives. Indonesia is undergoing an unprecedented urban development, often adopting paradigms typical of western countries that do not appropriately reflect the local culture, society, environment and landscape. Currently, over 50% of its population lives in urban areas, and up to two-thirds of the population are expected to live in cities by 2035<sup>30</sup> (figure 2).

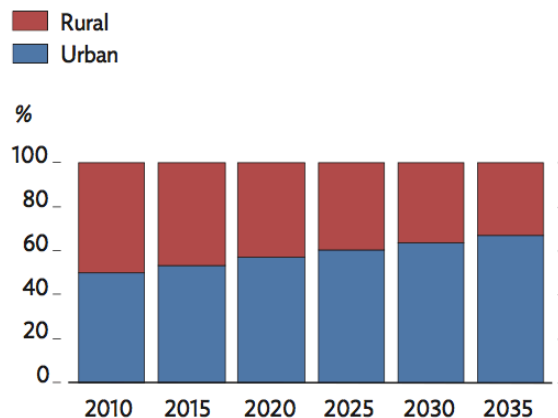


Figure 2. Population projections<sup>31</sup>

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, have been morphed in congested environment, facing serious environmental issues due to climate change and uncontrolled commercial development. Water management, waste management, sewerage, 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, intensified by unpredictable weather, extreme temperatures and more and more recurring floods. According to the Asian Development Outlook 2018<sup>32</sup>, only one in three urban households have access to decent water

<sup>26</sup> Idem

<sup>27</sup> Can be found in: <http://habitat3.org/the-new-urban-agenda/>

<sup>28</sup> Can be found: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

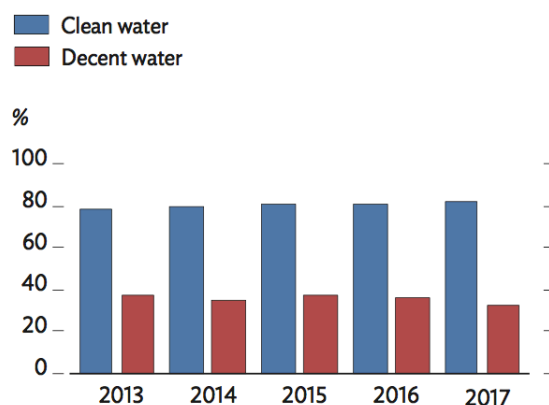
<sup>29</sup> Can be found in: <https://www.placemakingweek.org/wuhan>

<sup>30</sup> Asian Development Outlook, (2018).

<sup>31</sup> Badan Pusat Statistik, 2013. *Indonesia Population Projection*. Retrieved from: Asian Development Outlook, (2018), p. 259.

<sup>32</sup> Asian Development Outlook, (2018).

and one in hundred is connected to a sewerage system. This already deficient access to water infrastructure is further exacerbated by the impacts of natural hazards (such as floods and landslide), posing high risks to public health<sup>33</sup>.



Notes: Clean water consist of packaged water, refill water, pipe, and water from other sources (i.e., artesian well/ pump, protected well, and protected spring) with distance to the nearest final disposal site of faeces  $\geq 10$  meters. Decent water consist of pipe, rain water, and water from other sources with distance to the nearest final disposal site of faeces  $\geq 10$  meters.

**Figure 3.** Access to clean water and decent water (urban households)<sup>34</sup>

While major urban centres like Jakarta, Surabaya, and Yogyakarta have resources to face these challenges, second and third tier cities often can only rely on the resourcefulness of their communities to face current climate and environmental challenges.

As in many other emerging economies, Indonesia has often adopted development paradigm typical of western temperate cities and that often produce a negative impact on the established urban centres and communities. Car-based development, high-rise development, and limited investment in public transports and public spaces are today challenging not only the environmental sustainability of Indonesian cities, but also their social and economic viability. The traditional urban pattern of Kampong, self-sufficient urban villages, is today challenged by commercial development that leaves limited or no space to public space and traditional community living. Some Kampong, several communities in Jakarta and Surabaya, have demonstrated creativity and innovation in adapting to contemporary challenges and have implemented programs of urban agriculture, street beautification, waste recycling, and community engagement. All these programs adapt existing in-between spaces within the urban form; they contribute to the vibrancy of a kampong, they anyway have no the structural capacity to drive substantial paradigmatic changes in urban development or to support a long-term sustainability for urban centres or resilience for its communities.

## V. National Policy and Strategy for "Adaptation" Activities In the Context of Climate Change In Indonesia

The limitations of funding, technology and human resources make Indonesia a vulnerable country, towards climate change. The level of policy intervention must be seen with the development of existing information and the real needs of the country, region, and islands. Therefore, the analysis and

<sup>33</sup> Idem.

<sup>34</sup> Badan Pusat Statistik, 2013. *Indonesia Population Projection*. Retrieved from: Asian Development Outlook, (2018), p. 259.



response of the impact of ecosystem, social / economic and cultural changes (including exploring and using local wisdom and knowledge) is a priority that must be carried out by the government.

Initiation of activities through research on the threat of climate change and its adaptation options in several regions of Indonesia has been carried out. This is done at the level and framework for developing policy strategies and implementing climate change adaptation activities in Indonesia. This activity is carried out by ministries, institutions, non-governmental organizations and universities and regional governments, both funded by the state 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), where one of the thematic issues provided was detailed directions to respond to and anticipate the threat of climate change are strategic sectors, such as coastal and fisheries, agriculture and health within the framework of national policy preparedness.

This ICCSR document is expected to have an influence on the National Medium-Term Development Plan (RPJMN) for the period 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 natural disasters focus on national priorities. Currently there are 5 (five) main sectors that have climate change adaptation policies and strategies, namely; 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 from a number of policies from the Ministry of Agriculture, which are issued in response to climate change or considered to be related to adaptation efforts. The National Law No. 41 Year 2009 concerning Sustainable Food Agricultural Land Protection and Ministerial Regulation No. 39/Permentan/OT.140/6/2010 concerning Guidelines for Licensing of Food Crop Cultivation Businesses. The action program of these policies is the development of water harvesting technology and efficiency of water use such as drip irrigation and mulch and the development of land and plant management technologies to improve crop adaptability<sup>35</sup>.

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 (four) sub-sectors, namely; 1) Water Resources, 2) Cipta Karya (Building), 3) Roads and Bridges, 4) Spatial Planning. Water resources are focused on water balance (needs and availability), adequate Water Resources infrastructure, provision of alternative water sources, complete data and research, and water conservation. For the Cipta Karya sub-sector (Building), they have 3 (three) strategic goals, namely; 1) contribution of infrastructure services to economic growth, 2) contribution of infrastructure services to improving community

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<sup>35</sup> Sector Action Plan Document in Response to Climate Change Adaptation (2012).

welfare, 3) contribution of infrastructure to improve environmental quality. Some of the activities that are the fields of work for the Roads and Bridges sub-sector are Planting trees on the roadside, making drainage by extending the run-off time, moving the road to an area safer from the influence of sea level rise and building dikes in the coastal area.

The last is the sub-field of spatial planning, where adaptation efforts are carried out at the level of mainstreaming climate change in the national spatial planning system. Thus, it can guarantee that spatial planning has taken into account the projections of climate change in the future, and ensures that spatial planning undertaken does not increase the vulnerability of the region to the effects of climate change but instead increases regional resilience to the impacts of climate change in the future (DNPI, 2012).

Various implementing laws and regulations from 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, which forms the basis for action programs such as improving management of natural resource infrastructure in order 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; providing access and processing of data and information related to climate change to spatial planning, zoning planning, space utilization, space control, institutional capacity building and spatial planning and supervision (DNPI, 2012).

Concrete activities in Indonesia to 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 been felt must be realized in the real efforts of stakeholders, especially the sectors and departments that are directly affected by climate change. At the 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 between the development sectors.



At present we are still faced with homework, towards governance and environmental management in sectors that are superior in resilience and the Indonesian economy, such as in the sea and coastal areas that have been under pressure due to various factors such as population growth pressures in coastal areas, exploitation and habitat destruction, illegal destruction and deforestation and increased pollution caused by industrial and housing activities that increase vulnerability in both regions. This situation makes the area more vulnerable in the face of threats and impacts of climate change.

## **Summary**

The challenges of Indonesia today and in the future regarding climate change adaptation focus more on domestic preparedness through the establishment of clear tactics, details and measurable outcomes. This is achievable only if the tasks and functions of each sector are understood and through a spirit of collaboration between different government sectors, agencies, and local communities. A new typology of public space for the Indonesian context, focussed on people-centred development and aiming to respond to climate change with a coordinated and integrated approach, is suggested as a strategy to address several of current issues experienced by local communities. Current strategies and policies aim to reduce the effect of climate change, minimise impact of development on environment, and prepare communities for future extreme weather events as well as environmental hazards. Redefining settlements patters in Indonesian cities, through an integrated system of public



spaces, aims to improve not only the living conditions of local communities, but especially to face current challenges with the aim to generate positive cycles to improve environments and ecosystems.

**Table 1.** Summary of main hazards and risks connected to climate change in Indonesia

Climate-Related Hazards and Risks		Level of Risk
	<p><b>Flood and Drought<sup>36</sup></b>  <i>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.</i></p> <p><i>City of Samarinda:</i></p> <ul style="list-style-type: none"> <li><i>Floods in Samarinda happen annually. Length, height and spacious flood that have varied. The duration of the flooding that occurred ranged between 3 –10 hours with the water level between 0,3–1,5 m, while the area of inundation The contained Lempake area, with an area of inundation to ± 200 ha. (Achmad Ghozali, Ariyaningsih, Riyan Benny Sukmarab, Belinda Ulfa Aulia, 2015, A Comparative Study of Climate Change Mitigation and Adaptation on Flood Management Between Ayutthaya City (Thailand) and Samarinda City (Indonesia), Procedia - Social and Behavioral Sciences 227 ( 2016 ) 424 – 429</i></li> <li><i>Flood disasters, landslides have increasingly occurred in Samarinda, Kutai Kartanegara, East Kutai, and West Kutai, this is a negative impact of mining that is rapidly developing and uncontrolled</i></li> </ul> <p><i>River flood hazard and urban flood hazard are classified as high based on modelled flood information currently available to the tool of <a href="http://thinkhazard.org">http://thinkhazard.org</a></i></p>	Severe
	<p><b>Access to Clean Water<sup>37</sup></b>  <i>Water availability could be impacted by climate change in Indonesia in a number of ways:</i></p> <ul style="list-style-type: none"> <li><i>Decrease in freshwater availability in coastal zones due to saltwater intrusion</i></li> <li><i>Decrease in inland water availability and saltwater intrusion in the rivers due to river flow reductions</i></li> <li><i>Limited water availability due to a decrease in rainfall during the dry season.</i></li> </ul> <p><i>City of Samarinda:</i>  <i>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: “Tidak ada</i></p>	Severe

<sup>36</sup> 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](https://reliefweb.int/sites/reliefweb.int/files/resources/Indonesia_2.pdf)

<sup>37</sup> Ibid

	<p>kebijakan dibuat untuk menghentikan okupasi atas rawa-rawa , <a href="https://www.niaga.asia/mengapa-air-menjadi-masalah-di-samarinda/">https://www.niaga.asia/mengapa-air-menjadi-masalah-di-samarinda/</a>). water scarcity is classified as very low or non-existent based on modelled flood information currently available to the tool of <a href="http://thinkhazard.org">http://thinkhazard.org</a></p>	
	<p><b>Access to Reliable Energy Sources</b>  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<sup>38</sup>. The power grid is considered to be overextended and potentially vulnerable to the impacts of extreme weather events and sea-level rise<sup>39</sup>.</p> <p>City of Samarinda:  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)</p>	High
	<p><b>Community Vulnerability and Safety</b>  Community vulnerability to climate change, including climate variability and extremes, is related to social vulnerability as a pre-existing condition<sup>40</sup>. Despite existing progress, poverty is still significant<sup>41</sup>. Almost 10% of its population (approximately 25.9 million people) lives below poverty line and approximately 20.78% remains vulnerable of falling into poverty<sup>42</sup>.</p> <p>City of Samarinda:</p> <ul style="list-style-type: none"> <li>• 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).</li> <li>• 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.</li> <li>• 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</li> </ul>	High



<sup>38</sup> Asian Development Bank (2015). Indonesia Country Water Assessment. Manila.

<sup>39</sup> 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>

<sup>40</sup> Cutter and Emrich (2006). Social vulnerability to climate change variability hazards: a review of the literature. Final Report to Oxfam America

<sup>41</sup> Asian Development Bank (2018). Indonesia Member fact sheet. Retrieved from: <https://www.adb.org/sites/default/files/publication/27769/ino-2018.pdf>

<sup>42</sup> World Bank. Indonesia: Climate Risk and Adaptation Country Profile, (2011).

	<p>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 (<a href="https://www.mongabay.co.id/2017/03/27/masyarakat-kalimantan-timur-menderita-akibat-lingkungan-yang-rusak/">https://www.mongabay.co.id/2017/03/27/masyarakat-kalimantan-timur-menderita-akibat-lingkungan-yang-rusak/</a>)</p>	
	<p><b>Food Security<sup>43</sup></b>  Food security could be affected by climate change in Indonesia in a number of ways:</p> <ul style="list-style-type: none"> <li>• Limited crop productivity due to rising temperatures</li> <li>• Increase in crop failure risks due to reduced durations and unpredictable starts of the rainy season and decreasing rainfall predictability</li> <li>• Decrease in food production due to increasingly severe floods across the country</li> <li>• Decrease in food production in southern regions (including Java, Bali and Nusa Tenggara) due to an increasing frequency and intensity of droughts</li> <li>• Decrease in production of specific crops due to projected decrease in number of cold nights during the planting season</li> <li>• Increase in crop pests and diseases as a result of increased temperatures</li> <li>• Challenges related to preservation of crops and seeds due to erratic and intense rainfall</li> <li>• Decrease in availability of fish for consumption due to rising sea water temperatures and levels</li> </ul> <p>City of Samarinda:  As of July 2019, at least there have been numerous forest fires which have burn an area more than 60 Ha (<a href="https://merdeka.com/peristiwa.html">https://merdeka.com/peristiwa.html</a>.) 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 (<a href="https://money.kompas.com">https://money.kompas.com</a>) 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.</p>	<p>High</p>
	<p><b>Waste Contamination</b>  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<sup>44</sup> and are still common practices in the country.</p>	<p>Severe</p>

<sup>43</sup> 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](https://reliefweb.int/sites/reliefweb.int/files/resources/Indonesia_2.pdf)

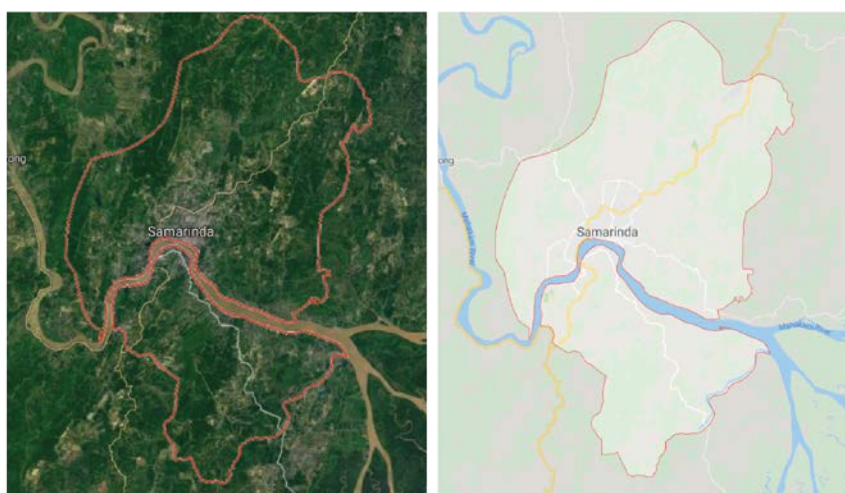
<sup>44</sup> [https://www.bappenas.go.id/files/8913/5022/6069/climate-change-roadmap-waste-sector\\_20110218181950\\_0.pdf](https://www.bappenas.go.id/files/8913/5022/6069/climate-change-roadmap-waste-sector_20110218181950_0.pdf)



	<p><i>City of Samarinda:</i>  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: <a href="http://bontang.prokal.co/read/news/18363-astaga-sehari-samarinda-dipenuhi-800-ton-sampah">http://bontang.prokal.co/read/news/18363-astaga-sehari-samarinda-dipenuhi-800-ton-sampah</a>).</p> <p>The number of Final Disposal Sites is only one that is qualified. Namely Bukit Pinang Final Disposal Site on Jalan Pangeran Suryanata, Samarinda Ulu. Even then the capacity is only up to 500 tons per day. In other words 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. (<a href="http://samarinda.prokal.co/read/news/11758-volume-sampah-meningkat-tajam.html">http://samarinda.prokal.co/read/news/11758-volume-sampah-meningkat-tajam.html</a>)</p>	
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## VI. Focus of the Proposal


As explained in detail in the following section, the aim of this programme is to develop a new typology of public space that promotes building solutions and techniques that improve the environment, harvest resources and contribute in a positive manner to the overall ecology of an area, strengthening climate change adaptation and resilience. To achieve this, the project focuses on one pilot city, where a series of interventions, based on the template of the new typology, are planned, so to create a new social and ecological system 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.



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


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 communities' vulnerabilities to climate change.





**Table 2.** Climate Change issues in Samarinda City


City Territory	Ethnicity	Climate change and other issues	Vision and Mission
<p>Samarinda City</p> 	<p>The first ethnic group living in this area was the Banjar and Bugis Wajo. Furthermore various kinds of ethnic groups began to arrive and settle in Samarinda City including:</p> <ul style="list-style-type: none"> <li>• Paser</li> <li>• Javanese</li> <li>• Madurese</li> <li>• Sasak</li> <li>• Dayak</li> <li>• Chinese</li> </ul> <p>And others.</p>	<ul style="list-style-type: none"> <li>• Environmental problems that arise are floods, and poor waste management, thus making the quality of health worse.</li> <li>• 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.</li> </ul> <p>Throughout 2017, the highest temperature of Samarinda Municipality is 28.30 °C with the highest humidity of 86%. When viewed from rainfall and rainy days, the Municipality of Samarinda has the highest rainfall and rainfall in April and June in 2017.</p> <ul style="list-style-type: none"> <li>• Climate change in Samarinda, East Kalimantan, deserves to be taken seriously, because East Kalimantan has different environmental characteristics. East Kalimantan has a characteristic Regional Tropical Rain Forest. So that environmental management to anticipate climate change cannot be compared to environmental management on the other island, like Java island. To manage the environment characterized by tropical rain forests,</li> </ul>	<p>Focus (2018-2023) on:</p> <ul style="list-style-type: none"> <li>• Realizing the quality of East Kalimantan's human resources that are independent, highly competitive and noble;</li> <li>• Realizing a reliable economic structure with broadest community participation;</li> <li>• Realizing equity and proportionality of basic services, for the community;</li> <li>• Realizing effective, efficient, participatory and law-based governance;</li> <li>• Realizing integrated and harmonious development with an economic and ecological based regional development approach.</li> </ul>

City Territory	Ethnicity	Climate change and other issues	Vision and Mission
		<p><i>East Kalimantan requires special measures that can be carried out so that development can continue, the environment can be sustainable and emission levels can be reduced.</i></p> <ul style="list-style-type: none"> <li>• <i>Mining activities in Samarinda City have damaged the city environment. In addition, this massive coal mining activity causes disasters such as floods, drought fires to diseases, especially acute respiratory infections</i></li> </ul>	

**Table 3.** Local Action for overcomes the issue in Samarinda City

No	Hazard and Risk	Samarinda Local Action	Stakeholder
1	<b>Flood and drought</b>		
1		<p>☒ <i>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 Karang Mumus river and water pumps in flood area, (4) The City Rivers Normalization program for increasing water flows, (5) Development of Bendalis (a small water reservoir).</i></p> <p>☒ <i>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)</i></p> <p>☒ <i>Improve the comprehensive and preventive flood mitigation planning</i></p> <p>☒ <i>Repair the flood control infrastructure</i></p> <p>☒ <i>Improving the Quality of Riverbank Settlement</i></p>	<i>Samarinda Municipality</i>

		<ul style="list-style-type: none"> <li>☑ Consolidating the sustainability of protected areas to support sustainable cities development</li> <li>☑ Flood control systems development</li> <li>☑ Drainage network system development and improvement</li> </ul>	
		Increase public and private green space	Samarinda Citizen
2	Access to clean water		
		Clean Water Services through Regional Water Companies.	Samarinda Municipality
3	Access to reliable energy resources		
		Electricity Services by the State Electricity Company.	Samarinda Municipality
4	Community vulnerability and safety		
		<ul style="list-style-type: none"> <li>☑ Demand lawfully issues related to the management of coal mining environment.</li> <li>☑ Monitor mining business activities</li> </ul>	Samarinda Municipality
5	Food security		
		<ul style="list-style-type: none"> <li>☑ 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.</li> <li>☑ Synchronizing and sharpening the role of extension agents in the field plus increasing the capacity of education counseling in the field of agriculture.</li> </ul>	Samarinda Municipality
		<ul style="list-style-type: none"> <li>☑ Diversification of food and utilization of land owned by the community.</li> <li>☑ Coaching through the use of home yards to help fulfill household food needs</li> </ul>	Samarinda Citizen

6	<b>Waste Contamination</b>		
		<i>Processing waste into recycled goods that are worth selling.</i>	<i>Education Institution</i>
		<i>At certain times, where waste is very disturbing, the government invites Non-Governmental Organizations to clean up Waste together.</i>	<i>Samarinda Municipality, NGO, Citizen</i>
		<ul style="list-style-type: none"> <li>☑ <i>Form a junk cyber team that is tasked with spurring the community to maintain cleanliness.</i></li> <li>☑ <i>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.</i></li> <li>☑ <i>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.</i></li> </ul>	<i>Samarinda Municipality</i>
		<i>Organic Waste Management.</i>	<i>Samarinda Municipality and Citizen</i>

## PROJECT/PROGRAMME OBJECTIVES

The objective of this programme is to prepare Indonesian communities to cope with the effect of climate change as well as mitigate the causes of the current environmental crisis. 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. The programme is based on an action research participatory methodology. The theoretical framework adopted is the *Positive Development* paradigm<sup>45</sup>, which promotes building solutions and techniques that improve environment, harvest resources and contribute in a positive fashion to the overall ecology of an area. Positive development advocates interventions on 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 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<sup>46</sup>. The *Positive Development* paradigm is implemented in this project through a systemic

<sup>45</sup> Birkeland, J. (2008). *Positive development: from vicious circles to virtuous cycles through built environment design*. London: Earthscan.

<sup>46</sup> Idem.



approach<sup>47</sup>, 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 allows to maximise the resources and possibility of an ecosystem, spreading the load of current challenges, maximising the gains of the interventions, outreaching different communities within the selected pilot city<sup>48</sup>. 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 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 will be spatially limited to specific communities, the creation of a network, including existing and proposed public spaces, green areas, water bodies, community and social infrastructure, will maximise the environmental and social benefits of the programme.

Within this theoretical framework, this programme suggests a strategic role for public spaces<sup>49</sup>. 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<sup>50</sup>. 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 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, such as clean water, food, affordable energy, and increase community safety. 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 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 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.

## **PROJECT/PROGRAMMES COMPONENTS AND FINANCING**

In Indonesia, the public space unconsciously found in many places, from urban area to rural area, people have their terminology of their own communal space. Indonesia Government itself don't use phrase "public space" but directly to open green space with some thematic models. In Jakarta, at the moment use the name of *RPTRA (Ruang Publik Terpadu Ramah Anak)* or Integrated Child Friendly Public Space and will be change soon to *Taman Maju Bersama* and became to political more then

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<sup>47</sup> Maser, C. (2012). *Decision-making for a sustainable environment: a systemic approach*. Boca Raton: Taylor & Francis.

<sup>48</sup> Idem

<sup>49</sup> 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/irpsd.6.4\_5

<sup>50</sup> Guaralda, M., & Kowalik, M. (2012). *Negative space and positive environment: mapping opportunities for urban resilience*: REAL CORP.

became city policy to provide place for public. Other case is in Bandung City, place that provide for people became very artificial with many twists of thematic name for *Taman Jomblo* (Park for Single) and several others. All of this has triggering questions and challenge to re-define public space, can the typologies of public space heave in sight at our places? Space for public often doesn't have any means and empty; bureaucracy became more complex fight one another with interest and as the result "public space" became expensive, more than USD 20.000 /year/project/city budget was allocated only to make feasibility study, not only that the budget often neglects the participation of people. This project aims also to bridge the proses of new typology of public space that can be use as example of integrated participatory process for the future.

#### Lesson Learned from Surabaya:

*Cak Markeso* Cultural Centre in *Kampung* 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 *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 *kampung*.

*Kampung* Ketandan is one of the old *kampungs* at Surabaya. Its location is surrounded by modern buildings. This *Kampung*, 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 *Kampung* Ketandan.

The components of the 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 with a series of guidelines, tactics, solutions and spatial relationships that will be then applied in the different communities involved in the programme. The new typology of public space will be defined through review and evaluation of:

- a. water sensitive urban design tactics
- 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. synergies and processes to support community resilience and economic viability
- j. local social and cultural practices
- k. 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, 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 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. The component will then progress with the co-development and construction of actual public spaces in 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 3:* This component will develop training for community groups and government officials to divulgate finding of the project as well as publicise 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 4:* 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<sup>51</sup> to monitor the actual impact of the new integrated system of public spaces on the relevant communities.

The Budget of the Project as seen below (see table 4):

**Table 4. The Budget of the Project**

Project 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. Increased urban resilience through the development of a new public space typology and guidelines that can	75.000

<sup>51</sup> 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.

		<p>1.1.2. Assessment tool and methodology for the evaluation of climate-resilient public spaces developed</p> <p>1.1.3. Public space guidelines, incorporating new typologies that can be used as a best practice for replication</p>	inform planning processes at the city-level	
2	Awareness raising and local resilience strengthening through the design and implementation of a new public space typology	<p>2.1.1. Community profiling developed for targeted locations</p> <p>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</p> <p>2.2.1. Climate-resilient public space is co-developed and built in the selected communities (in the selected city) based on previous findings</p> <p>2.2.2. Community groups are established, based on existing governance structures (if present), to ensure adequate maintenance of the public spaces</p>	<p>2.1. Increased awareness and ownership of design processes</p> <p>2.2. Community-based infrastructure developed resulting in a strengthened adaptive capacity</p>	<b>450.000</b>
3	Capacity building, knowledge management and communication	<p>3.1.1. Training for community groups to base to strengthen community adaptation in Public Space location</p> <p>3.1.2. Training for government officials in key sectors (e.g. planning departments) on project findings, methodologies and approaches applied for replication</p> <p>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</p>	<p>3.1. Increased capacity at the city- and community-levels on climate-resilient strategies and design options for public spaces</p> <p>3.2. Knowledge sharing and increased awareness on project results among targeted audience (communities, governmental bodies, general public)</p>	<b>75.000</b>
4	Monitoring	<p>4.1.1. Evaluation of place quality before the intervention, at completion of the intervention, and two years after the completion of the interventions</p>	<p>4.1 Increased understanding and awareness of the impact of the intervention</p> <p>4.2 Knowledge sharing and increased awareness on project results among targeted audience (communities, governmental bodies, general public)</p>	<b>25.000</b>

Project / programme execution cost	<b>85.000</b>
Total project / programme execution cost	<b>710.000</b>

*Table 5. Project Timeline*

Milestone	Expected Dates	Expected Duration
Component 1: <ul style="list-style-type: none"> <li>Development of theoretical model for the new typology of public space</li> </ul>	2020	4 months
Component 2: <ul style="list-style-type: none"> <li>Context analysis</li> <li>Community engagement</li> <li>Intervention design</li> <li>Intervention construction</li> </ul>	2020   2021	1 month 2 months 3 months 9 months
Component 3: <ul style="list-style-type: none"> <li>Training and findings divulgation</li> </ul>	2021	3 months
Component 4: <ul style="list-style-type: none"> <li>Monitoring of the impact of the interventions and their sustainability</li> </ul>	2020  2021  2023	1 month  1 month  1 month

#### **INDONESIA POLICY FOR CLIMATE CHANGE ADAPTATION**

- Republic of Indonesia Law No. 23 of 1997 Concerning Environmental Management**  
 Article 1 :
  - The environment is a unity of space with all objects, power, circumstances, and living things, including human beings and their behavior, which affect the survival of the lives and welfare of humans and other living things;
  - 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;
  - 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;
  - 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 Iklim 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

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.

- **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.

## PROJECT/PROGRAMME JUSTIFICATION

This programme 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<sup>52</sup> and on a systemic approach<sup>53</sup>. 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 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<sup>54</sup>. Building on recent experiences of urban farming<sup>55</sup>, this programme 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 in the New Urban Agenda as strategic contexts where to address several of the recurrent issues of contemporary cities, including social and environmental issues.

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

<sup>53</sup> Maser, C. (2012). *Decision-making for a sustainable environment: a systemic approach*. Boca Raton: Taylor & Francis

<sup>54</sup> Lawson, G. M., & Wang, P. (2009). Water sensitive urban design : landscape planning and design to improve water quality in Shijiazhaung and Yueyang.

<sup>55</sup> 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

Public space requires communities to work together and an integrated approach to negotiate different aspects of public life. Expanding this concept, it is recognised that public spaces today can be rethought in a way to accommodate more soft landscapes, not for beautification effects, but for environmental protection<sup>56</sup>. The positive impact of urban greenery on environment is extensively discussed in literature<sup>57</sup>. In addition to environmental gains, greenery has been recognised having a positive effect also on mental health and community activities.<sup>58</sup> The incorporation of traditional wisdom in the design of public spaces, plants selections, colour 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 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. Zoning and modernist design have broken traditional pattern of public spaces and imposed a car-based approach that has profoundly impacted lifestyle, resilience, and sustainability<sup>59</sup>.

More than dispersing in the urban fabric different functions and activities, this programme 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 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.

The first component of the programme 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 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 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

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<sup>56</sup> Kowalik, M., & Guaralda, M. (2011). Mapping resilience : A framework for changing cities: AST Management Pty Ltd.

<sup>57</sup> Climate change adaptation in practice : from strategy development to implementation. (2013). Chichester, West Sussex, UK: John Wiley & Sons Inc.

<sup>58</sup> 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.

<sup>59</sup> Guaralda, M. (2014). Form-based planning and liveable urban environments. *Urban Morphology*, 18(2), 157-162.

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 will analyse and evaluate the broader Indonesian context and formulate a new type in the form of a series of design guidelines, implementation 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, water storage and utilisation 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 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 relying on integrated environments, where 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 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 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 microclimate<sup>60</sup>.

- 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 as 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 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 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<sup>61</sup>.

- 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

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<sup>60</sup> Lee, S., & Yigitcanlar, T. (2010). Sustainable urban stormwater management : water sensitive urban design perceptions, drivers and barriers.

<sup>61</sup> 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

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.

This component of the programme addressed climate change in terms of reduction of pollutants in current ecosystems, Encouraging reuse and recycle will also limit emissions and provide communities with a potential source of income linked to the production of building materials<sup>62</sup>.

- Economic viability. The first phase of the programme 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 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 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<sup>63</sup>.

- Community resilience. Sense of community will be enhanced through the participatory process of the programme. 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 aspirations.

This component of the programme stretches from phase 01 to phase 02. In phase 01, communities will be consulted to finalise 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<sup>64</sup>.

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

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

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<sup>62</sup> Municipal solid waste management in Asia and the Pacific Islands : challenges and strategic solutions. (2013). New York: Springer.

<sup>63</sup> McFarlane, C., & Desai, R. (2015). Sites of entitlement: claim, negotiation and struggle in Mumbai. *Environment & Urbanization*, 27(2), 441-454. doi:10.1177/0956247815583635

<sup>64</sup> 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



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

This project will bring together the City Government of Samarinda and try to reach out as many as possible stakeholders in the City of Samarinda. We will execute the plan in the land or location own by the city government. From the strategy, we were also trying to implement the PPPP (Private - Public - People Partnership) that can be trigger by public space development. The implementation will learn from Surabaya as one of successful city for producing public space based on PPPP (i.e Joglo Markeso at Ketandan Kampong, Surabaya).

This project will in line with Samarinda Regional Spatial Planning, No. 2 of 2014-2043. It is also both synergy and consistent with the mission of Samarinda Government which Realizing integrated and harmonious development with an economic and ecological based regional development approach.

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. Opportunities, challenges, conflicts, and possibilities will be recorded.
- 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 land acquisition will be necessary as well as changes in the urban form of the neighbourhood will have to be negotiated. 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 development of the public space, plans for the future development of the neighbourhood 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 events and festival, stress will be put on everyday activities to make the space dynamic, liveable 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. The new

typology of public space will have to be a space where to gather, work, play, and learn in a community setting.

The construction of the new public space will involve a survey of the current urban form and its potential reorganisation. 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 suggests a community approach to the development of neighbourhoods. 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 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.

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

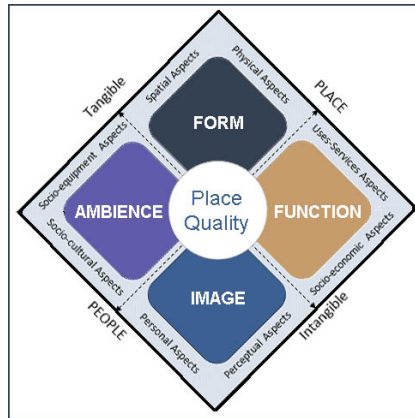
The forth component of the program will deal with the assessment and monitoring of the interventions. In order to evaluate the impact and effectiveness of the new public spaces developed as well as of the system of public spaces that they will generate, qualitative and quantitative data will be collected 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<sup>656667</sup>:

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<sup>65</sup> 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.

<sup>66</sup> 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.

<sup>67</sup> 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*.



**Figure 5.** 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.

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 6.** Summary of Mitigation Action in regards 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
Community vulnerability and safety	Community based interventions
Food security	Urban Farming
Waste contamination	Waste treatment and recycling

## 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 8 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 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 7.** 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 for benefits
Compliance with the Law	<p><i>The activities that have been defined at project preparation phase are aligned with existing laws and normative acts.</i></p> <p><i>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.</i></p>	<p><i>Risks:</i>  <i>Insufficient alignment with laws, regulations and standards, particularly for interventions under component 2 (construction of public space).</i></p> <p><i>The Benefit :</i>  <i>Reduce insecurity of property rights and future development.</i></p>
Access and Equity	<p><i>The community profiling (Component 2, Output 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.</i></p>	<p><i>Risks:</i>  <i>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.</i></p> <p><i>Benefits:</i>  <i>When conducted successfully, participatory approaches provide numerous benefits to the community: these will not only capture local knowledge, but can also increase awareness on existing climate vulnerabilities, potential future impacts and the need for climate change adaptation. Prior to, throughout and after the construction phase, participatory approaches will allow building project ownership and setting up community governance structures to manage and maintain the community projects. If no women groups are in place, these will be created so</i></p>

		<p><i>as to ensure that women have equal access to the project benefits. If designed well, public spaces provide the opportunity to become places of inclusion.</i></p>
<p><i>Marginalized and Vulnerable Groups</i></p>	<p><i>Consultations and other participatory approaches will be tailored to the context by for example, conducting women-only / youth-specific focus group discussions or workshops. 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 accessibility requirements.</i></p>	<p><i>Risks:</i>  <i>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.</i></p> <p><i>Benefits:</i>  <i>As mentioned above, if designed well, public spaces provide the opportunity to become places of inclusion. Placemaking strategies will help enhancing social networks that are crucial to disaster preparedness and response and climate change adaptation. Making sure that marginalized and vulnerable groups are engaged throughout all phases will be crucial to ensure the success of the project. Furthermore, well-designed public spaces have the potential to provide benefits to vulnerable groups such as women, children, the elderly, youth, etc. Interventions such as greenery and vegetation may for example help alleviate heat stress, to which generally elderly people and children are the most vulnerable. Furthermore, well designed public spaces can for example increase safety for women, which although not strictly related to climate change adaptation, could be an underlying issue that increases women’s overall vulnerability. Climate resilient strategies such as creating water buffers and water collection spaces can for example be designed as spaces for sports that can benefit a wide range of groups, such as the youth. To sum up, a holistic approach to public space design that integrates climate resilience</i></p>

		<i>and enhances placemaking can bring many benefits to the community while building their adaptive capacity.</i>
<i>Human Rights</i>	<i>Consultations will capture issues related to human rights in the target areas.</i>	<p><i>Risks:</i>  <i>Principle that applies to community-related processes and interventions in public space.</i></p> <p><i>The Benefit:</i>  <i>This process will guarantee the basic rights of the stakeholders, including the right to express their opinions and become a society that is equal to other groups.</i></p>
<i>Gender Equity and Women's Empowerment</i>	<i>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.</i>	<p><i>Risks:</i>  <i>Despite progress made, inequalities between men and women are still present across the country<sup>68</sup>. 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.</i>  <i>Risks identified are related to a potential lack of participation of women.</i></p> <p><i>Benefits: by engaging women from the initial phases, the project aims to promote gender equity and empowerment. Not only will a gender perspective be incorporated into the design of the public space typology, but specific women-targeted activities will also be identified and carried out. Indicators that will help monitor the success of gender equity and empowerment will include the number of activities and interventions in the public space with gender as a specific entry point.</i></p>
<i>Core Labour Rights</i>	<i>Adherence to the ILO labour Standards and national labour</i>	<i>Risks:</i>

<sup>68</sup> <https://www.adb.org/sites/default/files/institutional-document/32231/cga-indonesia.pdf>

	<p><i>laws is to be monitored throughout the process as a standard procedure.</i></p> <p><i>Safety and security measures related to the construction phase under component 3 must be in place and are to be monitored throughout the process.</i></p>	<p><i>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.</i></p> <p><i>The Benefit:</i>  <i>This process will guarantee the basic rights of core labour right prior to Freedom from child labour and Freedom from discrimination at work</i></p>
<p><i>Indigenous Peoples</i></p>	<p><i>Consultations will capture issues and needs related to the different ethnic groups that are present in the target communities.</i></p> <p><i>Appropriate tools translated to the relevant languages within each context will be used to ensure that communities are aware of their rights.</i></p> <p><i>The project will be consistent with UNDRIP, and particularly with regard to Free, Prior, Informed Consent (FPIC) during project design and implementation.</i></p>	<p><i>Risks:</i>  <i>Indonesia is a country of great diversity and complexity in its culture, ethnicity, language, people, and geography<sup>69</sup>. There are 500 ethnic groups speaking more than 600 languages across the country<sup>70</sup>. 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<sup>71</sup>. The complexity of the context will require that this principle is monitored throughout the planning and implementation phases.</i></p> <p><i>Benefits:</i>  <i>A similar approach as the one mentioned above on ensuring project access and equity to vulnerable groups would be followed in the case of indigenous groups. Firstly, full and equal participation of different ethnic groups is to be applied throughout the process. Also, public spaces would provide the opportunity to become places of inclusion. Different indigenous groups could benefit from the project's benefits.</i></p>

<sup>69</sup> <https://www.adb.org/sites/default/files/institutional-document/32231/cga-indonesia.pdf>

<sup>70</sup> <https://www.adb.org/sites/default/files/publication/28024/indigenous-peoples-indonesia.pdf>

<sup>71</sup> <https://www.adb.org/sites/default/files/institutional-document/32231/cga-indonesia.pdf>



<p><i>Involuntary Resettlement</i></p>	<p><i>Interventions under component 2 will be designed to avoid resettlement. If involuntary resettlement is identified as a potential risk, related activities will not be approved.</i></p>	<p><i>The design of public spaces could potentially identify the need to demolish existing buildings. This could potentially lead to involuntary resettlement.</i></p> <p><i>The Benefit: The design will produce public spaces that are a marker for legal and sustainable settlements.</i></p>
<p><i>Protection of Natural Habitats</i></p>		<p><i>Risks: Given that the interventions are planned to be executed within an urban context, the risk of negative environmental impacts in natural habitats is low.</i></p> <p><i>Benefits: The project aims to incorporate eco-system based adaptation measures that will provide environmental and socio-economic co-benefits.</i></p>
<p><i>Conservation of Biological Diversity</i></p>	<p><i>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)</i></p>	<p><i>Risks: 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<sup>72</sup>.</i></p> <p><i>Benefits: Opportunities identified for the project include the recognition of public spaces as enhancers of biodiversity in urban contexts, potentially acting as ecological corridors.</i></p>
<p><i>Climate Change</i></p>	<p><i>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.</i></p>	<p><i>Benefit: Project activities aim to increase climate change adaptation and to promote practices that contribute to climate change mitigation. No risks are identified for this principle.</i></p>

<sup>72</sup> <https://www.cbd.int/countries/profile/default.shtml?country=id>

<p><i>Pollution Prevention and Resource Efficiency</i></p>	<p><i>Design and construction phases will prioritize and promote the use of local materials.</i></p> <p><i>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</i></p>	<p><b>Risks:</b> <i>Construction could lead to inadequate resource management and production of excessive waste</i></p> <p><b>Benefit:</b> <i>the integration process will have a good impact on the wider environment</i></p>
<p><i>Public Health</i></p>	<p><i>Further assessment is related to the enhancement of opportunities.</i></p>	<p><b>Benefits:</b> <i>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.</i></p>
<p><i>Physical and Cultural Heritage</i></p>	<p><i>Furthermore, 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.</i></p>	<p><b>Risks:</b> <i>Project activities might affect unidentified cultural sites which exist in the targeted areas and are impacted by project activities</i></p> <p><b>Benefits:</b> <i>The process will raise awareness of both local values and culture.</i></p>
<p><i>Lands and Soil Conservation</i></p>	<p><i>Screening of activity 2.2.1. will determine whether additional management is required once the design phase is completed.</i></p>	<p><i>No risks are identified for activities under components 1 and 3.</i></p> <p><i>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 promote urban agriculture at a small scale it is highly unlikely that any risks are triggered.</i></p>

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<sup>73</sup>: 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<sup>74</sup> 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.

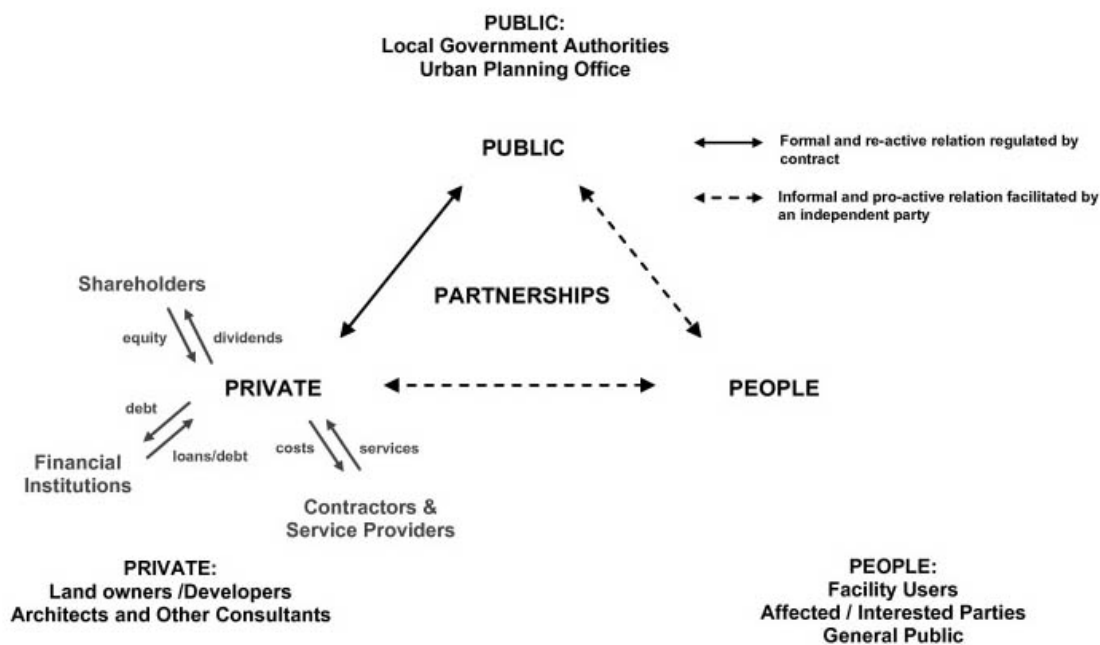


Figure 6. 4P model, based on Wong & Wong (2013)

<sup>73</sup> 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>

<sup>74</sup> 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>

## ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY



### WALIKOTA SAMARINDA

Samarinda, July 30<sup>th</sup> 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 Jandani, SH, I.B.S.  
Mayor of Samarinda

## A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT

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

Surabaya, 20<sup>th</sup> 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

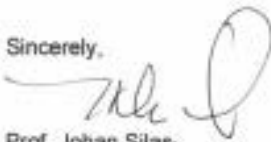
To Whom It May Concern,

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. IMPLEMENTING ENTITY CERTIFICATION

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..



**Monica Tanuhandaru**  
**Executive Director of Partnership for Governance Reform in Indonesia (Kemitraan)**  
Implementing Entity Coordinator

Date: 5 August 2019

Tel. and email: +62-21-7279 9566;  
Monica.Tanuhandaru@kemitraan.or.id

Project Contact Person: **Dewi Rizki**

Tel. and Email: +62-21-7279 9566; [Dewi.Rizki@kemitraan.or.id](mailto:Dewi.Rizki@kemitraan.or.id)

**ANNEX 01**

**THE RESILIENT RESEARCH INSTITUTE UNTAG SURABAYA AND SCHOOL OF DESIGN OFFICE QUT  
PROJECT ARRANGEMENT FOR ADAPTATION INTERVENTION  
IN CITY OF SAMARINDA (INDONESIA)**

No.	Activity/Component	Anticipated Result	Sub Activity	Strategic Partner	Anticipated Time
I. Research/Preparation	Development of theoretical model for the new typology of Public Space	The new typology of Public Space that can use as adaptation strategies in the context of the city, and easy to replicate in other cities with clear guideline and methods	Research on climate-resilient public space, best practices and lesson learned within the Asia-Pacific Region especially South East Asia.	the Pratt Institute (USA) and UN Habitat Global Public Space Programme	March - May 2020
			Developing assessment tools and methodology for climate-resilient Public Space.		May - June 2020
			Developing guidelines and incorporating new typologies.		June - July 2020



II. Implementation	Awareness raising and local resilience strengthening through the design and implementation of a new Public Space typology	Construction of 3 Public Space as part of city Public Space network and can be the best practice of adaptation strategies and have a high sense of belonging from the citizen.	Focus Group Discussion (FGD) with City of Samarinda Authorities; making need assessment based on existing and planning document and also adaptation strategy that has developed.	City of Samarinda Authorities	August 2020
			Focus Group Discussion (FGD) with Civil Society Organization (CSO); making need assessment based on existing and planning document and also adaptation strategy that has developed.	the University of 17 Agustus 1945 Samarinda	August 2020
			Focus Group Discussion (FGD) with City Council; making need assessment based on existing and planning document and also adaptation strategy that has developed.	the University of 17 Agustus 1945 Samarinda & City of Samarinda Authorities	August 2020

			Focus Group Discussion (FGD) with Citizen; making need assessment based on existing and planning document and also adaptation strategy that has developed.	the University of 17 Agustus 1945 Samarinda	August 2020
			Community Engagement in 3 location. (This location is based on the recommendation of City of Samarinda and also result of the FGD)	the University of 17 Agustus 1945 Samarinda & City of Samarinda Authorities	September - October 2020
			Design Workshop in 3 location (This location is based on the recommendation of City of Samarinda and also result of the FGD)	the University of 17 Agustus 1945 Samarinda & City of Samarinda Authorities	November 2020, January, February 2021
			Construction in 3 location (This location is based on the recommendation of City of Samarinda and also result of the FGD)	City of Samarinda Authorities & Community	May - December 2021
III. M and E	Delivery of Adaptation, Monitoring and Evaluation	To ensure the achievement of the adaptation intervention on the track or not align with the program design	Internal Monitoring and Evaluation	Team	January 2022
			External Monitoring and Evaluation	City of Samarinda Authorities	January 2022

			Dissemination of Methods and Findings / Training	City of Samarinda Authorities & Community	February 2022
			Program Audit	AF Team and Internal Team	February 2022
IV. Closing		To ensure the sustainability of program and making impact measurement	Post Project Monitoring	the University of 17 Agustus 1945 Samarinda	2022, 2023
			Book Publishing	Team	2022
			Establish 4P Strategy	Team	2022