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Urban Analysis Reports

Pekanbaru City

Presentation of the findings

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Pekanbaru City

- Riau Province



Introduction of the expert, team and methodology

Expert Team

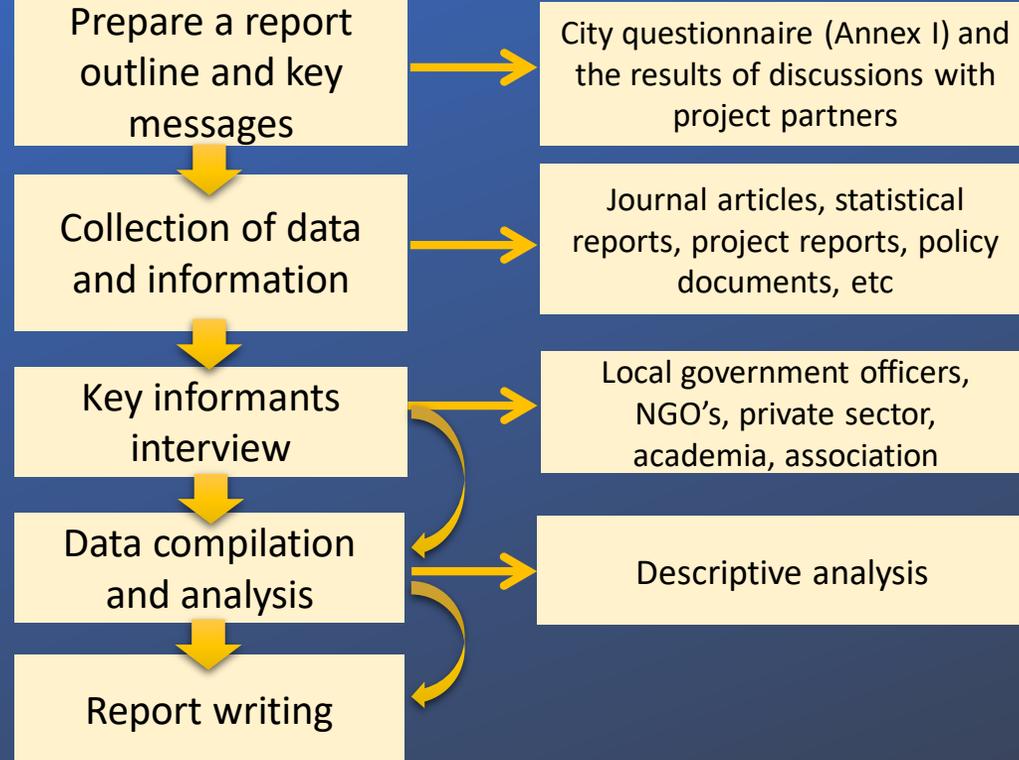
1. Wahyu Mulyana

- ± 25 years experience
- Doctoral Degree – Environmental Science
- Master of Arts - Urban Management
- Bachelor Degree – Urban Planning

2. Nila Ardhyarini H. Pratiwi

- ± 10 years experience
- Master of Environmental Science
- Bachelor Degree – Urban & Regional Planning

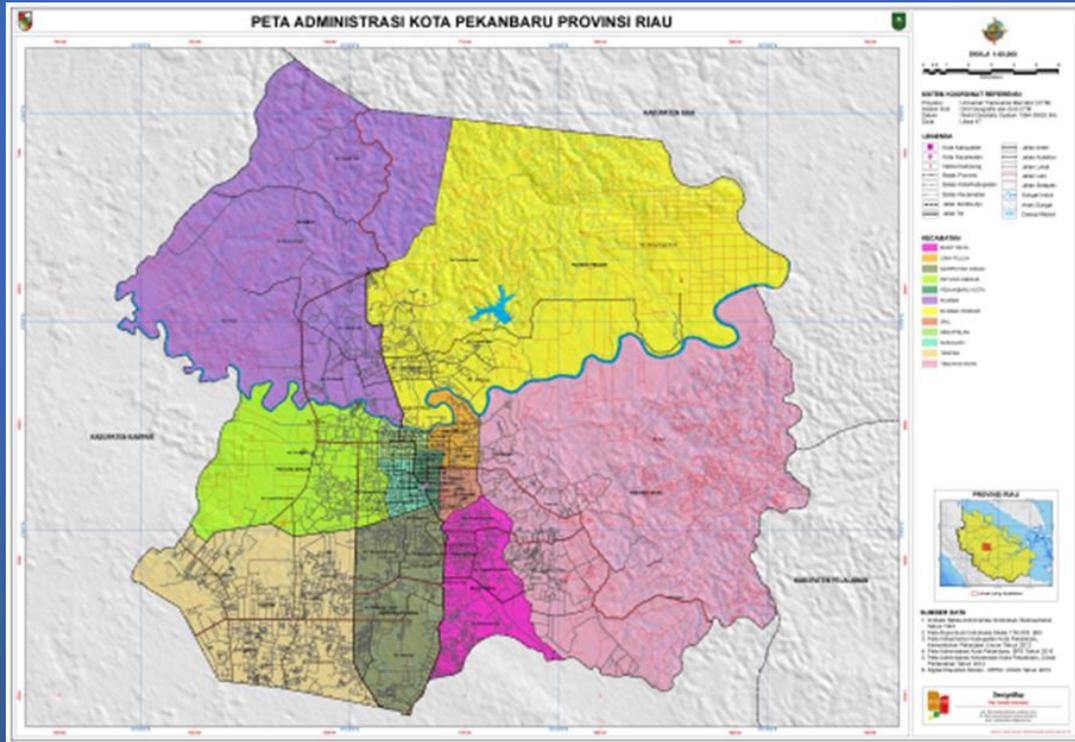
Approach: Systematic Desk Study



Key Informants

1. Ms. Rima (Environment and Cleaning Agency)
2. Mr. Edwin Perwira (Spatial Planning and Public Works Agency)
3. Mr. Suwondo (PSIL Universitas Riau)
4. Mr. Mardianto Manan (PWK Universitas Islam Riau)
5. Mr. Rico Kurniawan (Walhi Riau)
6. Mr. Fahrial (APINDO Pekanbaru City)
7. Mr. Ronny B. Leksono (Indonesia's Association of Planner – Riau)
8. Focus Group Discussion (FGD) with the Head of Bappeda, Head of Housing and Settlement, Head of Environment Agency

What make the pilot city different?



- Located on the mainland of Sumatra through which the Siak River passes
- Cities that have peatlands and are surrounded by districts prone to forest and land fires which are Siak District, Kampar District and Pelalawan District.
- Vulnerable to flooding, peatland and scrub fires, and haze (including from surrounding districts).
- The largest GHG emissions come from the energy sector, namely industry and transportation.
- Economic center in Riau Province that is currently being developed the Tenayan Industrial Estate.
- The largest contributions to the economy include (1) wholesale and retail trade, car repairs and motorbikes; (2) construction; and (3) manufacturing.
- The original ethnic group is Malay only about 23%, currently dominated by the Minangkabau ethnicity around 41%, the rest are Javanese, Batak, and Chinese ethnic immigrants.

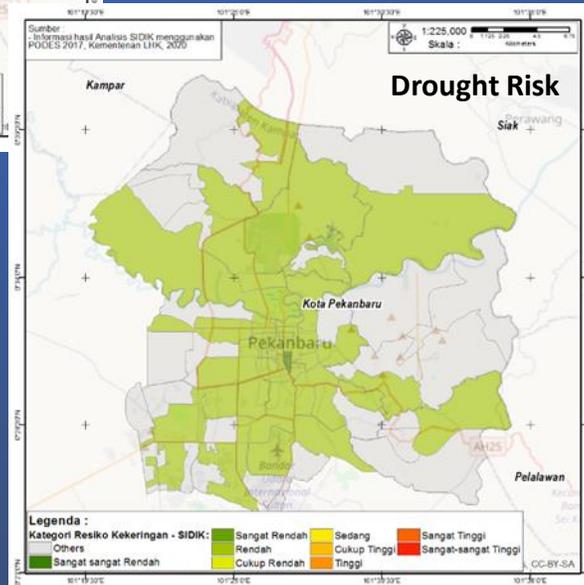
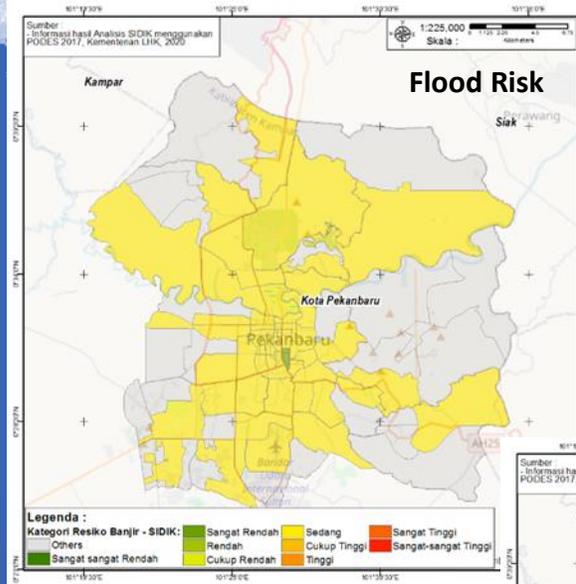
Summary report of the main findings and challenges of the city

- Prevention or mitigation of the impact of forest and land fires in Pekanbaru City, through the construction of a multipurpose building for evacuation needs during forest fires.
- The addition of green open spaces, city greening, and urban agriculture to create a micro climate.
- The arrangement of the slum area in a low lying area along the Siak River.
- There is no centralized scale for waste water treatment plant.
- Waste treatment facilities are limited, the existing landfills are still open dumping with a lifetime of less than 5 years.
- Electricity consumption is high and increases in line with population growth and urban development.
- There is no common view regarding cooperation between regions because it is considered to only benefit the city of Pekanbaru.

General remarks and recommendations for the local action plan

- This city does not yet have a vulnerability and risk assessment for climate change impacts related to hazard, vulnerability, risk, affected sectors and vulnerable groups of people. This study becomes the basis for the preparation of the Strategy and Action Plan in the Local Action Plan (LAP).
 - The priority sectors studied are related to water and sanitation, housing, waste, drainage, health.
 - The priority sector study considers the existing master plan or sectoral plan as well as ongoing programs such as Kotaku, Pamsimas, Sanimas, Waste to Energy, etc.
 - Preparation of the LAP content needs to considering to the substance in the Strategic Environmental Assessment (SEA) of RPJMD and become material for the preparation of the RPJMD Technocratic Design.
- The GHG inventory needs to be developed with a methodology that can be updated regularly.
- Forming City Teams and engaging multi-stakeholders as well as designing collaborative processes in LAP preparation.
 - The city team needs to determine the Technical Team that will be the core team of LAP formulation.

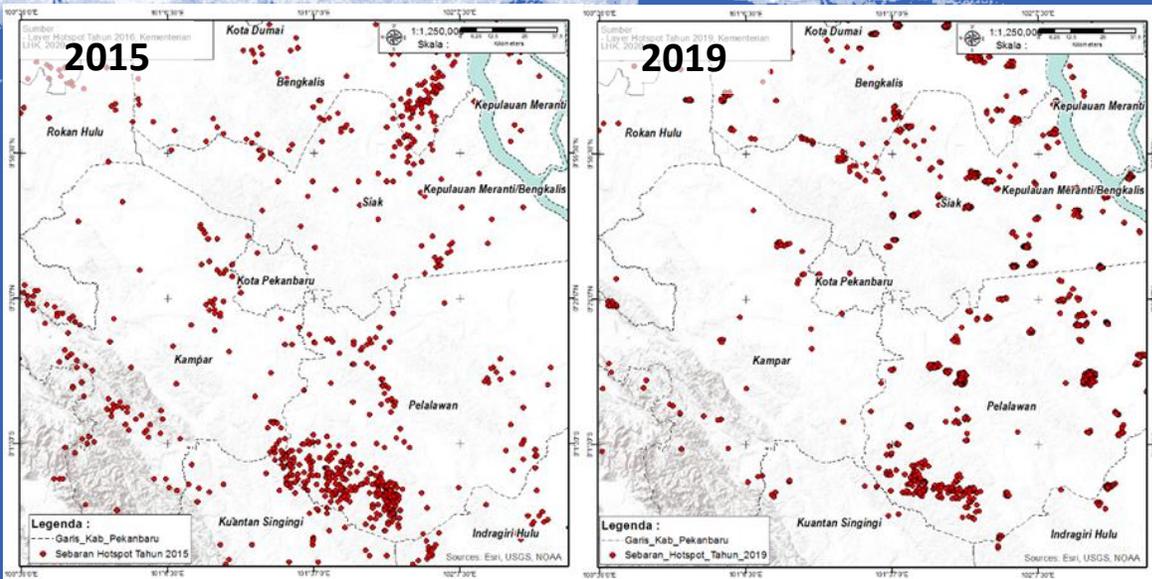
Climate mitigation and adaptation



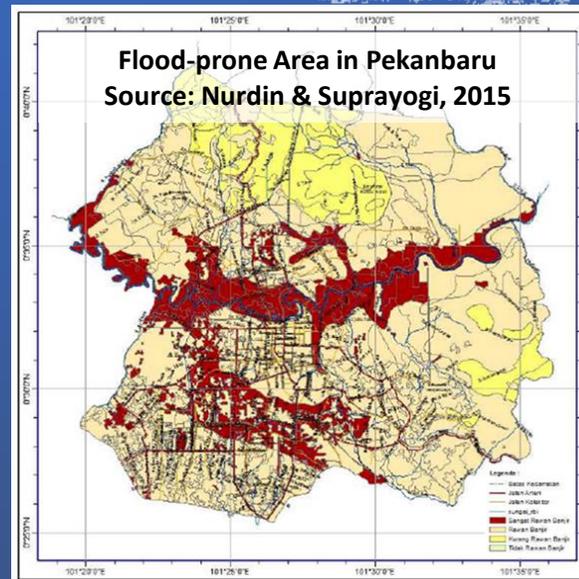
Source:
SIDIK, MoEF, 2020

- Pekanbaru City Government has prepared a Greenhouse Gas Inventory which found that the energy sector is the largest emitter.
- Although Pekanbaru City Government does not have a specific policy to combat climate change, addressing environmental problems has become one of the aspects considered in local development policies (Local Medium-term Development Plan/ RPJMD).
- Policy response to urban climate change:
 - Urban transportation through Trans Metro Pekanbaru Development, Monorail Development, Motor Vehicle Emission Test.
 - Waste to Energy through Construction of Waste Power Plant.
 - Greening the City through Green Open Space Development and *Kampung Iklim* development.

Disaster preparedness, prevention and resilience



Forest and Land Fires Hotspot in Riau Province
Source: Ministry of Environmental and Forestry



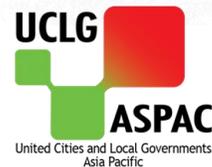
- Action plan for disaster management which includes disaster preparedness and prevention, disaster management emergency and logistics, and post-natural disaster recovery.
- City Government has 22 shelter houses that can be used for people affected by floods, haze and other disasters.

Potential Hazard	Risk		
	Low	Medium	High
Flood	-	234 Ha	10 Ha
Forest fire	-	721 Ha	-

Disaster Risk in Pekanbaru City
Source: BNPB (Disaster Risk Indonesia Document), 2016

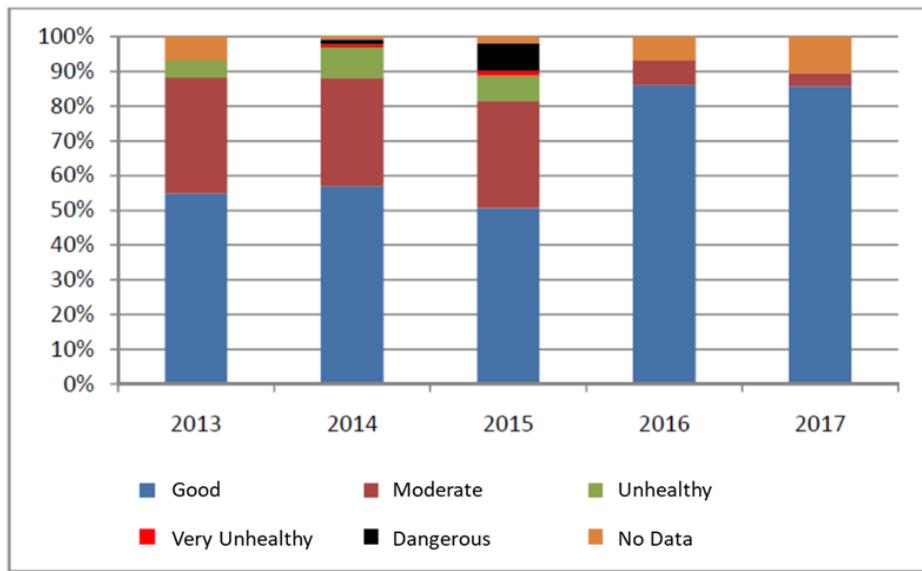


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Air pollution and other pollutions

Air Quality Monitoring Results in Pekanbaru City



Source: Environmental Management Performance Document of Pekanbaru 2017

- There are three Air Quality Monitoring Stations that work 24 hours. However one of them has broken, so this city needs additional facilities for measuring air quality.
- Air pollution due to the haze of forest and land fires continues to fluctuate.

Pollution Index and Quality Status of Siak River Waters in Pekanbaru City Section, 2017

No	Lokasi	Nilai IP dan Status Mutu	
		I	II
1	Jembatan Leighon II	4,82 (cemar ringan)	4,39 (cemar ringan)
2	Jembatan Siak I	4,26 (cemar ringan)	1,96 (cemar ringan)
3	PT. AFR	6,24 (cemar sedang)	2,84 (cemar ringan)
4	Pelita Pantai	4,03 (cemar ringan)	2,16 (cemar ringan)
5	Pelindo	4,73 (cemar ringan)	4,22 (cemar ringan)

Sumber : Pengolahan Data Dinas Lingkungan Hidup dan Kebersihan Kota Pekanbaru, 2017

Keterangan : I = Pemantauan 29 April 2017

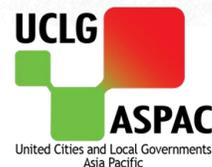
II = Pemantauan 4 Desember 2017

Source: Environmental Management Performance Document of Pekanbaru 2017

- Polluted river conditions due to river segments passing through densely populated settlements, high community activity, and the large number of businesses / activities that dispose of their waste into water bodies which eventually lead to the Siak River.



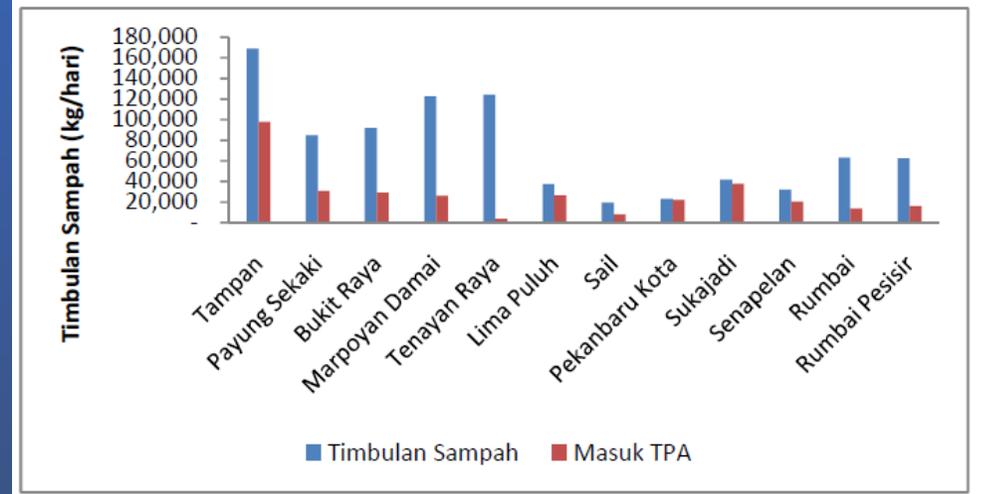
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Waste management

- Waste treatment facilities are limited, the existing landfills are still open dumping with a lifetime of less than 5 years.
- In 2017, the amount of waste was 745.196 tonnes/day and only 365.23 tonnes/day (49.01%) entered the landfill.
- Regulation related waste management in Pekanbaru City:
 1. Local Regulation Number 8 of 2014 concerning Waste Management.
 2. Mayor Regulation Number 154 of 2018 concerning Policy and Strategy in Management of Household Waste and Household Trash.
- The city government has built 17 communal Wastewater Treatment Plants (IPAL) and 2 communal septic tanks to prevent and tackle contamination by coliform bacteria.

Waste Generation in Pekanbaru City, 2017



Source: Environmental Management Performance Document of Pekanbaru 2017



Informal settlements

- There are 113,56 Ha of slums area that need improvement of settlement infrastructure or resettlement.
- Around 30% of the slum area has been arranged by the fulfillment of basic services.
- Policy response to housing and slum settlement areas arrangement through Pekanbaru City Regulation No. 13 of 2016 concerning Prevention and Quality Improvement of Slum Housing and Slum Settlements.

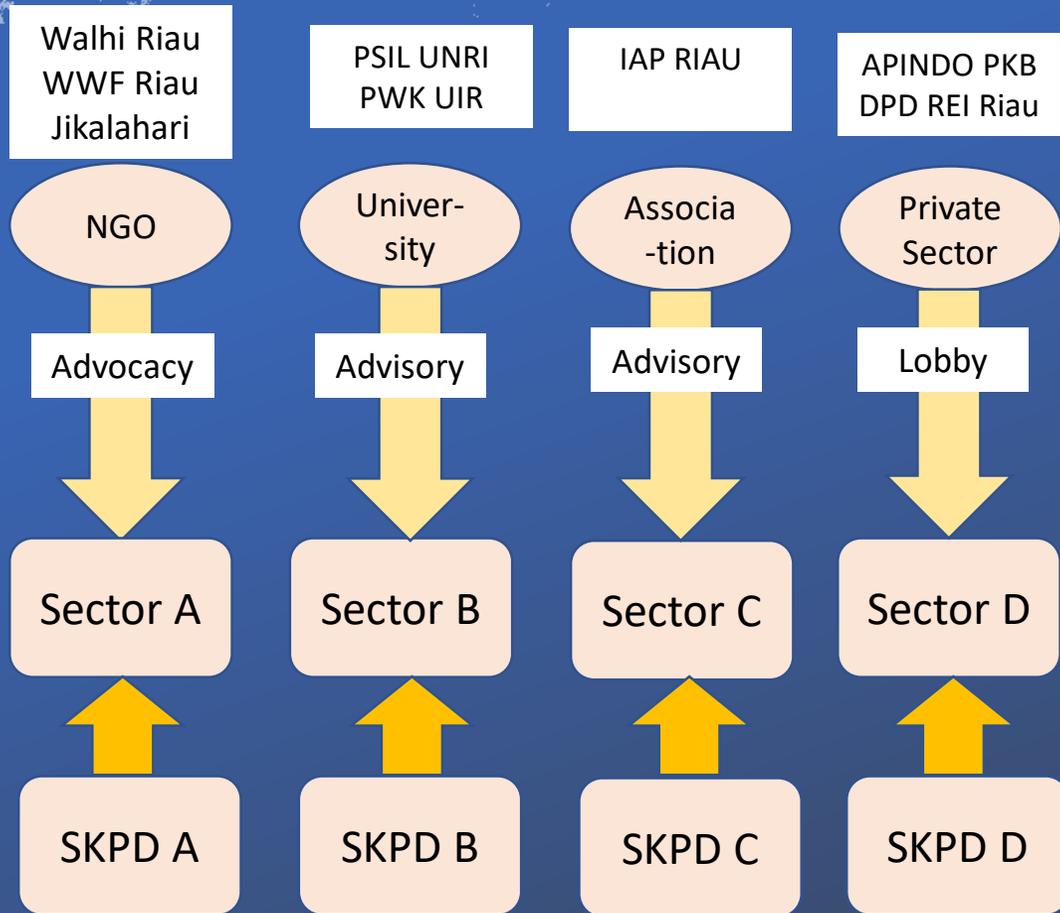
Slums area in Pekanbaru City

No.	Location	Area (Ha)	Land Status	Priority
1.	Sungai Sago	24,23	Community	High
2.	Kota Lama	8,18	Community	High
3.	Pesisir	23,04	Community	High
4.	Meranti	21,32	Community	High
5.	Rumbai Pesisir	28,39	Community	High
6.	Sumahilang	3,10	Community	High
7.	Padang Terubuk	5,30	Community	High
Total		113,56		

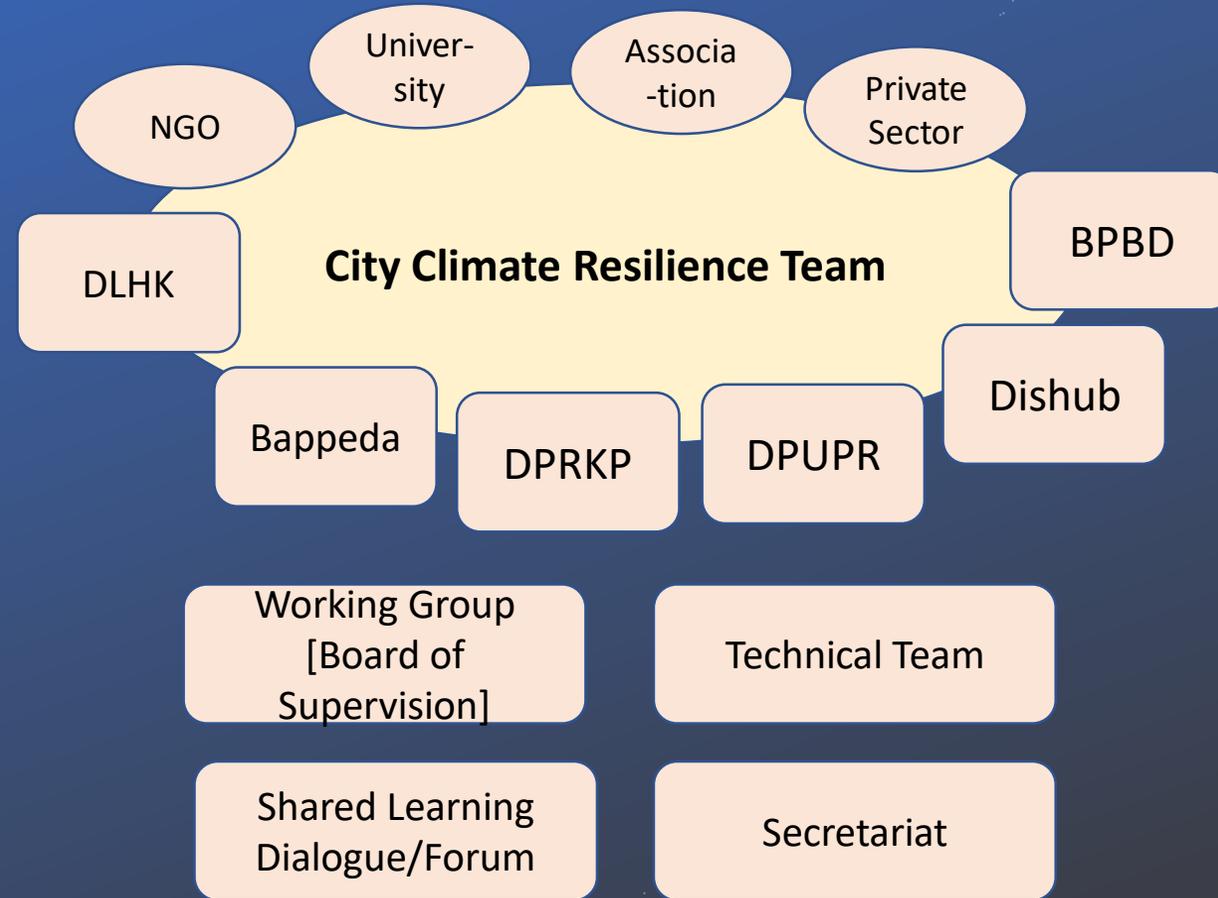
Source: Mayor's Decree Nomor 15/ Tahun 2016

Participation of civil society and governance

Existing Mechanism



Proposed Mechanism



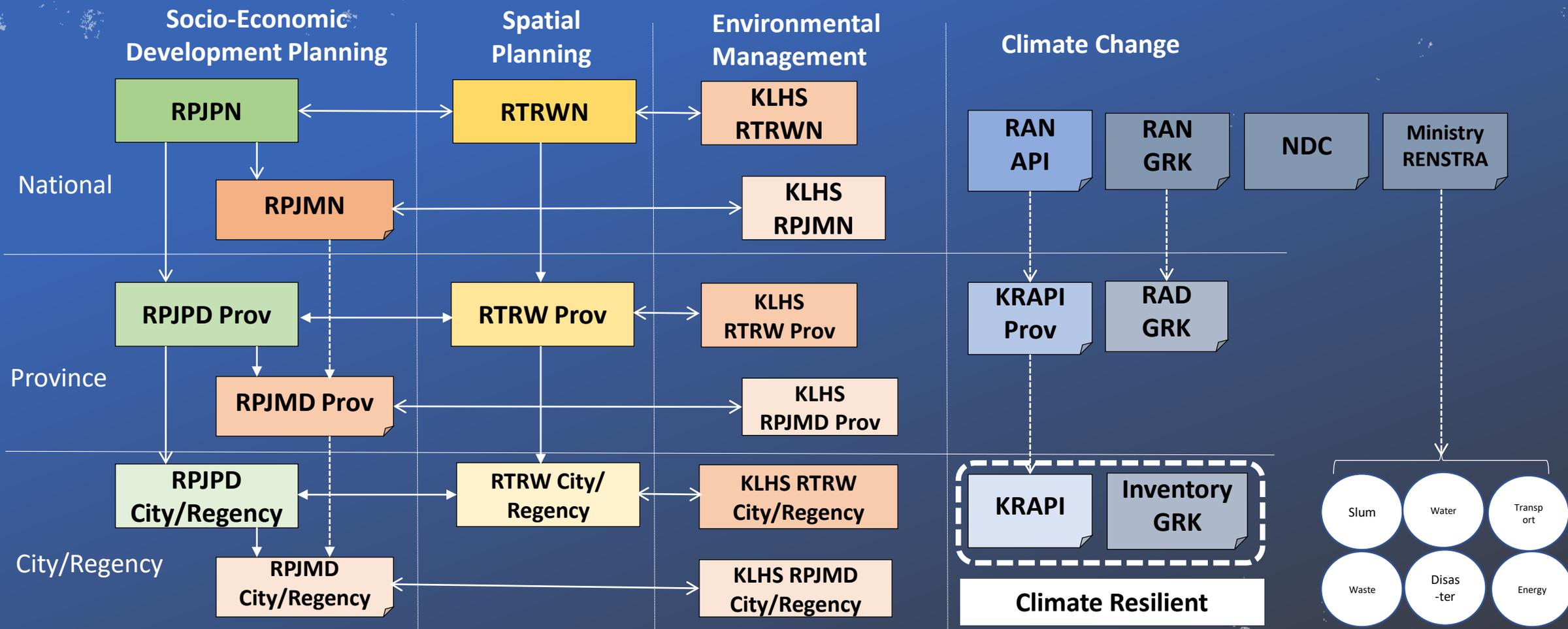
Challenges in terms of land use, spatial planning, housing provision and green spaces

- The city development has affected to the increased of surface temperature and air temperature on the urban area, whereas the public open space owned by the city government is still below 8%.
- The development of Tenayan Industrial Estate for downstream agro industry will increase the industrial process that depend on fossil energy.

Land Cover Changes

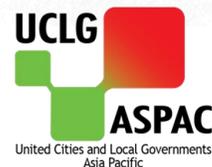
No.	Land cover	1989		2012	
		Ha	%	Ha	%
1.	Forest (secondary)	15.337,1	21,6%	2.359,89	3,9%
2.	Vacant land	5.910,6	8,3%	17.811,30	29,5%
3.	Water bodies	994,2	1,4%	869,76	1,4%
4.	Built up area	8.499,9	12,0%	11.202,40	18,6%
5.	Grass	7.697,4	10,8%	-	-
6.	Shrubs	28.764,0	40,5%	23.595,10	39,1%
7.	No data	3.770,0	5,3%	4.549,68	7,5%
Total		70.973,2	100%	60.388,13	100,0%

Articulation with the national policies



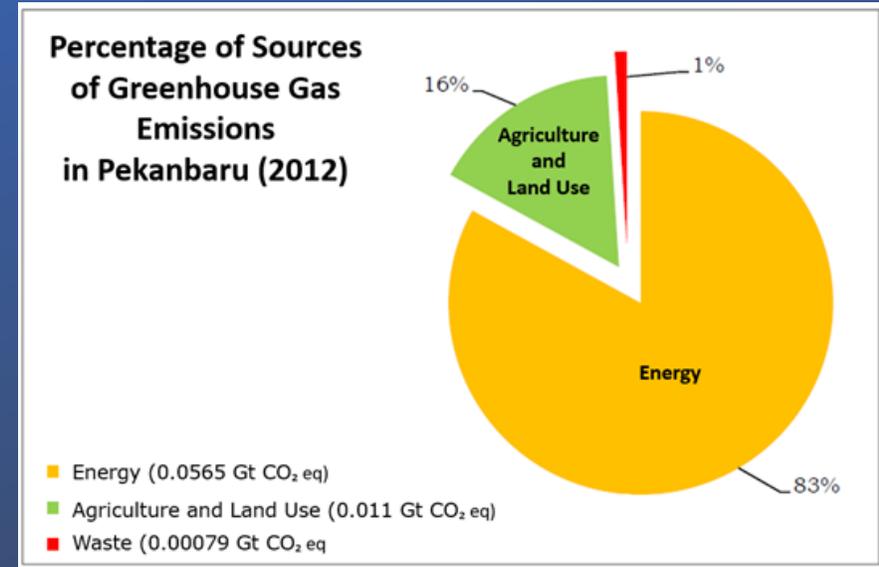
Best practices and challenges of the municipality

- Collaborative Action Plan for Forest and Land Fire Prevention with all stakeholders (national and local government, private sector, and community).
- Pekanbaru City Government is implementing a pilot project for processing solid waste to solid refused fuel (SRF).
- The city resilience of Pekanbaru that needs to be improved is Food Security.
- Development of the Climate Village (*Kampung Iklim*) for urban farming and adaptation to flood risk.



GHG mapping (and further analysis)

- The total GHG emission in Pekanbaru was 68,191,251 Gg CO₂eq (0.068 Gt CO₂eq):
 - Energy sector (56,470 Gg CO₂eq)
 - Livestock sector (11,13 Gg CO₂eq)
 - Land-based sector (10,887,476 Gg CO₂eq)
 - Agriculture sector (36.64 Gg CO₂eq)
 - Waste sector (786,005 Gg CO₂eq)
 - Industrial Processes and Product Use was not counted due to data limitation
- Power plants in Pekanbaru:
 - Diesel Power Plant of Teluk Lembu
 - Gas Power Plant of Teluk Lembu
 - Gas Power Plant of TRiau Power
 - Steam Power Plant of Tenayan Raya with a capacity of 2x110 MW fueled by coal is planned to operate in 2021



Source: Pekanbaru GHG Inventory, 2012