

Inspirational Quote



Intelligent



Millennial Figure



Revolutionary Mindset

“

**MILEA, MISSING
YOU IS HARD.
BUT IT'S HARDER
TO SOLVE PROBLEM
OF WELANG RIVER
ALL BY MYSELF.**

DILAN 2020



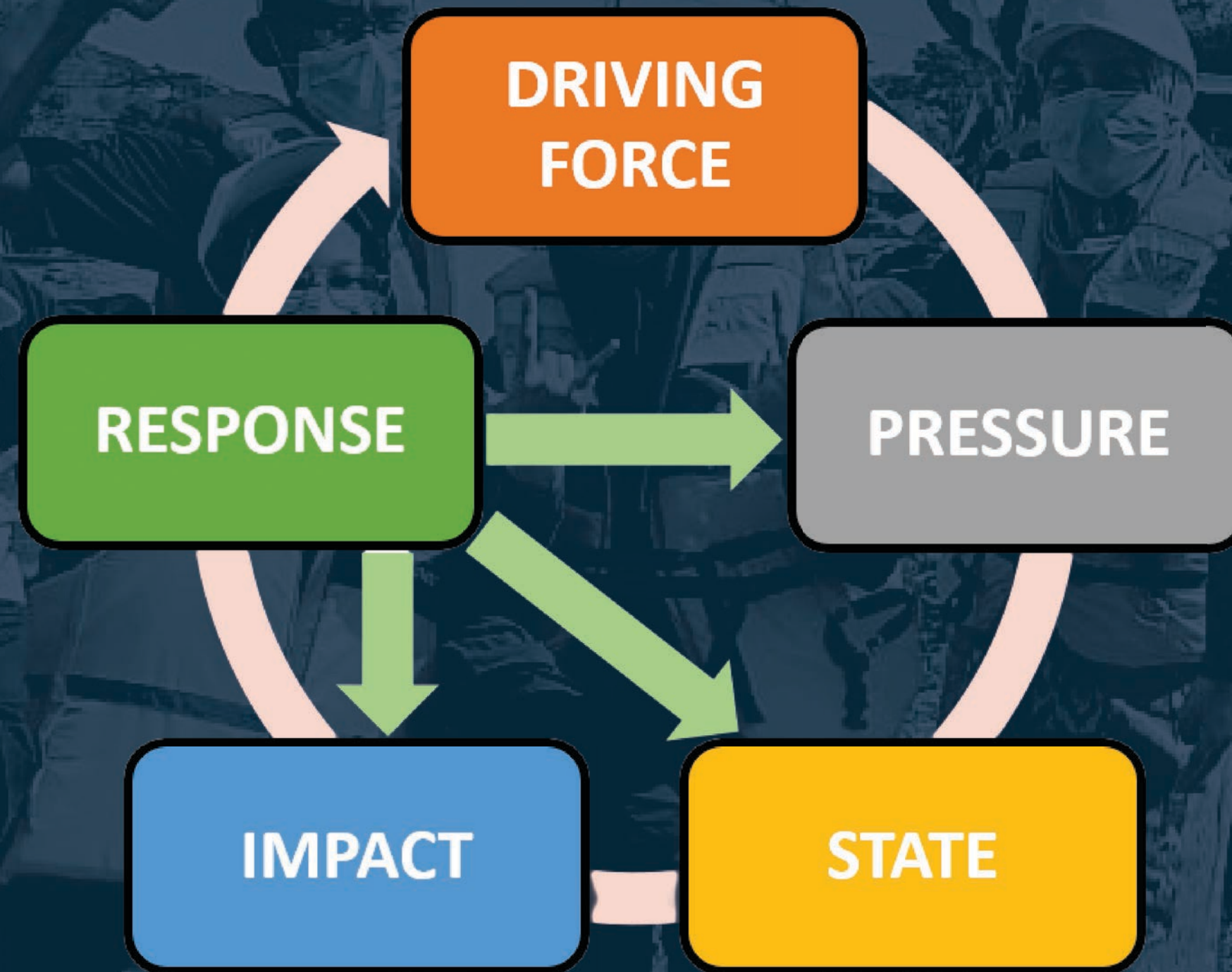


TEAM D PROUDLY PRESENT

WAYAHE WELANG WARAS (WWW)

Indonesia Healthy Rivers Challenge 2020

DPSIR Logical Framework Analysis







CURRENT SITUATION



Wawancara dengan juru irigasi dan ketua HIPPA DesaKraton



Banjir di Kec. Kraton pada 25 Desember 2011



Banjir di Kec. Kraton dan Pohjentrek



Banjir yang menggenangi jalan pantura pada bulan januari 2012



PEOPLE HABIT

indonesian people contribute

0,2 - 0,9
millions tons/year*
into ocean



*The Indonesian Institute of Sciences (2018)



**Waste in River
Bank**

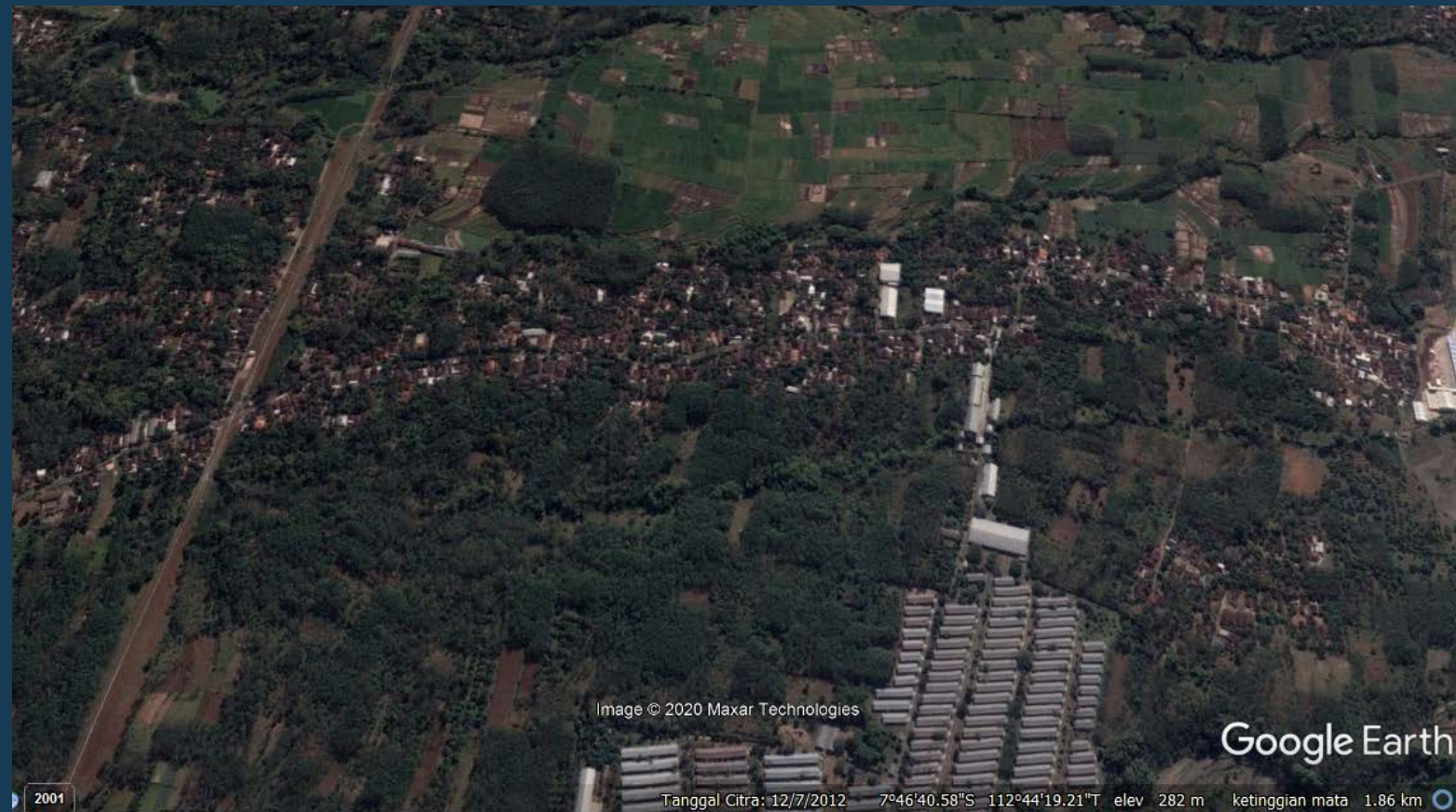


**Waste
Alongside the
River**

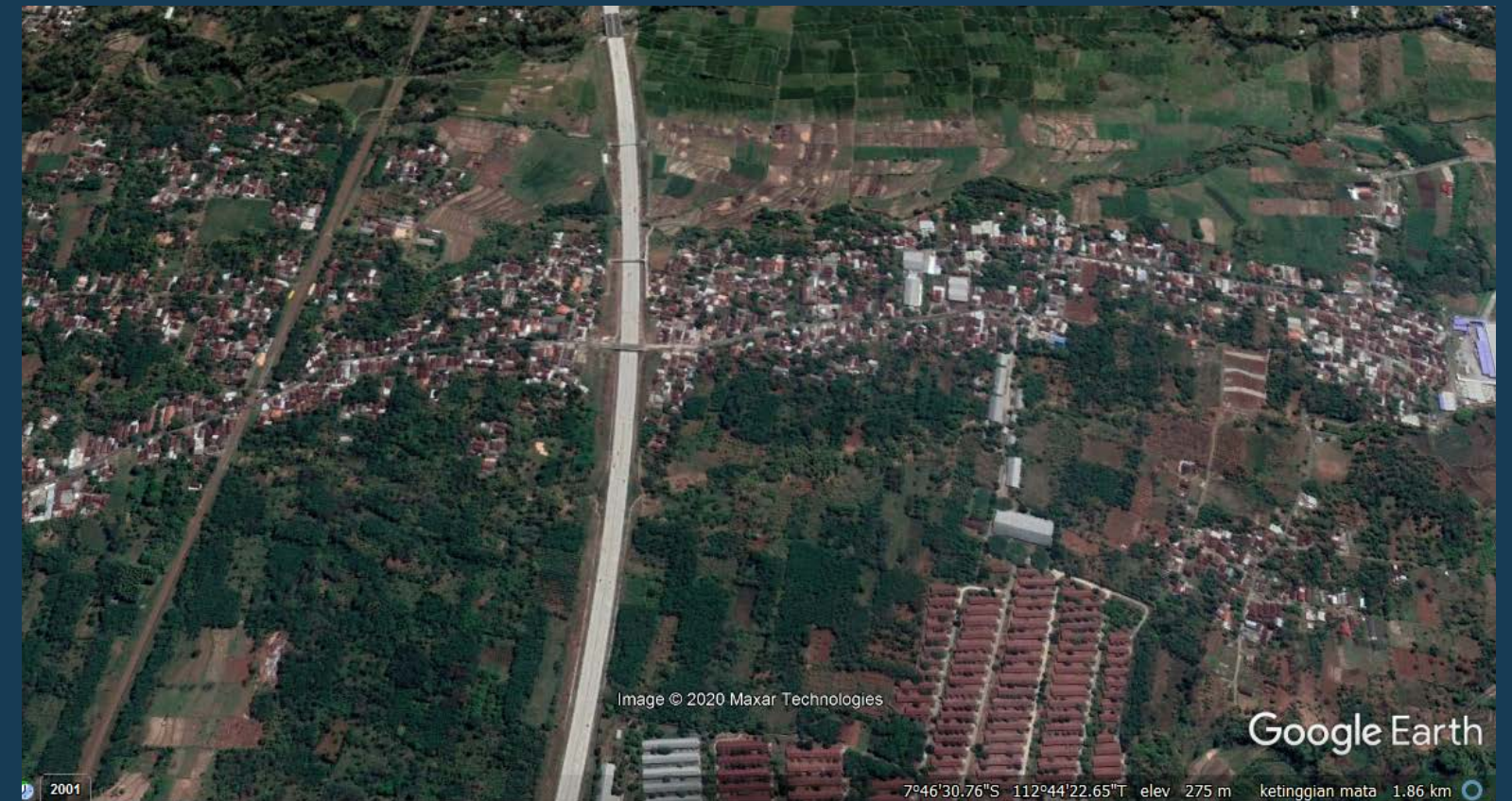


Diaper waste

LANDUSE CHANGE

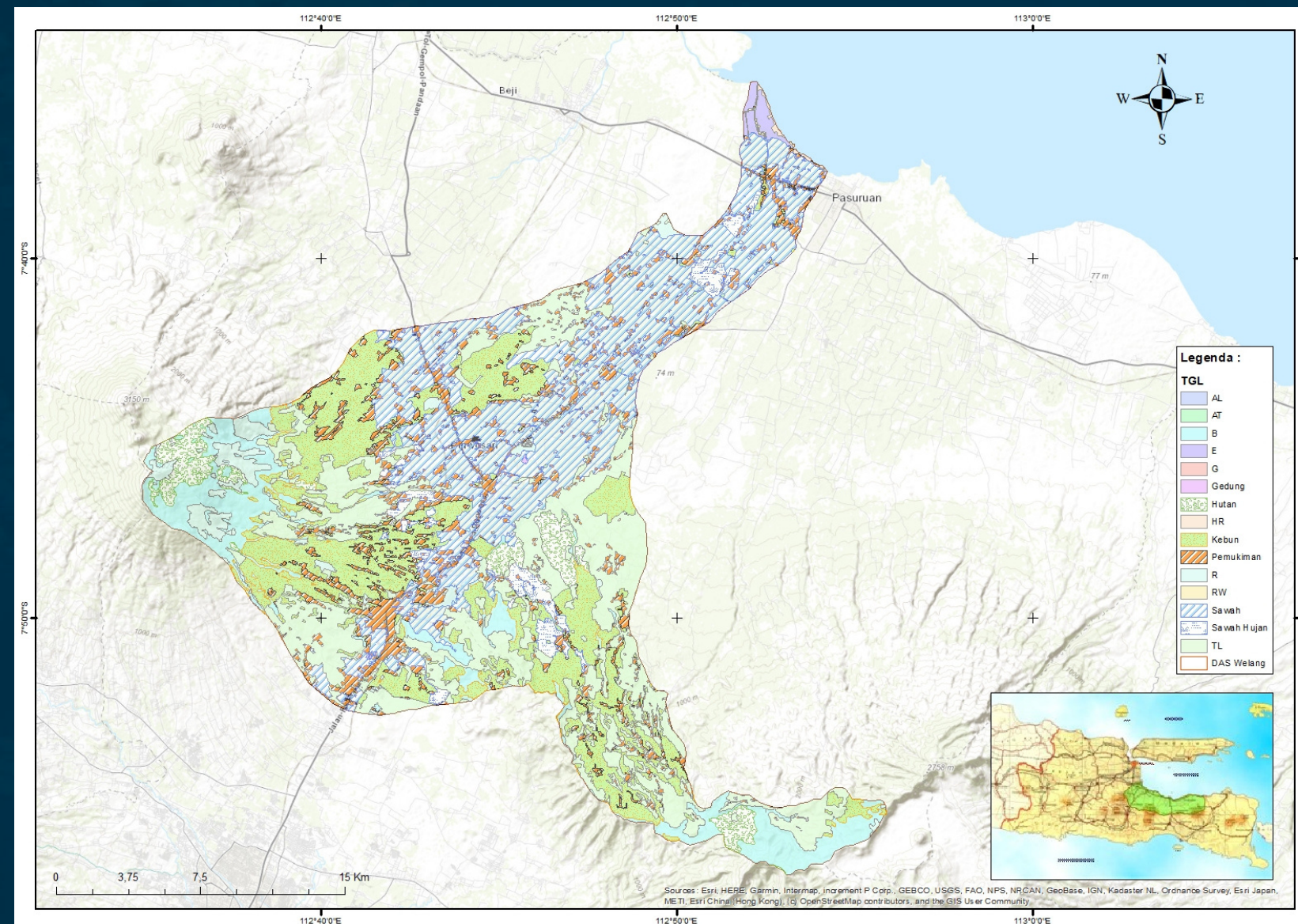


(Purworedjo in 2012)



(Purworedjo in 2020)

LAND USE CHANGE



ONLY

3%

1922 Ha
FOREST

source: calculation result, 2020

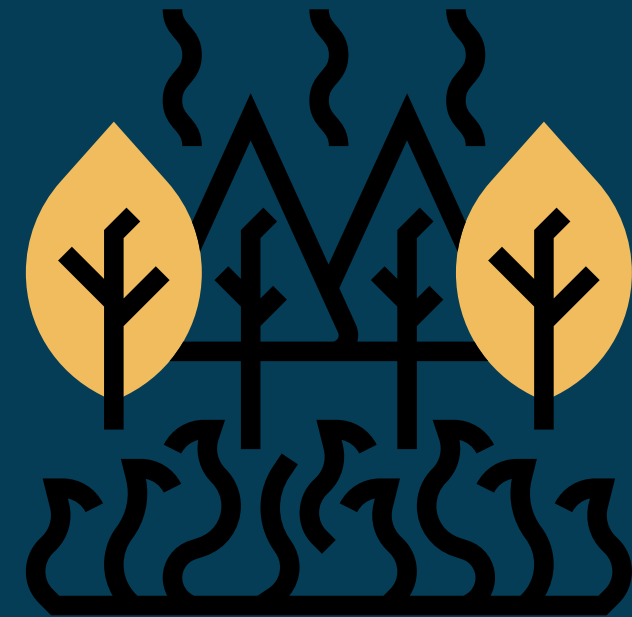
LAND USE CHANGE IMPACT



EXCESSIVE RUN OFF



EROSION /
SEDIMENTATION



NATURAL ECOSYSTEM
DESTROYED

Our Masterplan

Flood

- Zero Runoff Concept
- Polder System -> for residential area that prone to flooding
- Waste Management

No Flood

Poor Quality

- **Integrated Waste Management**
- Communal WWTP -> for residential area

Good Quality



*Flooding
Unprocessed Waste
River Pollution*



structural (abrupt)



- Education
- Social Awareness
- Law Enforcement
- Stakeholders Involvement

non structural (gradually)



*Local Habit
Law Enforcement
Land Use*

Integrated 4.0 Application

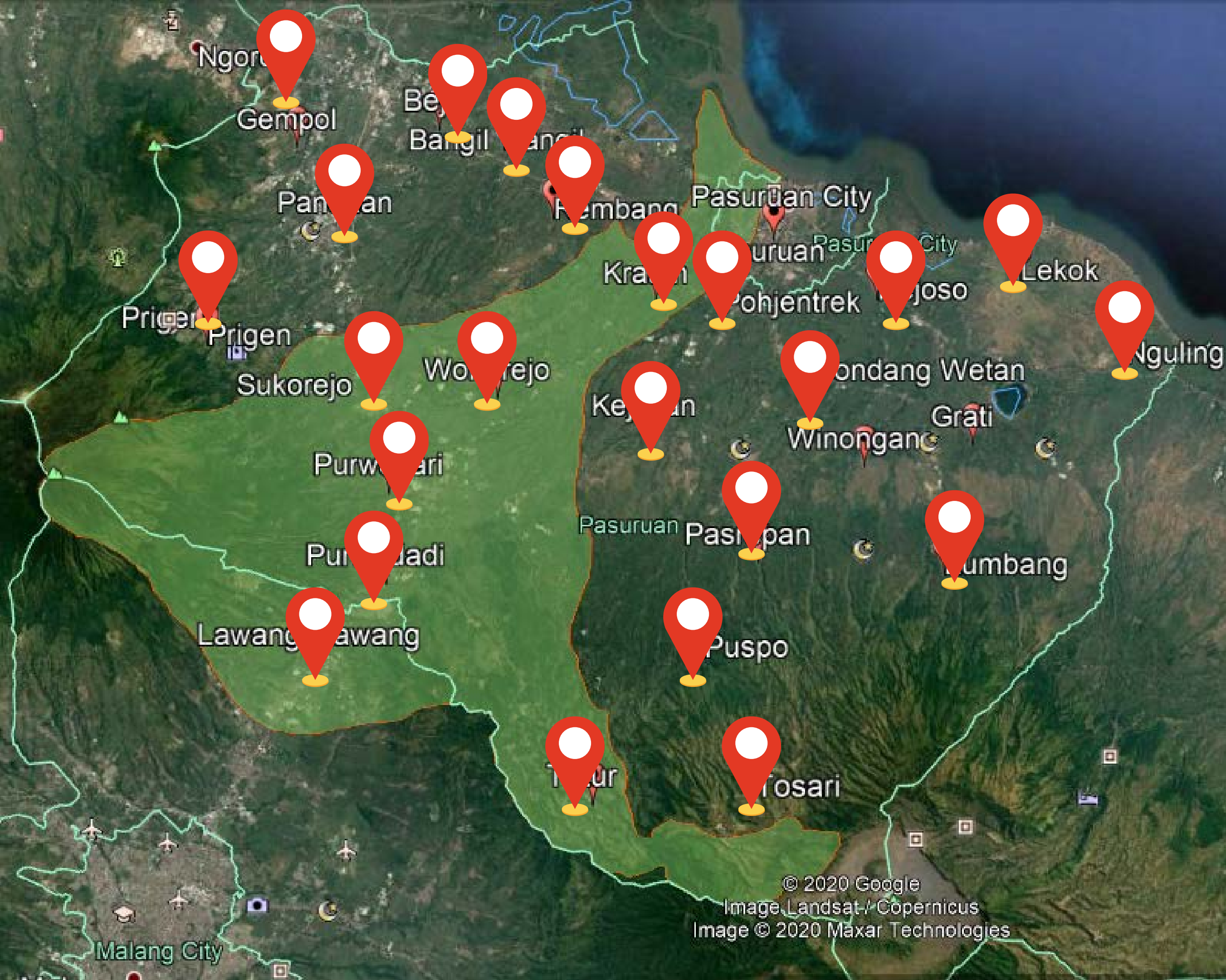


Integrated Waste Management

Place waste
banks in 24
districts of
Kab. Pasuruan



Develop a
trash picking
routine





"Every waste
can be
repurposed"

Zero Run-Off System



Rain Water Harvesting +
Membrane



Biopore and
Vertical Drainage



Retention Pond

Rain Water Harvesting



Rain Water Harvesting as an Flood Prevention

**Amount of
Houses**

Area of Houses

**Rainfall
Intensity**

Runoff Discharge



Data (Jan, 2017)



Runoff Discharge :
 $2.08 \text{ m}^3/\text{s}$

4014 + 1 ES + 1 PP

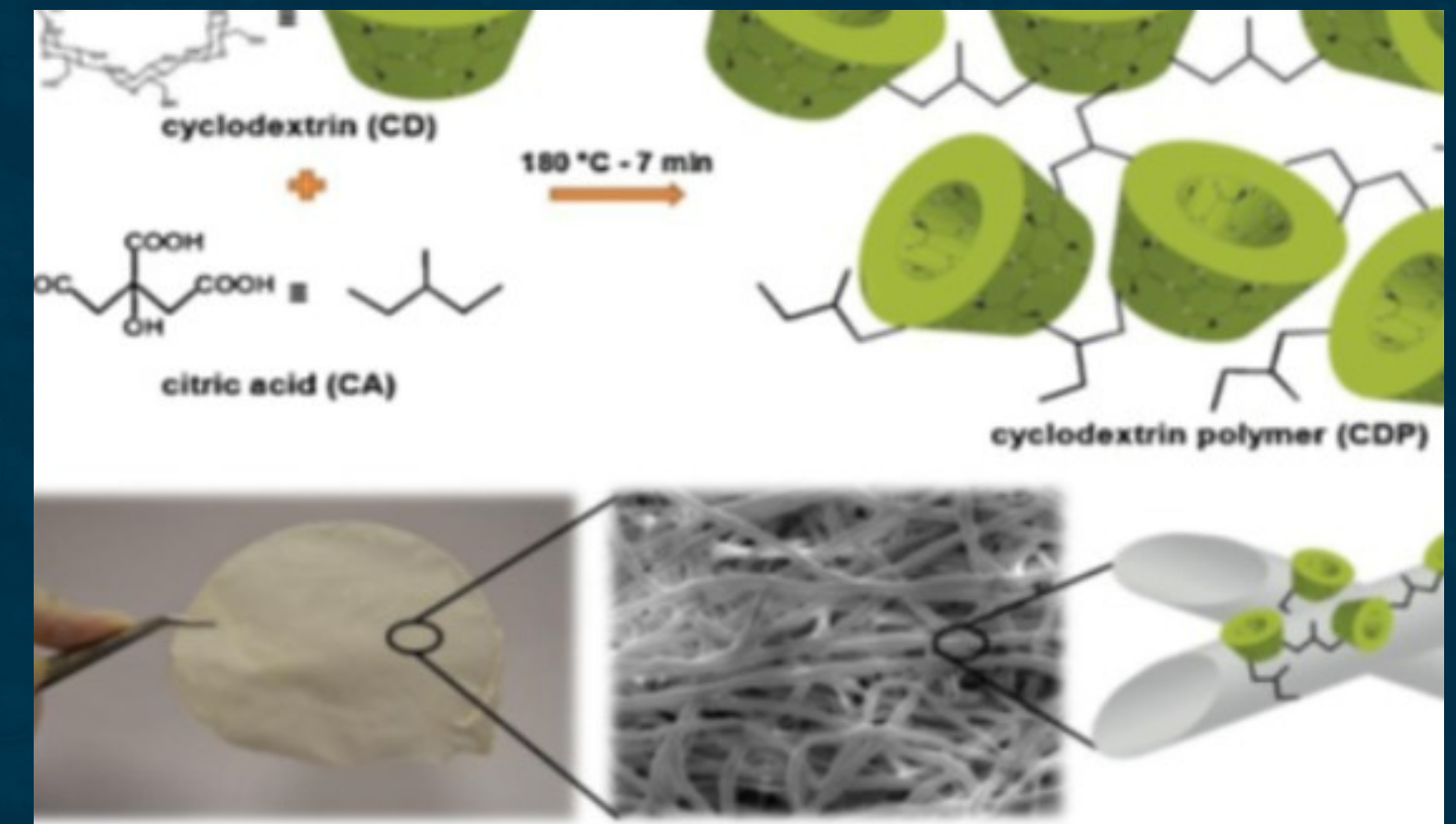
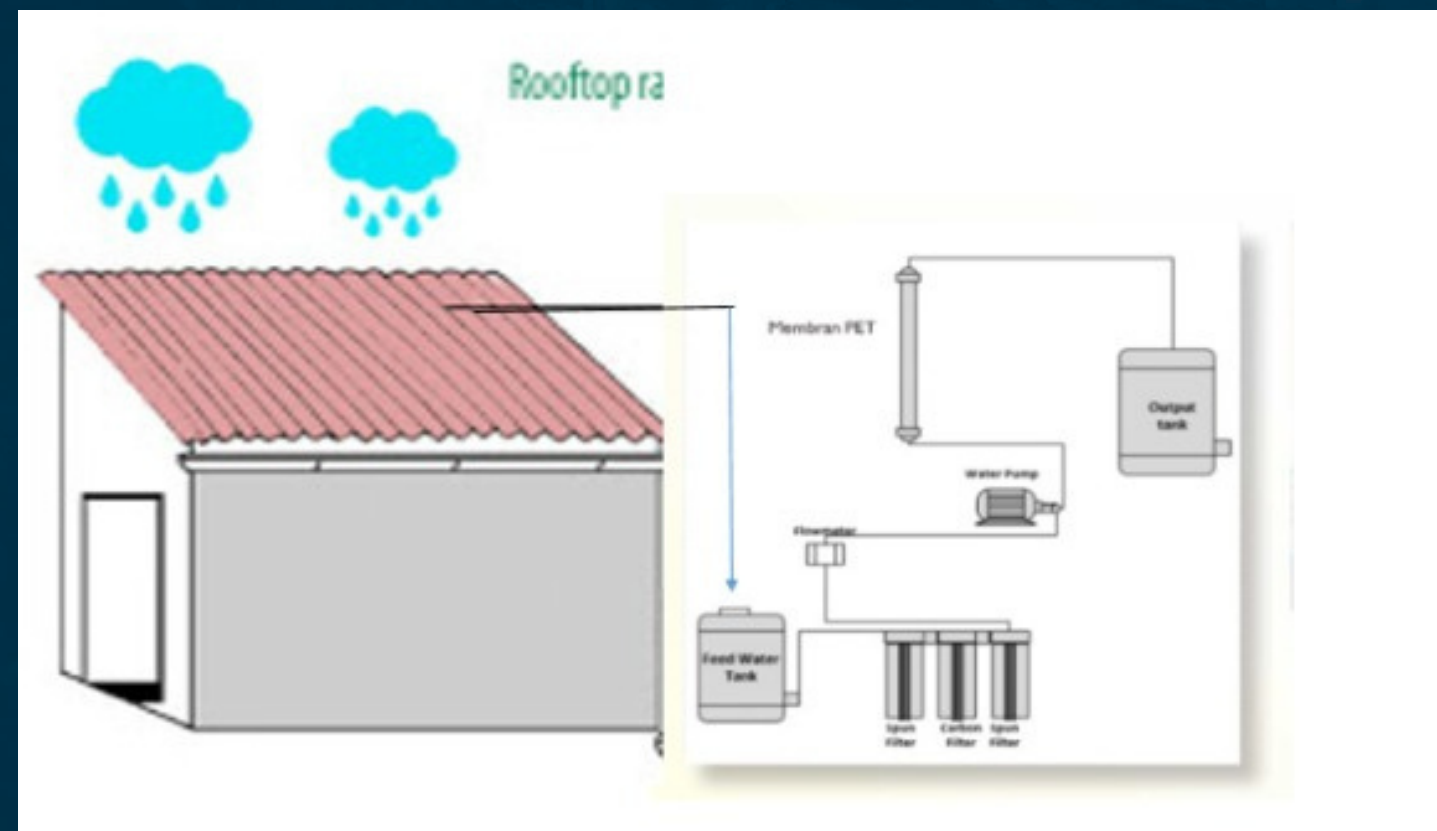
Kota + Kabupaten Pasuruan



400,000

Runoff Discharge :
 $205.1765 \text{ m}^3/\text{s}$

USING MEMBRAN TECHNOLOGY

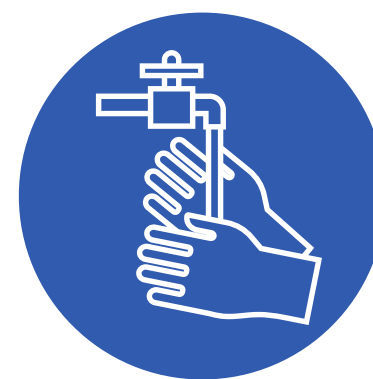




+



=

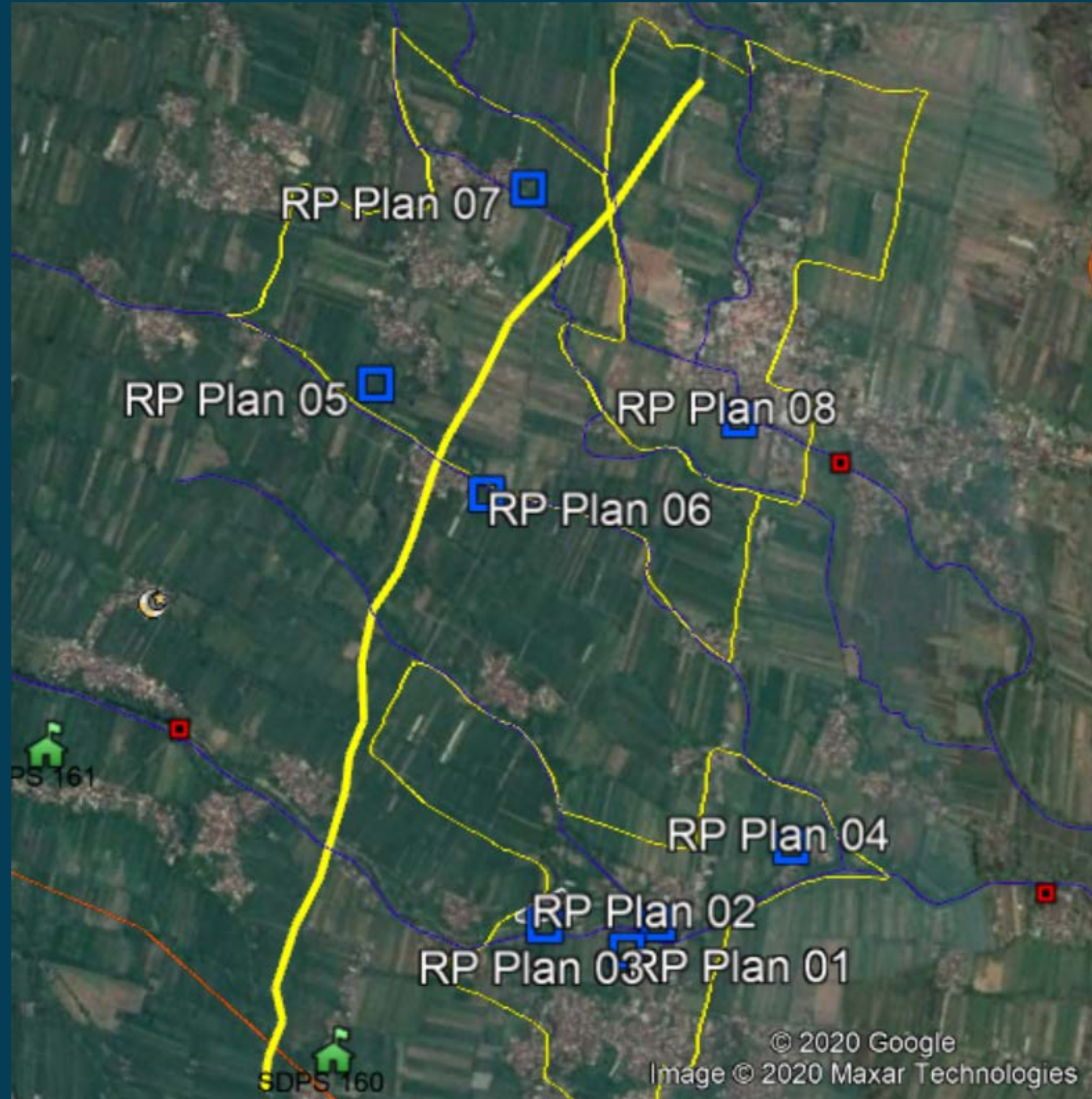




300L
Rp. 500,000;-

PV 0.5 inch
Rp. 57,550;-

Retention Pond Plan

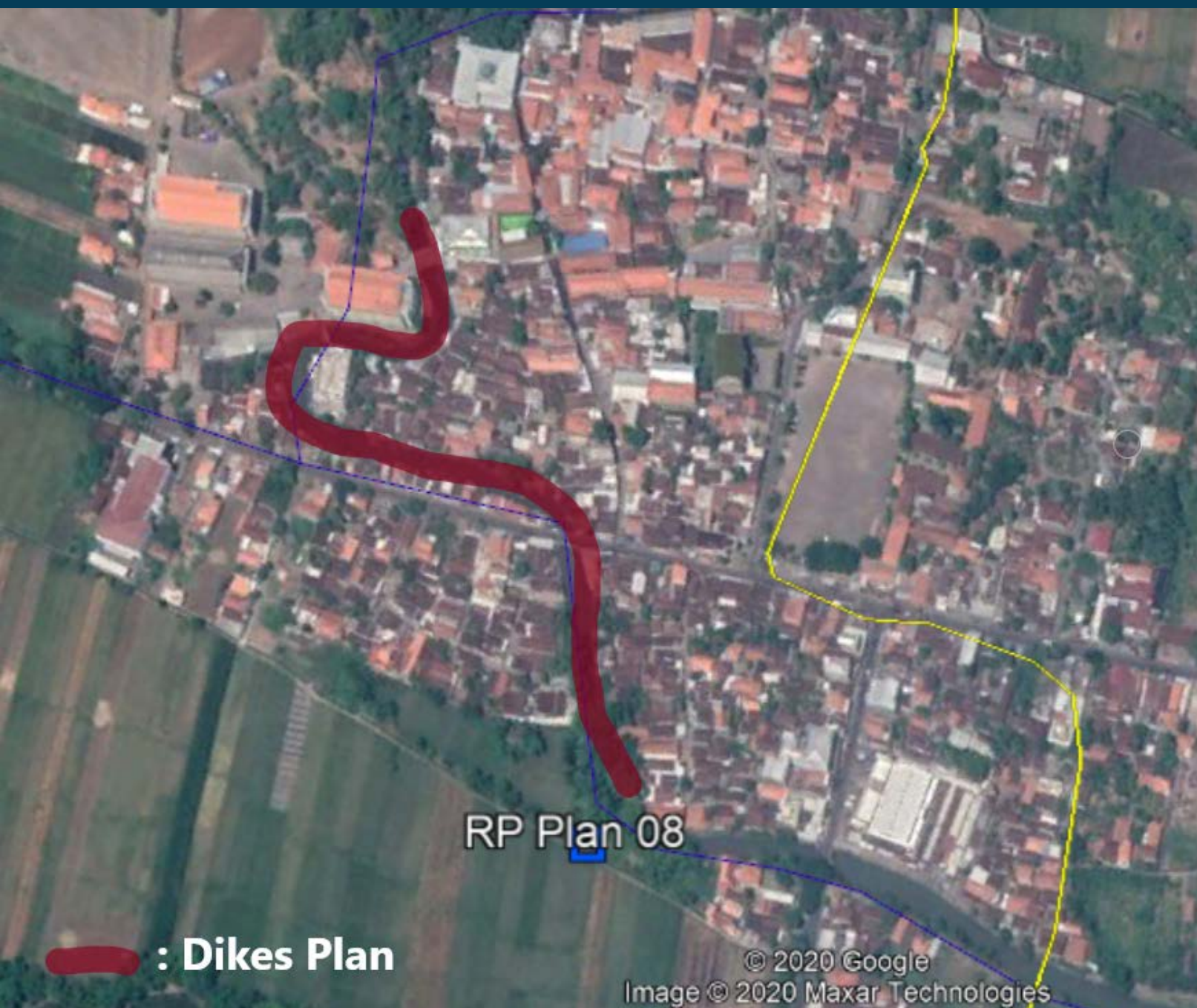


Polder System -> for **residential area that prone to flooding**

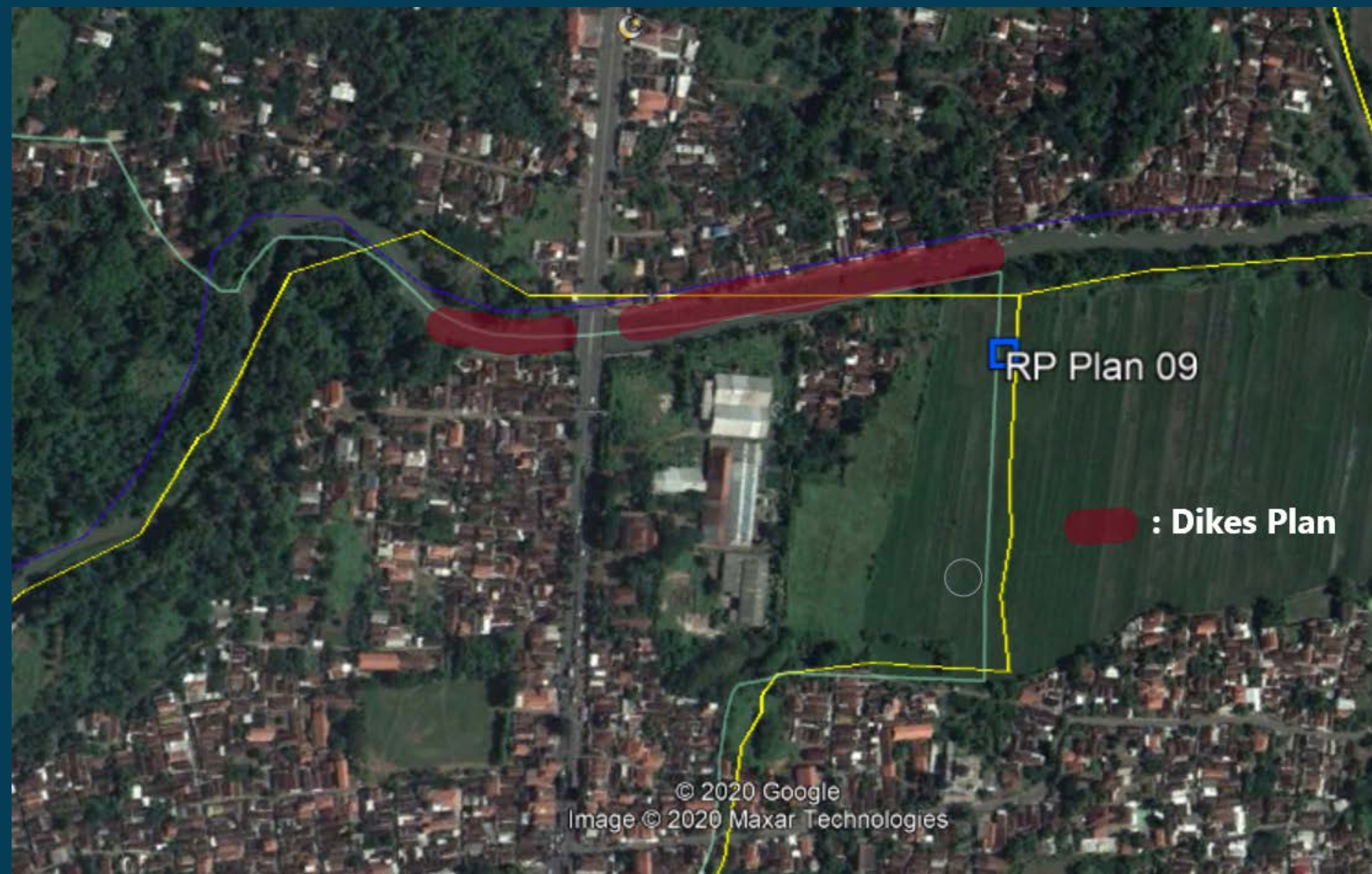


up to mid stream area

Retention Pond with Dikes



up to mid stream area



mid to down stream area

Sedimentation

EXAMPLE:

Bukit Mendek, Dusun Mendek,
Srigading, Lawang, Malang, East
Java 65216

BACKGROUND

Deforestation occur on Welang Watershed making their land erosion easily happened and making problem on river

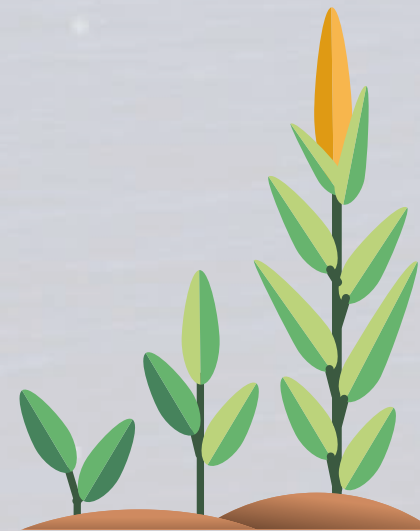


POTENTIAL EROSION AREA

ON WELANG WATERSHED



15178 Ha
PADDY FIELDS



11944 Ha
DRYLANDS

source: calculation result,2020

what can we do?

**interrupt the
erosion before
going into
river bank**



- **reforestation**
- **sediment trap from bamboo**

River Pollution

GREY WATER



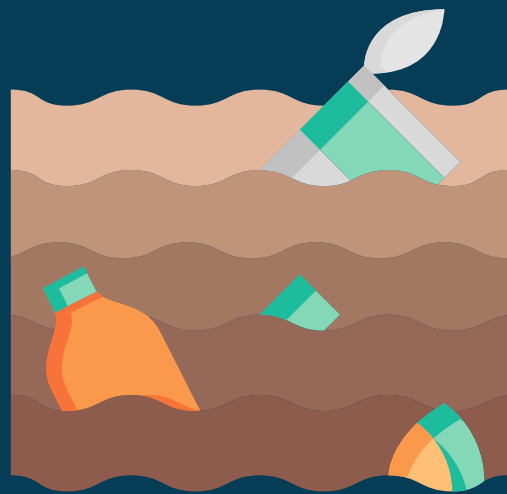
PLASTIC WASTE



INDUSTRIAL WASTE



Water Quality at Welang River



BOD = 4,1 mg/l

COD = 10 mg/l

DO = 4,9 mg/l

pH = 7,9

(Sri Wahyuningsih, 2010)

Class III

categorize:

HEAVY POLLUTED

(PP 20 / 1990)

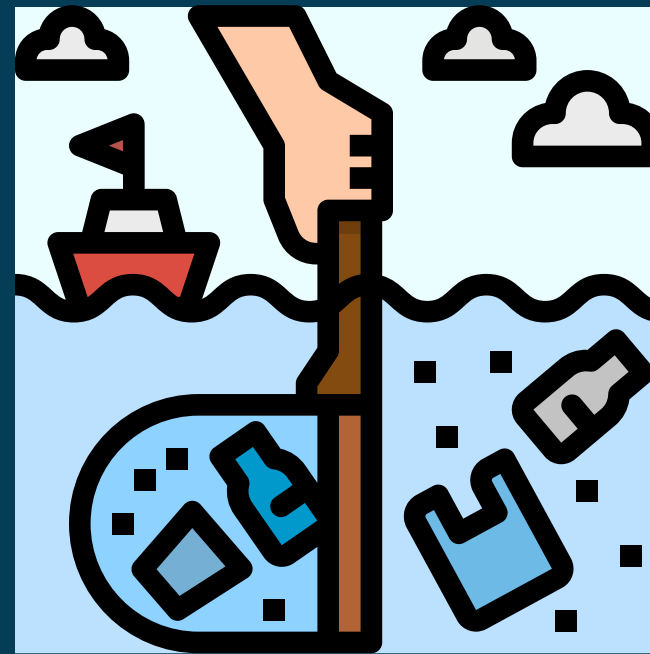
RESIDENTAL AREA NEAR RIVER BANK



WHAT CAN WE DO?



WASTE WATER
TREATMENT PLANT
BASED ON
COMMUNITY



CLEANING RIVER



ECO GREEN
INNOVATION

About Mindset...



American Dream



Indonesian Dream???



Brand-New Indonesian Dream

Implementing responsible and environmentally aware mindset
to the Indonesian "gotong royong" society



**"Even our
daily waste
still has
economic
value"**

Regulation and Law Enforcement



National Regulation (As a Standard)

- UU No. 17 Tahun 2019 -> Water Resources
- PP No. 38 Tahun 2011 -> River
- KemenPUPR No. 26 Tahun 2015 -> River Channel / River Segment Utilization
- PerMen PUPR No. 11 Tahun 2014 -> Rainwater Management

GAP

- Regional Regulation -> implementation of regulation from higher legislation especially for technical execution (Ministry of Home Affairs of Indonesia)
- There is no related regional regulation about Welang River or it's project and masterplan
- Standard **can't do enforcement**, only reference, need enforcement especially for the execution.

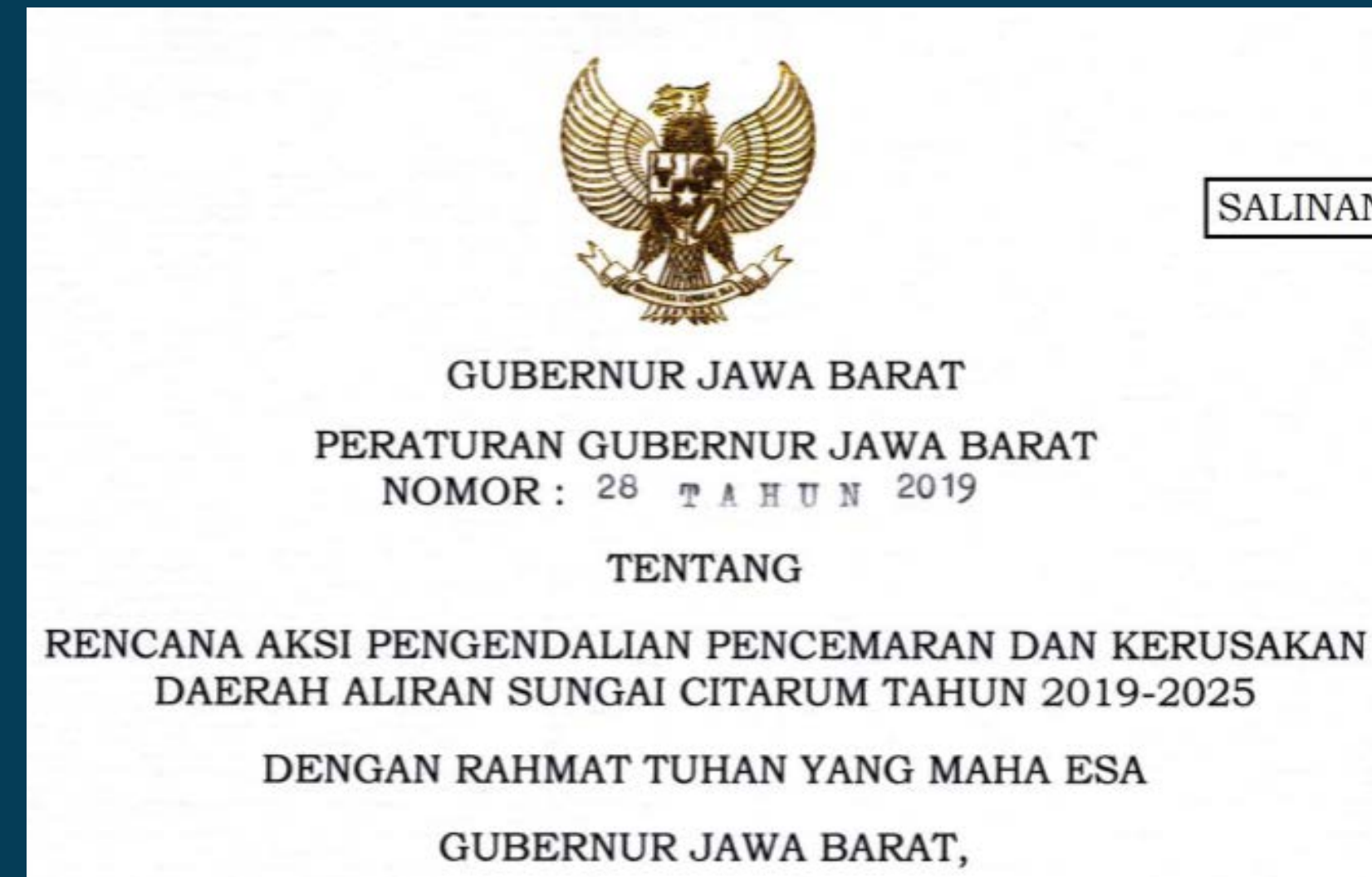
Regulation and Law Enforcement

Need Regional Regulation -> Do the enforcement

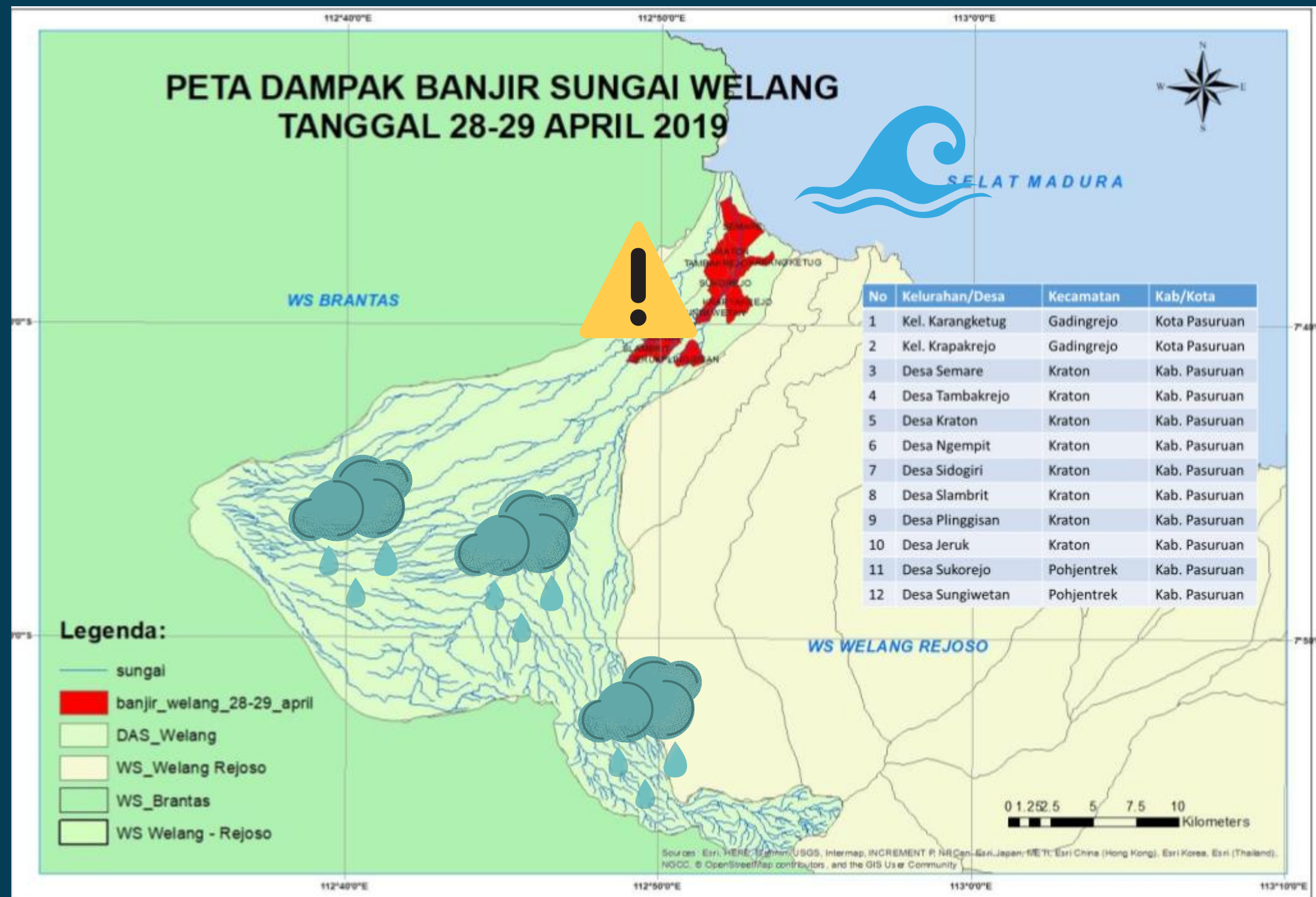
- LID & Green Infrastructure
- Welang River pollution control
- Zero runoff concept
- Land use change
- Our integrated flood management project (including river quality inside) should be protect & guide by law even until the technical aspect.

Best Practice

- Citarum Harum Project -> Pergub Jabar No. 28 Tahun 2019
- Pergub DKI Jakarta No. 43 Tahun 2013 -> Konsep Zero Runoff DKI Jakarta



FLOOD RISK MITIGATION

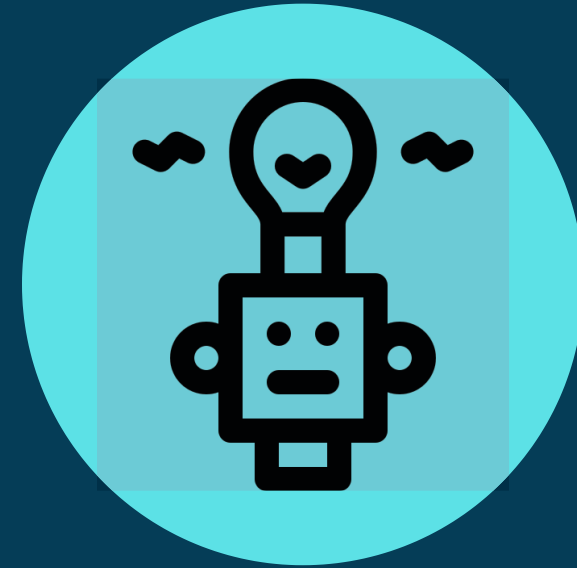


**"Treat flood like a visitor,
a distant relative who
comes once a year"**

-Mr. Apri, Head of Adus Kali movement

Welang Weling

Digital platform utilized for waste management and flood mitigation



Machine
Learning



Early Warning
and Reporting
System



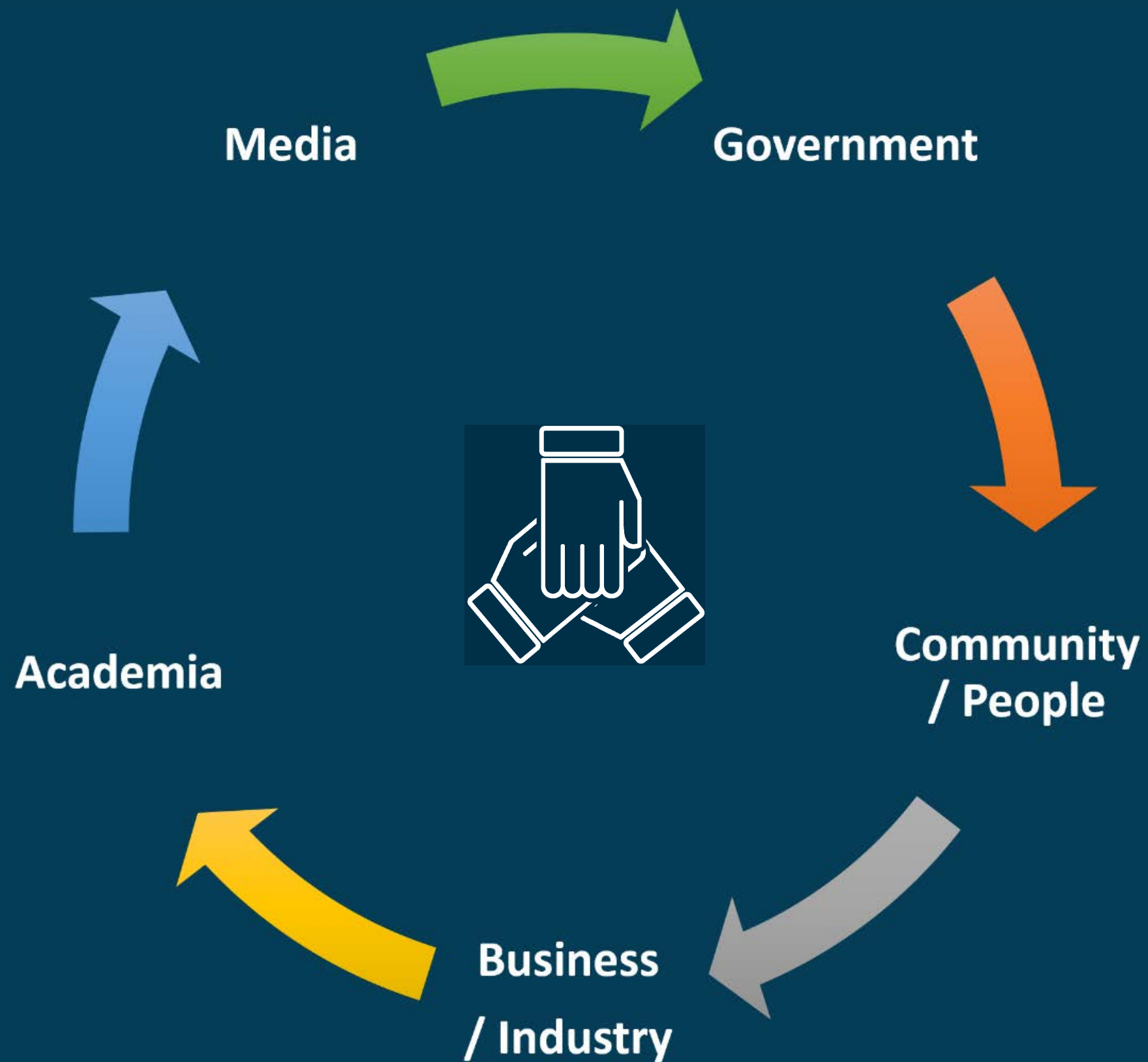
Big Data



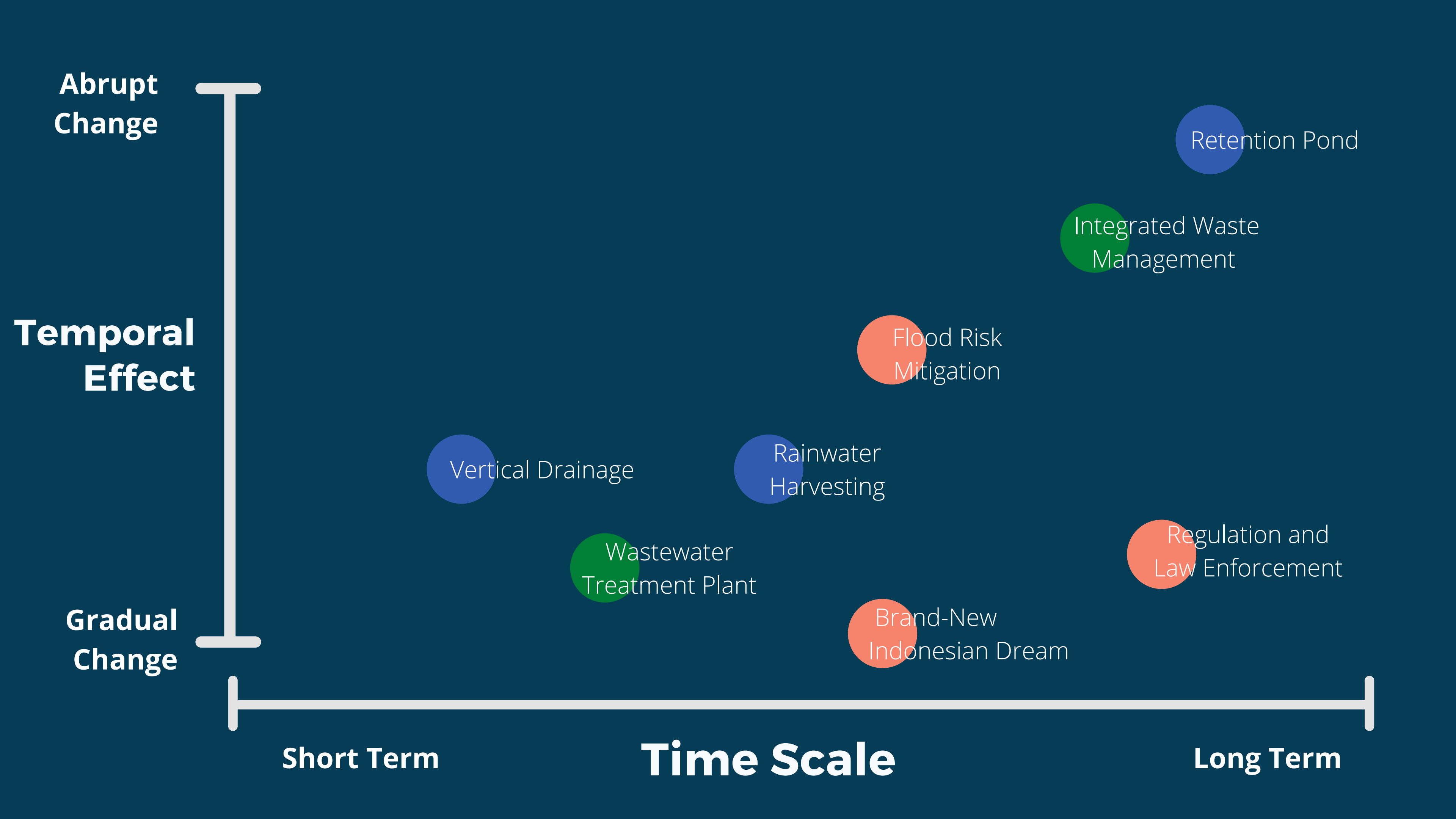
Stakeholders Analysis



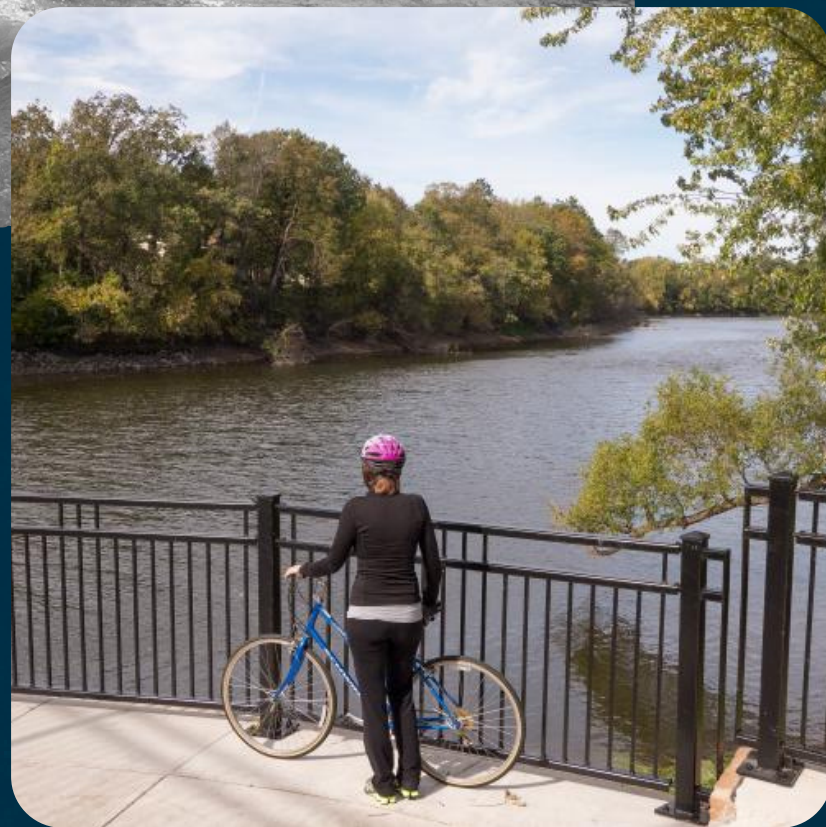
Pentahelix Concept -> Everybody has role!



- **Government** -> Unify like a parents
- **Community** -> Development actors
- **Business** -> Investor and contributor
- **Academia** -> Planner companion
- **Media** -> Convey information to the public

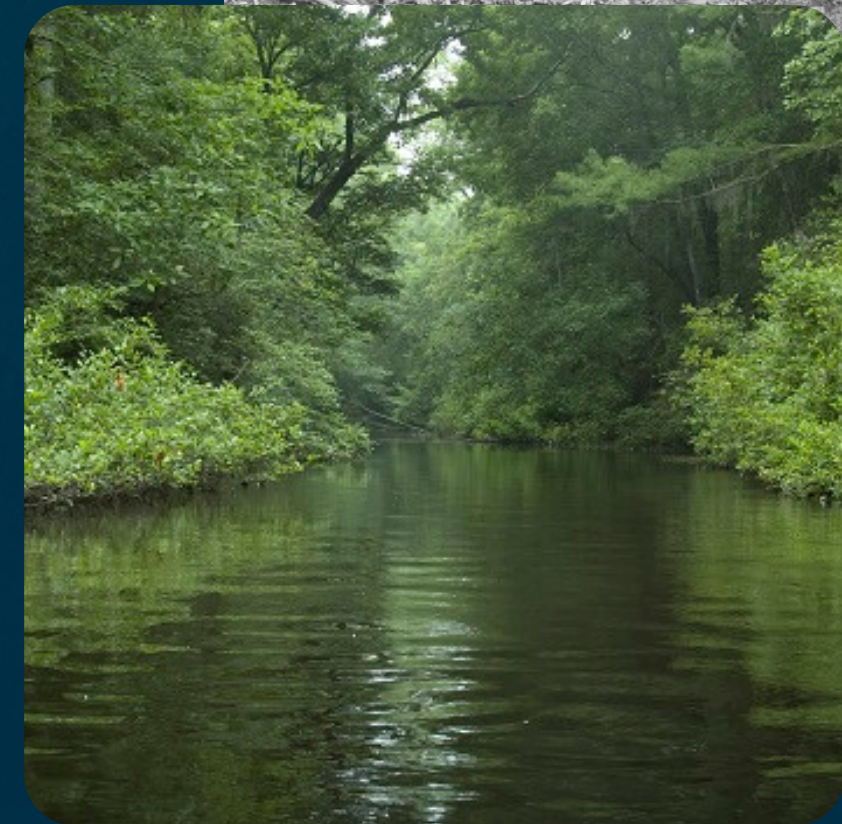


The New Face of Welang River



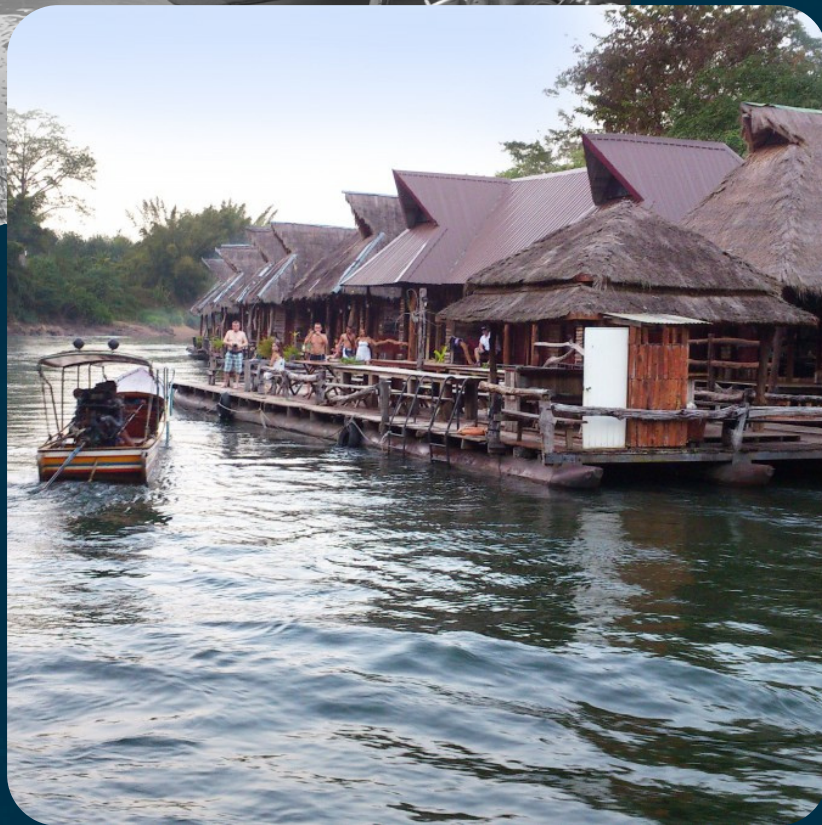
Free Flood Disaster

2025



Major circular economy of
East Java

The New Face of Welang River



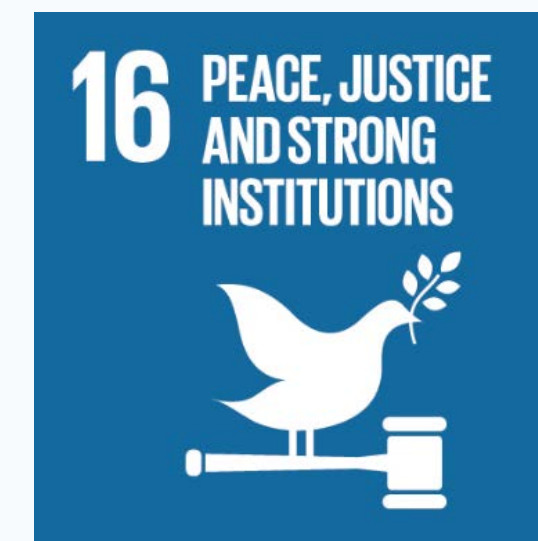
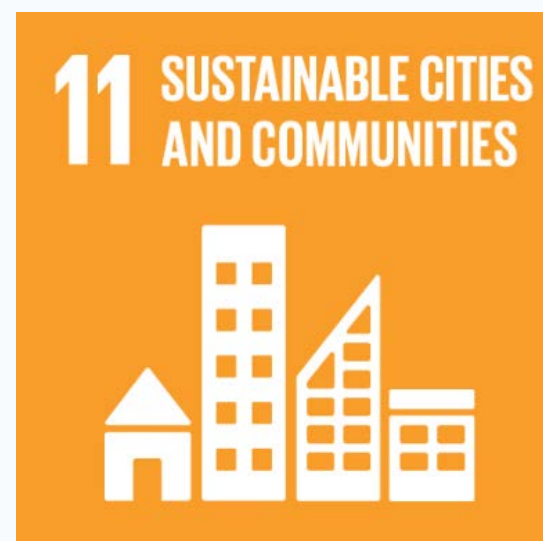
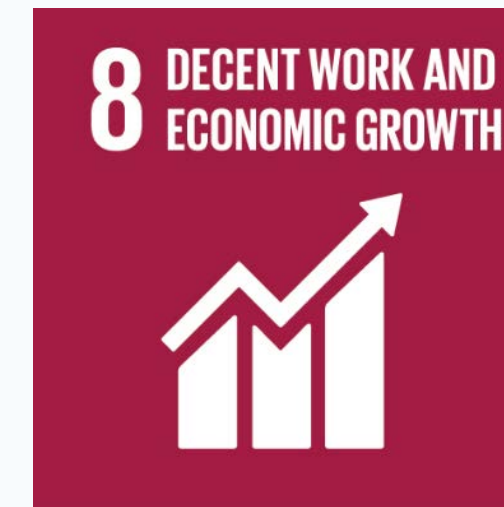
One of main tourism
on East Java



Drink Water from River

2030

2035



"Welang as The Source of Life"

Natural Environment
Built Environment
Economic Environment
Social Enviroment