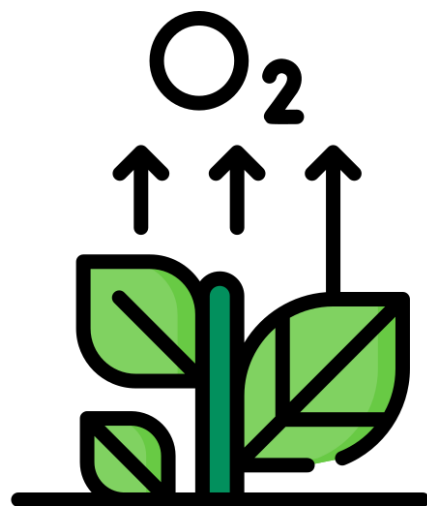
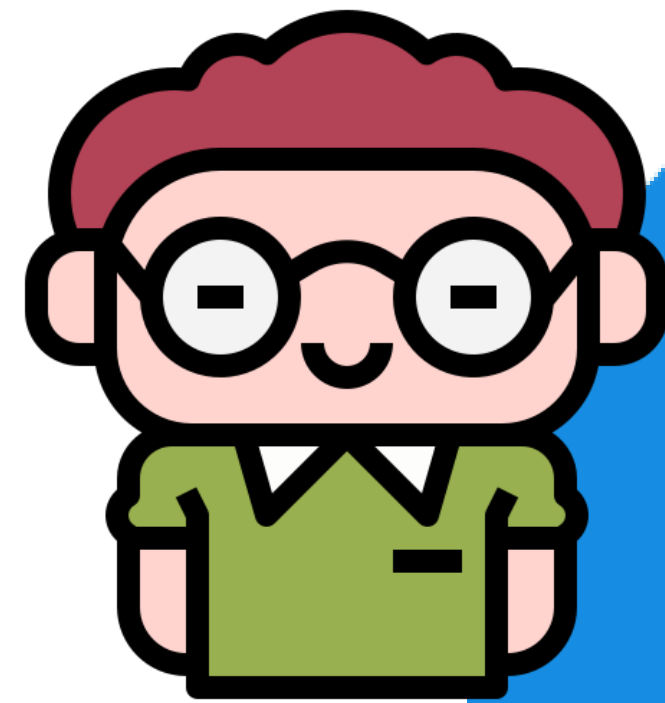
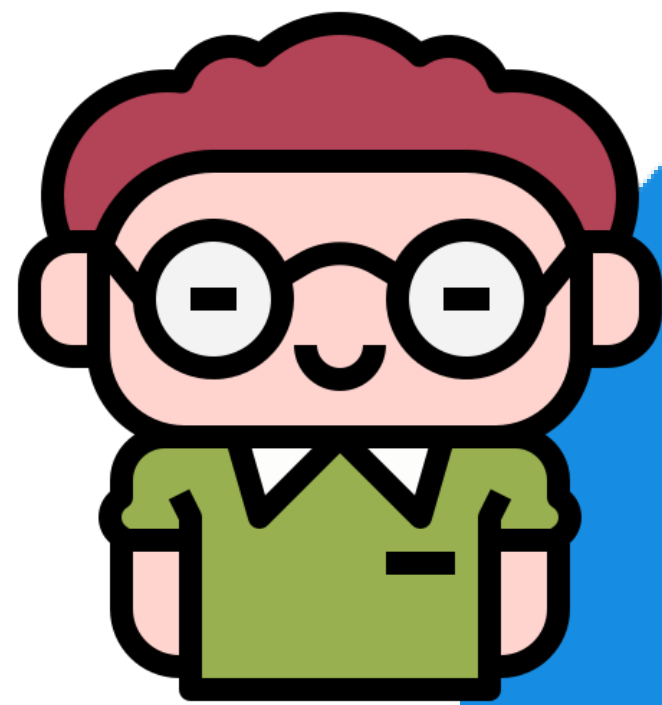


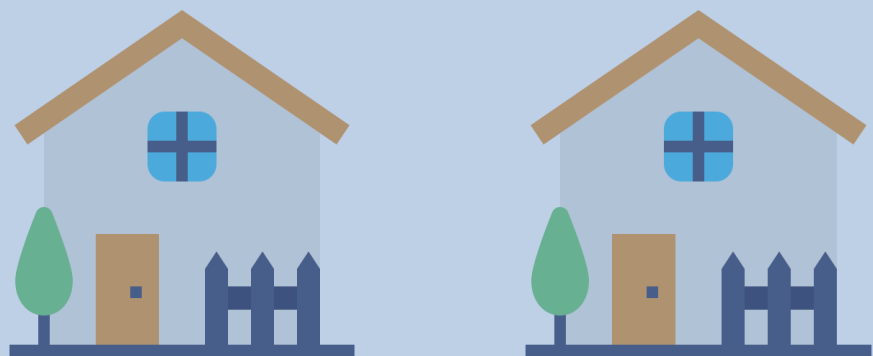


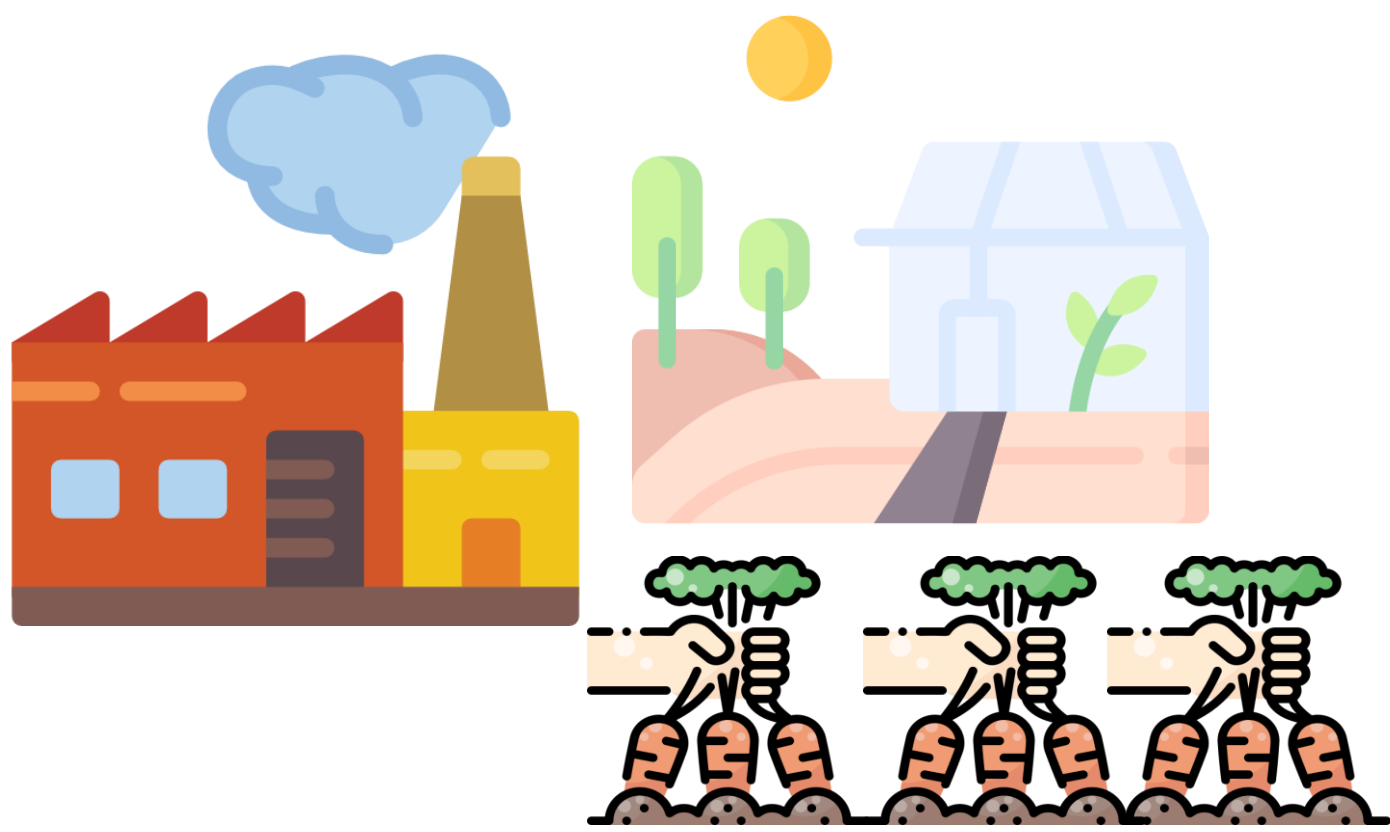


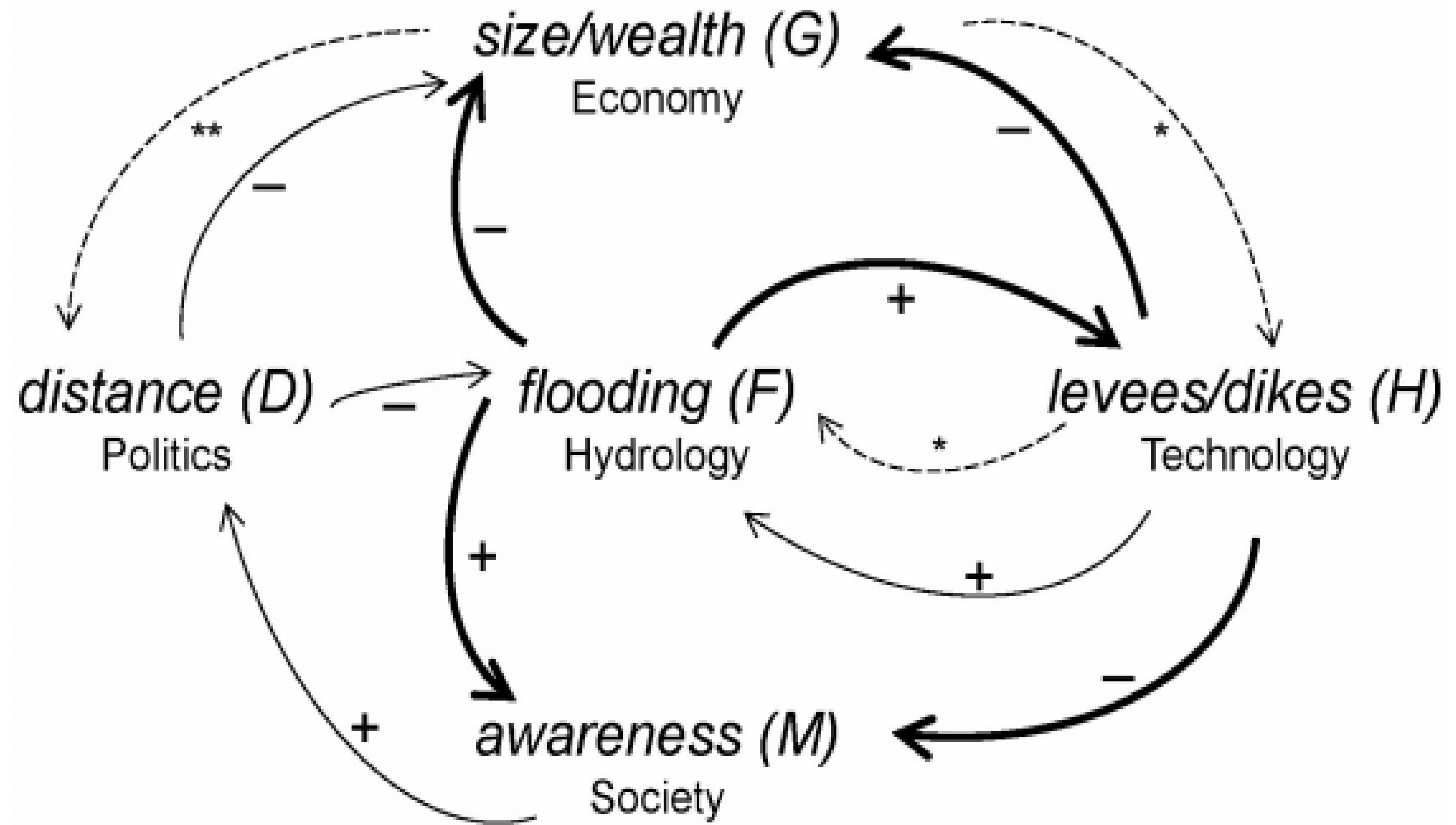


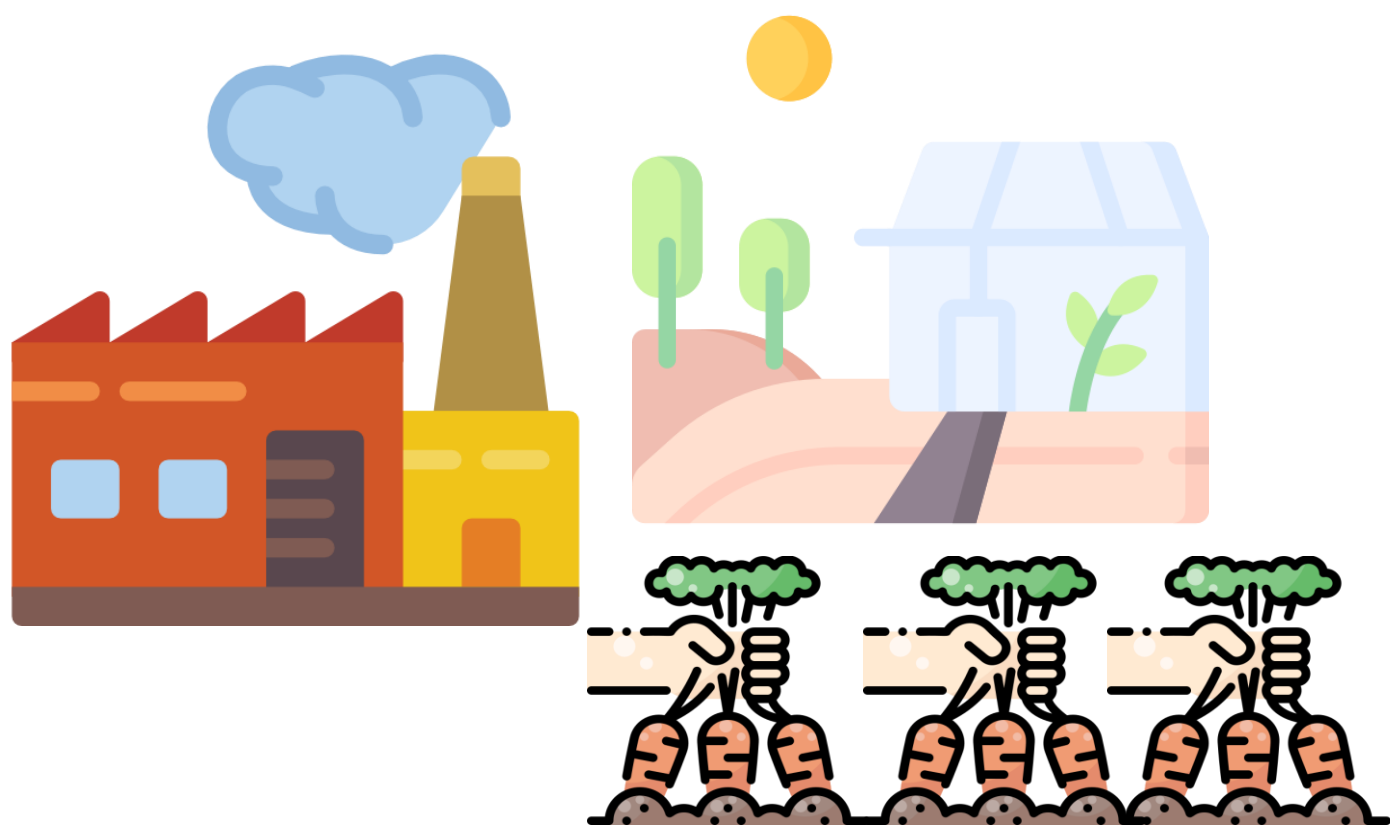














WHY????

Healthy Watershed

1

Optimalization of Water Resources

2

**Healthy Ecosystem (Water Quality
and Base Flow Management)**

3

No/Very Less Disaster Risk

Population Upstream



Population Midstream



Population Downstream



INDONESIA HEALTHY RIVERS
CHALLENGE 2020



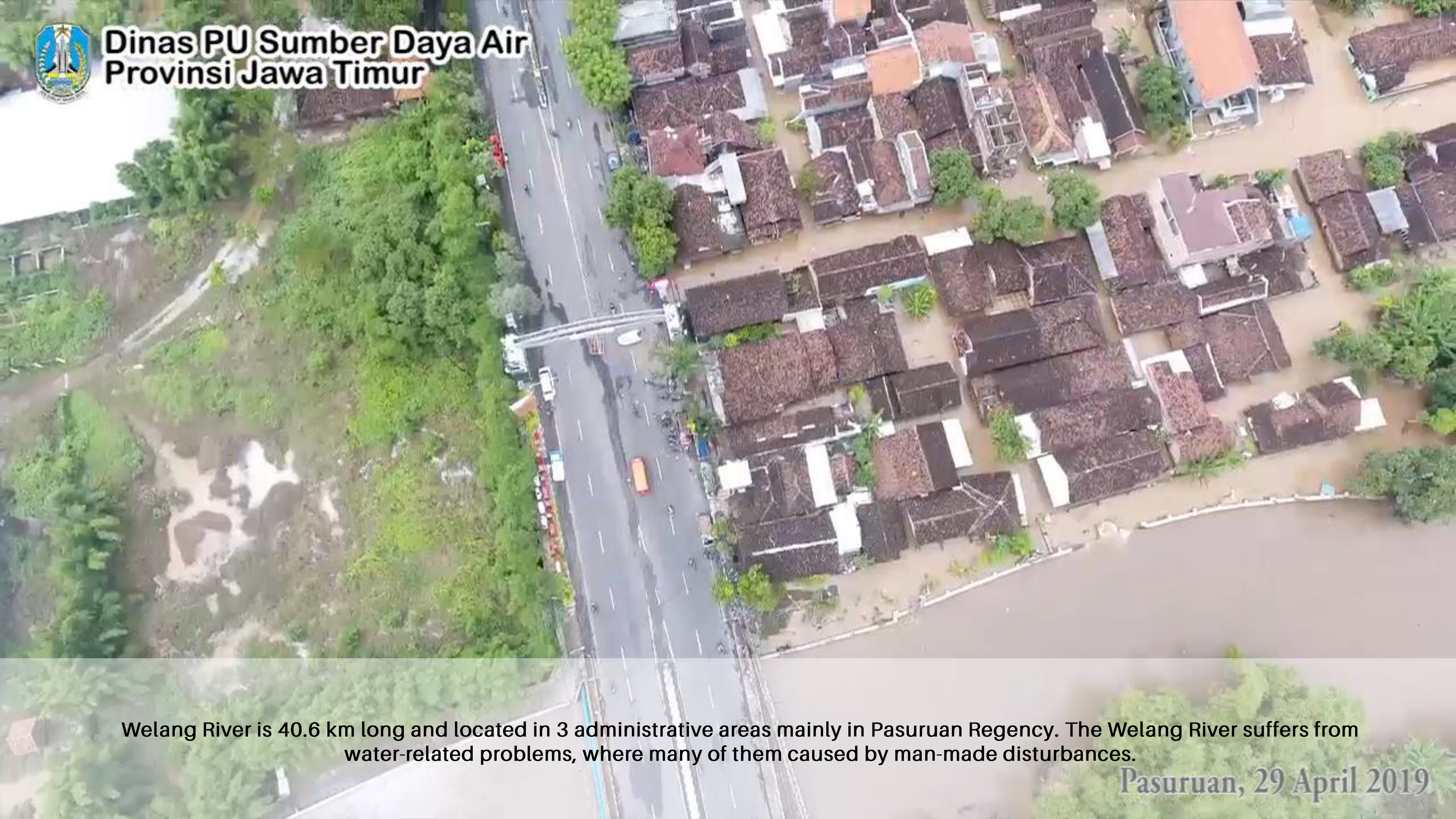
First Online Presentation



Team B



Dinas PU Sumber Daya Air Provinsi Jawa Timur

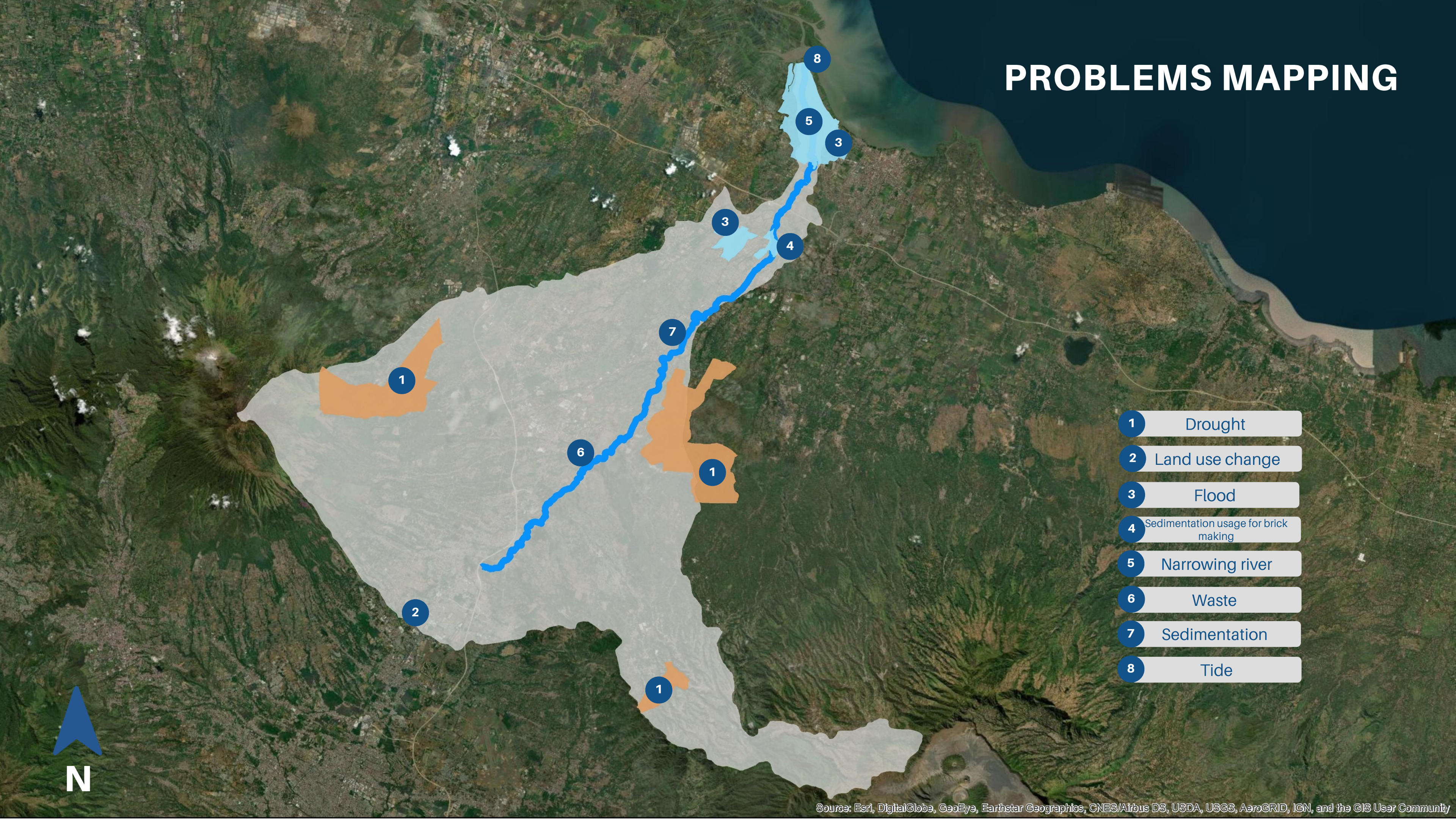


Welang River is 40.6 km long and located in 3 administrative areas mainly in Pasuruan Regency. The Welang River suffers from water-related problems, where many of them caused by man-made disturbances.

Pasuruan, 29 April 2019

**What we
have been
working on**

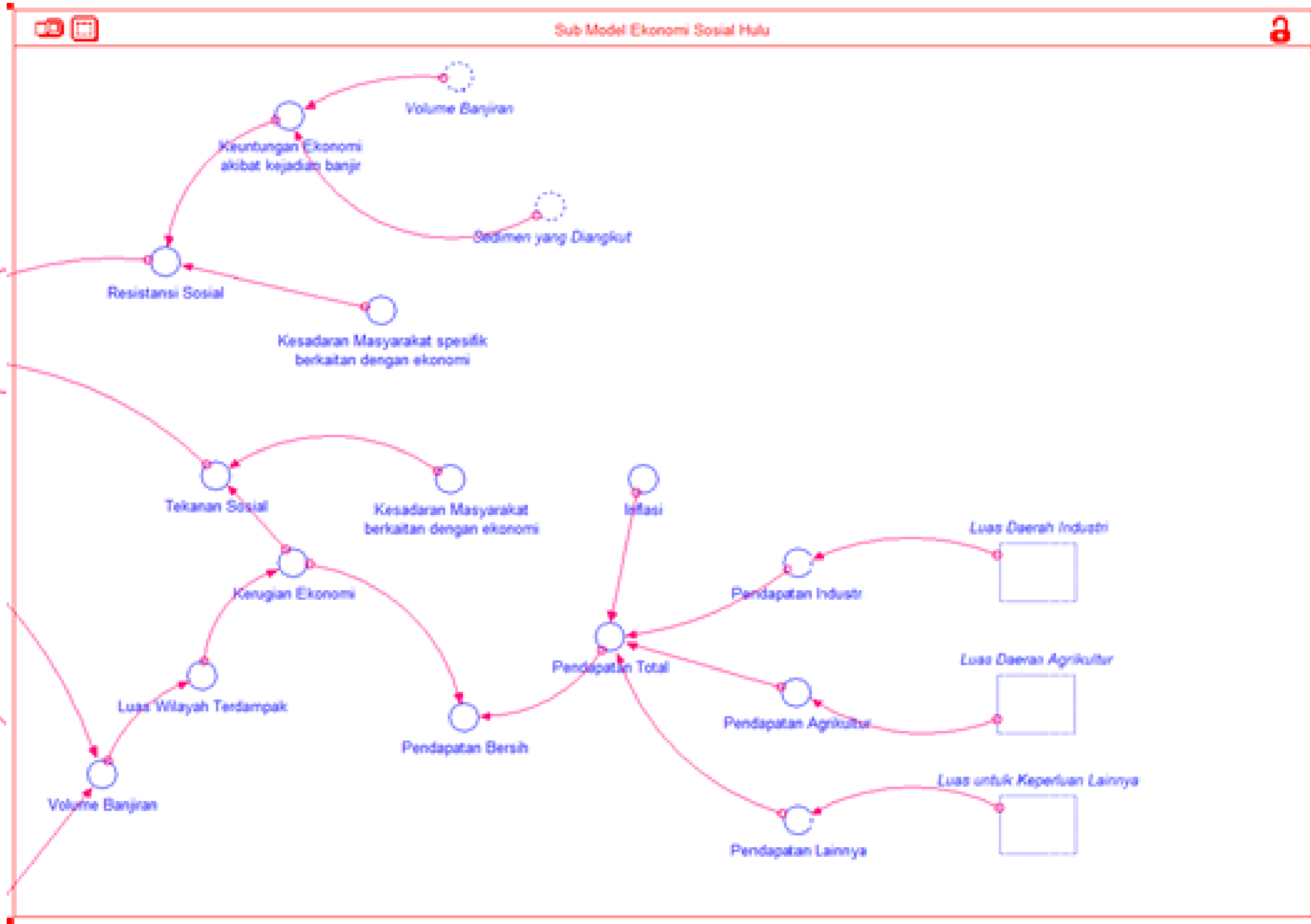
PROBLEMS MAPPING

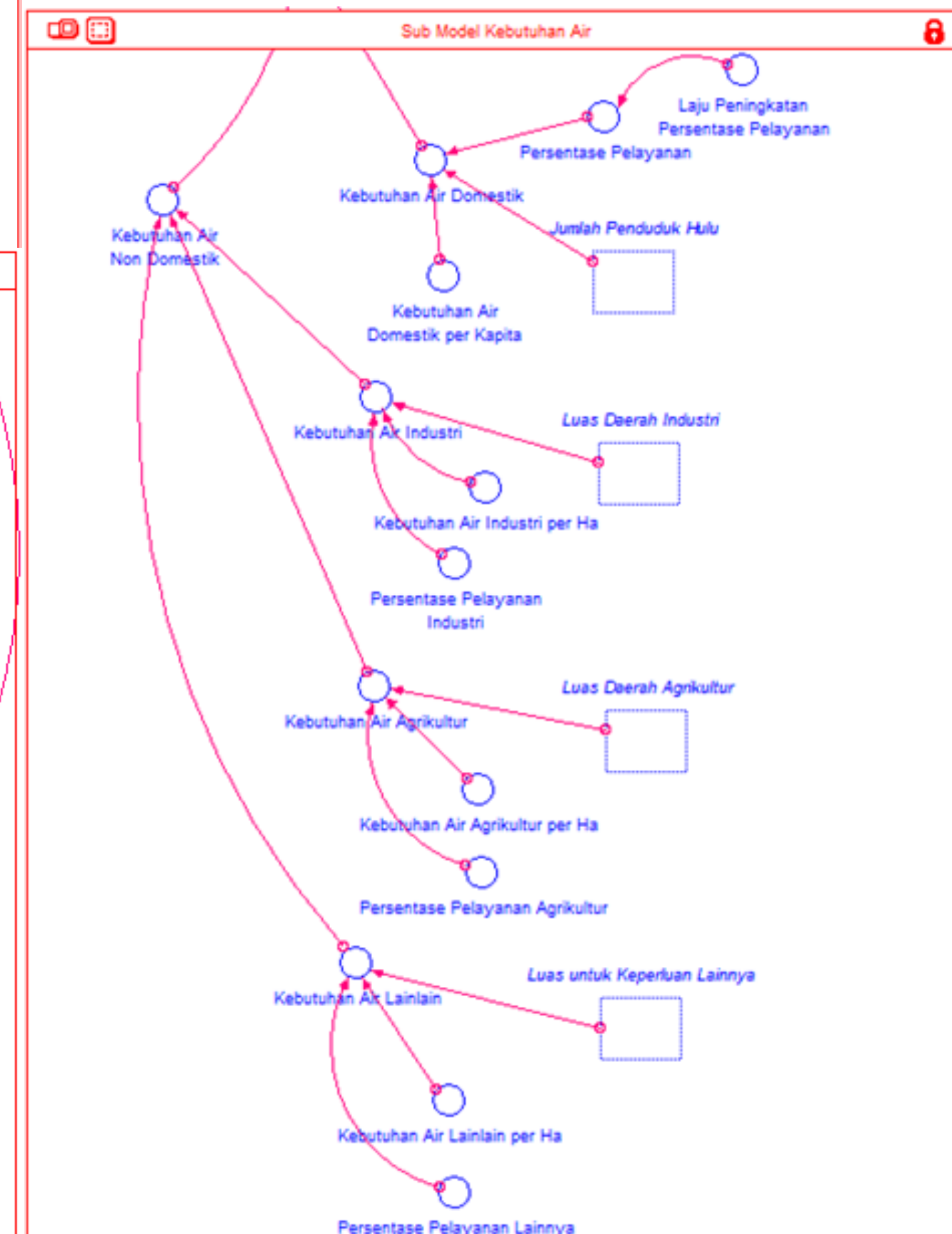
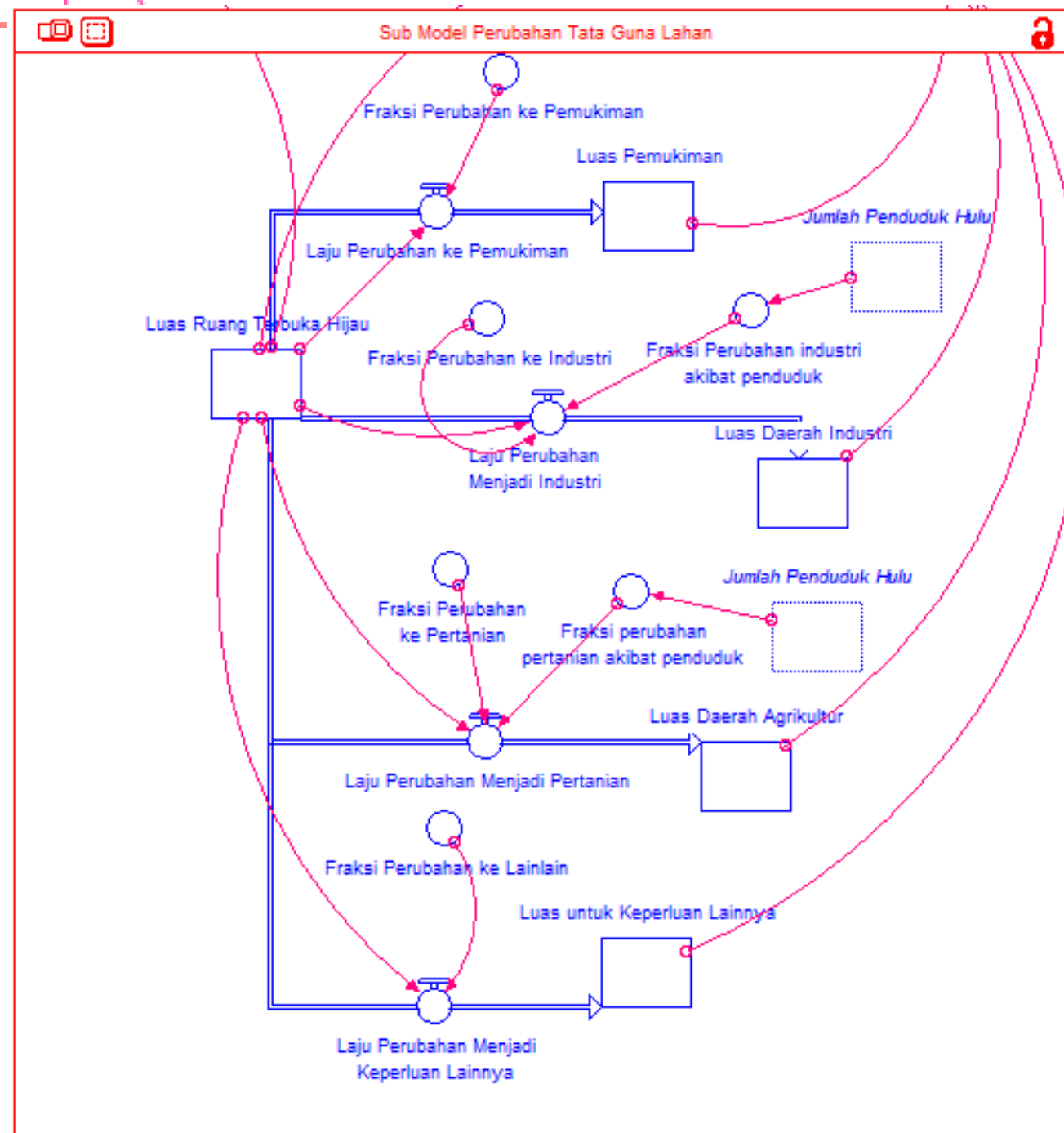
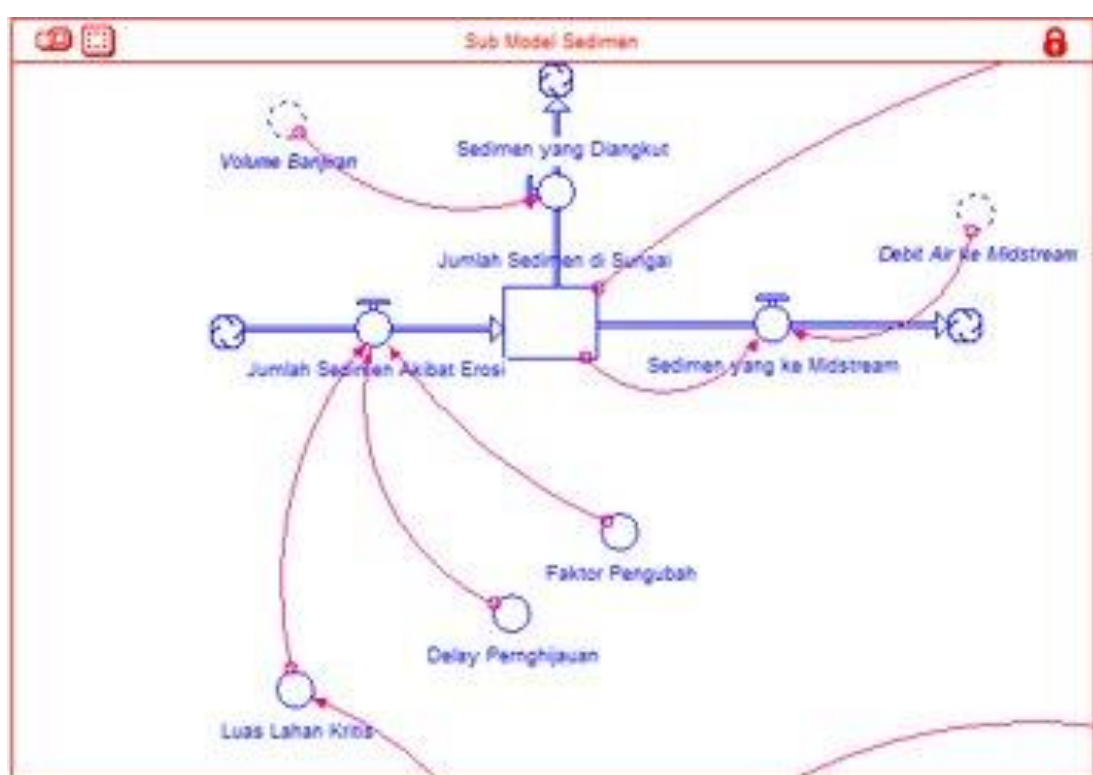
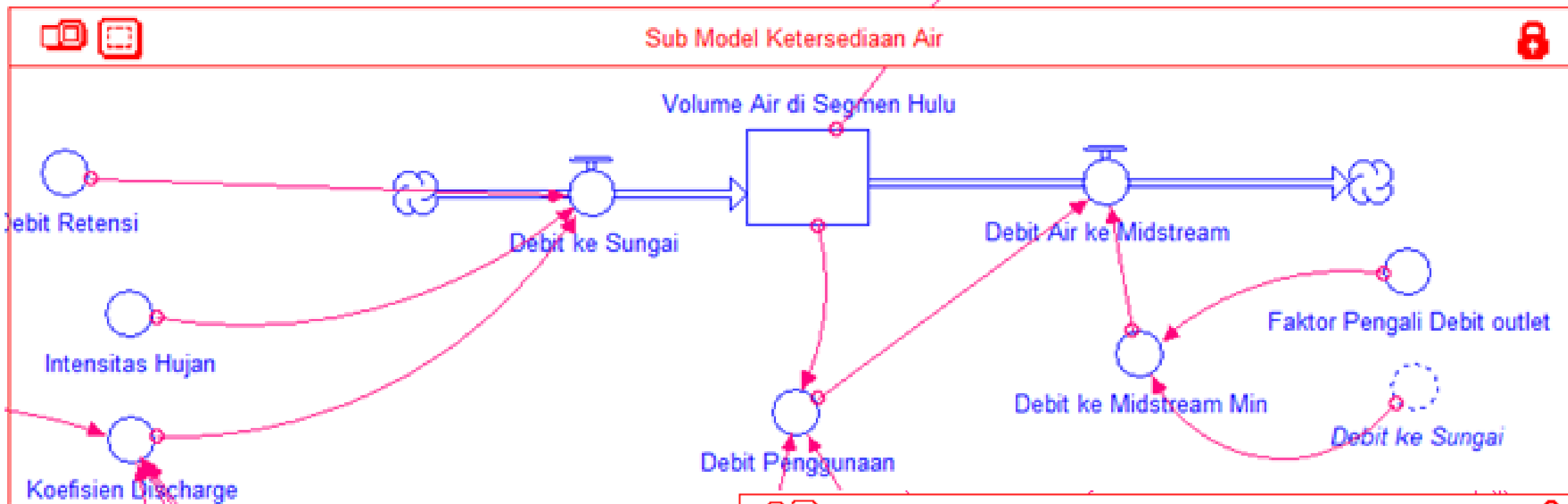


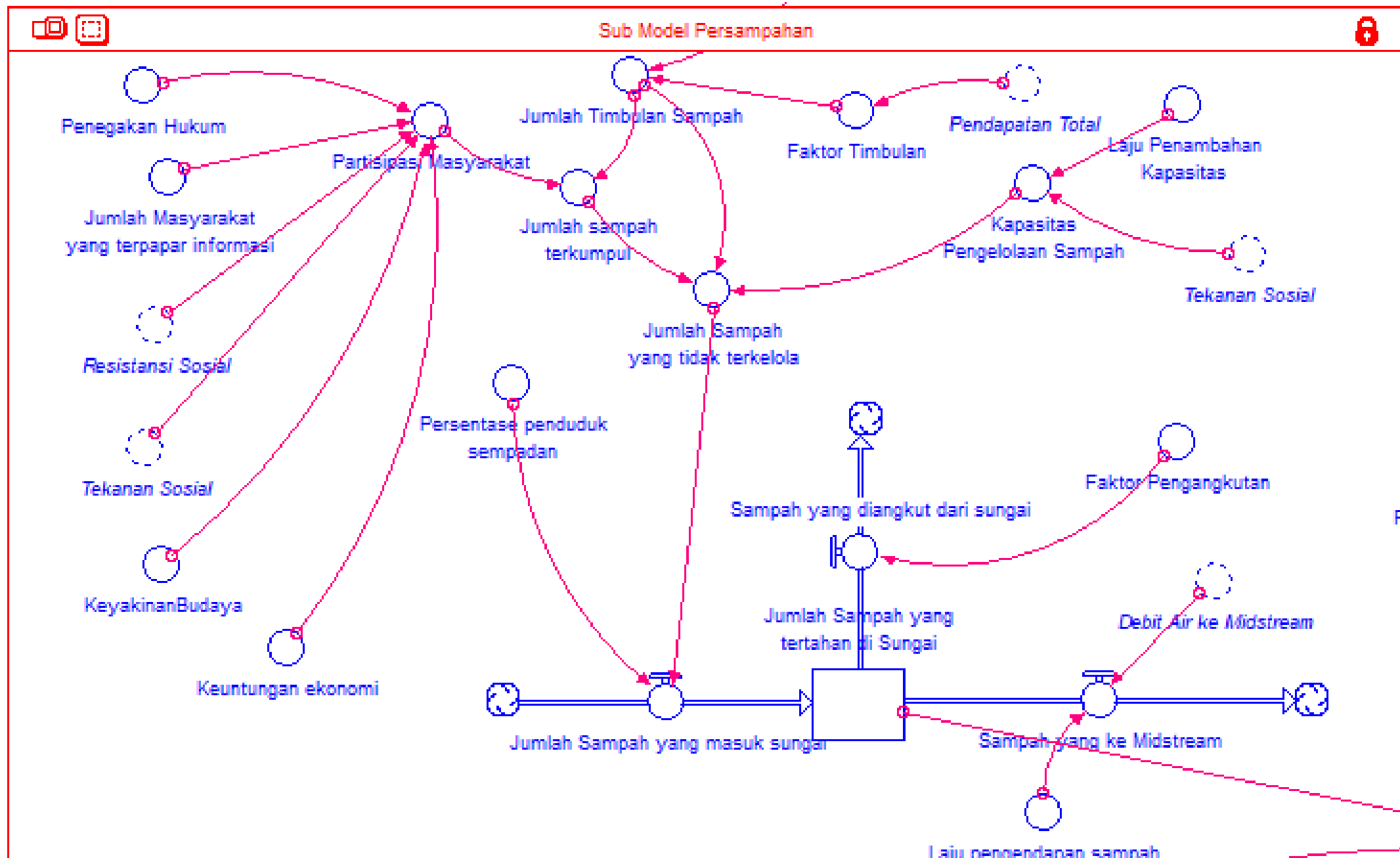
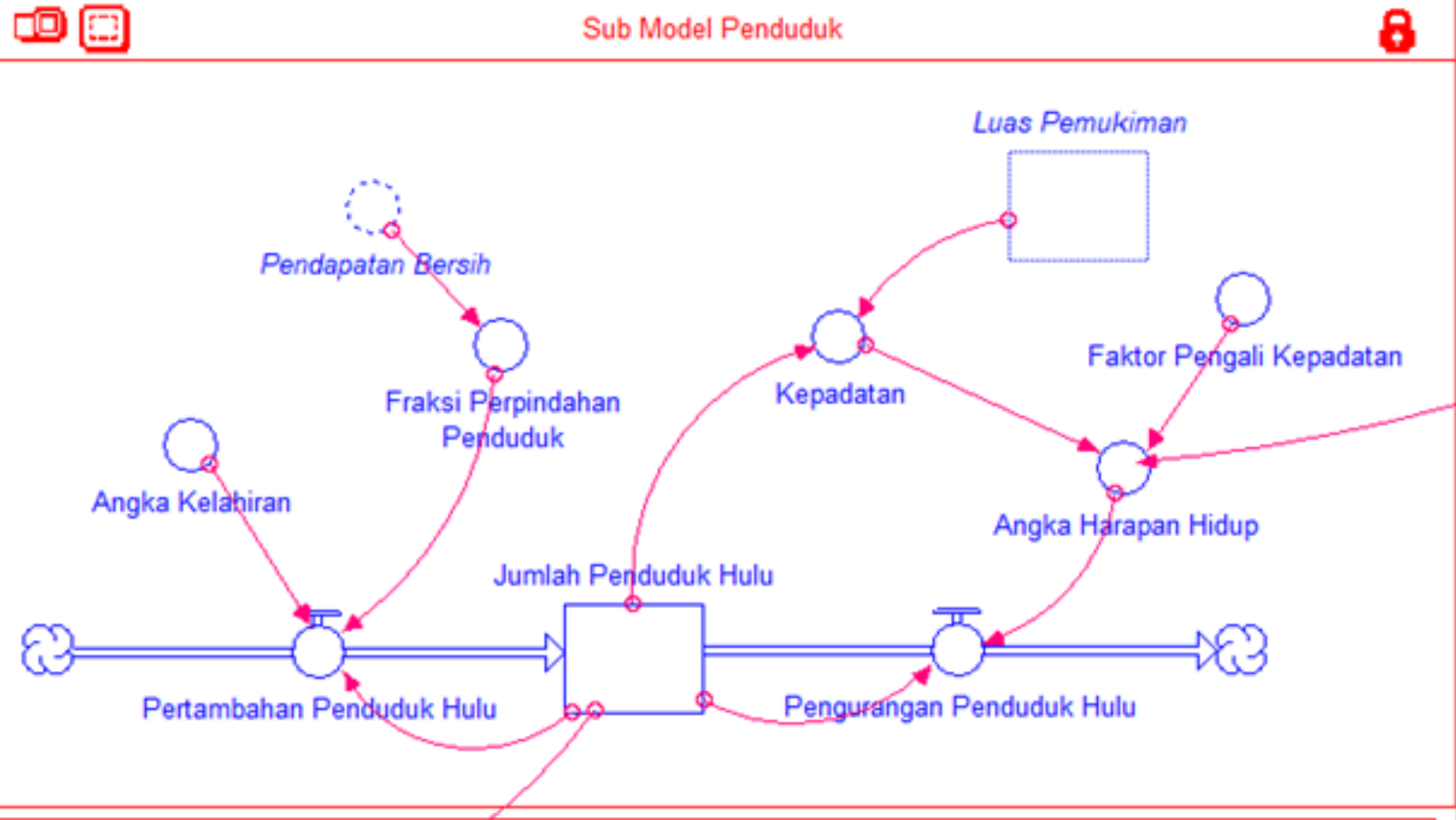
STAKEHOLDERS ANALYSIS

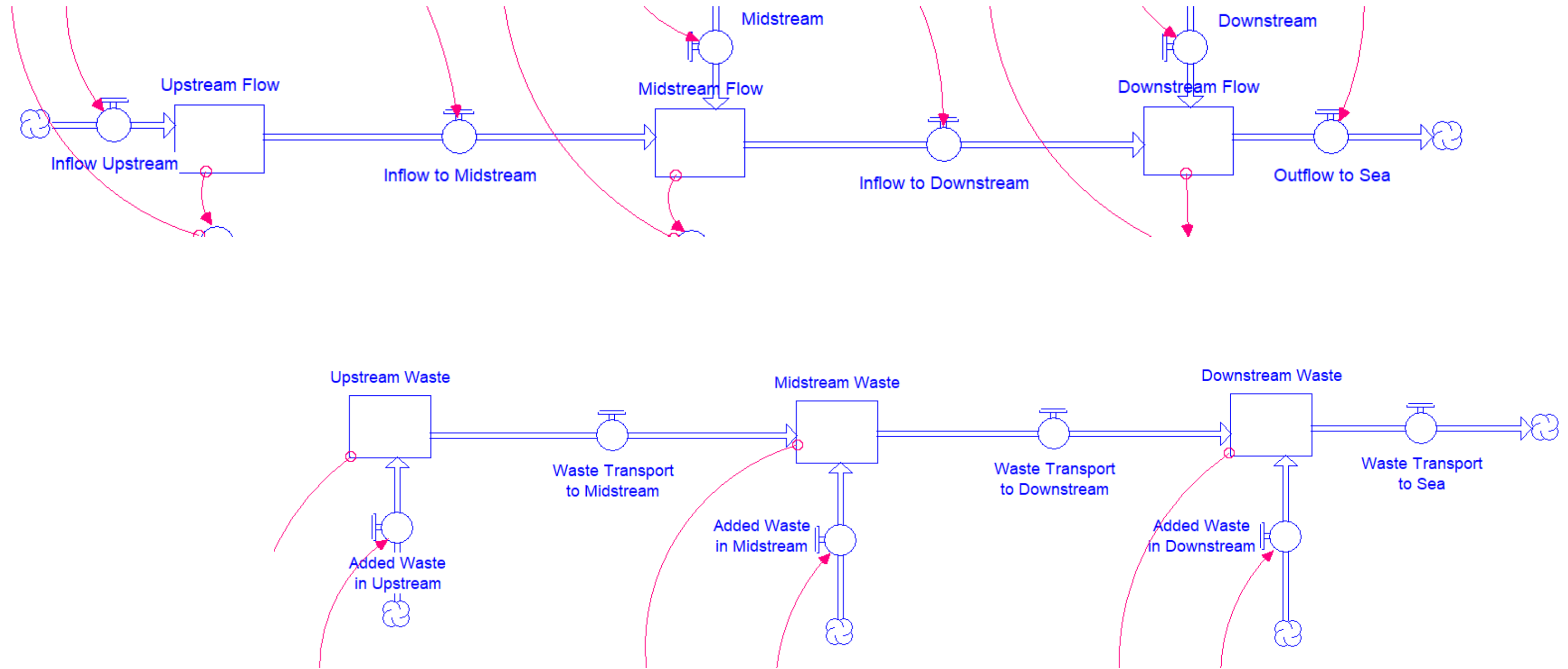


PROBLEMS MAPPING









NO FEEDBACK to COUNTER THE GROWTH!

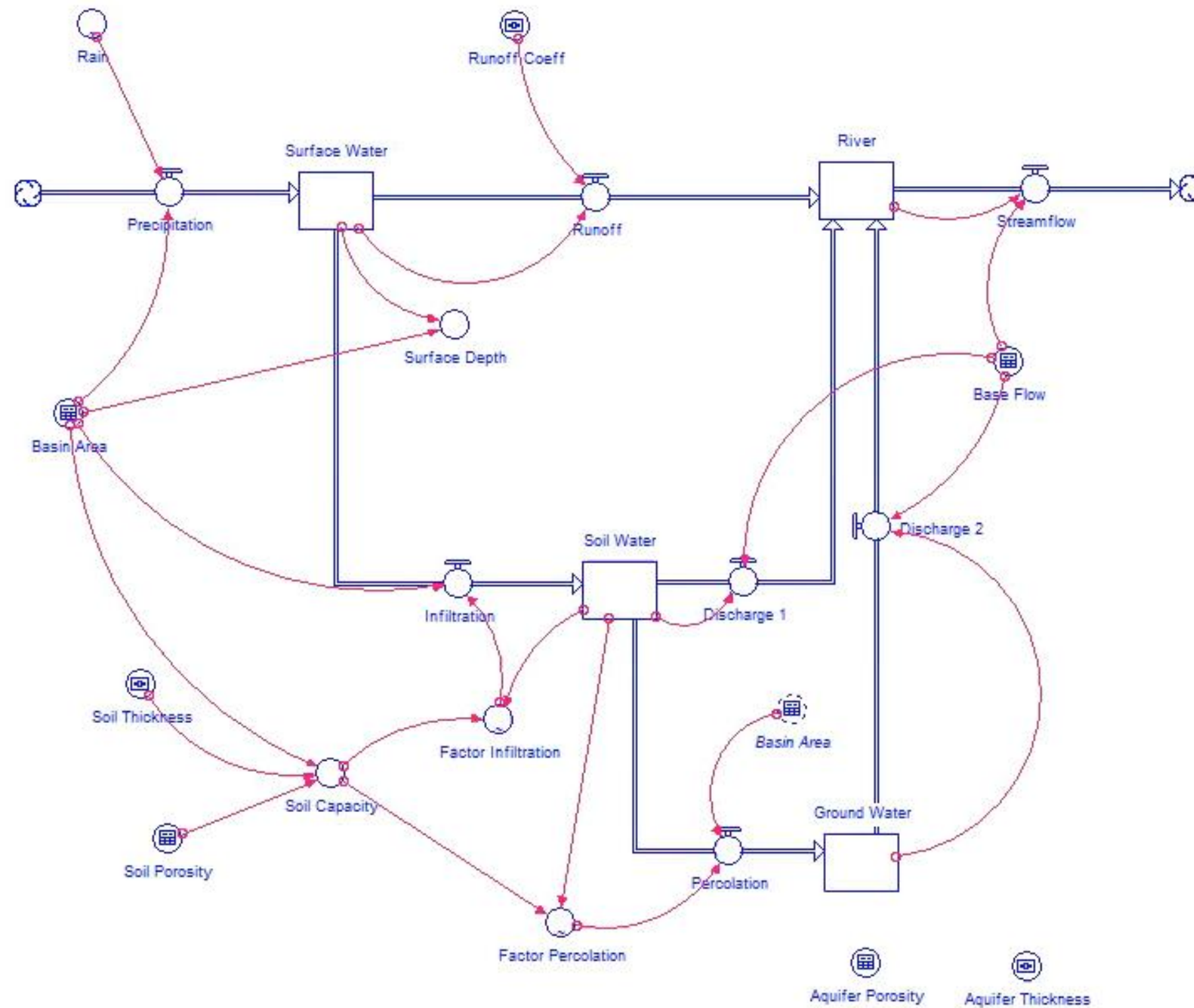
WELANG ASIK (asik) MANTAB (mantab)

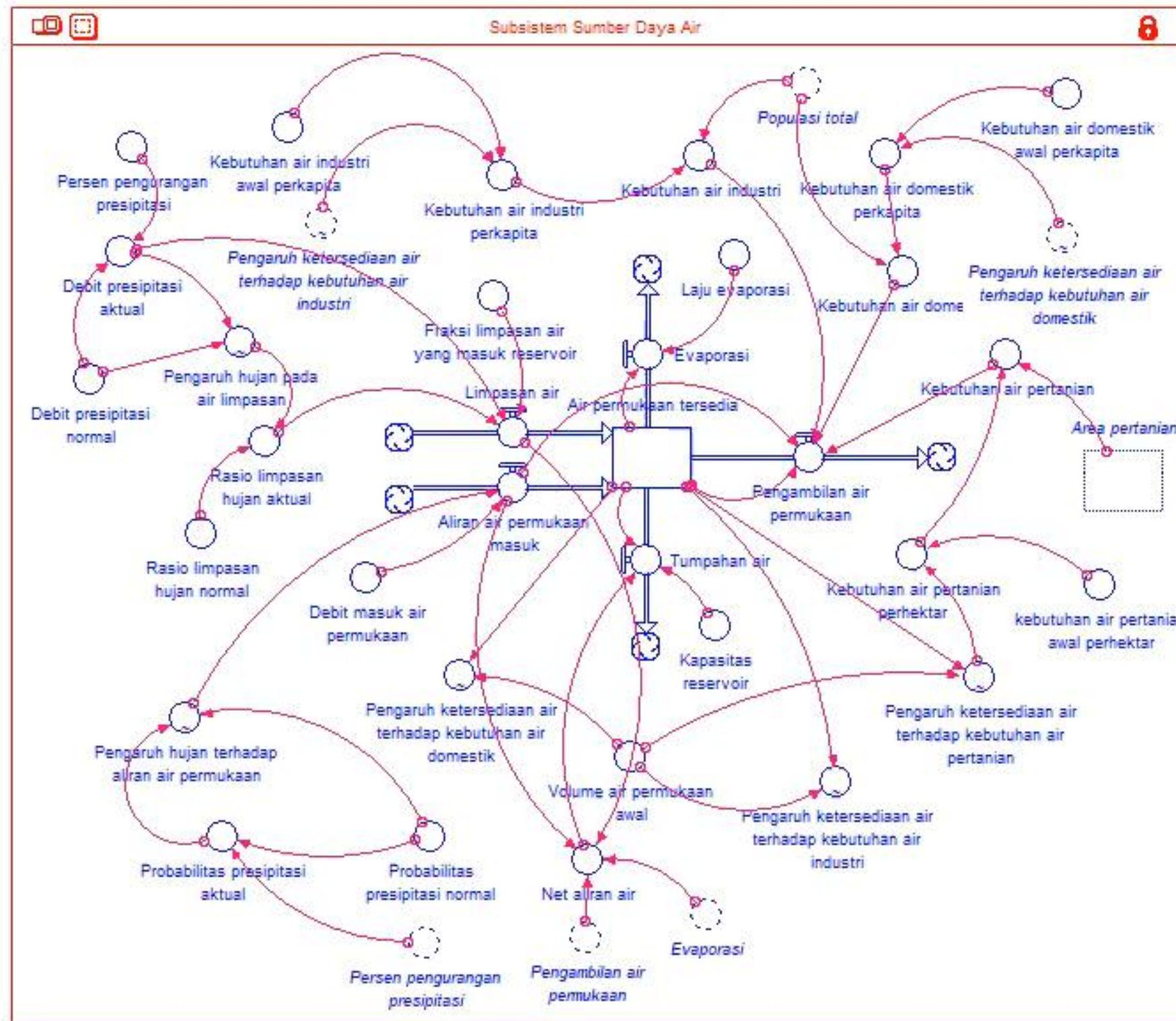
*"Aklimatisasi Sistem terIntegrasi Keseluruhan (dengan
mengedepankan) peMANfaaTAn Bersama"*

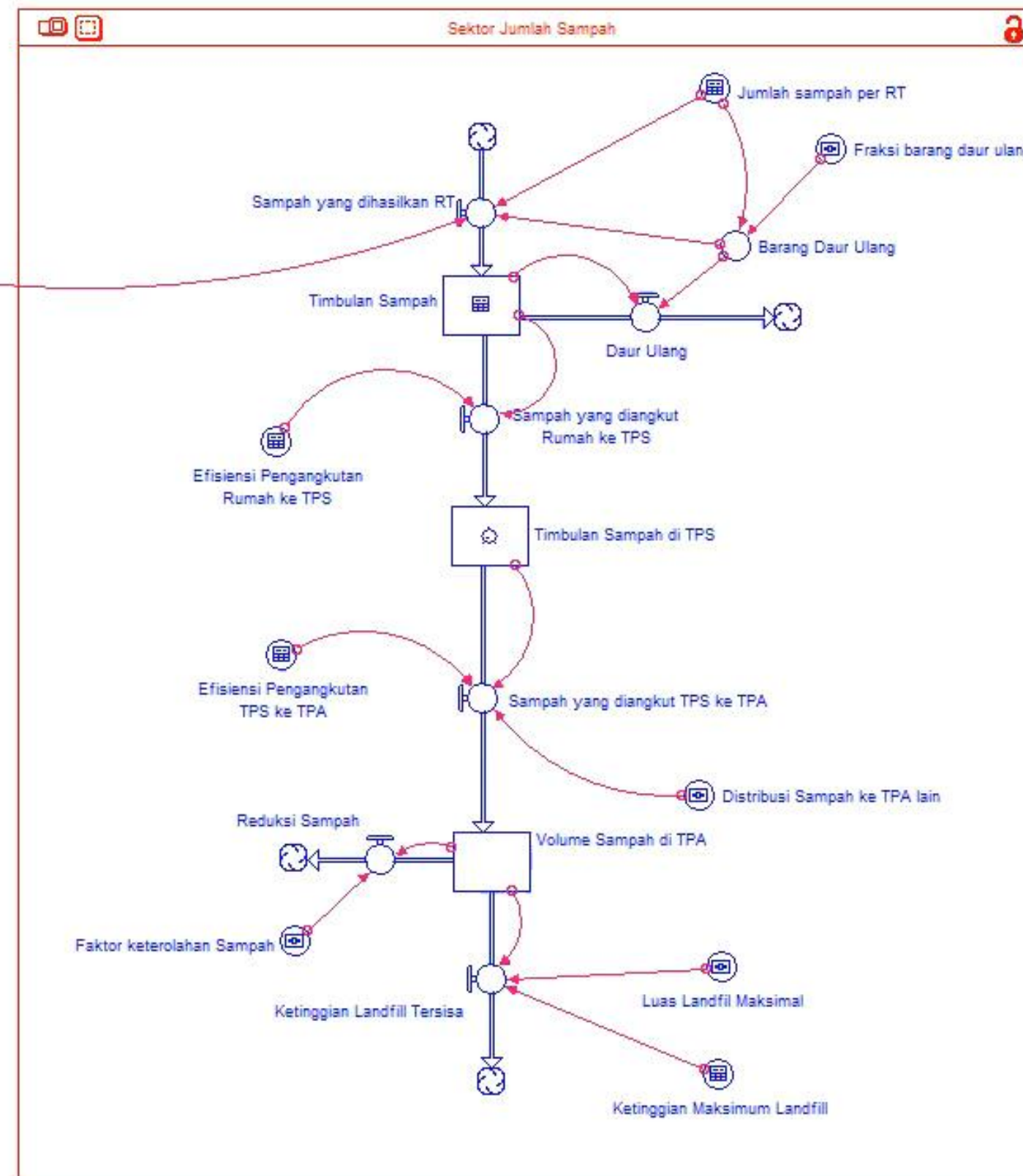
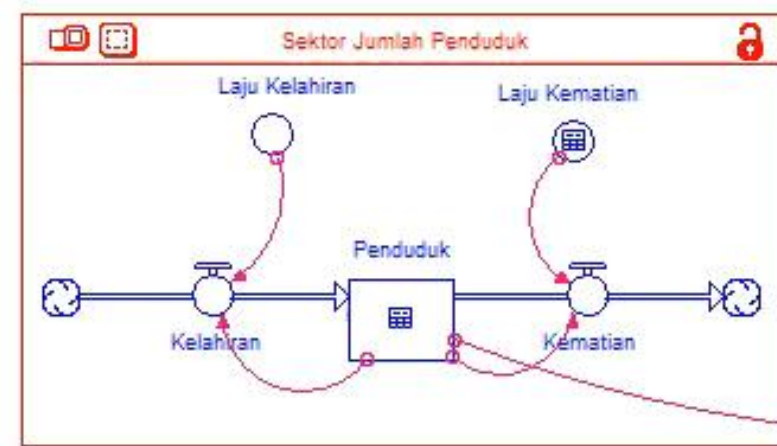


DISCLAIMER

SYSTEM DYNAMICS







CONSIDERATION



HYDRAULICS
AND
HYDROLOGY

SOCIO-
ECONOMICS

SPATIAL

Concept

OBJECTIVES



5 YEARS

Increasing Welang
Watershed resiliency
against threat of flooding



25 YEARS

Restoring watershed
function with community-
based approach



50 YEARS

Integrated and
sustainable watershed
management

SHORT TERM STRATEGIES



Frequency of
flood events
decreases

Improving the
quality of
disaster
mitigation
management

Reduce
material
losses due to
flooding

- Retention pond + sediment utilization
- AWLR optimization for flood forecasting in vulnerable locations

- Revitalization of levees with the help of bamboo planting
- Retention pond
- Sediment utilization
- Normalization

Sediment Trap (using bamboo) breakwater at erosion prone point

Making special SoP for flood mitigation as well as mechanisms for dissemination of information in accordance with local culture that is socialized

- Centralization of education to the community around the set-backs
- The establishment of local youth communities care about the waste that is educated related to organization and socialization
- Provision of large trash cans right on the border of the river

MID TERM STRATEGIES

Optimal utilization of water resources

No practice of dumping waste directly into rivers
(including waste and liquid waste)

There is already a good institutional of river management
among stakeholders

Decreased flood insecurity level to moderate throughout
the watershed

Strengthening regulation and enforcement of regulations
on land use (0% violations)

Water quality meets the standards along the watershed

APPROACHES

POLICES

- Prohibition of groundwater use and mandatory provision of PAH/water source from PDAM/mandatory to provide water reservoirs for 5% of the total land.
- Conditional 0% interest loan for farmers who are willing to follow the plan of planting period to provide alternating retention ponds and/or types of planted crops
- Utilizing water from retention ponds efficiently
- In addition to waste disposal permits, each industry must have an IPAL and report the results for inspection
- Granting special authority to communities/institutions/individuals to report potential pollution for inspection if it provides sufficient evidence
- Reporting plans for planting methods to obtain loans and/or subsidies
- Community-based waste management, where entrepreneurial training is provided
- Each sub-district has TPS 3R and/or waste banks
- Obligation for buildings around the river to face the river
- Meeting between stakeholders periodically
- One watershed one policy
- Law enforcement related to land use
- Educating the community about the appropriate land use designation
- Relocation of people living on the set-backs of the river
- RTRW improvement based on carrying capacity including components of flood management areas
- Koperasi simpan pinjam with 0% interest and high-interest savings for farmers who are willing

TECHNOLOGIES

- Manufacture of rainwater reservoirs for industrial and domestic purposes (MCK)
- Rainwater harvesting (PAH) such as in Kampung Code Yogyakarta
- Socialization and encouragement of the manufacture of infiltration wells, PAH, and/or biopore
- Making bypass connected with soft structure (bendung)
- Optimization of domestic liquid waste management depending on location and habits of residents (can use septic tanks, wetlands, or communal IPAL)
- The loan of recycling machines is specialized for each sub-district in each TPS 3R built, accompanied by operational training that will be assisted in the process of selling / finding the market
- Encourage the commercialization of composting by transporting compostable household waste and can be mixed with agricultural waste to be sold as compost plantations and agriculture
- Utilization of kupang leather waste for animal feed and handicrafts
- Revitalization of the riparian area by dividing it into several levels
- Reforestation or planting of special plants (forest stands) accompanied by engineering terraced / slope of land to prevent erosion

EDUCATION

- Establishment of river school (education of small children about rivers and waste)
- BABS Campaign
- Training on nutrient efficient planting methods
- Socialization of waste management and routine programs of "Ibu-ibu asik sampah"
- Education of minimal organic and non-organic waste sorting Training on nutrient efficient planting methods

LONG TERM STRATEGIES

Increase economic added value of water resources

Water quality along the river reaches class II

100% managed waste

There is an independent community-based management

There are no flood for the 100 year plan discharge

APPROACHES

POLICES

- Optimization / tightening policy on the use of rainwater by industry and housing
- Strengthening the organization of sediment management into bricks and/or compost by allocating industrialization, training, and market formation of irrigation channels for fish cultivation
- Sanctions and Criminal for those who do waste disposal in the river
- Application of taxes for certain product materials
- Policy update on the division of roles among waste management stakeholders, to determine the limits of the role of governments, consumers, and producers (related to their respective obligations) by creating a special commission involving all stakeholder components
- Strengthening incentive and disincentive programs for every component of society, in accordance with the concept of disaster trading program.
- Optimization of business incubation program of waste management and banning non-residual waste into landfill so that only residual waste enters the landfill (example: MRIF, Incineration, Compost, Pyrolysis, and so on)

TECHNOLOGIES

- Utilization of high discharge water flow for power plants
- The utilization of water/river buildings themselves for tourism
- Industrial Integrated IPAL
- Domestic IPLT with 100% service level
- Optimization of septic tank and wetland use in upstream domestic waste treatment with 100% service level
- Optimization of water reuse for domestic, industrial, and office use
- Adding water intake for raw water from Welang
- Optimization of riparian space utilization (undisturbed forest; managed forest; runoff control) and partial utilization of riparian for temporal parks, so that people can be more hesitant to damage / dispose of waste

EDUCATION

Environmental management curriculum becomes mandatory curriculum in schools

Featured Programs

4 Featured Programs

- 
- Barrage, coastal reservoir

- 
- Community-based waste management, where entrepreneurial training is provided for waste management for the community (village entrepreneurial incubator)

- 
- Applying conditional 0% interest loan to farmers who are willing to follow the plan of planting period to provide alternating retention ponds and/or types of planted crops (applying permaculture in Pasuruan district) during the period of bero.

- 
- Disaster trading program: Making regulations (based on agreement) relating to the allocation of costs to be paid by each sub-district for its contribution to destruction in its downstream, and the payment of the levy is given to the sub-district that recovers the damage / receives the damage. (Encouraging a centralized reporting system through WhatsApp and / or applications for reporting of pollution, rubbish, and / or water volume that exceeds the permitted limits or can also use an automation system, such as a monitoring camera / image sensing for water level, water-color, and the presence of garbage). The main principle is mass equilibrium, in which each sub-district is only allowed to issue something downstream from the upstream plus the allocation factor that must be tolerated. If it exceeds this limit, there is a currency conversion based on the predicted downstream impact.

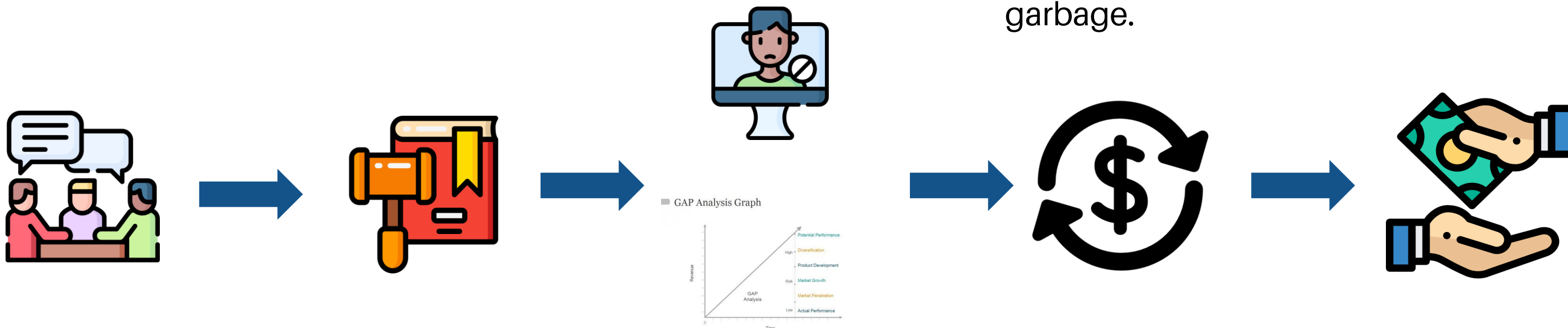
1. Disaster Trading

The main principle is **mass equilibrium**, in which each sub-district is only allowed to release limited amount of pollutants or water volume to downstream by considering the allocation factor that should be tolerated.

If the Districts exceeds this limit, there is a currency conversion based on the predicted downstream impact.

1. Making regulations (based on agreement) relating to the allocation of costs to be paid by each sub-district for its contribution to destruction in its downstream, and that payment is given to the sub-district that recovers the damage / receives the damage.

2. Encouraging a centralized reporting system through WhatsApp and / or applications for reporting of pollution, rubbish, and / or water volume that exceeds the permitted limits or can also use an automation system, such as a monitoring camera / image sensing for water level, water-color, and the presence of garbage.

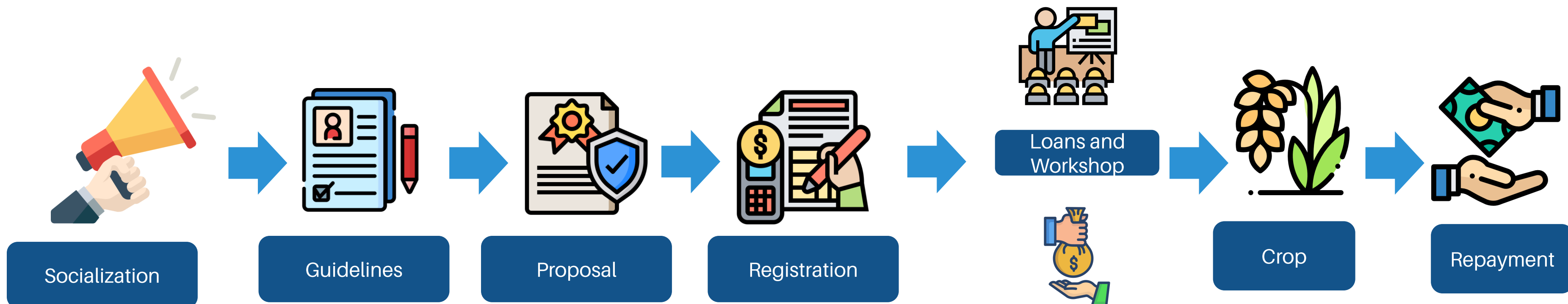


2. Union for Savings and Loan

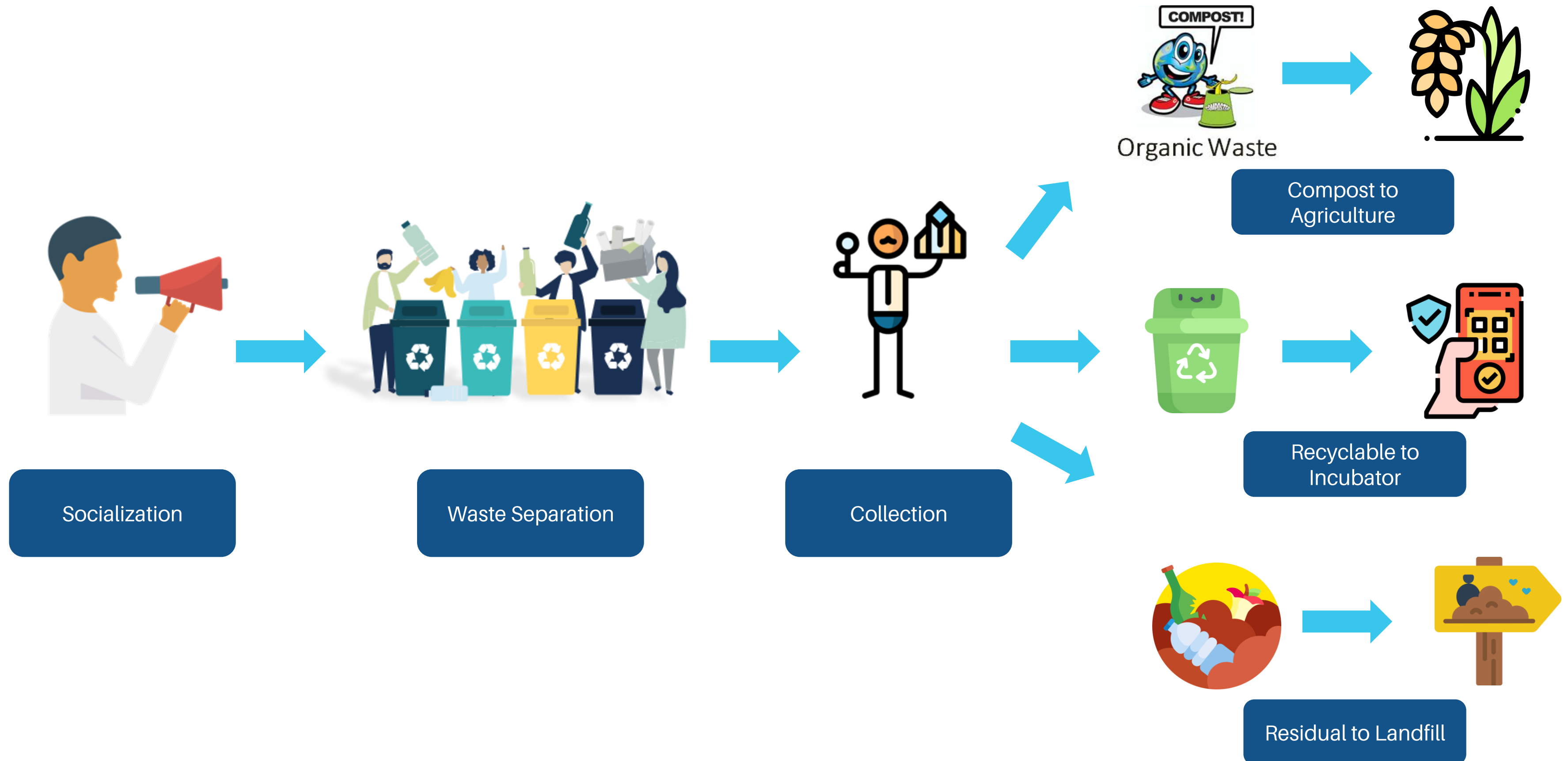
Applying conditional 0% interest loan to farmers who are willing to follow the plan of planting period to provide alternating retention ponds and/or types of planted crops (applying permaculture in Pasuruan district) during the period of bero.

Main Purposes:

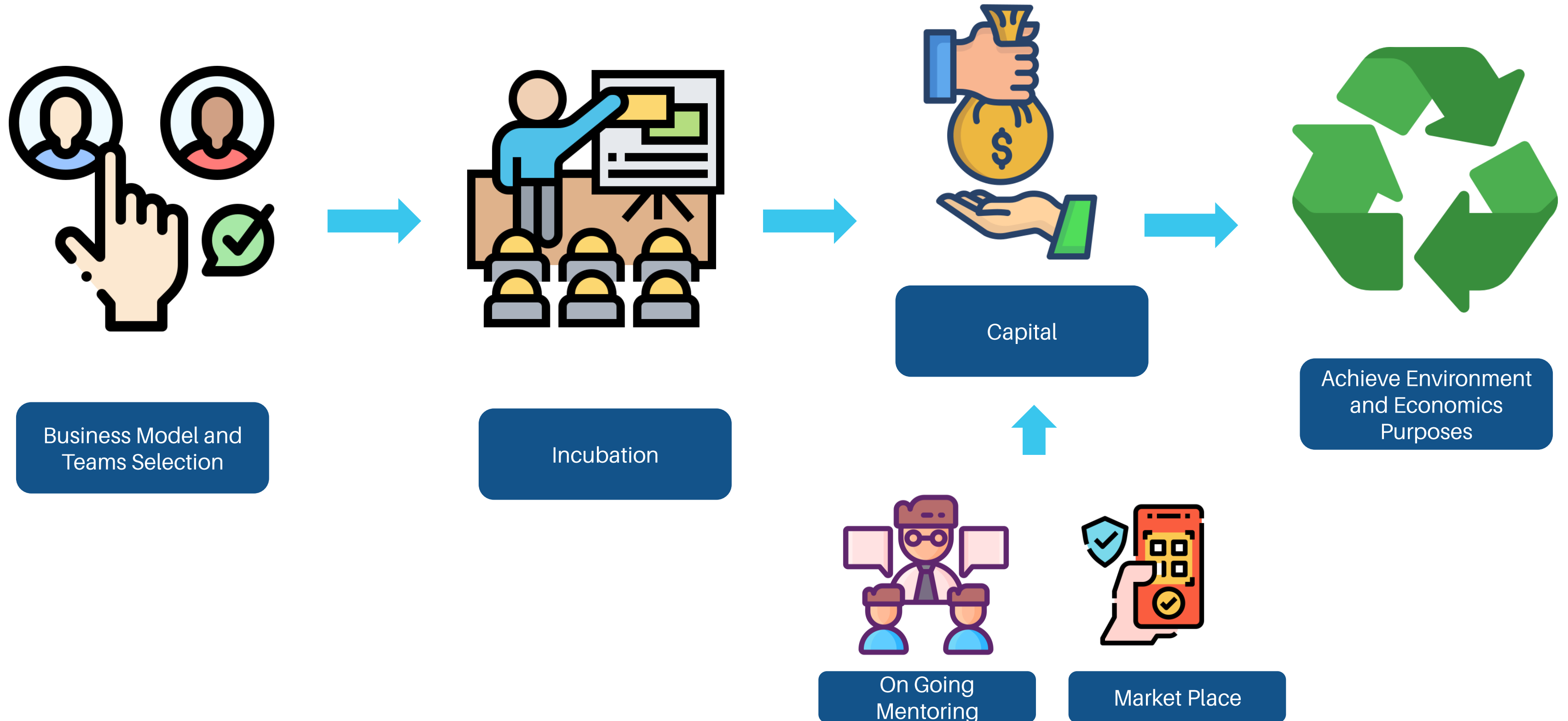
1. Restoration of critical land
2. Provision of additional storage volume for river runoff
3. Riparian recovery
4. Make it easy for farmers to get started



3. Waste Management Incubator



3. Waste Management Incubator





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#WelangAsik2Mantab2