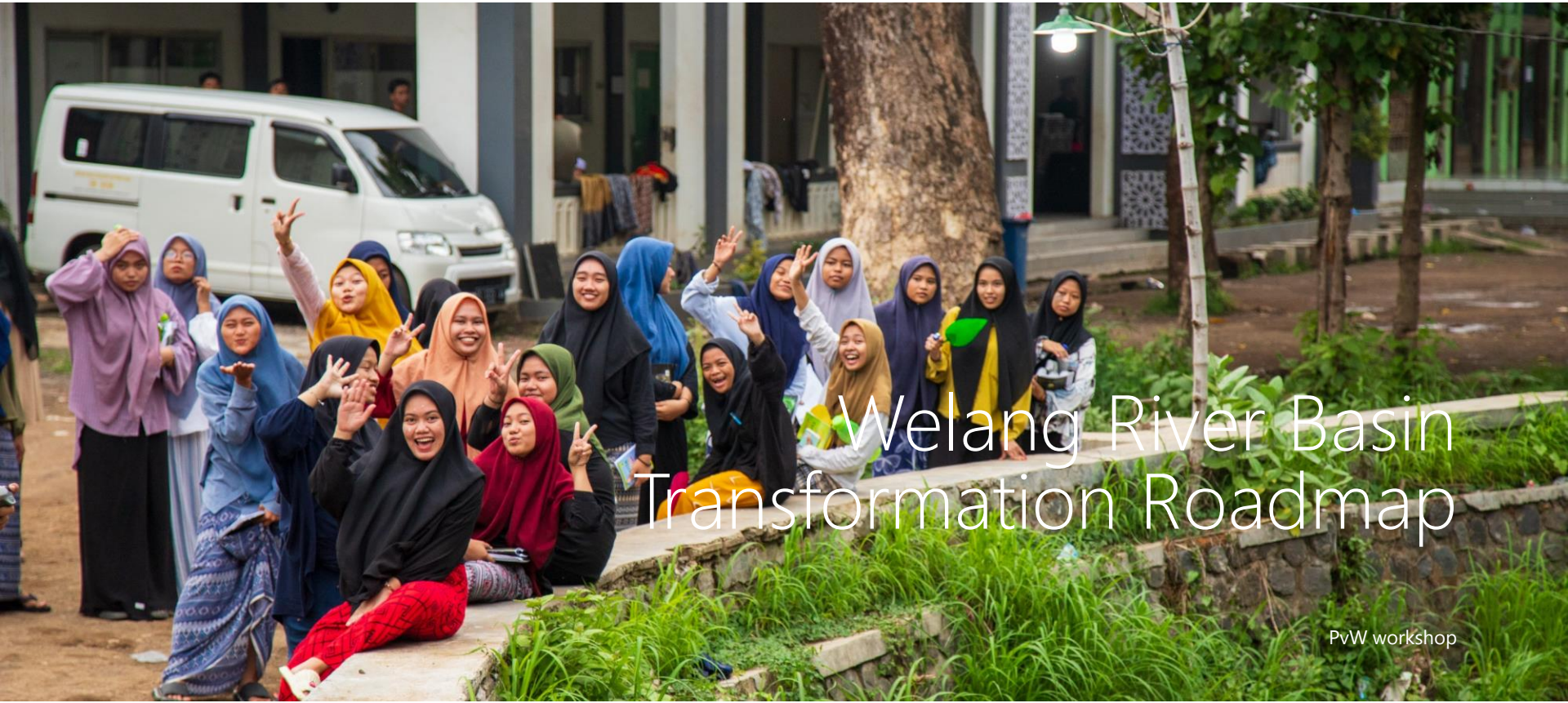
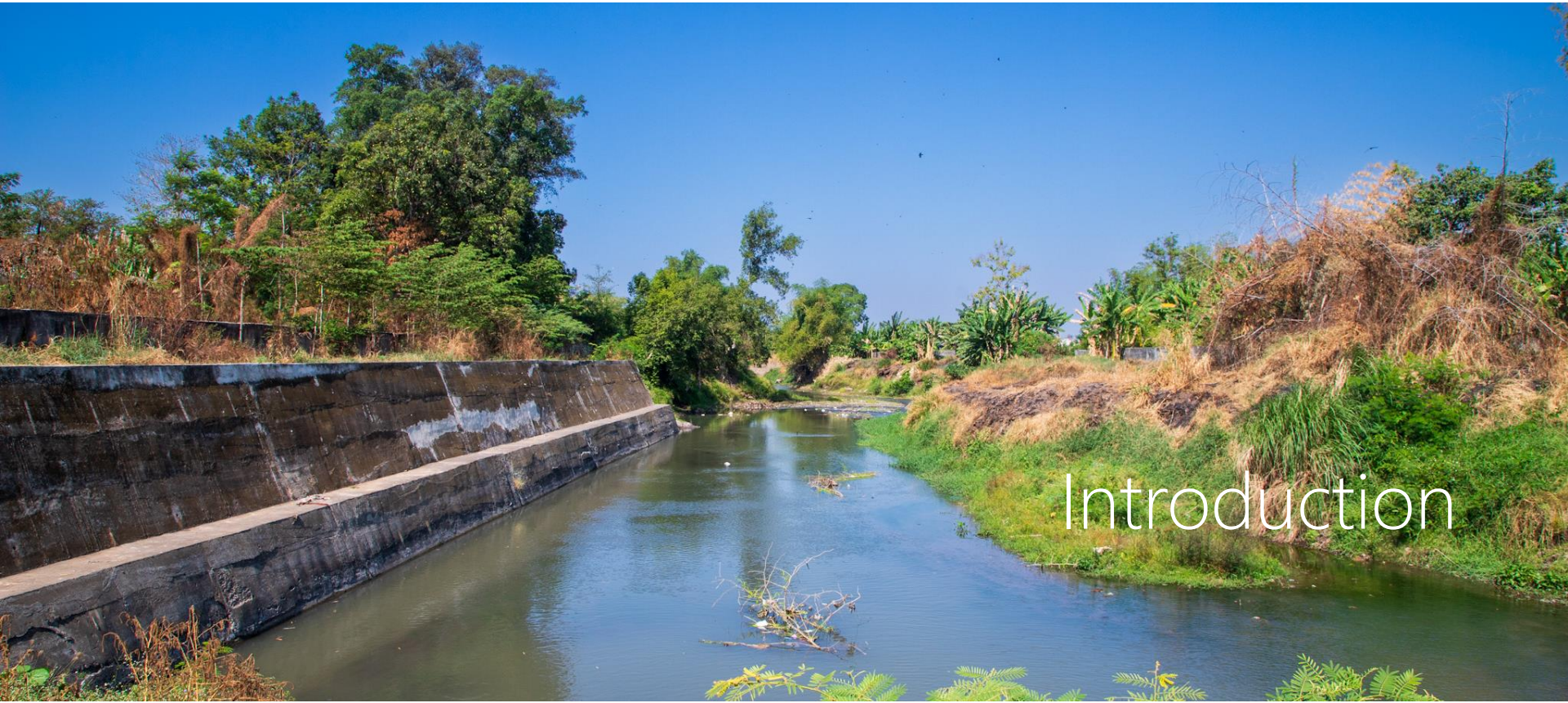


Welang River Basin Transformation Roadmap

PvW workshop

Intern gebruik



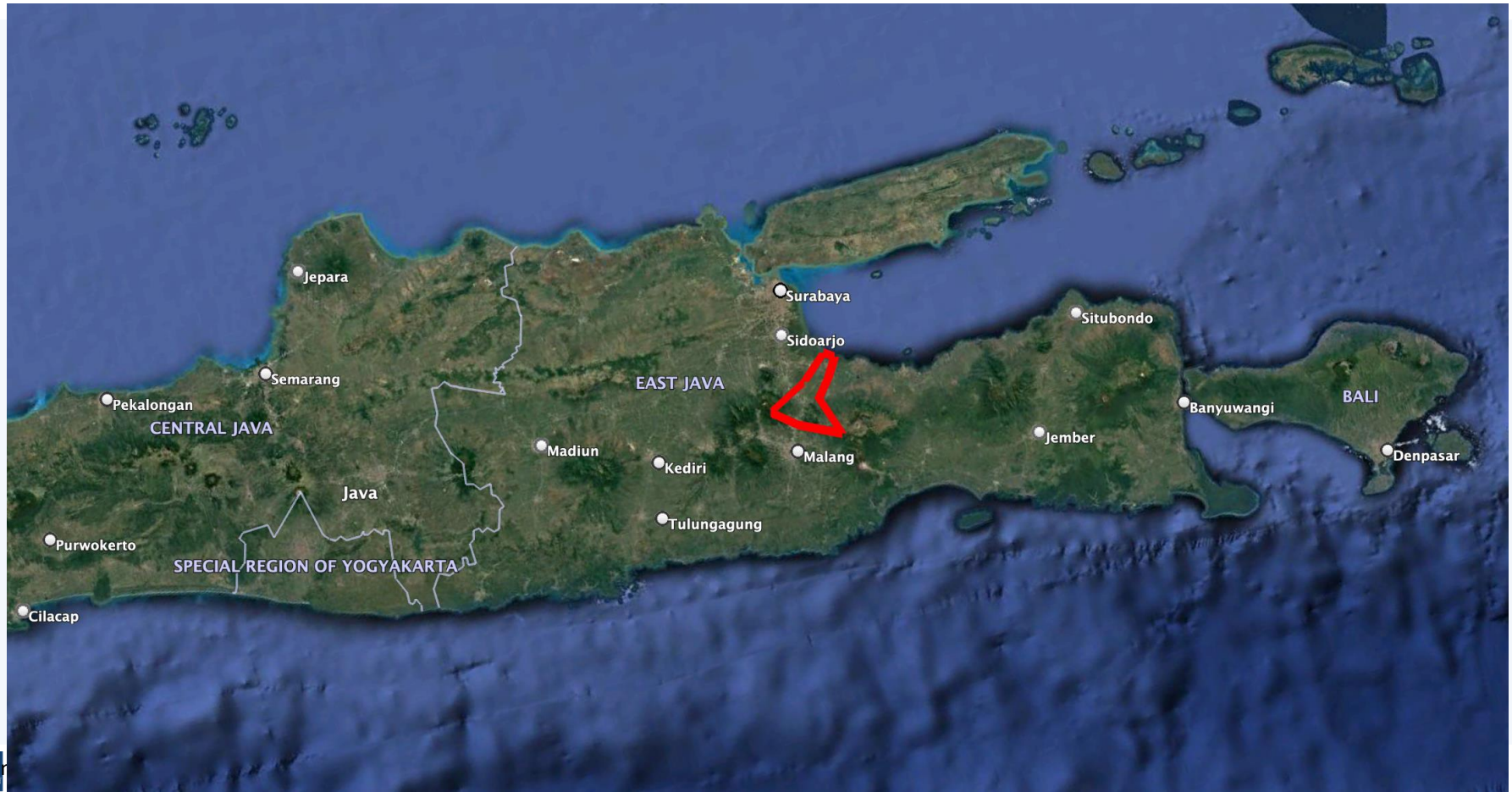
Introduction

Introduction

- Welang Phase 1: Masterplan for the Welang watershed

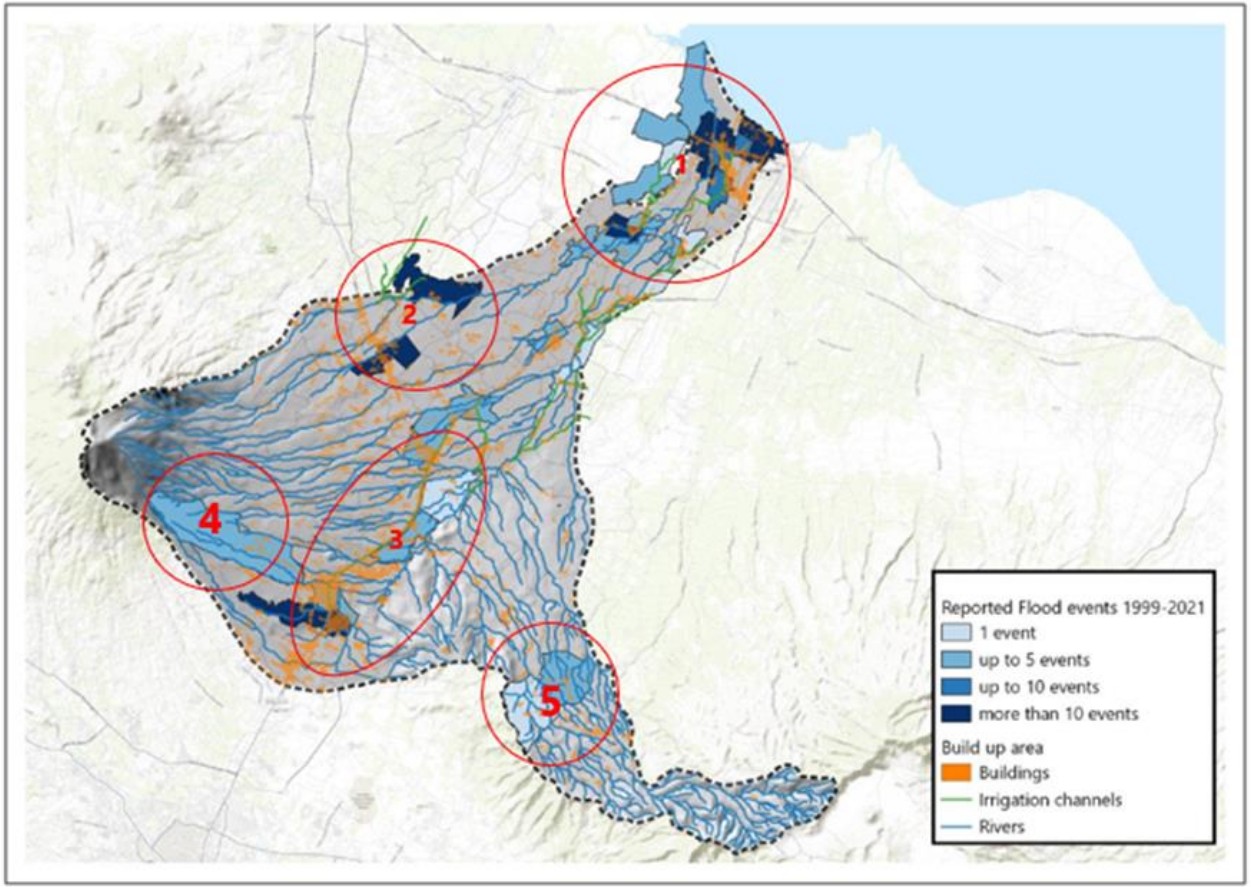
- MoU Water: PUPR EJP

- Welang Phase 2: Witteveen en Bos, Aidenvironment/Sangga Bumi Lestari Nuffic
- in collaboration with EJP PUSDA Malang University, schools, private sector, communities: Co-creation


Jepara
Surabaya
Situbondo
Sidoarjo
Semarang
EAST JAVA
Pekalongan
CENTRAL JAVA
Banyuwangi
BALI
Jember
Madiun
Malang
Denpasar
Kediri
Java
Tulungagung
Purwokerto
SPECIAL REGION OF YOGYAKARTA
Cilacap

Issues in the catchment

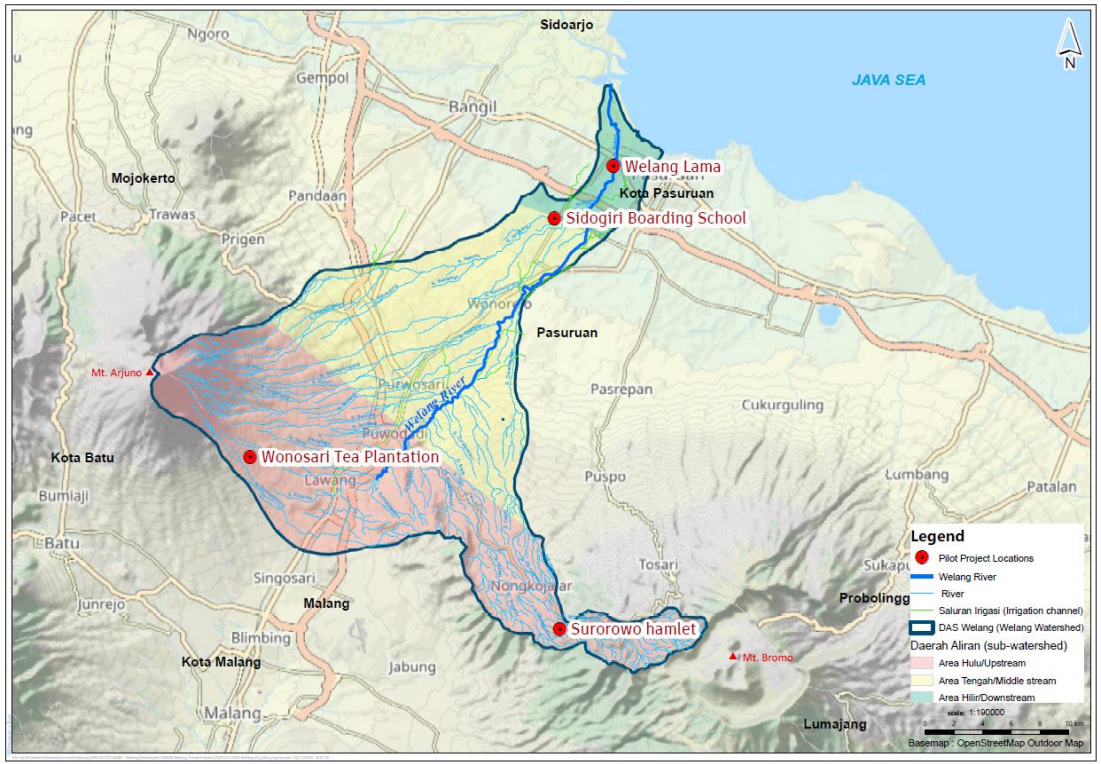
- Flooding
- Waste
- Upstream erosion
- Reduction of groundwater reserves



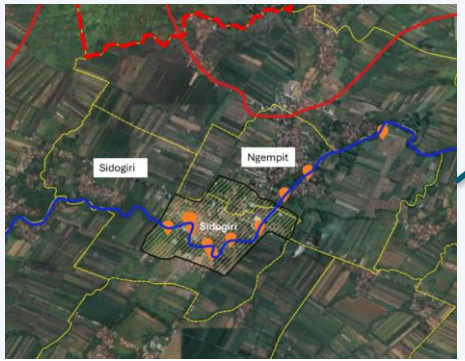
Pilot projects

- 1 downstream, 1 mid-stream, 2 upstream

- Flood protection, water conservation, soil conservation, waste



Mid- and Downstream Location



- Welang Lama
- Sidogiri

Welang Lama

- Goal: protection of Sukorejo village, reduction of waste in river

- Co-creation approach in 3-4 steps
- Involvement of students and universities

Intern gebruik

Recommended measures through co-design process

Structural

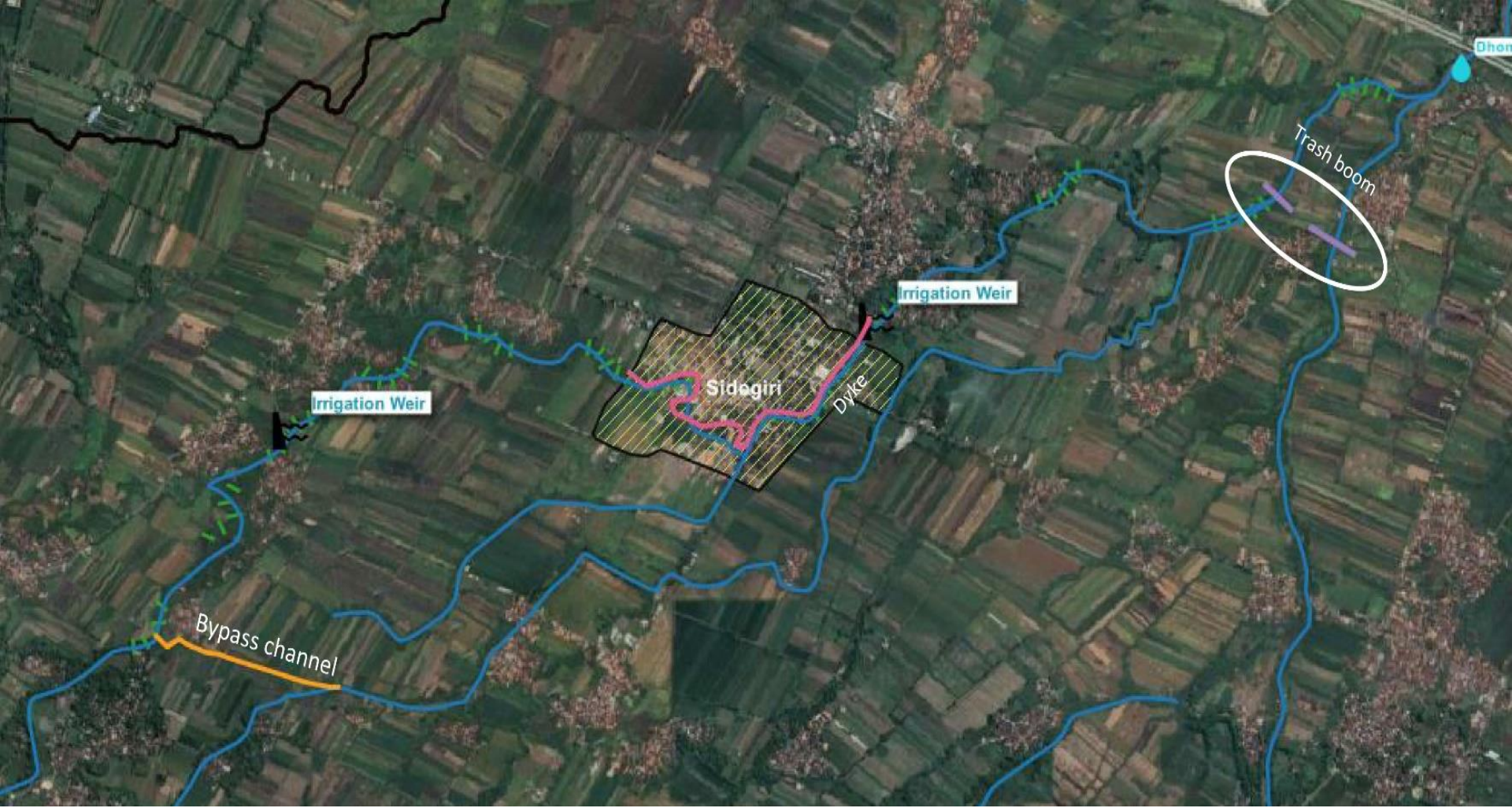
- First stage: Dike construction to protect immediate vicinity of the communities surrounding Welang Lama
- Second stage: Implementation of retention basins

Non-structural

- River clean-up
- Installation of trash booms
- Early warning system

Sidogiri

- Goal: protection of Sidogiri boarding school district, including access to river, reduction of waste in river
- Co-creation approach in 3-4 steps
- Involvement of students and universities


Trash boom
Irrigation Weir
Sidegiri
Dyke
Irrigation Weir
Bypass channel

Recommended measures through co-design process

Structural

- ASAP: Closing the gaps!
- First stage: Bypass channel construction upstream of Sidogiri
- Second stage: Dyke construction in Sidogiri

Non-structural

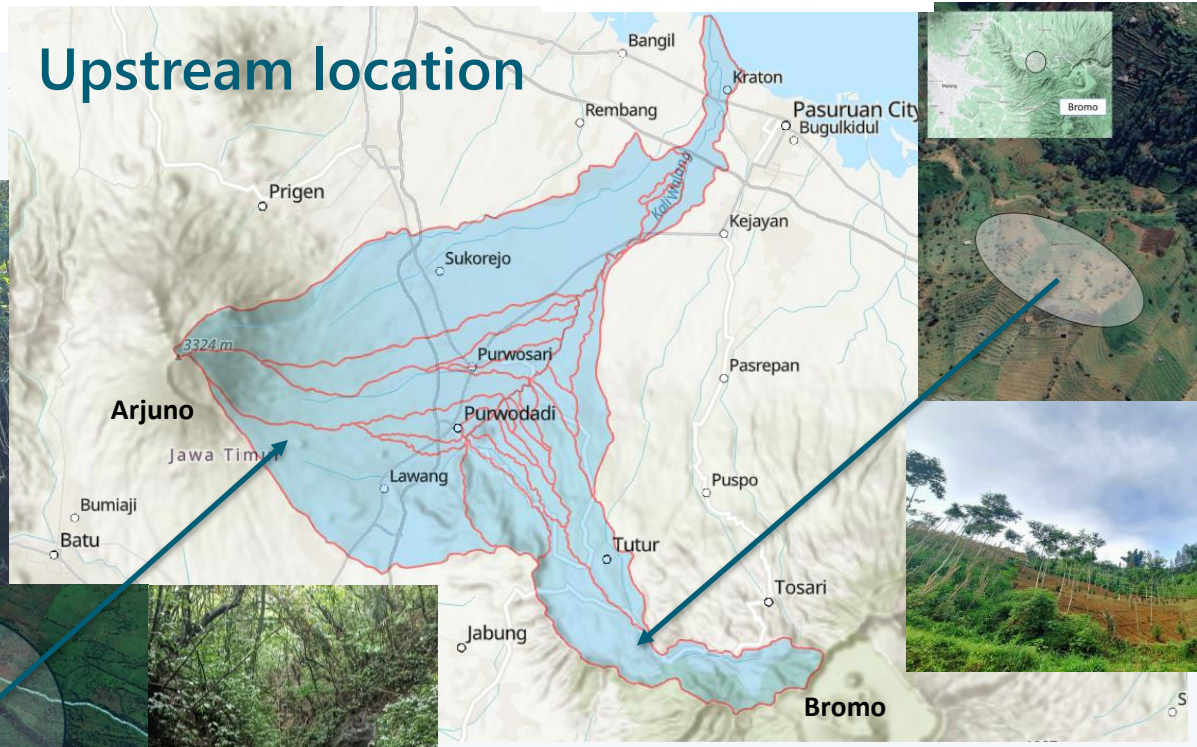
- Trash removal/early warning system and the like less effective here due to the nature of the flood wave (very short time-period)

Witteveen + Bos | aid environment | Nuffic southeast asia

Surorowo (Bromo side)

Wonosari
(Arjuno side)

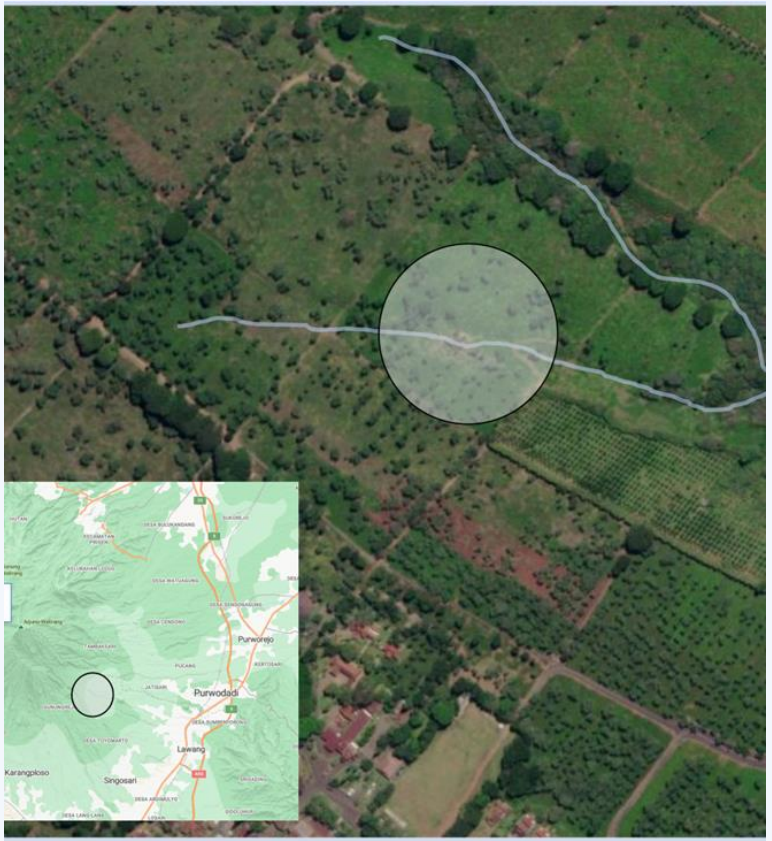
Upstream location



- Wonosari is located in Tea Plantation area. Rocky and heavily vegetated.
- Surorowo is located in Perhutani-owned land cultivated by local communities. Conversion of high-slope land for agriculture.

Wonosari tea plantation

- Goal: water conservation in upstream sections, using low-tech techniques
- Demonstration project
- (Involvement of students and universities)



Implementation point 1

Gully plugs made of bamboo

Gully plugs made of branches

Implemented water trap

Type of structures	Unit
Branches-made gully plugs	37
Bamboo-made gully plugs	7
Water traps	66
Gabions	1
Total	111

Implementation point 2

Implementation at Wonosari Point 2

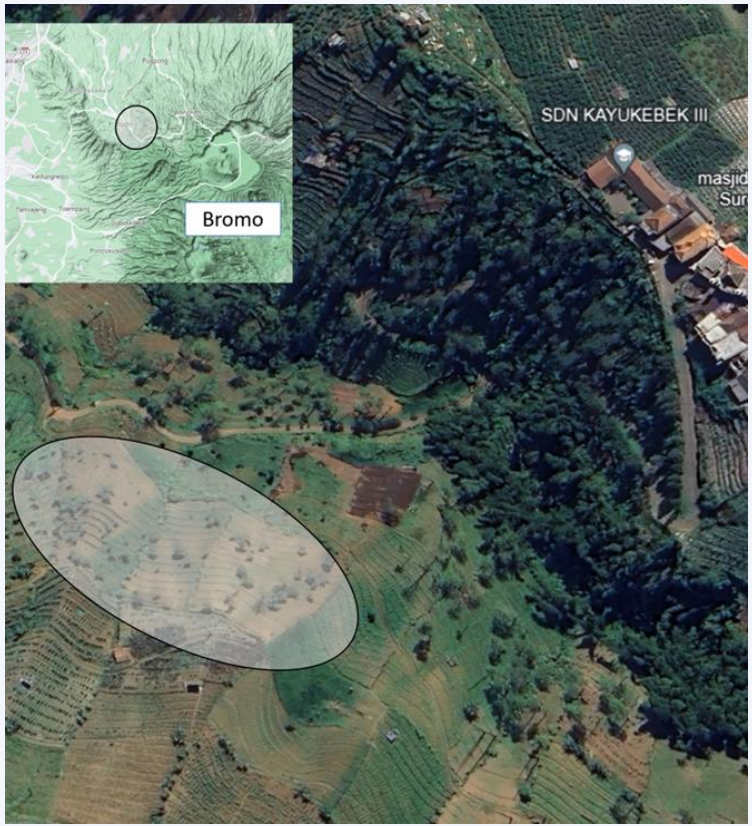
Implemented stone-made gully plugs (left) and water traps (right)

Installation of gabions

Type of structures	Unit
Stone-made gully plugs	14
Water traps	16
Gabions	4
Total	34

Surorowo

- Goal: soil conservation in upstream sections, using low-tech techniques
- Demonstration project
- (Involvement of students and universities)



Witteveen + Bos

aid environment

Implementat

Nuffic southeast asia

imple, low-cost methods, easy to replicate, and sing local materials

8 Trucuks, made by local residents
1 Gabion, made by UPT workers

Implementation point 3

4 Trucuks, made by local residents

Surorowo 3

Surorowo 2

Surorowo 1

Implementation point 1

9 Trucuks, made by local residents

Implementation point 4

6 Trucuks, made by local residents

Surorowo 4

- To turn this area **into a solid pilot to learn**, by the application of **live barriers on the slope** and to experiment with **hedgerows as a green solution for soil erosion**
- Needs **good case** for **local stakeholders to involve**
- **Runoff control**
- **Consortium** as the **driving force for collaboration** to **scale to other sites with partnership**

Image © 2024 Airbus

Intern

Disseminating water and soil conservation techniques

Terracing

Alley cropping

Combined bamboo structure with elephant grass and sandbag

Mulch application

A-frame/ondol-ondol

Source of figures:
https://vetiverindonesia.wordpress.com/wp-content/uploads/2012/01/jukniskta.pdf
https://bptupdgmengatas.ditjenpkh.pertanian.go.id/posts/red-napier-grass
https://www.hants.gov.uk/thingstodo/countryside/blog/20231107-hedgerows

Discussion

Co-design/production

- Made possible by good relations with EJP PUSDA
- Targeting direct needs: flood protection, erosion protection etc