# Gender, Climate Change and Urban Systems

SESSION B: A CASE STUDY

FUTURE WATER SECURITY FOR MAKASSAR CITY, INDONESIA

# Steps in Successful Project Design

Participatory vulnerability assessments

→ Activity design

→ Stakeholder buy-in

→ Successful implementation

# Makassar, Indonesia


- Located in South Sulawesi
- 1.5 million people
- 80% water supplied from one river and a dam
- 62% population have municipal water
- Declared by government as a ‘model’ region

Figure credits:
Muh N Iman, in Kirono et al, 2014

# Objectives of the Makassar project

**Objectives of the projects were to further:**

- **Understanding of current Makassar's urban water services and challenges**
- **Understanding of current and future climate, and its potential impacts**
- **Understanding of future water supply for the City**
- **Adaptation options to improve water security for the City**

# Climatic projections for the city and relevant catchments

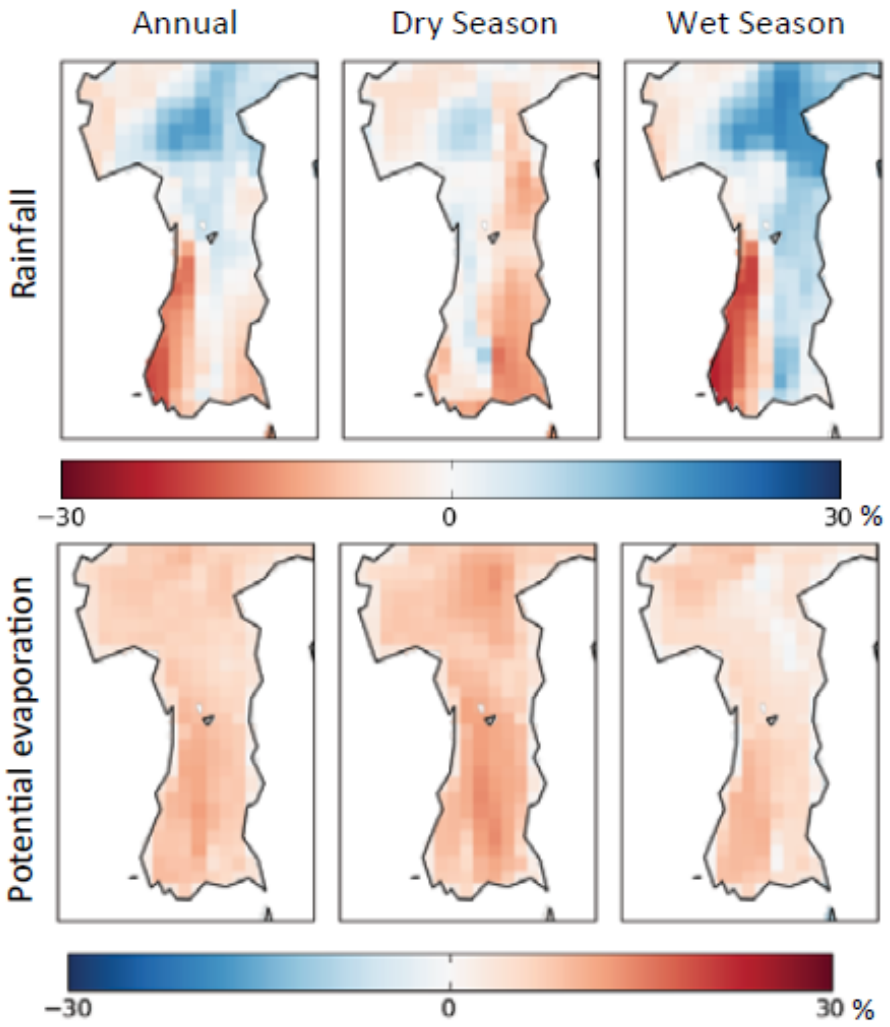


Figure credits: CSIRO, 2012

**Projected rainfall and potential evaporation changes for the 2030s relative to the 1990s for the South Sulawesi region**

**(indicated as the median of five regional climate simulations)**

**There is uncertainty in the rainfall projections but the majority of the models suggest a decrease in rainfall over the Makassar area**

# Participatory vulnerability mapping

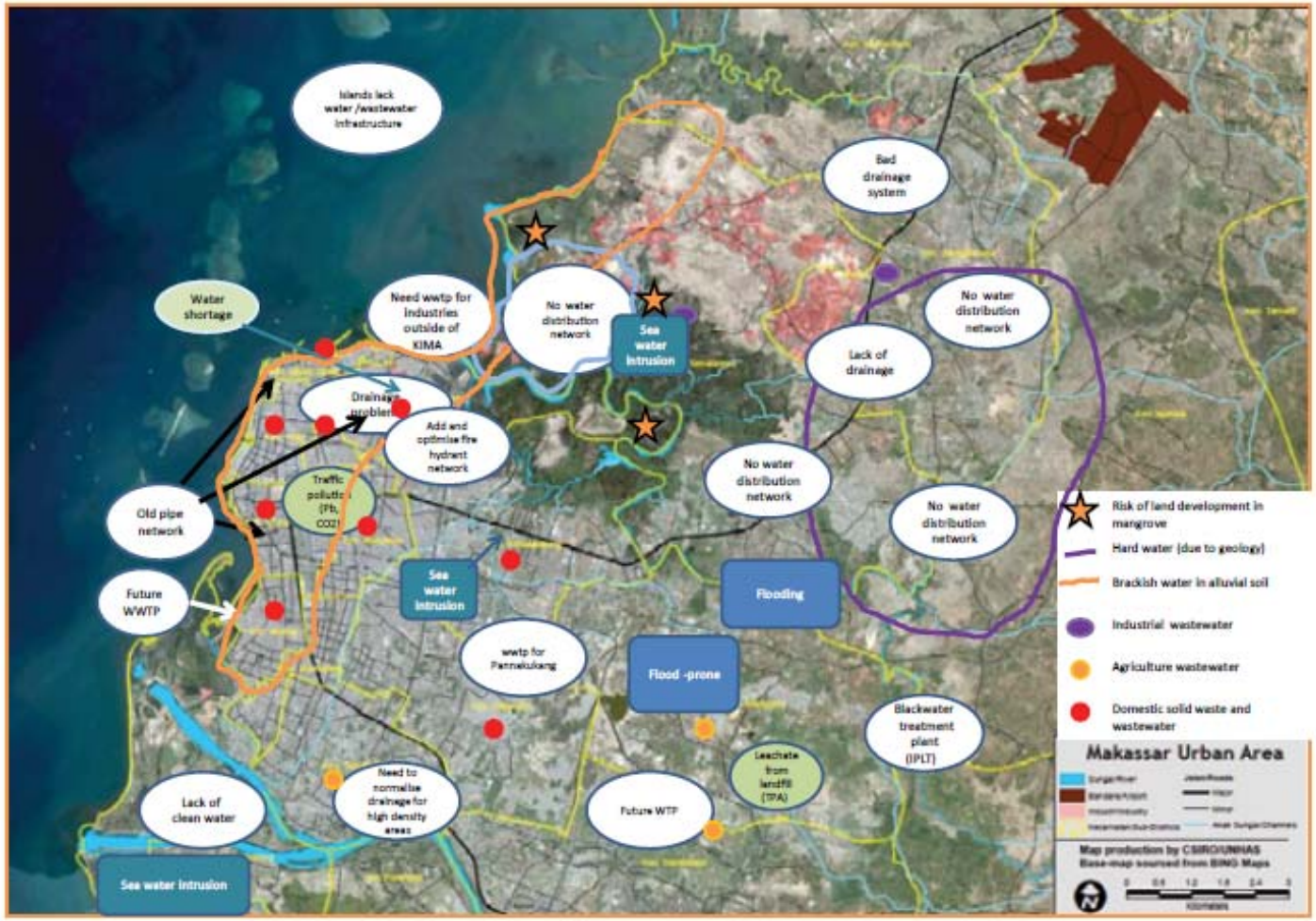


Figure credits: CSIRO, 2012

**Water security and environmental challenges in Makassar city, according to stakeholders**

**(summary of issues from a range of participatory mapping activities)**

# Design

## Hard solutions:

**Increase in the capacity of the water treatment plant**

## Soft solutions:

**Manuals for community-based waterworks maintenance**


Photo credits: Silva Larson

# Findings of the vulnerability mapping


Photo credit: Silva Larson

**One of the key vulnerabilities of the city water system that emerged during the consultation process was identified as presence of solid waste in the system**

# Community consultations

Photo credits: Xiaoming Wang

**Among other needs identified:**

**Increase community capacity by providing training on reuse of the waste products.**

# Design of additional activities

- Waste segregation and management training
- Composting
- Community re-vegetation program
- Manufacture of goods using waste products



(a) Compost bin for organic waste

(b) Greening initiative

Photo credits: CSIRO, 2012

# Design of additional activities

**Women received two types of training for the income generating activities:**

**(1) Composting, growing nursery/herbs/vegetables and medicinal plants**

**(2) Production of household goods and goods for sale from the recycled materials.**

Photo credits: CSIRO, 2012

# Examples of similar activities elsewhere

## Waste souvenirs for tourists Bali

# Examples of similar activities elsewhere

# Knowledge sharing

**Motivate people to take on a lead role in furthering adaptation learning to other location.**


Photo credits: Silva Larson

# Benefits of women's activities

- Decrease in the amount of solid waste discharged
- Improved amenity
- Use of compost for gardens and sale
- Production of household items and handicrafts
- Generation of additional income from sales

# Lessons from the women’s activities

**Buy-in and participation of the community were essential to the start the initiative.**

**Pride was important for success and continuation of the initiative beyond project end-date.**

**Changing people's behavior is a long term process**

# Key Lessons from project overall

Various groups of stakeholders and beneficiaries need to work collaboratively to design and implement the program.

Project design and project team, including funding bodies, need to be willing and able to embrace adaptive management.

Makassar City Urban Water System

# PLENARY DISCUSSION

Your Experiences