

# UNDERSTANDING ECOHYDROLOGICAL CONNECTIVITY IN MULTIPLE CATCHMENTS TO CONSERVE GROUNDWATER, PROTECT SURFACE WATER AND CONTAIN RISKS IN A GLOBALIZING CITY, DAVAO CITY (PHILIPPINES)

## Demosite description

### Lithology / Geochemistry

Igneous rocks mostly of intercalated and compacted volcanic breccias during the Pleistocene; alluvium in the late Holocene



7°30'N 126°0'E



Courtesy of R. Gamboa

## Main description:

- ▶ **Davao City is one of the Philippines' most progressive cities** which contains 8 watersheds. Davao, Talomo and Lipadas rivers are critical areas.
- ▶ The coastal aquifers of Talomo and Lipadas watersheds provide **99% of the supply volume of the city's water district** which in turn serves 57% of the water consumption of the whole city. All the eight river systems are for **domestic, agricultural** (15,000 hectares of banana and pineapple plantations and fruit farms), and **industrial uses**.
- ▶ The Davao City side of **Mt. Apo Natural Park** is about 11,131 ha and shared by the Lipadas, Talomo and Sibulan watersheds.

Conserve Ecohydrological processes in natural ecosystems  
✔ **YES**

Enhance Ecohydrological processes in novel ecosystems  
✔ **YES**

Apply complementary Ecohydrological processes in high impacted systems  
✔ **YES**

## Ecohydrology Principles and Solutions

### EH IMPLEMENTATION PRINCIPLES

\* Quantification of the hydrological processes at catchment scale and mapping the impacts

### EH SOLUTIONS

To tap the Tamugan-Panigan River for drinking water (fig.1), a private company was given permit by the city to construct a water treatment plant which will also be powered by its own run-of-river hydroelectric power plant



## Lifezones

**Life Zone**  
Tropical Moist Forest

PPT (mm/yr): 1878

T (°C): 27

PET ratio: 0,85  
 Elevation: 6 m  
 Humidity: humid



Fig.1- Talomo-Panigan River Junction (courtesy of R. Gamboa)

## Major Issues

- \* Soil erosion
- \* Heavy siltation in rivers and Davao Gulf
- \* Massive expansion of banana plantations
- \* Talomo and Lipadas basins have poor health ratings with non-point sources of pollution (fig. 2)
- \* Unregulated groundwater use

## Social-Ecohydrological System

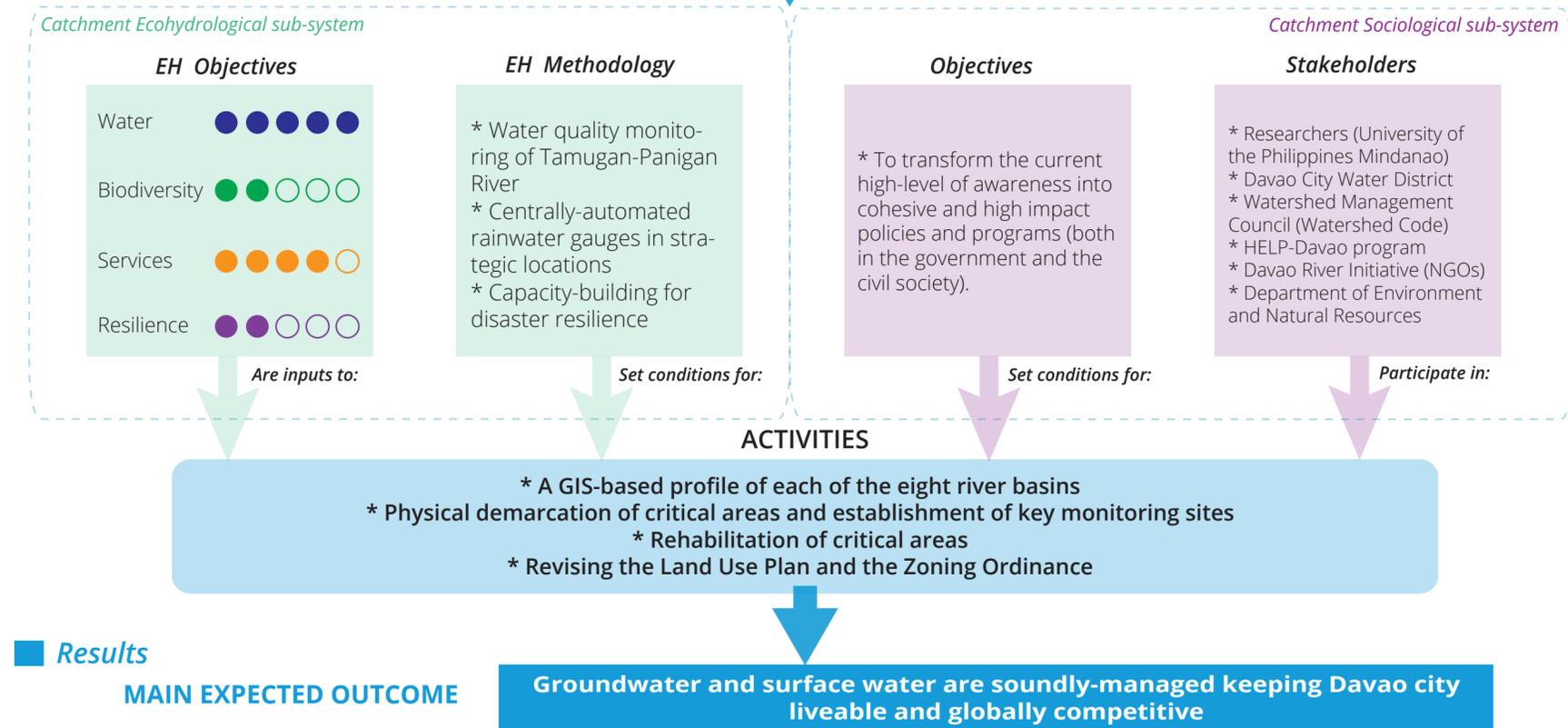


Fig.2- A polluted creek down an industrial area in Davao City (courtesy of R. Gamboa, 2013)



Ruth Gamboa  
 University of the Philippines Mindanao  
 ruthupmin@yahoo.com

[CLICK HERE TO SEE THE REFERENCES](#)

Developed by:



A Initiative of:

