

# River Basin Management Cycle Training Series

## RBM Game



Implemented by

**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

**GNANAMI  
GANGE**



# RBM Game



Implemented by



# RBM Role Game

## Objective of the exercise:

The RBM Role Game is an interactive exercise that help to:

- Comprehend the different interests from stakeholders.
- Identify objectives for RBM.
- Prioritise measures to be implemented basin to achieve the objectives.

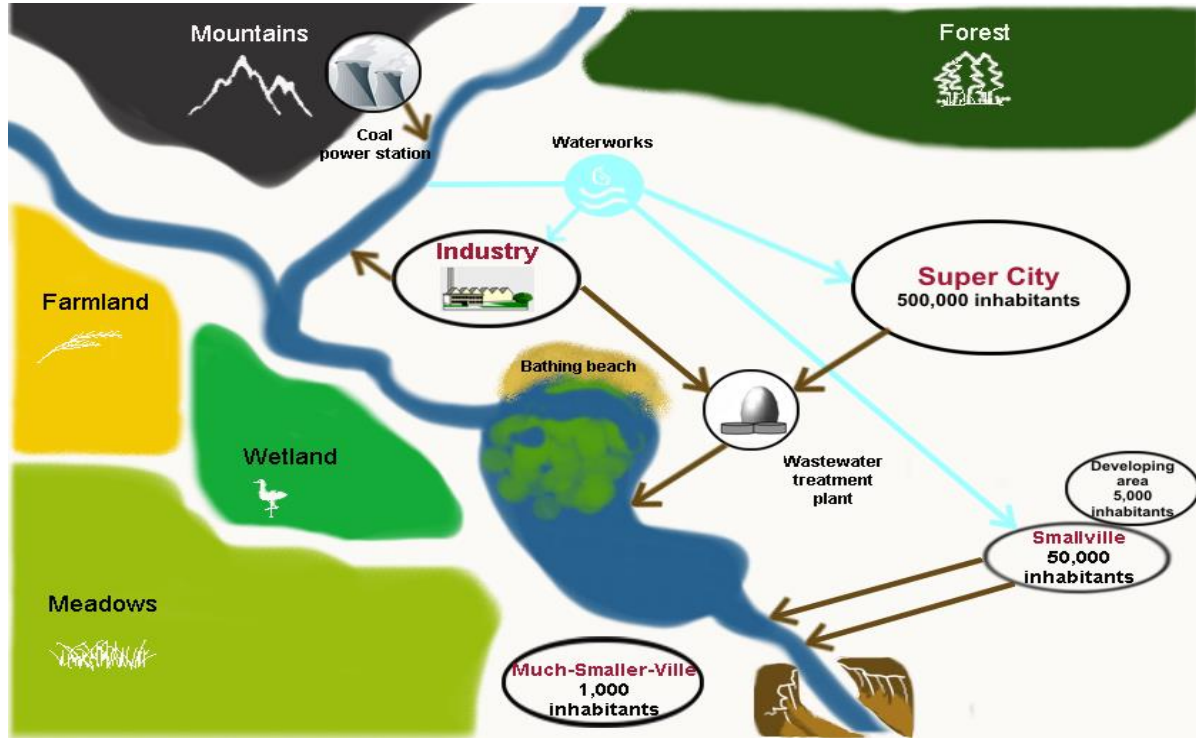
It is a role play for groups of at least 3 to 6 participants. Each group will have to:

- Read the information about the basin
- Each group-participant will have to take a role
- The group has to start discussion to develop the Basin Master Plan

IT'S YOUR TURN

# RBM Role Game - DWA World University Challenge, 2014

IT'S YOUR TURN



# RBM Role Game DWA World University Challenge, 2014

IT'S YOUR TURN

## Some facts and figures (1)

- **Water quality and quantity** of Lake Super-City is getting worse from day to day. A lot of algae is growing, O<sub>2</sub> concentration is low, water is getting turbid and residents are complaining about the odor, and temperature is too warm due to the cooling water from the power plant. Unfortunately, Much-Smaller-Ville will not be able to grow any further as the meadows will become a groundwater-protection-area. During drought season water scarcity is becoming more of a problem, especially for agriculture.
- **Water** supply of the “Much Smaller Ville” comes from the lake. This has to be stopped immediately because of the water quality problems. You want a sustainable drinking water system for the green province with high quality water and a buffer capacity during drought season. Water is taken directly from the river at the moment. More water is needed every year, as the number of inhabitants is increasing and the industry growing. Non-revenue water is 45%. The meadows have a very large aquifer which until now has only been used for agricultural irrigation.
- **Wastewater treatment** in the whole region has to be improved. Super City’s wastewater treatment plant is old and only has a carbon-elimination (secondary treatment). Additionally, final clarifiers are hydraulically overloaded and flushing out suspended solids. There is no space for expansion. Smallville only has septic tanks. The outflow goes via public sewer system to the lake. Smallville is growing rapidly. Much-Smaller-Ville also uses septic tanks. There is no sewer system. Sludge of septic tanks is transported by trucks. The disposal of sewage sludge on farmland is not allowed any longer, because of high heavy metals concentrations.

# RBM Role Game DWA World University Challenge, 2014

IT'S YOUR TURN

## Some facts and figures (2)

- **Industry** wants to expand, but water removal permit doesn't allow further water extraction from river and effluent concentration limits have been increased. You want to attract more industry and commerce to improve the region's financial situation and create more jobs. The existing industry has a very intensive water usage (process water and cooling water). Furthermore, all wastewater treatment technologies are end of pipe solutions. The wastewater streams are characterised by high COD, Ammonia and Phosphorus loads. All water production streams are above 25°C.
- **Waste Management** is old and has to be improved. The old landfill is full. Industry and city are looking for new alternatives. Industry and cities do operate together in waste collection.
- **Electricity** blackouts in the province are occurring more and more. Green activists always talk about waste-to-energy and biomass-to-energy. Find answers to their slogans. You are wondering whether you should still invest in the old coal power plant. The old coal power plant doesn't meet emission guidelines anymore. Too much water from the coal power plant is being led to the river, warming it up. There is a lot of wind in the mountains. However, wind alone might not be enough for the region. The effluent of the lake flows into a canyon. The geological conditions would allow the construction of a dam.

# RBM Role Game - DWA World University Challenge, 2014

IT'S YOUR TURN

## Your team consists of the following:

- Government official(s) of the Green Province:
  - 1 representative from the towns majors: s/he wants to improve to solid waste problem.
  - 1 representative from the Ministry of Environment: concerned by the quality of the Lake.
  - 1 representative from the Ministry of Industry: s/he wants to develop further the industries in the region.
- 1 Representative of the water supply and wastewater utility: concerned by water supply and waste water treatment.
- 1 Representative of the energy supply utility: want to improve electricity generation.
- 1 Consultant whose role is to provide innovative ideas and facilitate the discussion.

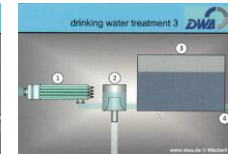
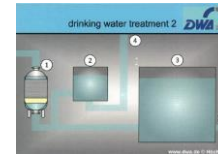
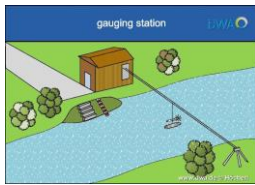
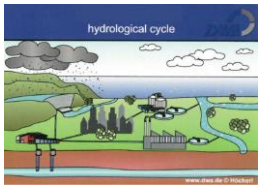
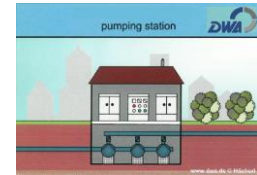
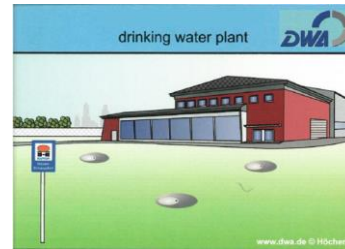
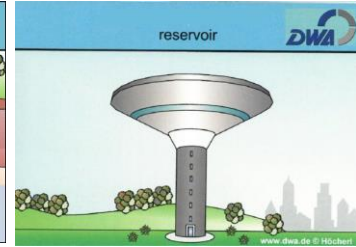
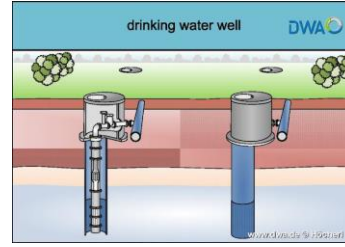
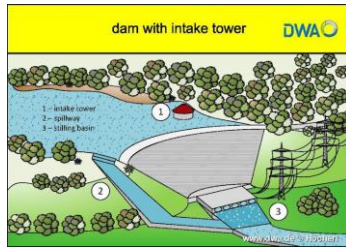
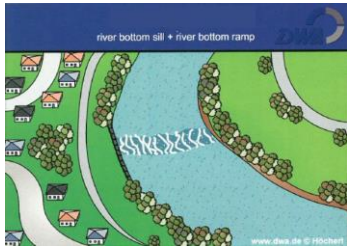
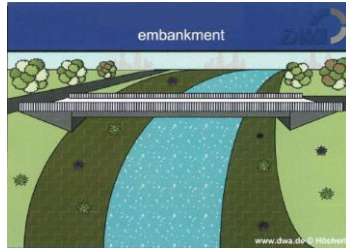
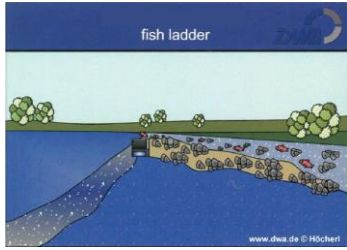
## Your common vision is:

Is to make the Green Province more attractive for new residents, new industries while also promoting ecofriendly tourism.

## Your tasks:

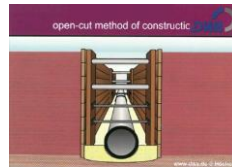
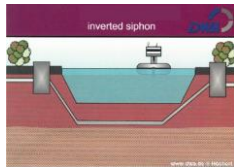
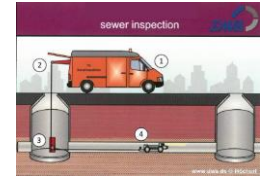
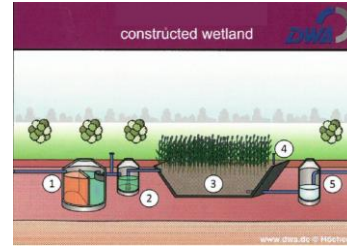
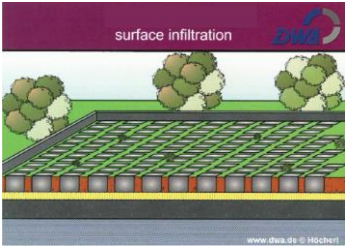
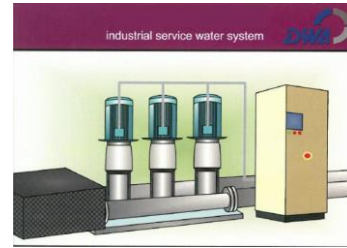
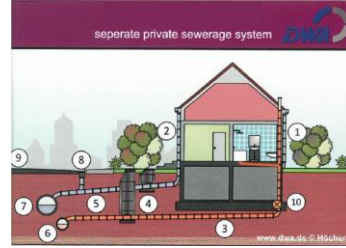
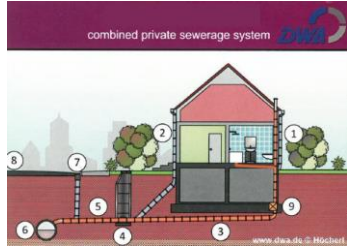
1. Read the context (10 min).
2. Each participant chooses a role (5 min)
3. Identify up to 5 objectives to carry out the Vision (10 min).
4. Identify and place on the maps up to **10 measures** to achieve the objectives (40 min).

# Theme: Water (blue cards)

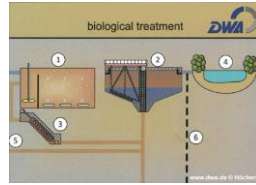
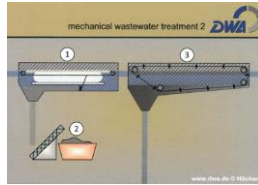
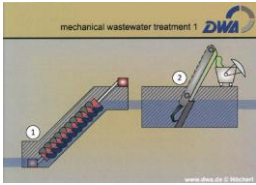
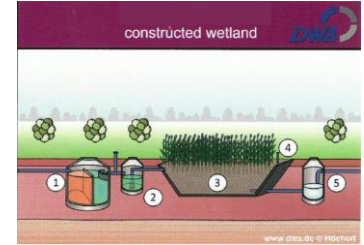
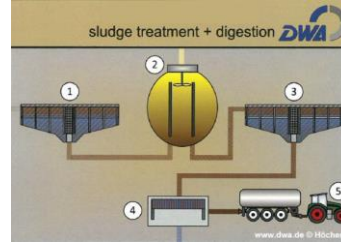
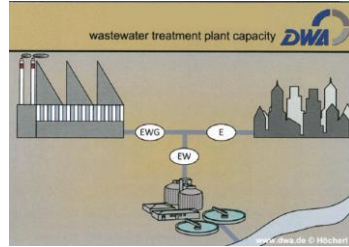
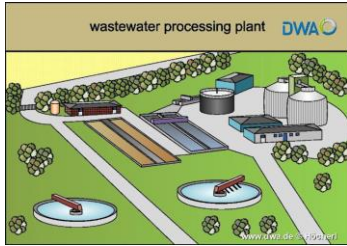




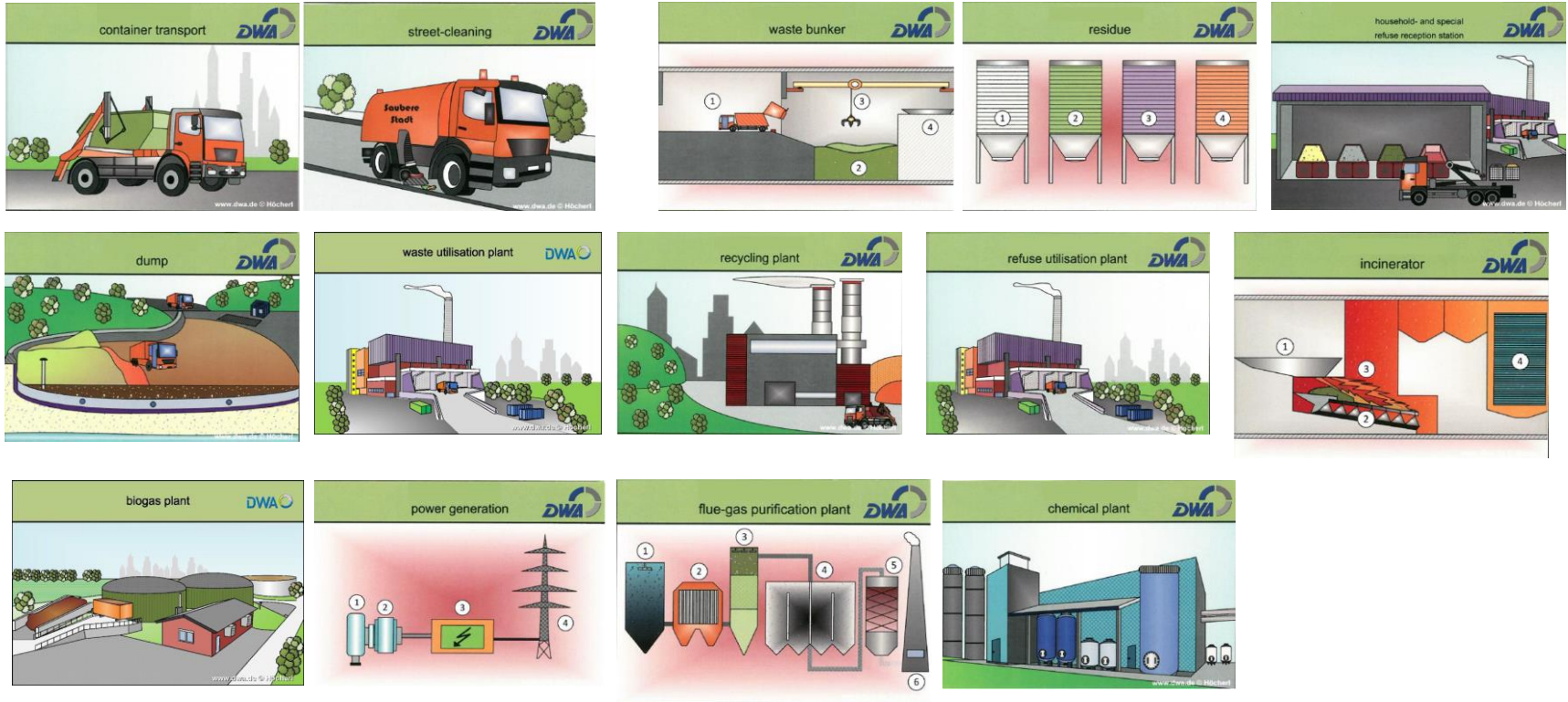
# Theme: Wastewater: Sewage system (purple cards)



# Theme: Wastewater treatment (brown cards)



# Theme: Waste management (green cards)



Collection & transport

Treatment

Further use

# Theme: Energy (yellow cards)

