

Development of a water quality monitoring for the distribution system Bribin (District Gunung Kidul)

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Introduction

- karst
- tropics
- ➔ water shortages during dry season
- no water treatment, no water quality monitoring
- dilapidated water distribution system
- water highly contaminated with fecal bacteria
- ➔ consumers boil water to avoid illness ➔ barely sustainable



map: <http://www.iwrm-indonesien.de/>

Aims

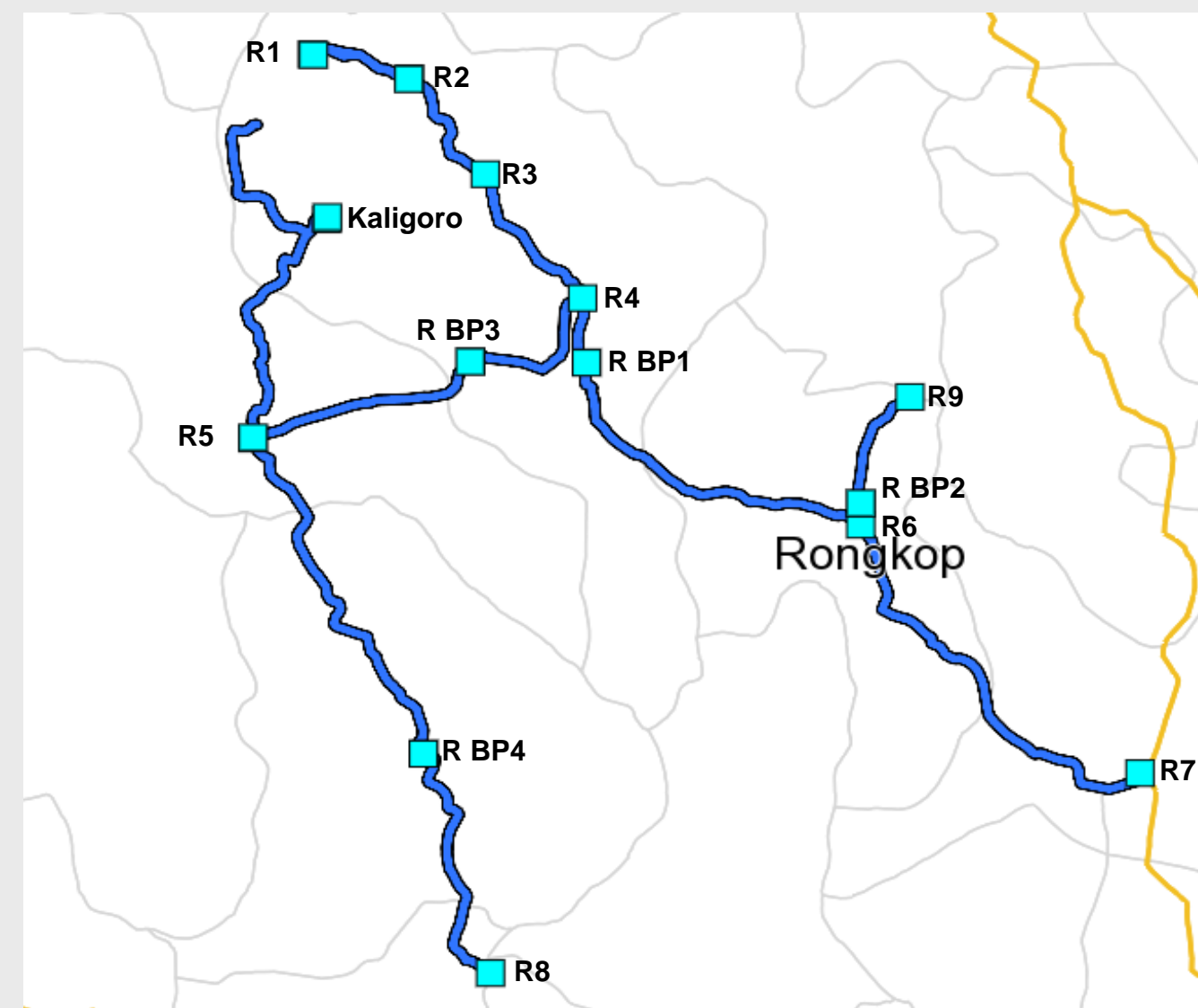
- development and implementation of a water quality monitoring system
- serves as a base for development of appropriate and sustainable treatment concepts



Sampling at a reservoir

Appropriate methods

- physiochemical analysis
 - temperature, pH, O₂, conductivity, turbidity
- microbiological analysis
 - ColiLert-System (quantitative detection of total coliform bacteria and *E.coli*)
- molecular biological analysis
 - PCR and population analysis



map: distribution network Bribin



ColiLert- Analysis



Results and Discussion

- coliforms in each sampling site
- dry season: increase of bacterial count within distribution system (see figure 1)
 - ➔ results from dilapidated and heated pipelines
- wet season: coliform contamination much higher (see figure 2)
 - ➔ results from high input of bacteria and poor filtration capacity of karst underground

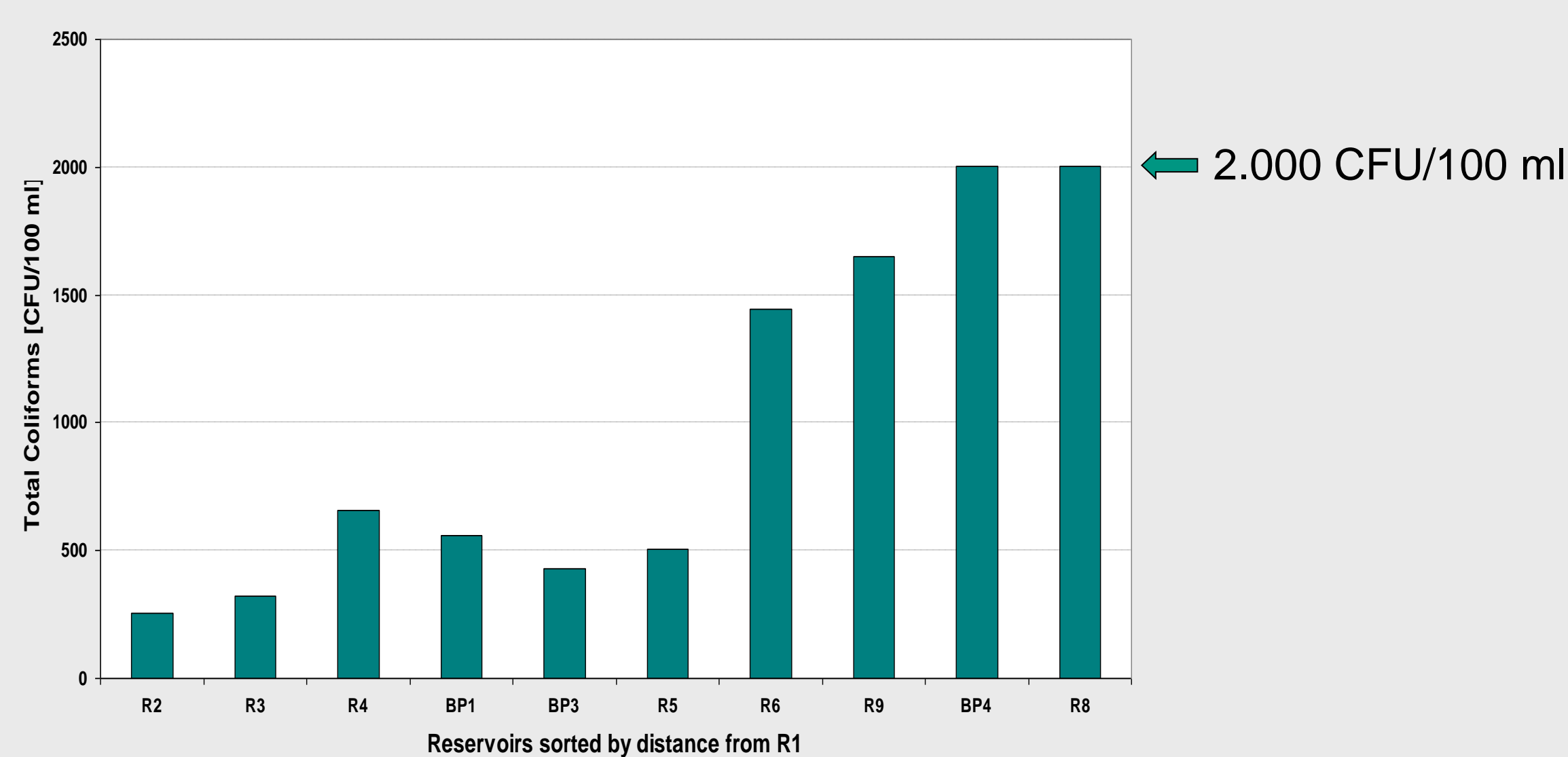


Figure 1: Total coliform data, October 2009

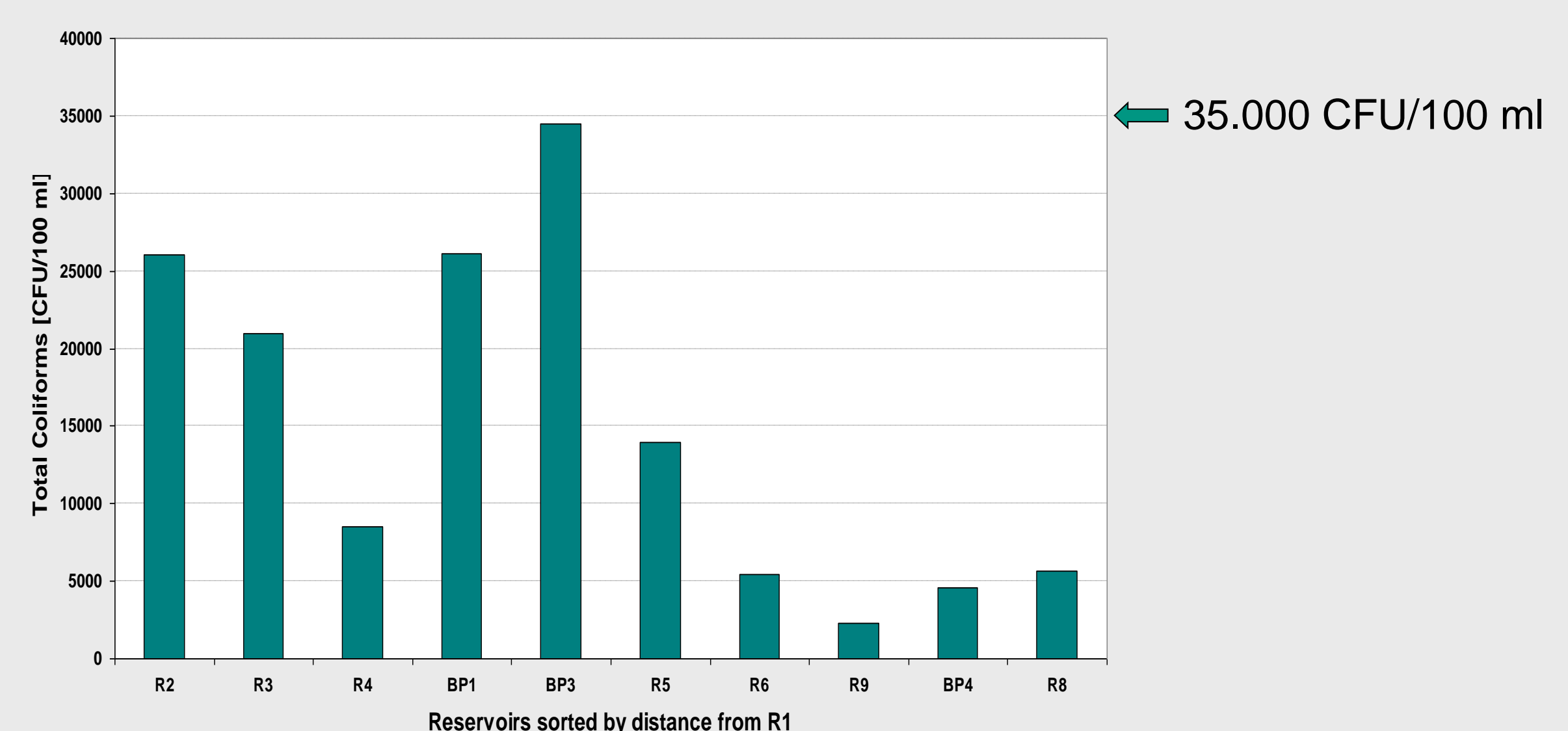


Figure 2: Total coliform data, March 2010

Conclusion and Outlook

water highly contaminated with fecal bacteria during dry and wet season



- pipelines have to be renovated
- monitoring has to be established
- hygienisation of water near to customer



Dilapidated pipeline