

Development of a water quality monitoring for the distribution system Bribin (District Gunung Kidul) and conception of a field laboratory for the water hygienisation at the Wonosari hospital

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- 1) Introduction
- 2) Hygienic analysis of the water distribution system Bribin
 - Material and methods
 - Results und discussion
- 3) Conception of a field laboratory
 - Material und methods
 - Results and discussion
- 4) Conclusion
- 5) Outlook

Gunung Kidul, Java

Introduction

Monitoring

Field laboratory

Conclusion

Outlook



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

Situation in Gunung Kidul


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Monitoring

Field laboratory

Conclusion

Outlook

- tropic climate
- Karstformation 
bad filtration capacity
- water shortages in dry season

- bad water quality
- no quality monitoring
- dilapidated water distribution network
and reservoirs



Population forced to boil water

- barely sustainable
- problem for high amount of water (e.g. hospital)

➤ Usage of underground water:

- accumulation of water in a cave
- use of electricity of waterpower plant to pump water to the surface
- feeding into water distribution system
- renovation and extension of distribution network
- monitoring of water quality and water hygienisation



Development of appropriate monitoring

Introduction

Monitoring

Field laboratory

Conclusion

Outlook

- monthly: caves (Gua Bribin & Gua Seropan) & hospital Wonosari
- twice a year: caves, hospital & distribution network Bribin

physiochemical analysis

- temperature
- pH
- oxigen
- conductivity
- turbidity

micro- und molecularbiol. analysis

- cultivation
 - ColiLert
- species-specific PCR¹
- population analysis

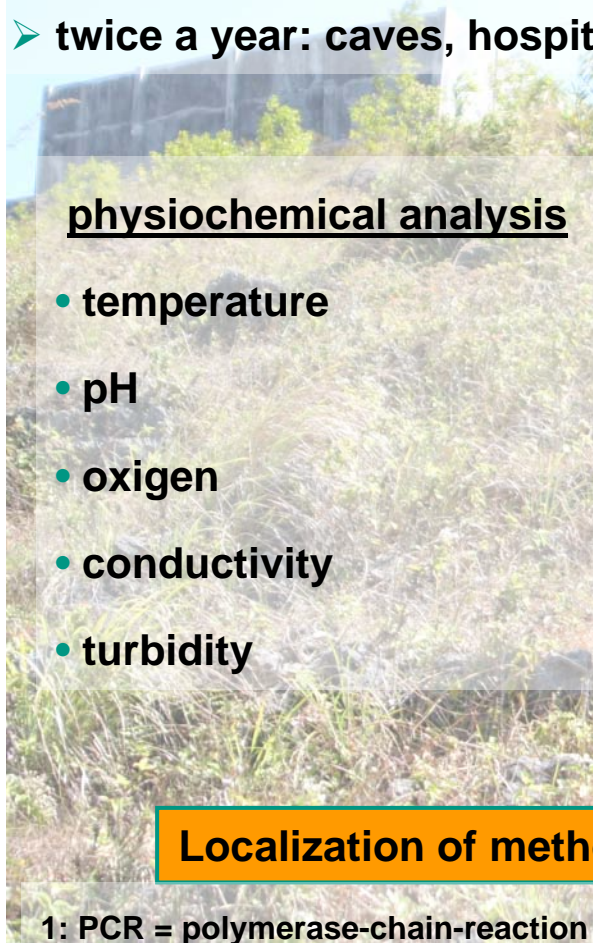
Localization of methods

1: PCR = polymerase-chain-reaction

Development of appropriate monitoring

Introduction	Monitoring	Field laboratory	Conclusion	Outlook
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- monthly: caves (Gua Bribin & Gua Seropan) & hospital Wonosari
- twice a year: caves, hospit

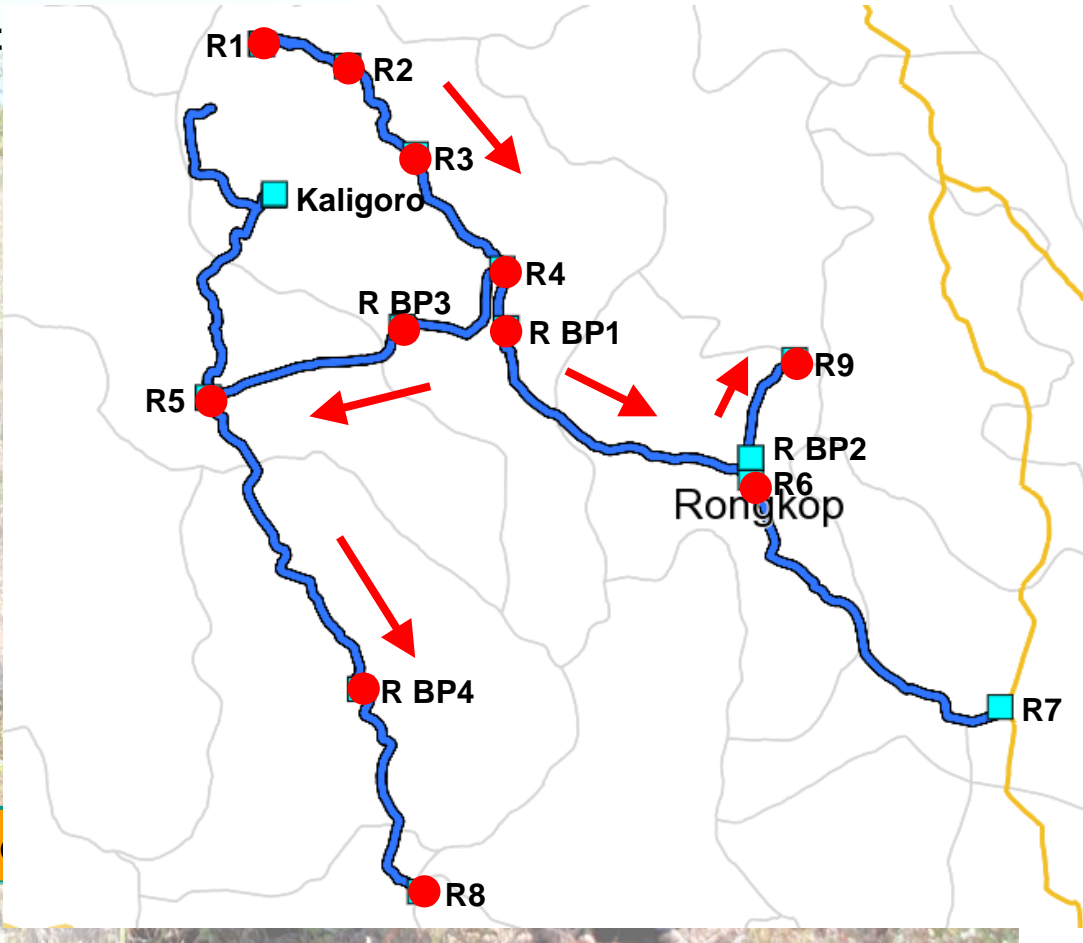


physiochemical analysis

- temperature
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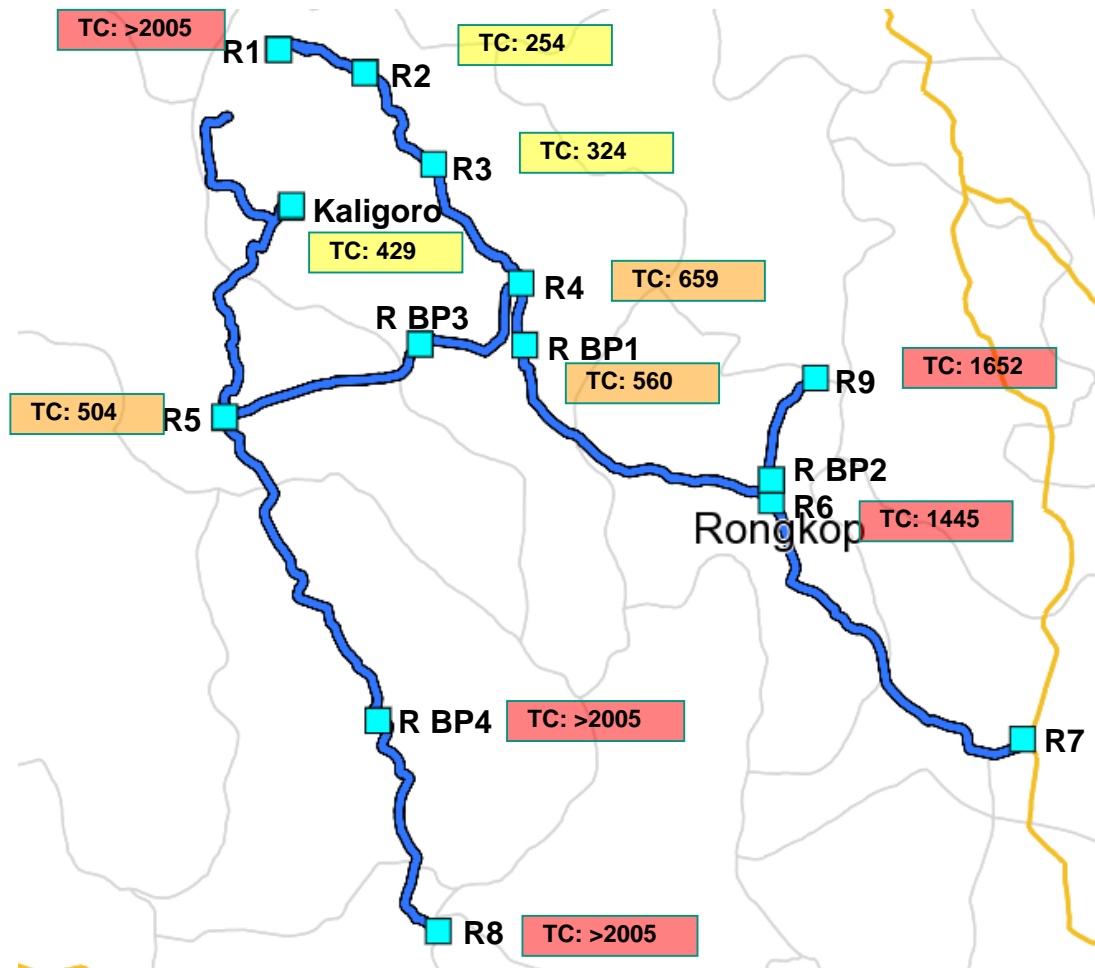
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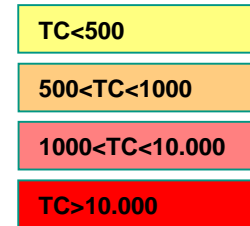


ColiLert-Results

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Legend



TC=Total Coliforms

Unit: CFU/ 100ml

CFU = colony forming unit

Karte: <http://iwrw.gik.uni-karlsruhe.de/mapguide/iwrw>

Räumliche Zuteilung der ColiLert-Ergebnisse

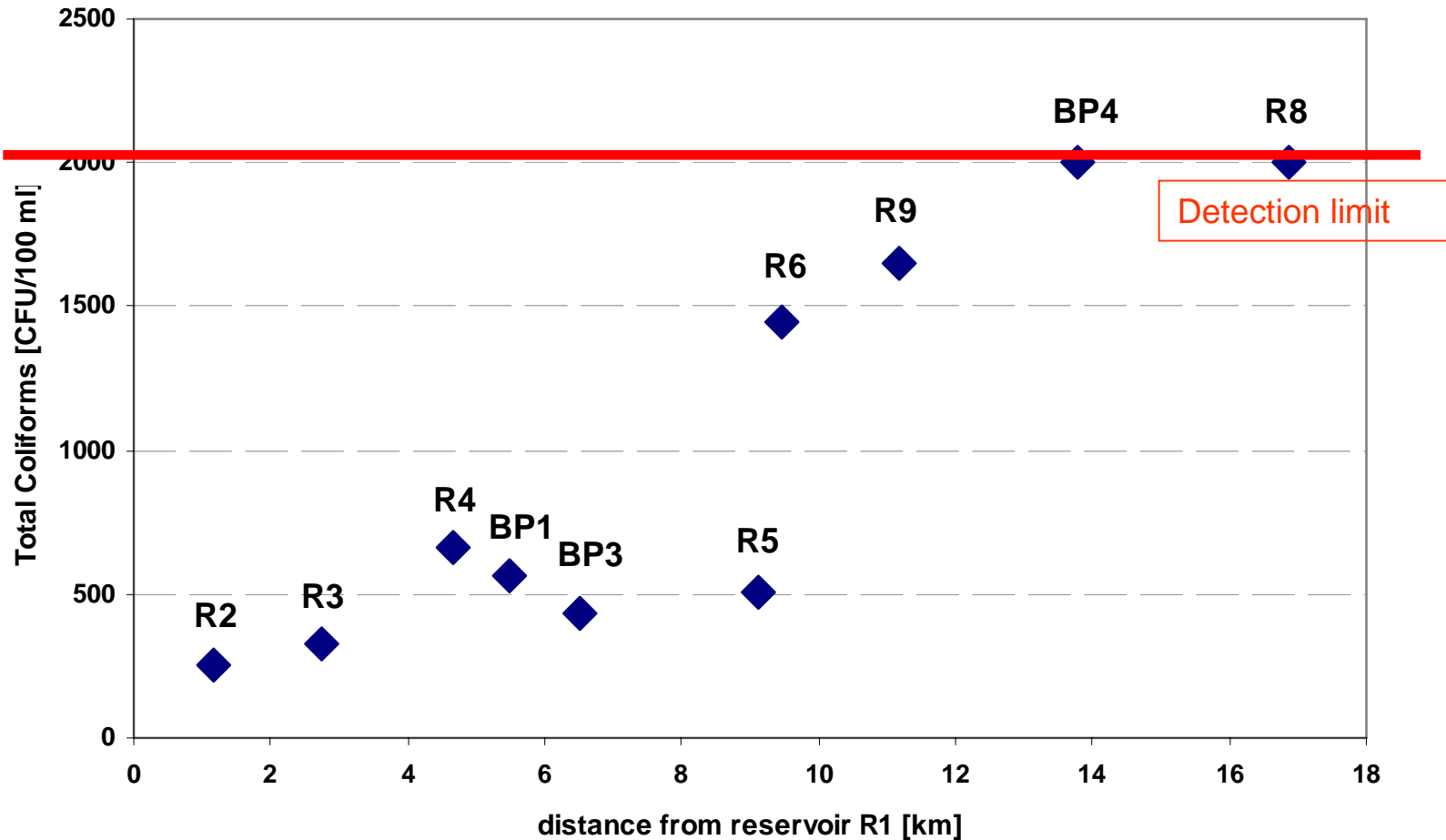
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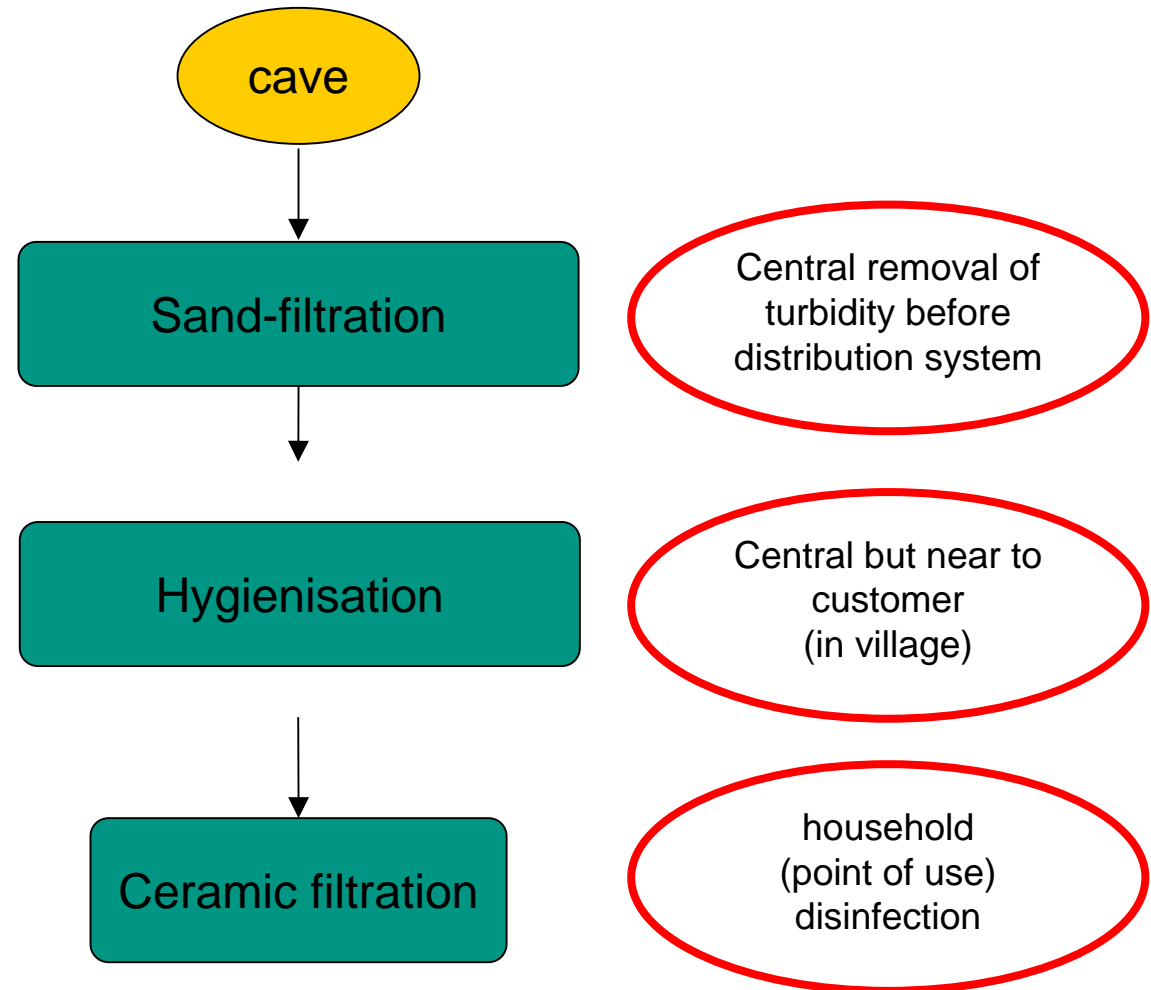


Development of appropriate and sustainable methods for water treatment



Plan for water treatment

Introduction	Monitoring	Field laboratory	Conclusion	Outlook
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1: PDAM= Indonesian drinking water agency

Plan for water treatment

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cave

Sand-filtration

Hygienisation

Pilot plant with 4 hygienisation methods will be installed in Wonosari hospital and will be fed with PDAM¹- water

Ceramic filtration

1: PDAM= Indonesian drinking water agency

Plan for water treatment

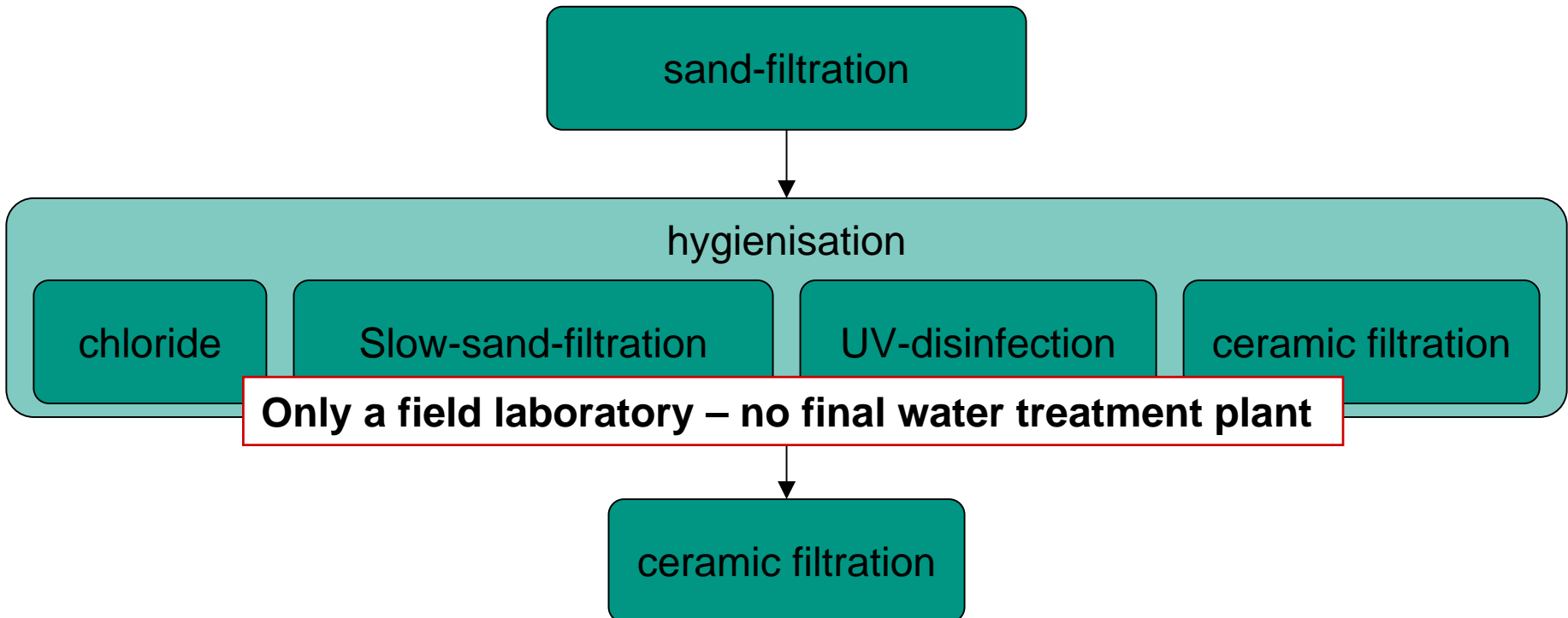
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➤ **Result of monitoring:**

high bacterial count and high contamination with fecal bacteria



water treatment after distribution network is essential

➤ **chosen techniques:**

chloride, UV-disinfection, slow sand- & ceramic filtration



Pilot plant / field laboratory

- **Project runs until 2013**
- **continuation of monitoring**
 - **monthly: Gua Bribin, Gua Seropan, Hospital Wonosari**
 - **twice a year: whole distribution network**
- **Optimization of DNA-extraction from filters**
- **construction of container for field laboratory**
- **shipping of container in October 2010**
- **first experiments at Wonosari hospital from January 2011**
- **development of appropriate and sustainable water treatment for project region**





**Thank you for your
attention!**

? Questions ?

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