# Assessment of water resources in atoll islands – Republic of Kiribati

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EUROPEAN UNION

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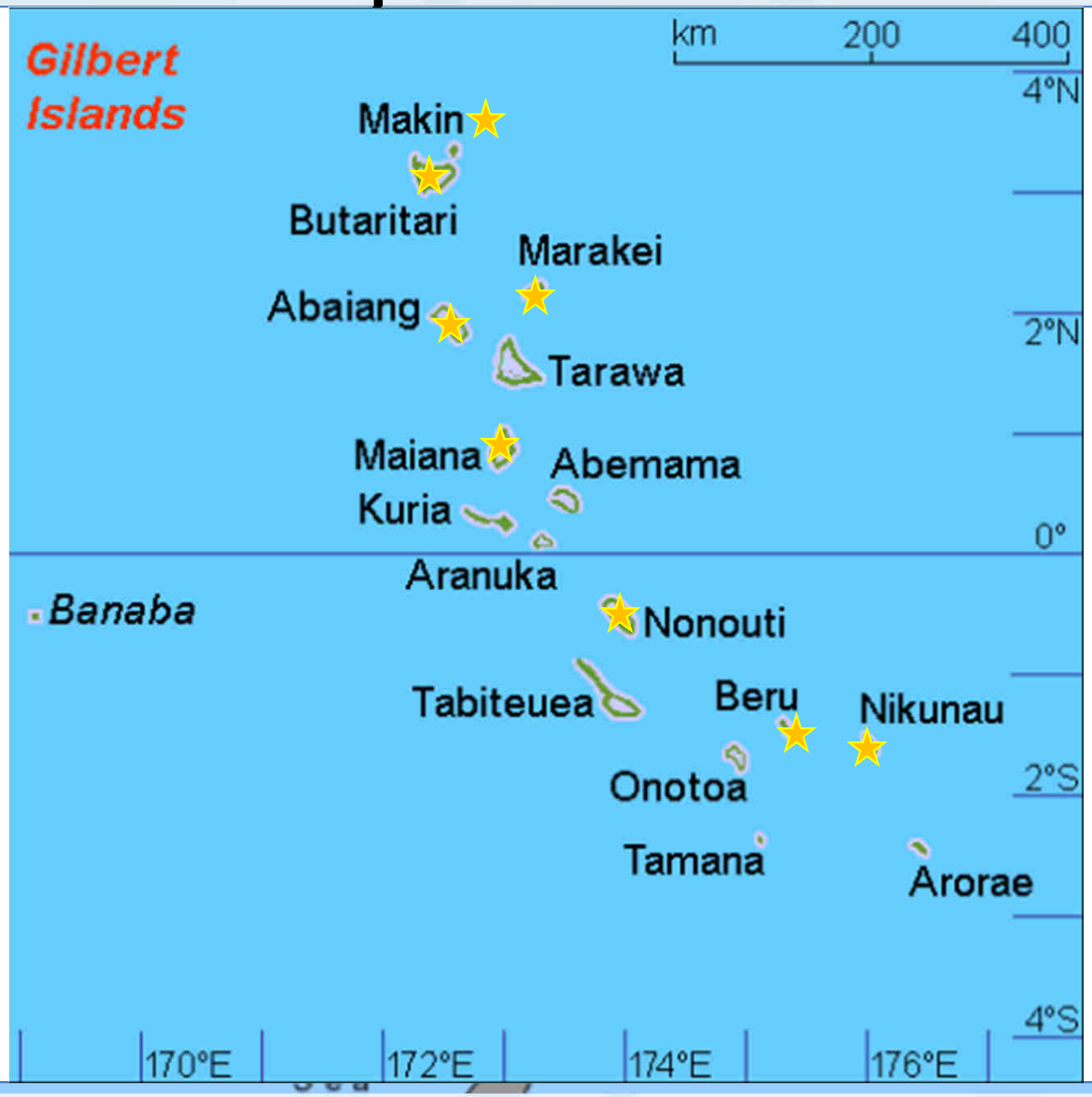
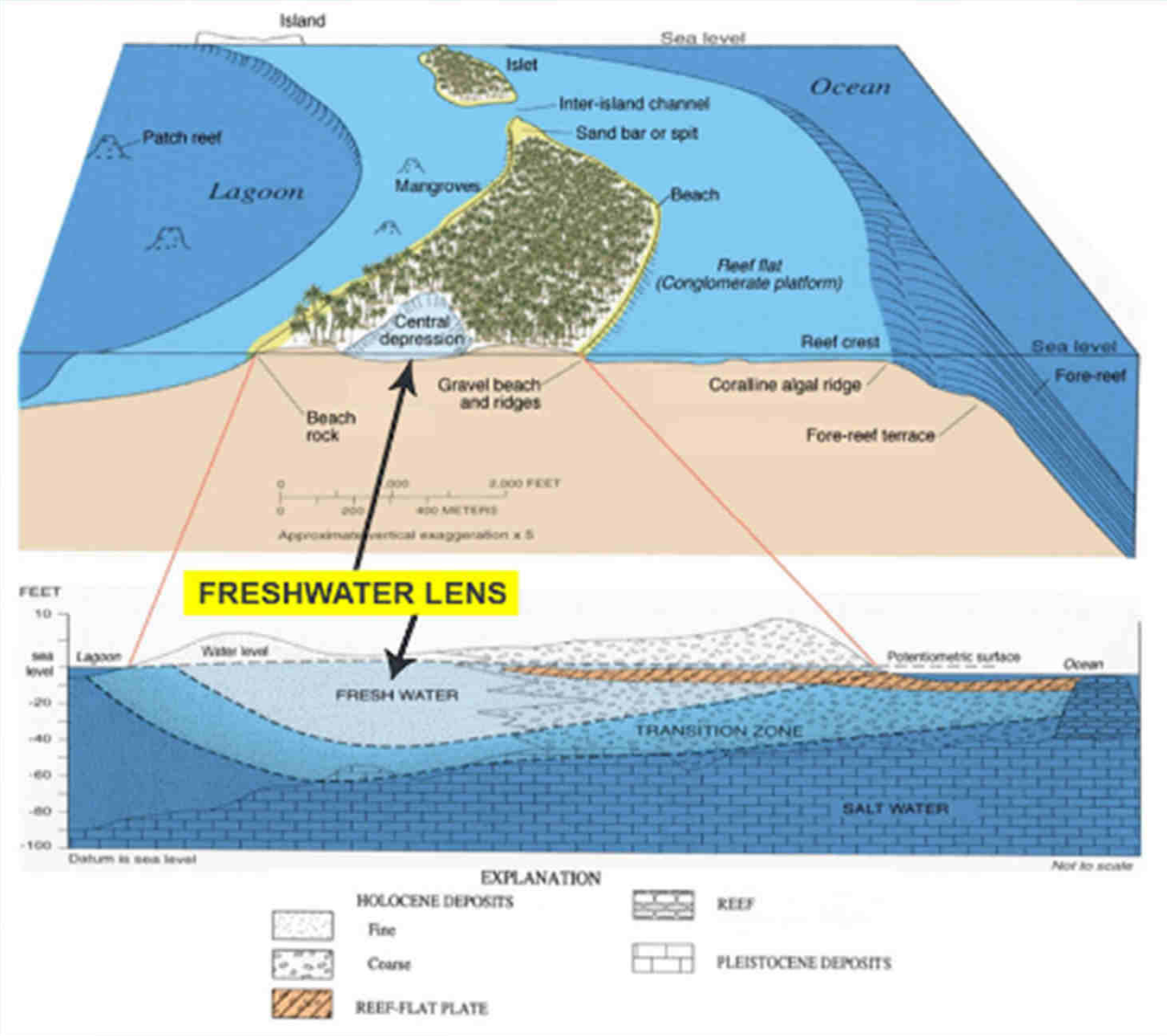
# Outline

- Introduction & Objectives
- Major challenges
- Approaches
- Results
- Lessons learnt
- Project update
- Key conclusions

# Republic of Kiribati



# Generic freshwater setting in an Atoll Island




**Source**: http://walrus.wr.usgs.gov/climate-change/atolls/definitions.html

# Water Resources Assessment

- Improved access to safe drinking water
- Hydrogeological assessment
- Rainwater harvesting assessment

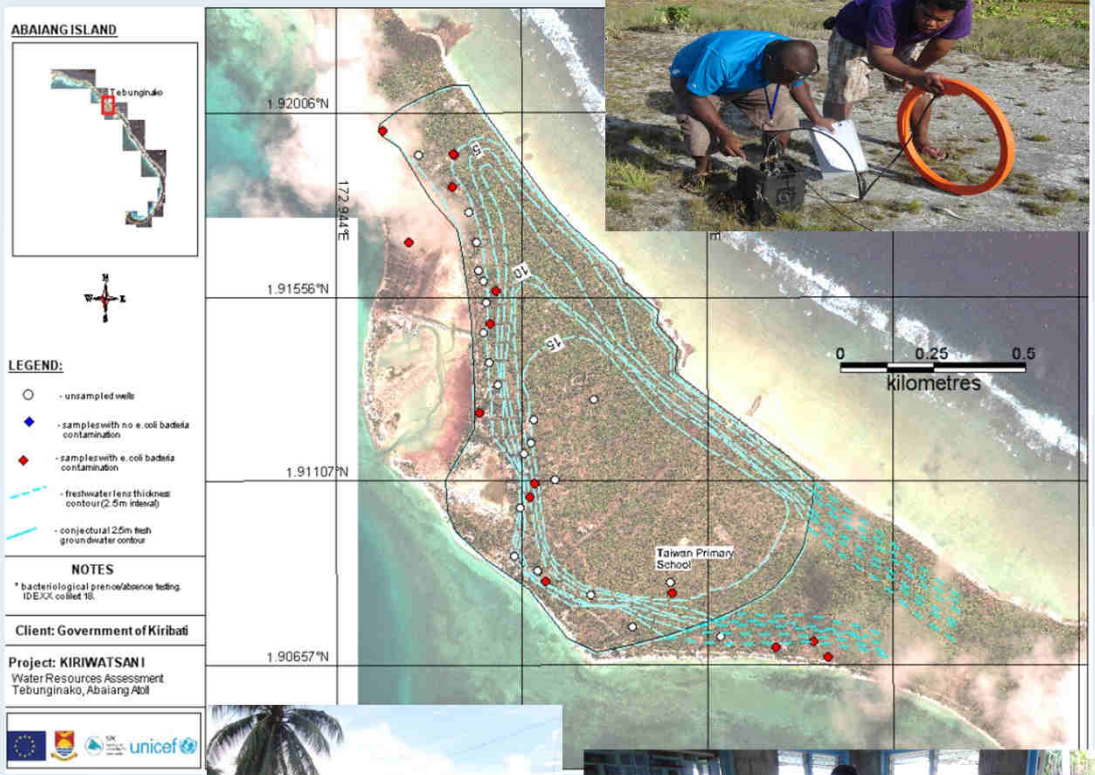
# Major Challenges

| Water Resources Assessment | Water Resources Management |
|---|---|
| • **Remoteness**<br>❖ high transportation cost<br>❖ limited W&S intervention from authorities<br>• **Time constraint**<br>• **Limited infrastructure & facilities**<br>• **Limited access to power, drinking water**<br>• **Lack of baseline information**<br>• **Unskilled Labour** | • Poor W&S facilities<br>• High level on contamination<br>• Vulnerability to extreme climatic conditions and saline intrusion<br>• Poor governance |

# Approach

- WRA methods & technology
  - EM-34 geophysics
  - E.coli tests

- Field survey undertaken
  - Existing groundwater well
  - Water level & quality
- Social survey
  - Community consultation

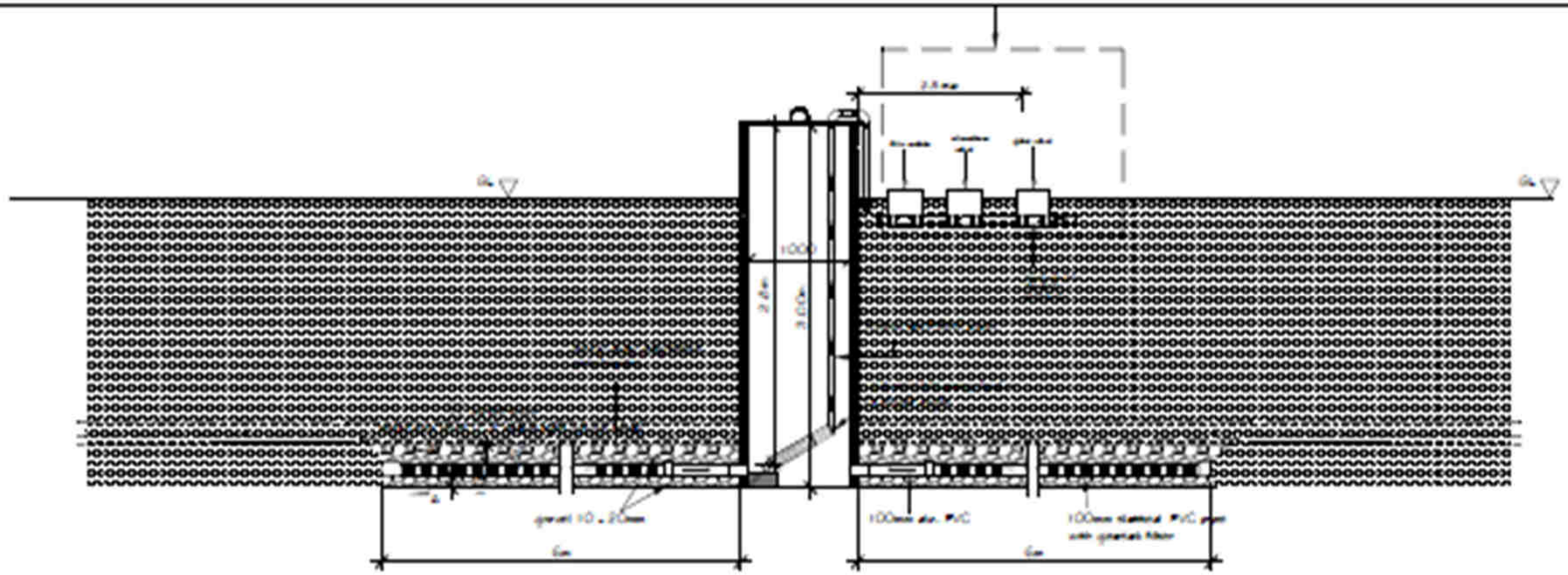


# Results

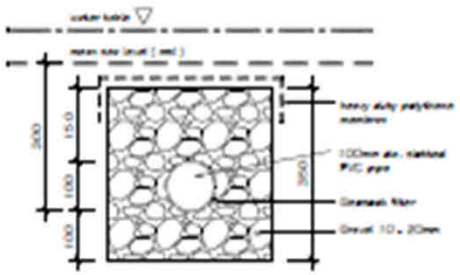
- The freshwater lens potential mapped for 36 villages in 8 outer islands
  - 22% of the villages with limited groundwater potential
  - 78% of the villages with good  fresh groundwater potential

- Location, condition, use and reliance of 1382 wells and 466 buildings – data is available on the web at http://ict.sopac.org/kiriwatsan/

# Results



SECTION ELEVATION



SECTION A - A

DETAIL OF SLOTTED PIPE

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# Lessons Learnt!!

- Value of WRA to determine water quality, potential groundwater zones and guides water supply systems design
- Appreciation of water resources assessment methodology & previous studies
- Capacity building permitted training and engagement of local staffs
- Community engagement permitted widespread participation and agreement on design

# Project Update

- Phase 2 underway
  - Establishment of project team in Tarawa
  - Community consultation and final agreement
  - EIA compliance & procurement
  - Implementation in July

# Conclusions

- WRA permitted the assessment of shallow and unconfined groundwater system:
  - determined the groundwater potential across the villages as influenced by on island size, sediment composition and rainfall recharge
  - vulnerable to E.coli contamination & saline intrusion
  - Identification of resilient resources
- Significant infrastructural & management improvement was needed for existing water supply systems
- WRA guided water supply design
- Community engagement allowed the sharing of scientific knowledge and strengthen their understanding on water resources management

THANK YOU!!

VINAKA VAKALEVU!!