

Modernization strategy for national irrigation systems in the Philippines: linking design, operation and water supply

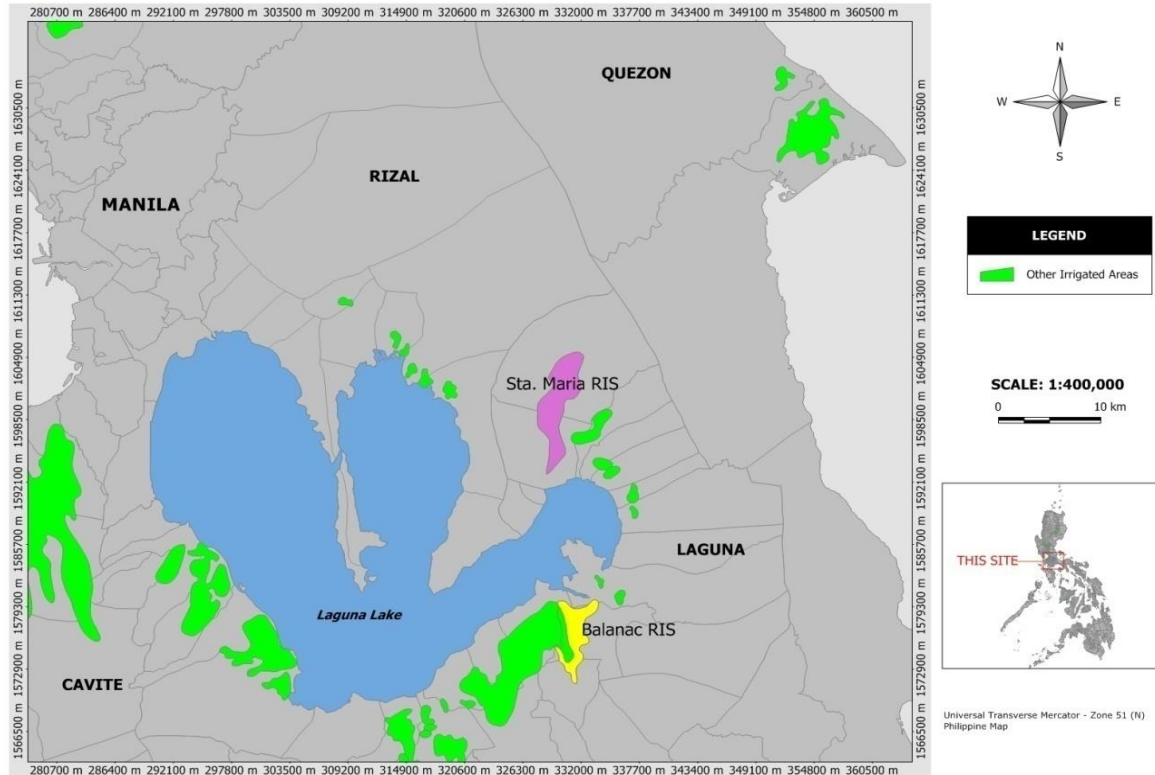
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Outline of the Presentation

1. System characterization
2. Social acceptability
3. Amenability to associated technology
4. Promising local technology
5. Farmers' vision
6. Modernization options
7. Conclusion

Balanac RIS and Sta. Maria RIS



- Gravity-type system
- Built and first operated in 1960s
- Served 1,000 ha rice areas

System characterization

Balanac RIS

- ROR dam
- Ungated offtakes
- Duck bill, long-crested weir
- 30-km canals, 87% lined
- Ungauged
- Natural drainage



System characterization

Sta. Maria RIS

- ROR dam
- CHO, gated offtakes
- Cross regulators with adjustable vertical gates
- 30-km canals, 77% lined
- Ungauged
- Natural drainage



Design coherence

System objectives

- **Productive irrigation**
- Rice monocropping
- Dry season irrigation
- Equitable supply per ha

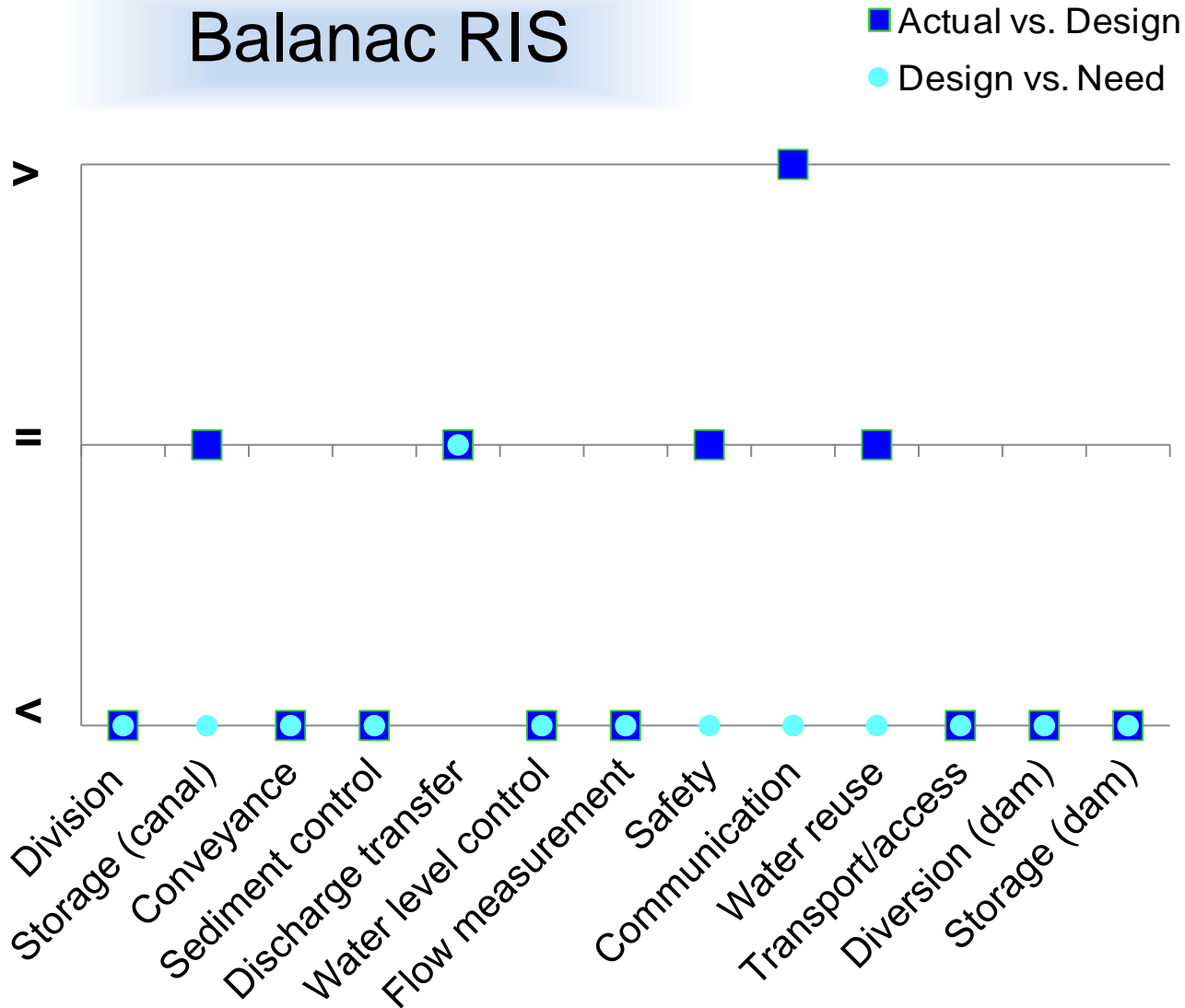


Operational objectives:

- **Balanac RIS**
 - Imposed allocation
 - **Splitted flow to TU**
 - **Splitted flow through main system**
 - **Upstream control; proportional control**
 - **Direct offtaking**
- **Sta. Maria RIS**
 - Imposed allocation
 - Intermittent flow to TU
 - Rotational flow through main system
 - Upstream control
 - **Direct offtaking**

Physical capacity

Balanac RIS

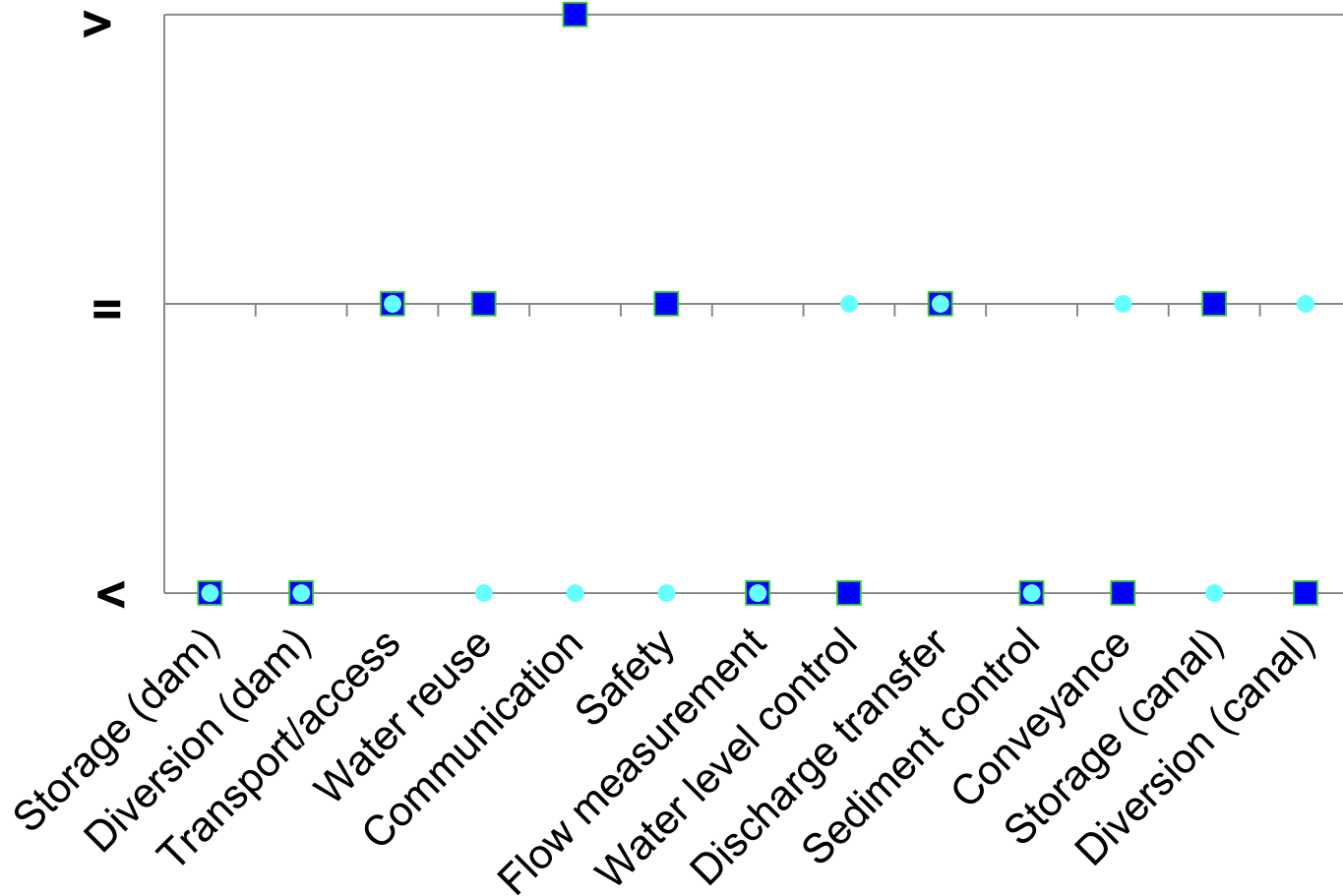


Physical capacity

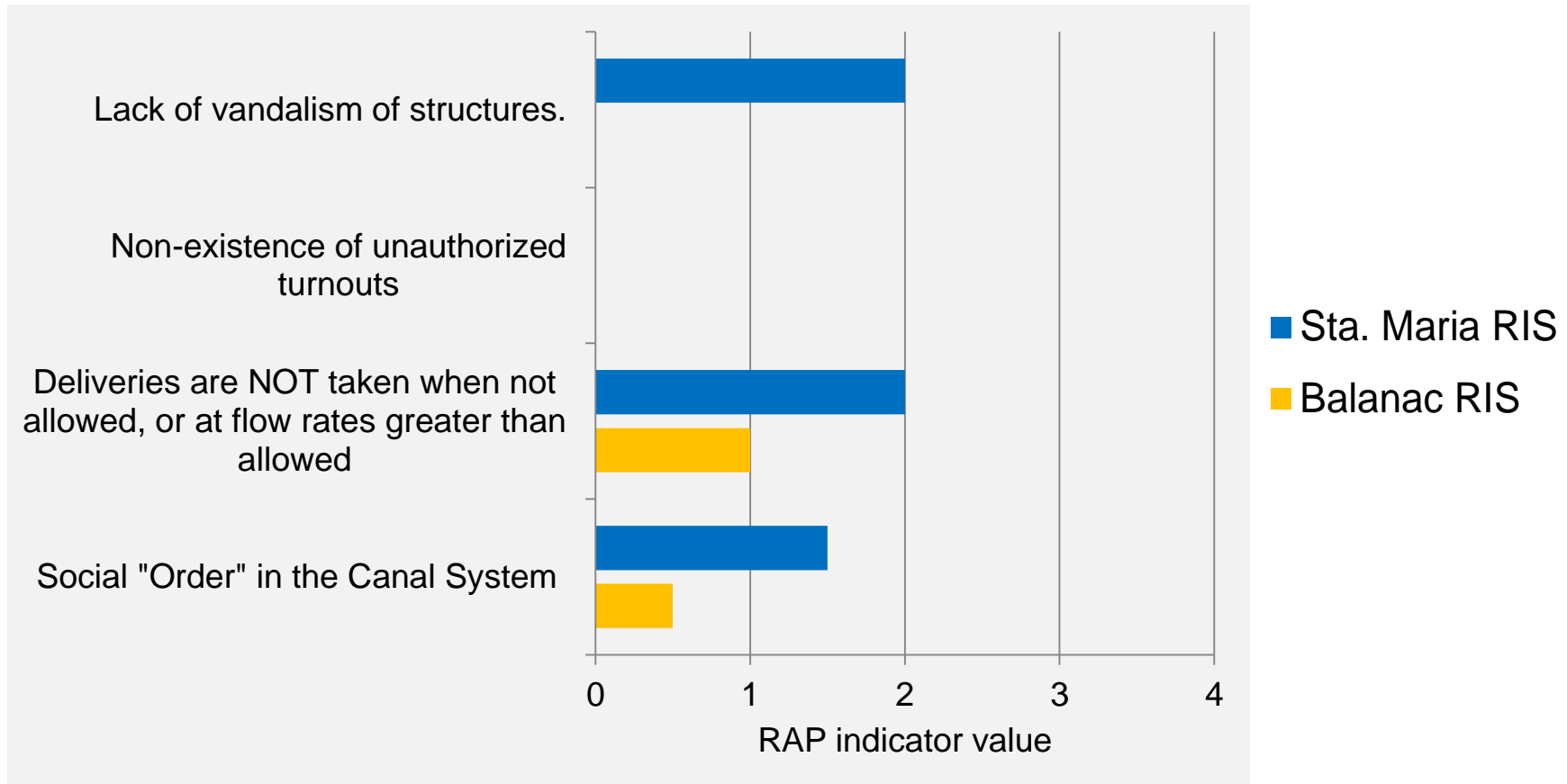
Sta. Maria RIS

■ Actual vs. Design

● Design vs. Need



Social acceptability



Amenability to irrigation technology

AWD (Alternate Wetting and Drying)



Photo credit: IRRI

- Challenge: Lack of flow control structures
Ungated/open direct offtakes

Promising irrigation techniques

- Drainage check structures
- Developing artesian wells
 - tubewells, small ponds



Farmers' vision

Balanac RIS

- Equitable water distribution
- Strong WUA
- No-leak concrete canals

Sta. Maria RIS

- Strong WUA
- Increased water supply
- Gauged system
- Equitable, orderly water distribution
- Climate proactive management
- Reliable irrigation service

Modernization Options

Balanac RIS

- Climate-proactive, cropping calendar
- Dam desilting
- Repair of dam gates, canal embankments
- Provision of flow control structures
- Consolidation of turnouts
- Flow measurements
- Storage-type dam or downstream ROR dam

Sta. Maria RIS

- Dam desilting
- Repair of dam gates
- Replace non-functional flow control structures
- Consolidation of turnouts
- Flow measurements
- Storage-type dam
- Spring development
- Water reuse structures

Conclusions

- ❖ Logical coherence among the physical structures, system operation and water supply is crucial for system modernization.
- ❖ On-farm water management or water saving techniques require flow control structures along conveyance canals.
- ❖ Technology options and their implications on system operations need to be well-understood by the stakeholders of irrigation systems.