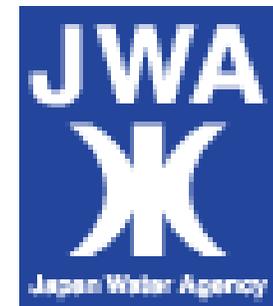




Effort for further sustainable water management

*SASAHARA HIDESHI
Japan Water Agency
NARBO vice secretary general*



Lessons learnt



Photo by Mr. Sugiura, JWA

Someone said, “the government spends money for construction, not maintenance enough.” We have frequently seen malfunctioned facilities without repair.

[Barrage control center]

Installation: 1992

Losing repairable by operator and local company: 2001

Current situation: no budget allocation to procure spare parts

Operation: not remote control

Plan: installation of alternative/substitute facilities considering maintenance

Lessons learnt: prudent choice at the time of installation

Lessons learnt

Applicable and appropriate approach for sustainable management

Needless to say, practitioners have to consider the sustainability at the time of installation of products/system for water resources management.

Photo by JWA



Malfunctioned water pump and motor



Old electric facilities



Enough capacity of the pump repair workshop and procurement of spare parts?



In case of one country, around 60-70% of pump system in whole nation is now malfunction because of aged, less spare parts, shortage of number of staffs for repair and budget. This situation might cause the crisis of economy and food security.

So far, it is necessary to improve the capacity of repair as well as installation of new pump system. In case of Vietnam, the government has the institute of pump and facilities at the strategic point of view.

Lessons learnt

Applicable and appropriate approach for sustainable management

Quality Infrastructure and proper maintenance should be considered.

Recommendation: procurement of equipment provided by **domestic firm/industry or overseas enterprises having sound capacity of the repair work in the country.**



Low cost equipment, but not quality

Photo by JWA

Even if the low cost machines were newly procured, it happens more or less often that **they malfunction soon and need to spend the high life cycle cost.**

Proper capacity and effort

Photo by Mr. Sugiura, JWA



Facility: Power generation (GE, USA) 105MW * 3 machines and pipeline

Installation: **1923**

Status : No problem : Operator manages with proper maintenance.

Operator procures spare parts and installs alternative/substitute equipment or procure spare parts.

Background: Enough income from power generation

Good governance with proper capacity of in-house staffs

Practice of PJT 2

Source: Web and FB of PJT 2



In this barrage, PJT 2 manufactures spare parts on site as well as procure equipments.



PJT 2 installed the field data monitoring system after prudent comparison of several countries' system.



Vietnam

Source: Web of VAWR



Institute For Pump And Water Resources Machines



Japan



Pump repair workshop in Niigata pref.

Source: E-TRUST

Capacity of in-house staffs

Applicable and appropriate approach for sustainable management
Improve the capacity on sharing information among practitioners

Good example on localized system: **GSM system** for hourly monitoring developed by PJT1 Indonesia



Sengguruh dam
in Indonesia

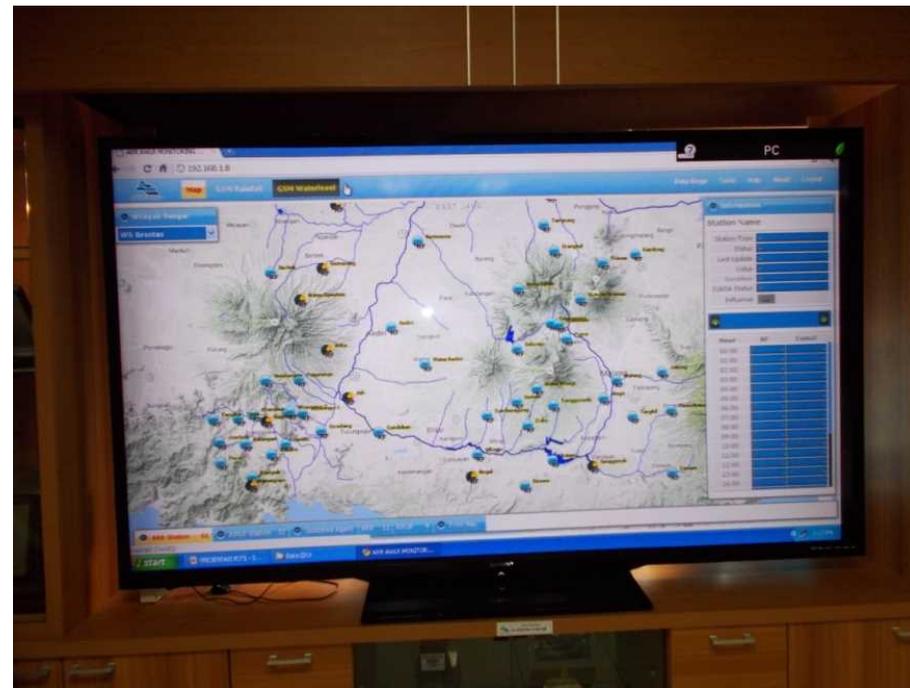


Water level
indicator/water gauge



Transmitter receiver

Photo by Sugiura, JWA



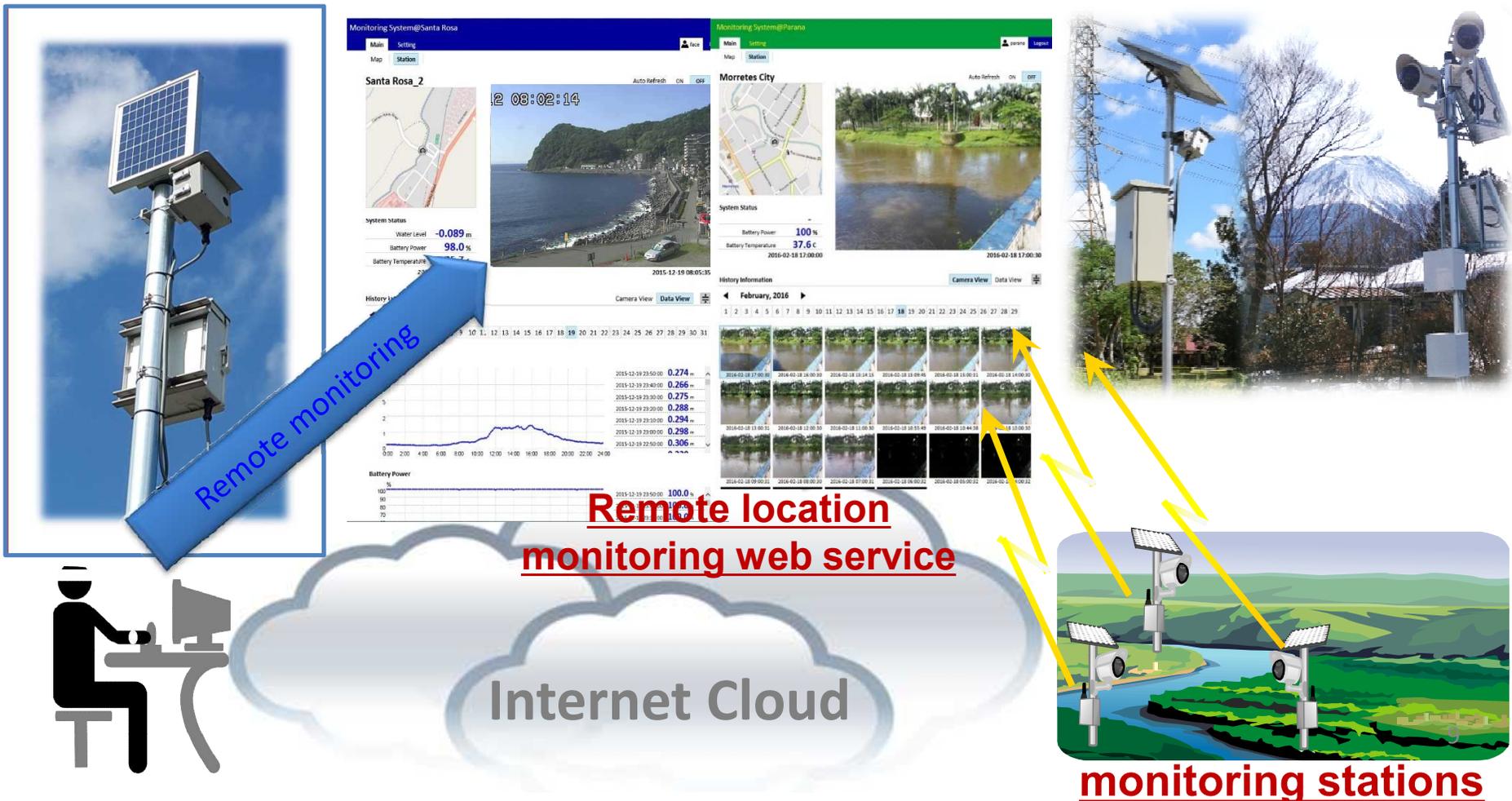
Display board

- All parts were procured by the local market with cheap cost
- Working rate : more than 99% (100%)
- PJT1 initially manufactured by themselves and now procures the spare parts.

Currently cost effective equipments are developed

Overview of the remote location monitoring system

This monitoring system enables you to **observe remote locations** by visual and data. It helps to detect **abnormal circumstance, sing of disaster and environmental variation.**



Advantages of the system (almost parts can be procured in each country)

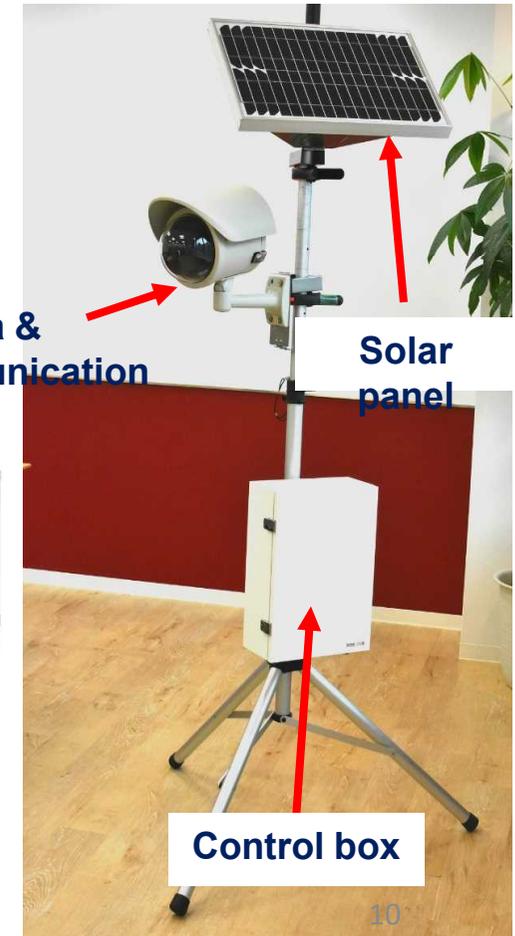
The system is consisted of

Monitoring stations and **Monitoring web service.**

- ✓ Monitoring station is able to deploy anywhere you wish to monitor at minimum cost, time and maintenance.
 - Driven by solar power and sending data through mobile phone network.
 - Consisted of commodity parts which can be procured in local market.
- ✓ Optional sensors are available.
 - Weather sensor, Water level sensor, Land slide sensor, Rain gauge and so on.
- ✓ Provide information through the Internet as a cloud service.
 - Initial investment is saved.
 - Get the information anywhere and anytime as long as the internet access is available.



Warning dissemination



Application cases

Disaster monitoring for early warning

  
Used in Brazil, Philippines and Bangladesh



Flood, Tsunami



Land slide
Debris flood

Observation of Nature environment



Birds and
Animals



Coastal / river bank erosion

Renewable energy plants operation

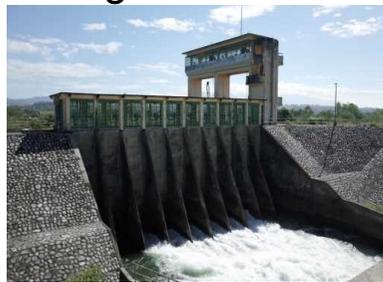


Solar



Wind

Agriculture and Irrigation management



Irrigation



Agriculture

Social infrastructure and Construction site monitoring



Construction

used in Myanmar 



Traffic
Security

What are the necessary approaches?

Prudent comparison with several watch before installation :
sharing information

Capacity of in-house staffs to
judge the best

Fund for repair with capacity of
private company

Find and share of the applicable
approach through NARBO



Water level gauge in
Asia under Japan's
ODA by firms

JWA always challenges to improve its service.

Source: JWA Tone canal project office



Practitioners, especially engineers, have the responsibility to ensure the quality with proper management !

Key for success: Quality Infrastructure



Extra slide on water quality in Bangladesh

SSCM in Bangladesh



Parameters		Arsenic (砒素) (mg/L)			Phosphate (リン酸) (mg/L)			Iron (鉄) (mg/L)			Manganese (マンガン) (mg/L)		
Bangladesh Standard (バングラデシュ基準)		0.05			6			0.3 - 1.0			0.1		
Date of Sampling サンプル採取日	Date of Analysis 水質検査日	Raw (原水)	Filtered (浄化後)	Ratio (除去率)	Raw (原水)	Filtered (浄化後)	Ratio (除去率)	Raw (原水)	Filtered (浄化後)	Ratio (除去率)	Raw (原水)	Filtered (浄化後)	Ratio (除去率)
4 July 2015	5-7 July 2015	0.222	0.153	31%	1.52	0.69	55%	6.17	0.650	89%	0.761	0.169	78%
4 Oct 2015	5-8 Oct 2015	0.196	0.059	70%	2.00	0.43	79%	3.45	0.000	100%	0.634	0.033	95%
23 March 2016	23 March 2016	0.176	0.059	66%	1.82	0.39	79%	5.29	0.070	99%	0.642	0.034	95%
27 April 2016	28 April 2016	0.205	0.069	66%	1.69	0.41	76%	5.81	0.047	99%	0.698	0.029	96%
29 May 2016	1 June 2016	0.134	0.050	63%	1.52	0.46	70%	3.6	0.490	86%	0.597	0.157	74%
31 July 2016	1-2 August 2016	0.182	0.051	72%	1.71	0.38	78%	5.64	0.000	100%	0.601	0.000	100%

Almost cleared

100% cleared !

Source: JWA

Thank you for your attention