



Overview of Water Supply Services in Thailand

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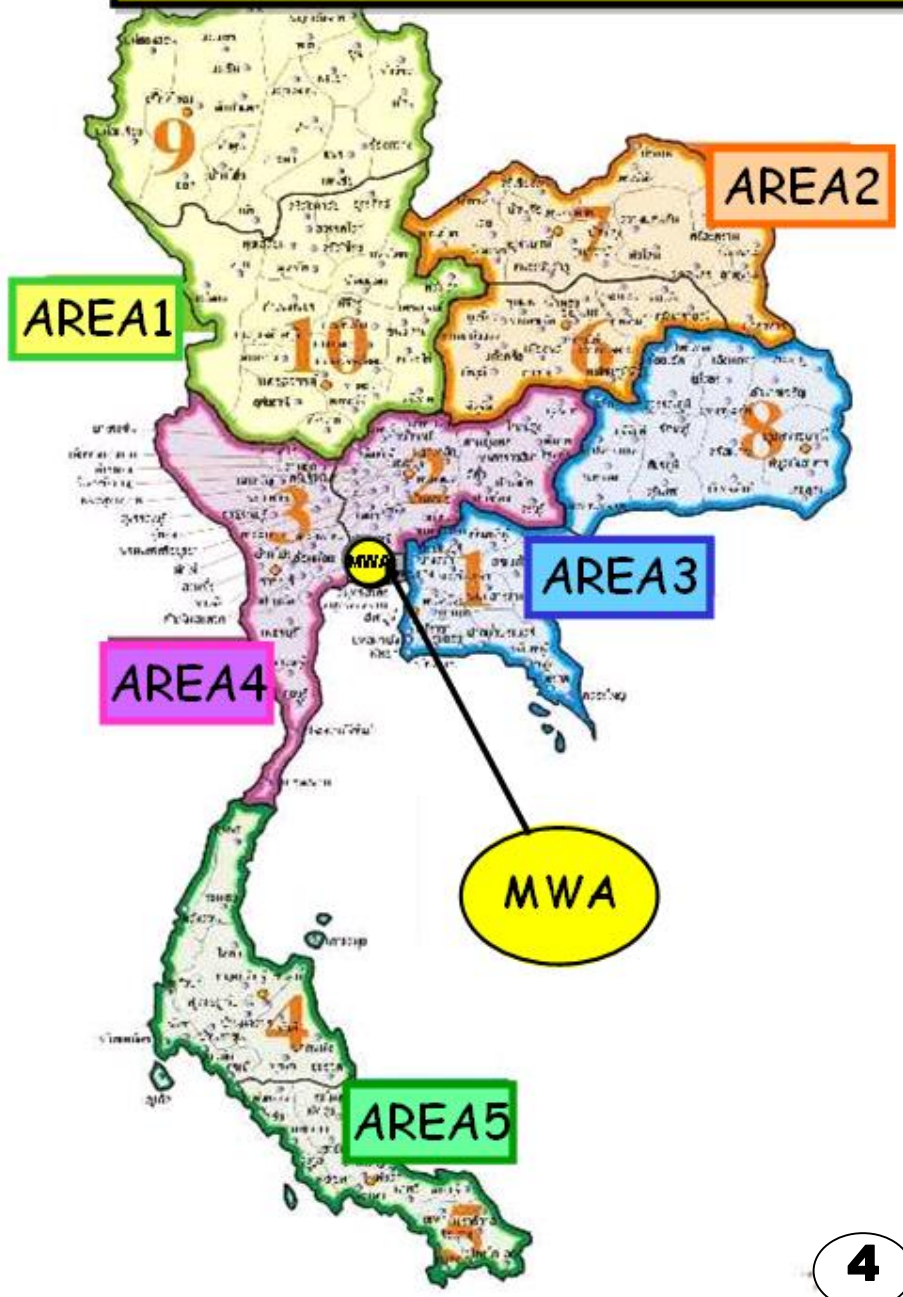
Presentation Topics

- 1. Water Supply Service in Thailand**
- 2. PWA Water Supply Service & General Information**

1. WATER SUPPLY SERVICE IN THAILAND (OVERVIEW)



PWA SERVICE AREAS



THAILAND COUNTRY PROFILE

PROVINCES

77

POPULATION

64

Millions Persons

- URBAN

30

”

”

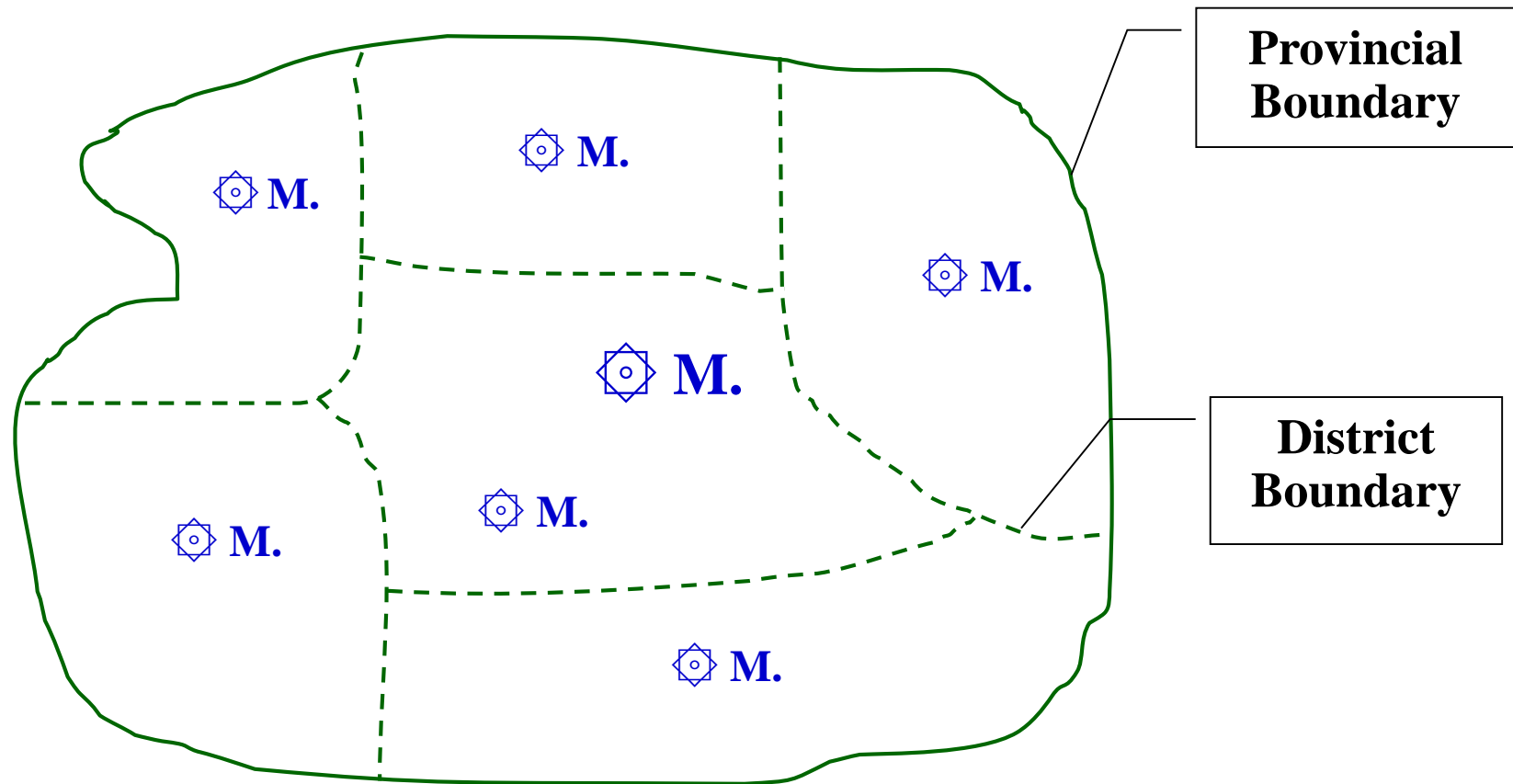
- RURAL

34

”

”

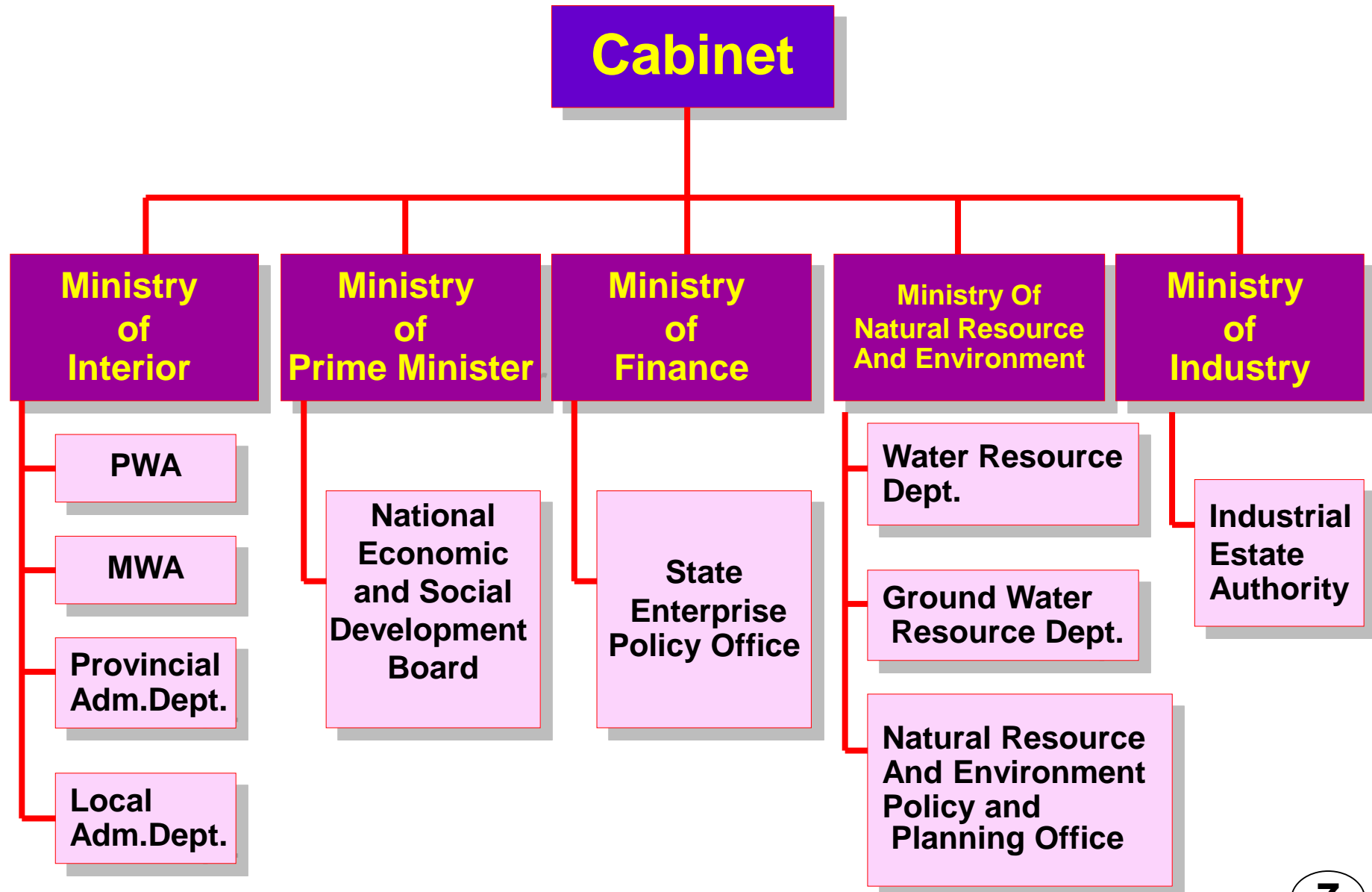
PROVINCE BOUNDARY , DISTRICTS BOUNDARY AND COMMUNITIES



➤ **URBAN :**  M (Municipalities) 2,010

➤ **RURAL :**  V (Villages) 74,955

MAJOR AGENCIES CONCERNED WITH WATER SUPPLY IN THAILAND



Government Organizations Concerned With Water Supply Sector in Thailand

Agency	Major Roles in Water Supply		
	Policy Setting	Planning	Operation
1. Ministry of Interior			
1.1 MWA.....	★	★	★
1.2 PWA.....	★	★	★
1.3 Provincial Adm. Dept.....	★	★	
1.4 Local Adm. Dept.....	★	★	
2. Ministry of Prime Minister's Office			
2.1 NESDB.....	★	★	
2.2 Budget Bureau.....	★		
3. Ministry of Finance			
3.1 State Enterprise Policy Office.....	★		
4. Ministry of Natural Resource & Envi.			
4.1 Water Resource Dept.....	★	★	
4.2 Ground Water Resource Dept.	★	★	
4.3 Nat.Res & Env Policy+Plann.Off.....	★	★	
5. Ministry of Industry			
5.1 Industr.Estate Authority.....	★	★	★

WATER SUPPLY SECTOR INSTITUTIONS

URBAN AREAS

- MWA
- PWA
- MUNICIPALITIES



RURAL AREAS

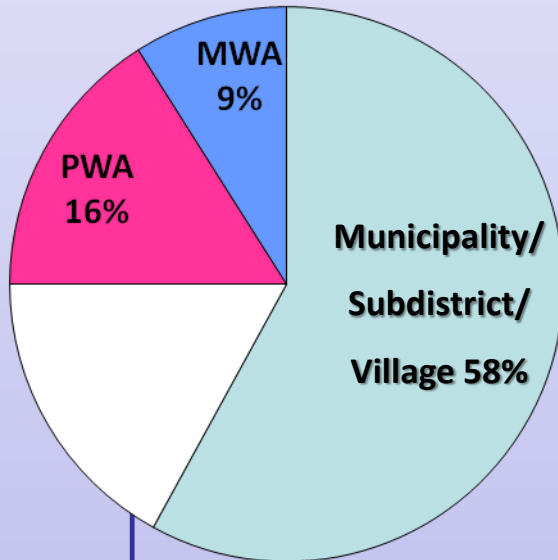
PIPED

- PWA
- LOCAL AUTHORITIES
(Subdistrict Administration
Organization : SAO)

NON-PIPED

- LOCAL AUTHORITIES
- Village

Water Supply Service in Thailand



No tap water 17 %



Water Supply Service Agencies in Thailand

❖ PWA (16%)

(Across the country except Bangkok, Nonthaburi, Samutprakarn and Local Authority water supply system)

3.8 mil. connections



❖ MWA. (9%)

Bangkok, Nonthaburi, Samutprakarn

2.17 mil.connections

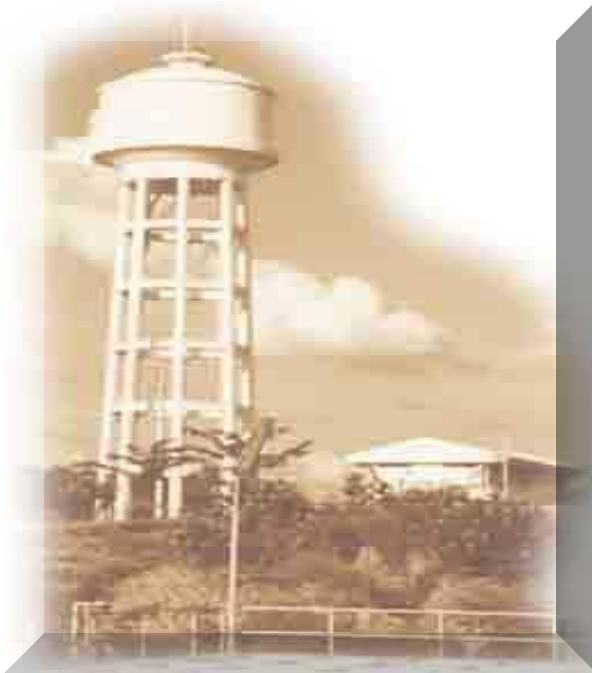


❖ Municipality / Subdistrict /Village (58%)

15 Mil. Connections



2. PWA WATER SUPPLY SERVICES & GENERAL INFORMATIONS



- Established
in 1979



- To supply (tap) water
across the country
except in Bangkok &
2 adjoining provinces
- To carry out
related business

PWA service area



การประปาส่วนภูมิภาค
Provincial Waterworks Authority



★ PWA Headquarters

● 10 Regional Offices

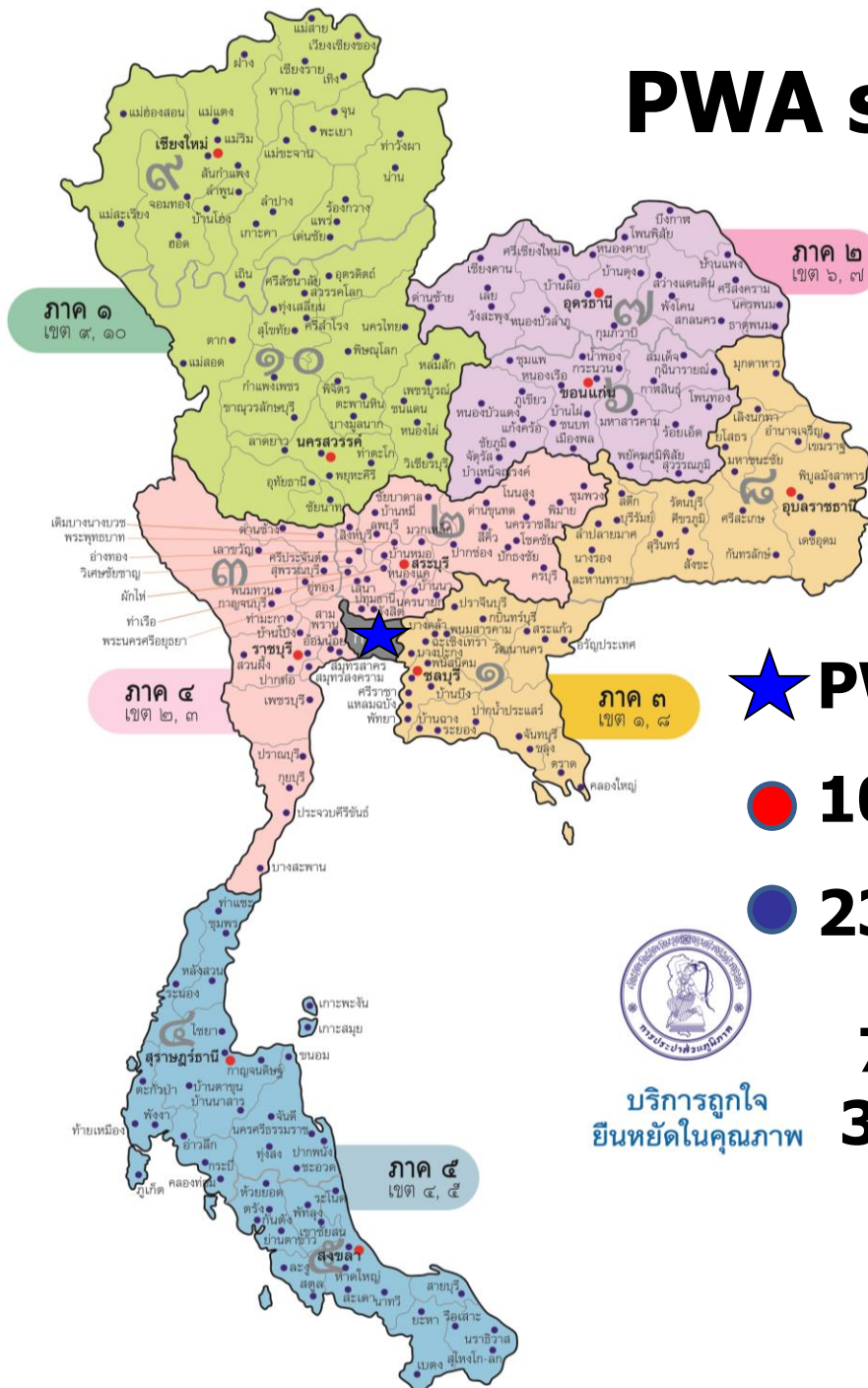
● 234 Waterworks

74 Provinces

3.8 million connections



บริการถูกใจ
ยืนหยัดในคุณภาพ





SIZE OF PWA's WATERWORKS

(CLASSIFIED BY NUMBER OF CUSTOMER)

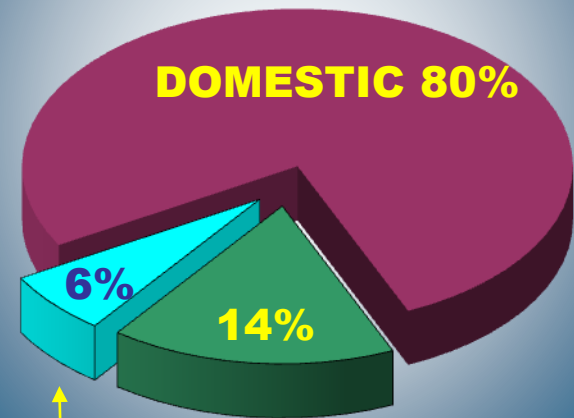
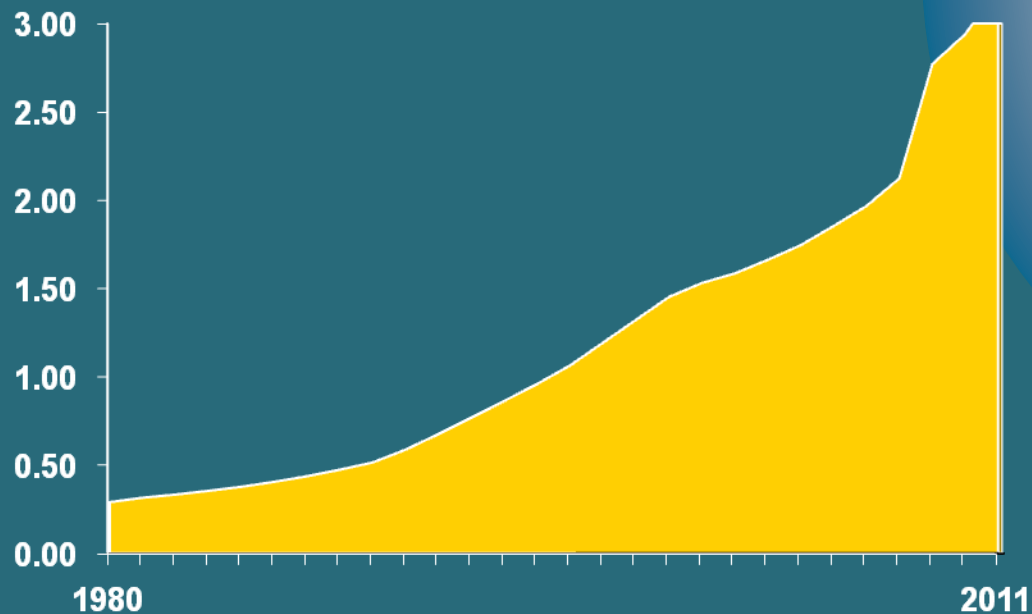
Customers (Households/Connections)	Number of Waterworks	Proportion %
1-5,000	57	24
5,001-10,000	71	31
10,001-15,000	39	17
15,001-20,000	18	8
20,001-25,000	15	6
> 25,000	34	14
Total	234	100

RAW WATER SOURCES OF PWA 234 WATERWORKS (Data in 2014)

REGION/AREA	NUMBER & % OF WATERWORKS			
	SURFACE W.	GROUND W.	BOTH (SW&GW)	TOTAL
NORTH	23 (82%)	2 (7%)	3 (11%)	28 (100%)
NORTHEAST	59 (82%)	0 (0%)	13 (18%)	72 (100%)
CENTER	43 (61%)	5 (8%)	20 (31%)	68 (100%)
EAST	22 (100%)	0 (0%)	0 (0%)	22 (100%)
SOUTH	39 (89%)	1 (2%)	4 (9%)	44 (100%)
TOTAL	186 (79%)	8 (4%)	40 (17%)	234 (100%)

PWA CUSTOMERS

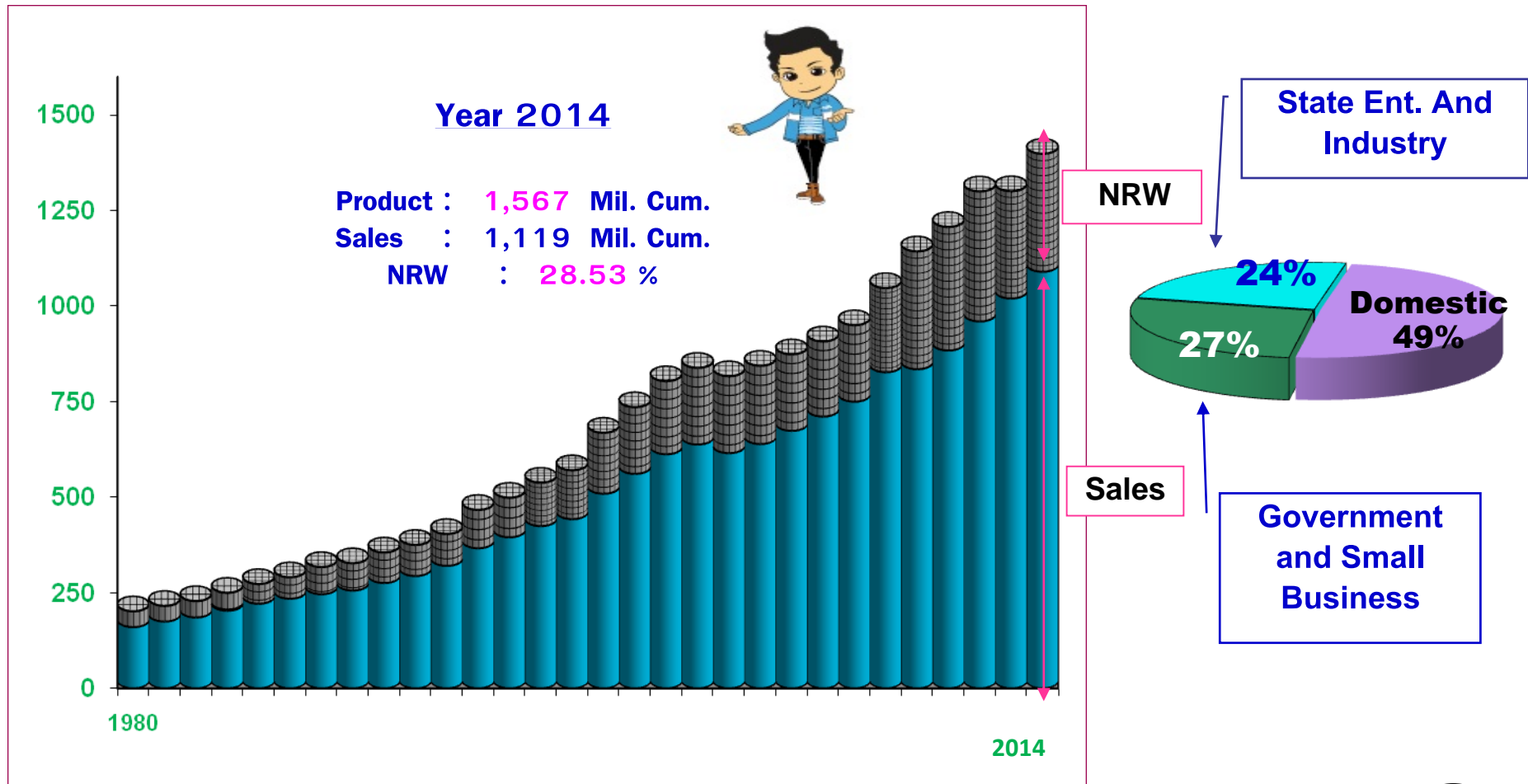
Mil.conn.



GOVERNMENT &
SMALL BUSINESS

STATE ENTERPRISE &
LARGE BUSINESS

PWA water supply services



Water Distribution System (Yr.2015)

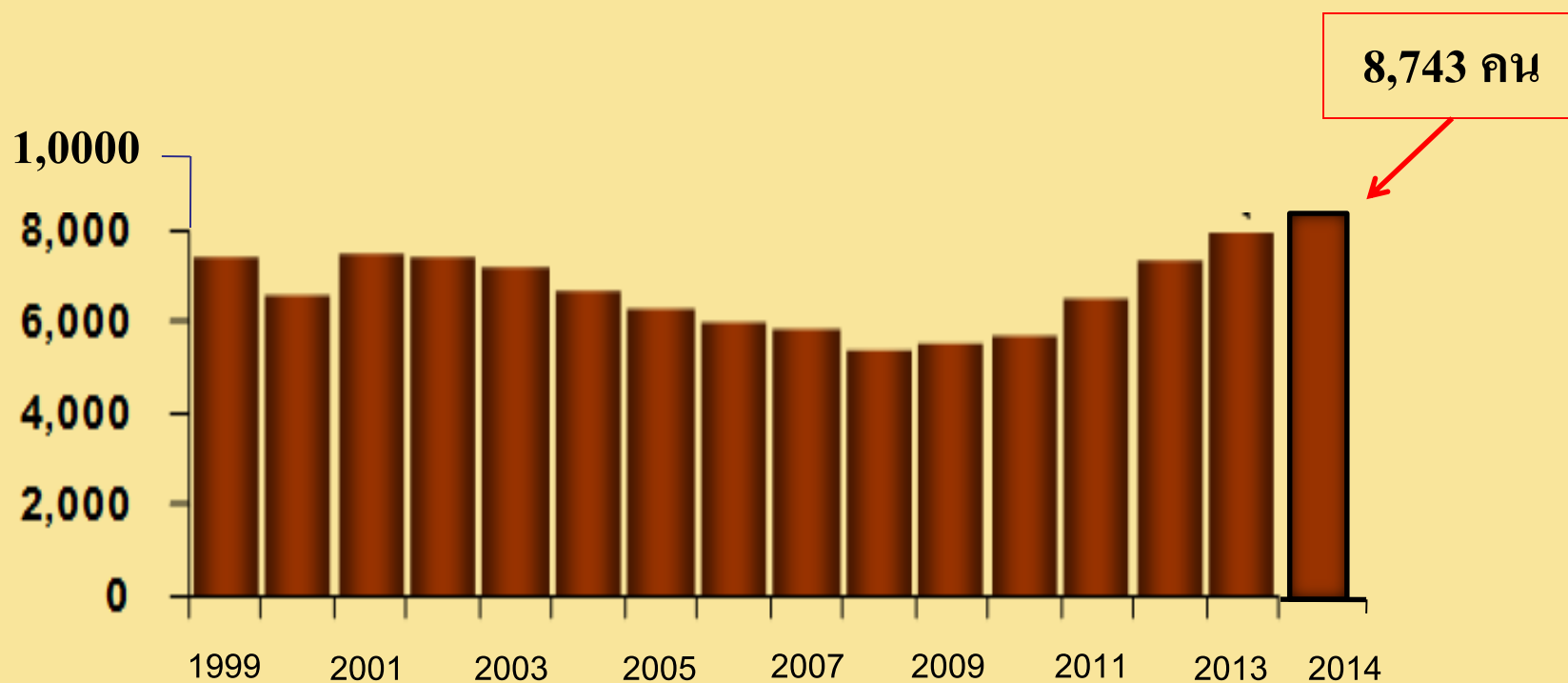


**total length
80,000 kilometres**

**Beyond service life
50,000 kilometres**



NO. OF STAFF

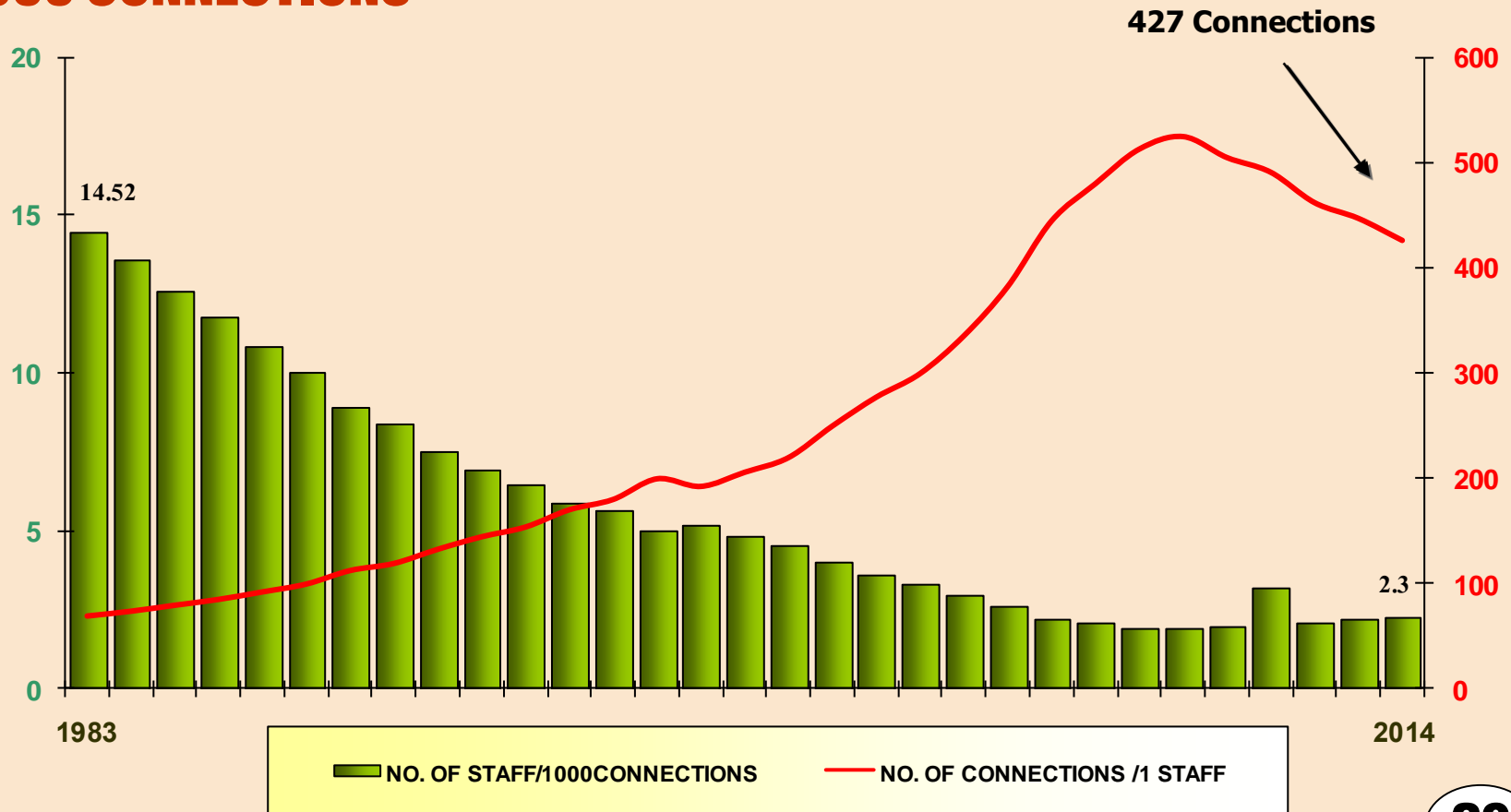


STAFF PER CONNECTION

**STAFF
PER
1,000 CONNECTIONS**

YEAR 2014

- 2.3 Staffs / 1,000 connections OR
- 427 connections / 1 staff



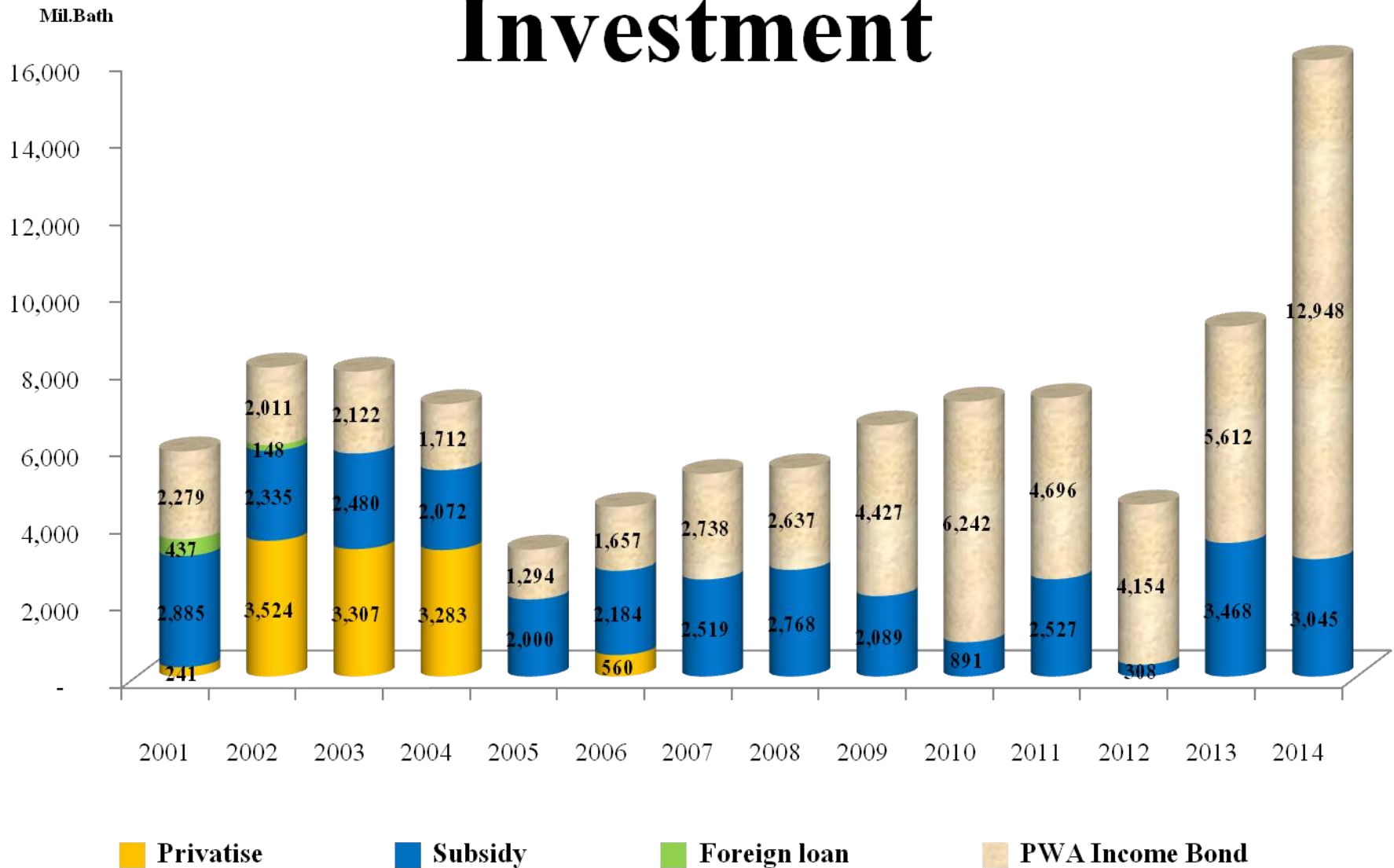
PROJECT INVESTMENT PLAN

Type of PWA's Project :

There are 5 major investment projects of PWA (5 Project Categories)

Project Categories (5 Types of Investment Projects)	Proportion of Subsidy Gov.Subsidy : PWA Income	
1. PWA Waterworks Expansion	75%	25%
2. Transferred WWKS Expansion	100%	-
3. Water Resources Development	50%	50%
4. Pipe Replacement	100%	-
5. Acceleration of Rural Water Supply Extension (only pipe laying)	100%	-

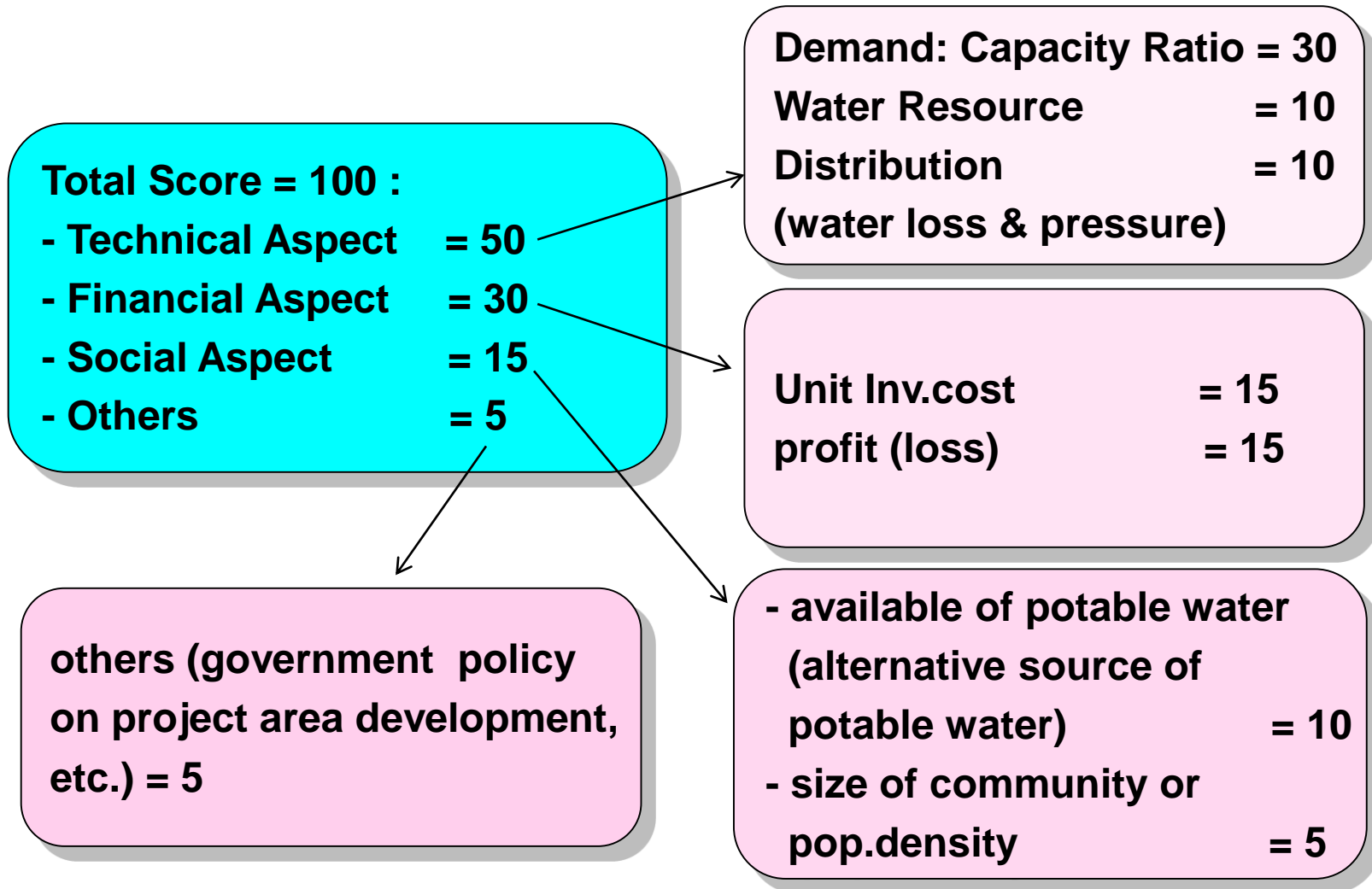
Investment



PROJECT INVESTMENT IN YEAR 2015 (NEW PROJECT)
TOTAL CONSTRUCTION COST

Project	Proposed (gov.subsidy)		Approved (Budget)		
	Number	Mill. Baht	Number	Mill. Baht	%
Waterworks Expansion	26	8,238	9	2,250	28
Transferred Waterworks Expansion	7	608	2	339	56
Water Resources Development	15	699	4	195	28
Pipe replacement	6	122	4	89	73
Acceleration of rural water supply extension(only pipe laying)	524	2,246	149	455	21
Total	578	11,913	168	3,328	28

PROJECT SELECTION CRITERIA/RANKING (WATER SUPPLY SYSTEM EXPANSION PROJECTS)



Customer Service



complaints handling
thru “call center”
1662

PWA Thailand



• Bill payment



- Counter Services



- Banks



- Post Offices



- TESCO Lotus



- True



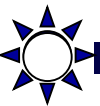
- PWA Offices



- ATM

Water Tariff (Water Rate)

A **price** assigned to **water** **supplied** by a public utility through a **piped network** to its customers



Criteria for Tariff Setting or Proper Tariff Should be relied on or reflected in

(a) Accounting or Financial Point of View

- The real cost of water
- Performance efficiency
- Necessity of investment



Criteria for Tariff Setting or Proper Tariff Should be relied on or reflected in

(b) Economic Point of View

- The scarcity of water resources
(real value of water)
- Social or fairness of the society
(ability to pay or affordability)



Criteria for Tariff Setting or Proper Tariff Should be relied on or reflected in

(c) Management Perspective

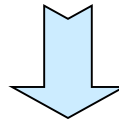
- Simple tariff structure (accepted by customers or easily understood by customer)
- Not difficult or not too complicate for operation staff to handle or manage (for example, there are not too many types of customer or wide ranges of water usage)



**Economics
Point of View**

**Accounting
or Financial
Point of View**

**Management
Point of View**



People could get good services
(both in quantity and quality of water)



People could get access to clean water



Service provider could reach its
long-term financial target

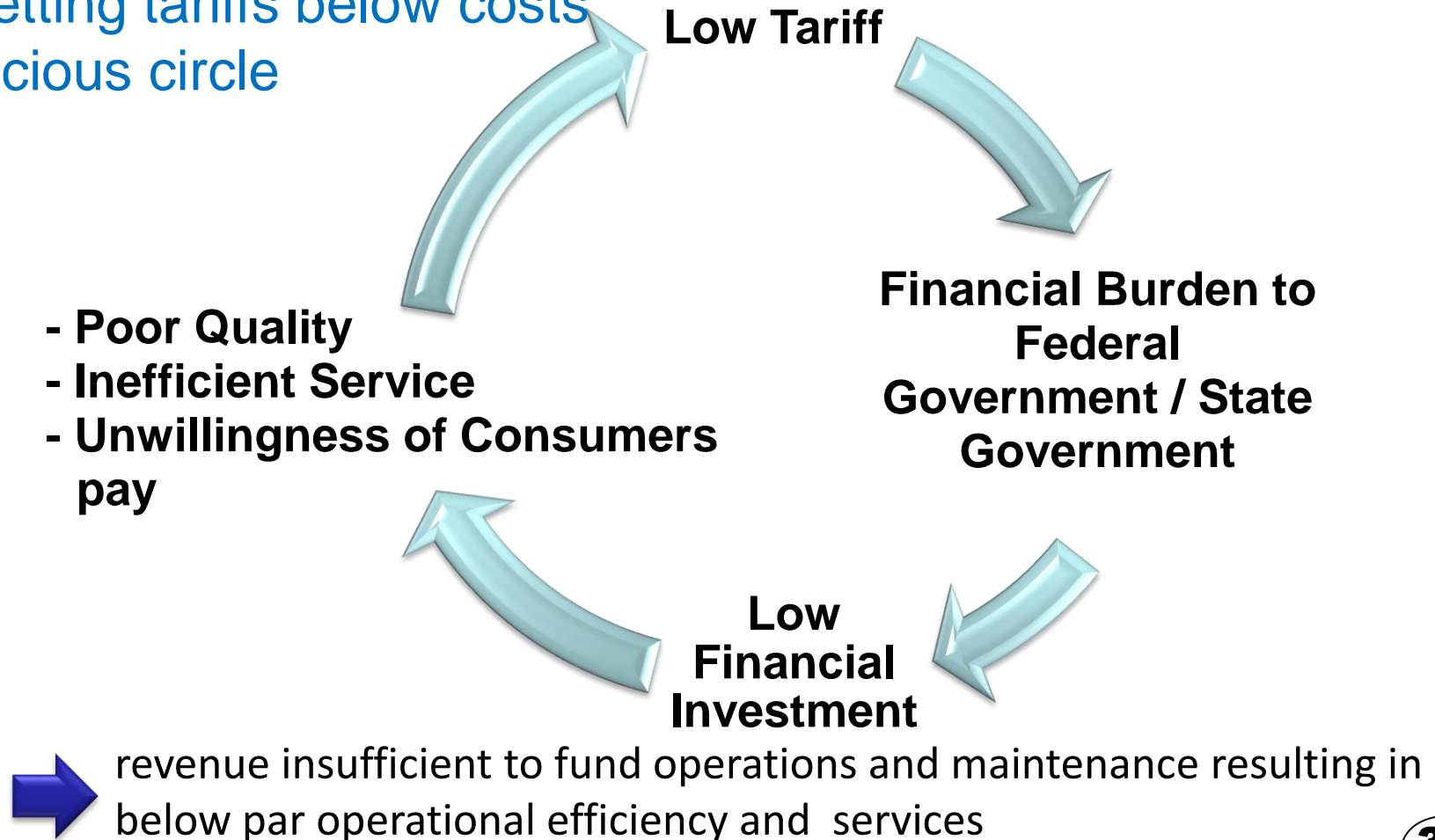
Conclusion

- ⌄ A clear separation of roles of Regulator, Operator and Owner is required
- ⌄ Full cost recovery principle or unless a proper Public Service Obligation Funds (Subsidy) should be launched
- ⌄ Ensure access to the poor through policy and regulation



FULLCOST & UNFULLCOST RECOVERY

- Under state enactments – long gestation between tariff reviews
- Setting tariffs below costs
- Vicious circle



Water Tariff Policy (In Thailand at present)



- No national or local regulatory body (Independent regulator)
- Tariff would be considered in ad-hoc basis
- Ability-to-pay principle (domestic and non-domestic customers)
- Water Charge designed base on progressive rate principle
- There is cross subsidization among customer types
- In case of PWA's tariff, Every 3-5 years, new tariff would be applied to the cabinet (or to the Board of Directors)

Water Tariff Structure
(Baht/cu.m)

Range (Cum./Month.)	Area 1 All area except area 1 & 2	Area 2 Privatise area and Chonburi Province	Area 3 Phuket , Samui, Pa- Ngan Waterworks
Type 1 Domestic			
1-10	10.20	10.20	10.20
11-20	16.00	16.00	16.00
21-30	19.00	19.00	19.00
31-50	21.20	21.20	21.20
51-80			
81-100			
TYPE 2 Government Small Business			
1-10	16.00	17.00	18.00
11-20	19.00	20.00	21.00
21-30	20.00	21.00	22.00
31-50	21.50	22.00	23.00
51-80	21.60	23.00	24.00
81-100	21.65	24.00	26.00
101-300	21.70	27.40	30.25
301-1,000	21.75	27.50	30.25
1,001-2,000	21.80	27.60	30.25
2,001-3,000	21.85	27.80	30.25
>3,000	21.90	28.00	30.25
Type 3 State Ent. Industrial			
1-10	18.00	18.25	18.50
11-20	21.00	21.50	22.00
21-30	24.00	25.50	26.00
31-50	27.00	28.50	29.00
51-80	29.00	31.00	31.50
81-100	29.25	31.25	32.50
101-300	29.50	31.50	33.50
301-1,000	29.75	31.75	34.75
1,001-2,000	29.50	32.00	34.75
2,001-3,000	29.25	32.25	34.75
>3,000	29.00	32.50	34.75

PWA Waterworks Expansion



Water Safety Plan



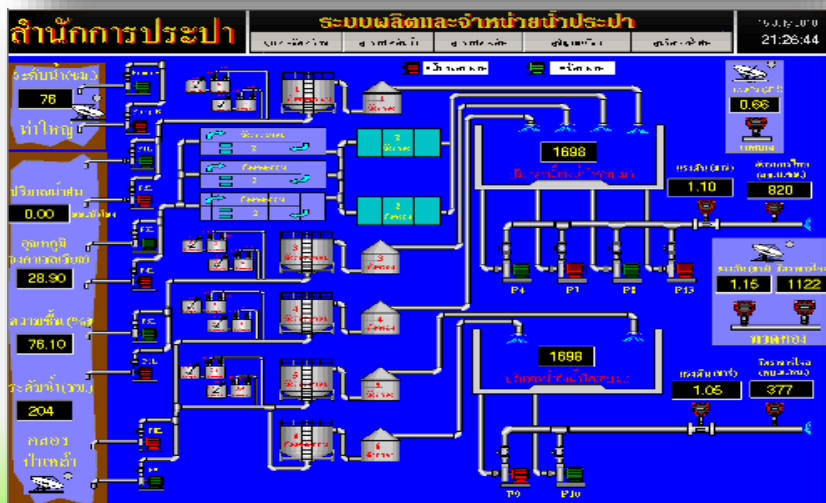
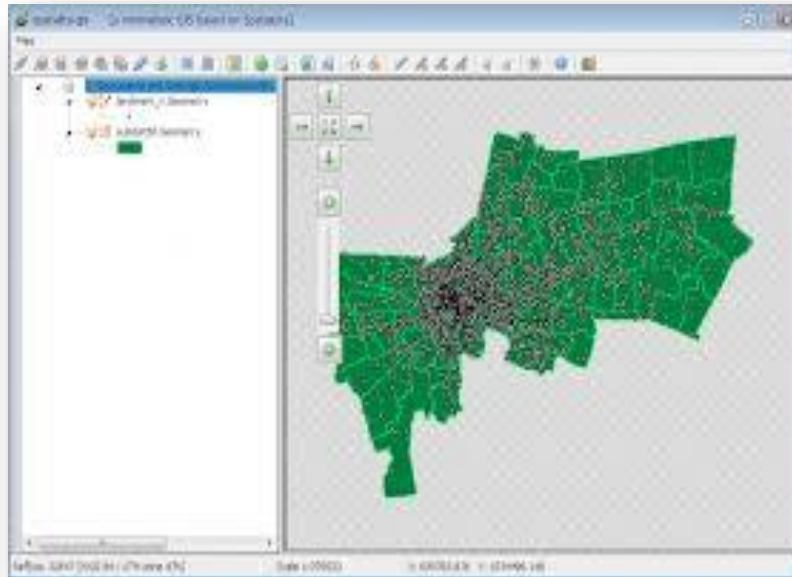
SCADA



Acceleration of Rural Water Supply Extension



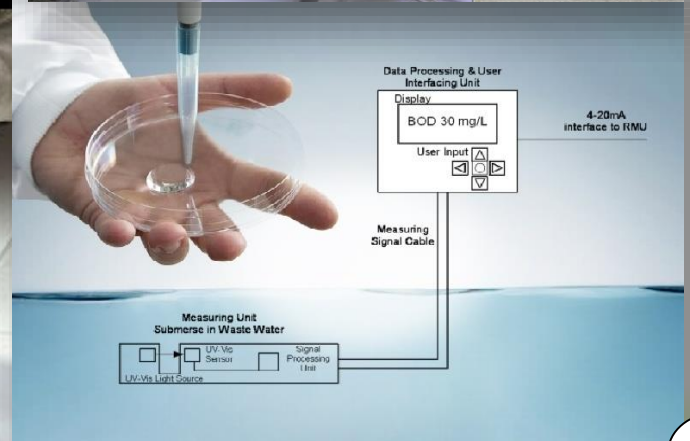
DMA



Early Warning System



ISO/IEC 17025



Call Center 1662



PWA Measure to Prevent Drought Problem

1.Raw Water Source

- (1) Dredge shallow raw water source
- (2) Survey for additional raw water source
- (3) Coordinate with private sector to use raw water
- (4) Pump raw water from natural reservoir
- (5) Monitor water quality problem Ex. Algae in raw water
- (6) Build temporary dam in the river to raise water level (if necessary)
- (7) Develop well without effect to the environment

PWA Measure to Prevent Drought Problem (Continued)

2. Production System & Distribution System

- (1) Prepare pump, machine, material and man power for water production and water distribution
- (2) Increase production capacity for potential waterworks
- (3) Add properly chemical to prevent the spread of the disease in dry season
- (4) Reduce water loss in various systems in order to have enough water
- (5) Supply water to cope with raw water and water demand

PWA Measure to Prevent Drought Problem (Continued)

3. Alleviate people who suffer from drought

- (1) PWA use water trucks to distribute water to people who suffer from drought
- (2) PWA supply water to the water truck of other agencies or organizations to alleviate people who suffer from drought outside PWA responsibility area without charge
- (3) Participate in "Alleviate Project Cooperated by 5 agency : The Royal Thai Army, Department of Groundwater Resources, Petroleum Authority of Thailand, Provincial Electricity Authority and Provincial Waterworks Authority"
- (4) Cooperate with Highways Department to alleviate people who suffer from drought



**Distribute water by PWA
water trucks to alleviate
people who suffer from
drought**



Construct weir to raise water level at Nongbualamphu Waterworks (Sriboonrueang Substation)



Dredge sand to drain water
(Thatphanom Waterworks, Nakhonphanom Province)



Dry irrigation reservoir

อ่างเก็บน้ำคลองบึง แหล่งน้ำดิบ กปภ.สาขาประจวบคีรีขันธ์



Dry natural reservoir



Water Quality Control



**Divided into
3 levels**

1. Waterworks Level



**2. Regional Office
Level**

**3. Headquarters
Level**





Ensure in PWA water quality

- **Monitoring raw water quality continuously**
- **Standard Water quality due to control measure of every production process**
- **Quality piping material usage for water supply**
- **Random monitoring of water quality by Head quarters**

Thank you