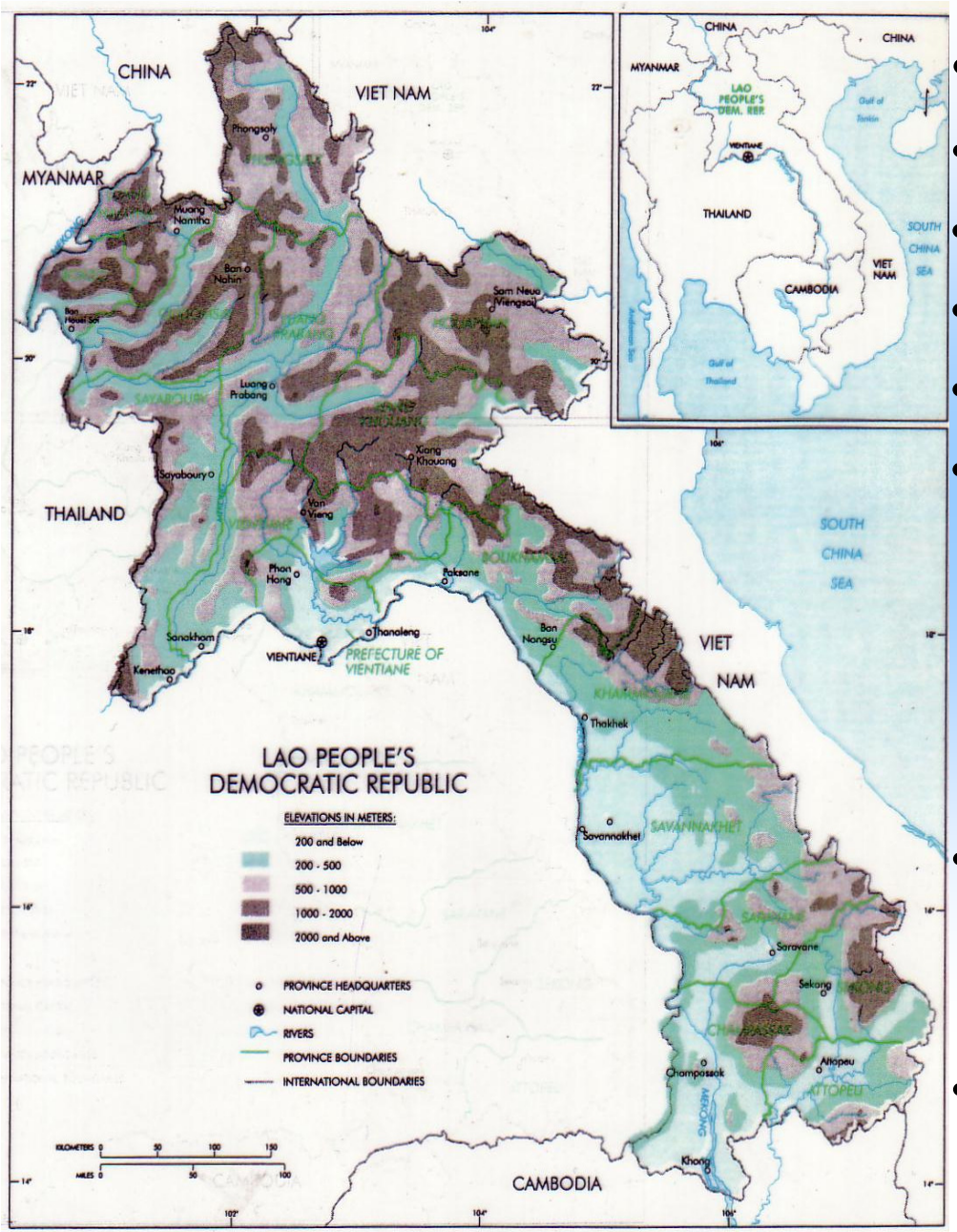
Rural Water Supply in the Lao PDR

General Information



- Location : South East Asian Region
- Area : 236,800 Km^2
- Population : 6,5 mil. (Census 2008)
- The Capital : Vientiane City
- Number of Province :17 Provinces
- Climate :
  - . Average Rainfall 1,850mm/year
  - . Average Temperature 20 ðC in the Northern
  - . Average Temperature 25 ðC in the Southern
- Elevation :
  - . Minimum 100 m with Sea Level
  - . Maximum 2,820 m with Sea Level
- Season : 2 Seasons
  - . Dry Season
  - . Rainning Season

Responsible Organization

- Ministry of Health
- Nationnal Center for Environmental Health and Water Supply
- Provincial Water Supply Office
- District Water Supply Office

Function for National Center for Environmental Health and Water Supply of MOH

- Long-term planning
- Establishment of policies and development national regulations
- Management of national and external funds and distribution to the provinces and districts
- Supervision of the execution of the national plan
- Supervision of the provincial programme
- General financial control
- Provision of technical and technology assistance and training
- Procurement of materials and equipments
- Co-ordination with different ministries, different component and donors
- Conducting scientific surveys and research
- Monitoring and evaluation of implementation
- Establishment of Steering Committee for Water and Sanitation

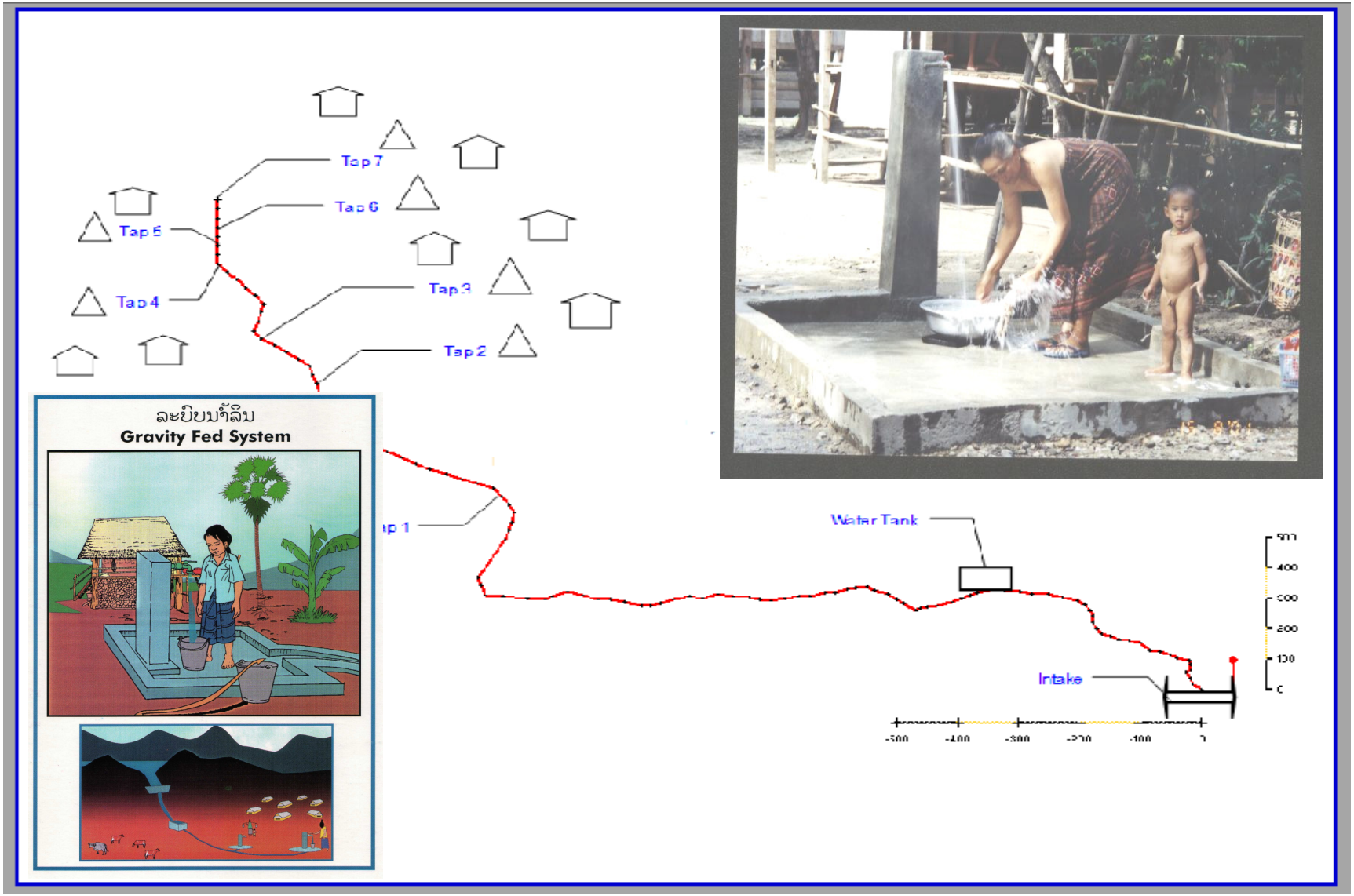
Function for Province and district

- Preparing a plan of operation and action plan
- Management strategy implementation including establishing a suitable supervisor/planning structure in the province, co-ordinations activities between different departments
- Preparing financial plans for government and donors and forwarding these plans to central level
- Project constructions
- Administration of projects
- Promotion of community contribution in construction
- Promotion of community participation in operation and maintenance of project
- Design of Techniques and Technologies

Rural Water Supply Technologies in the Lao P.D.R

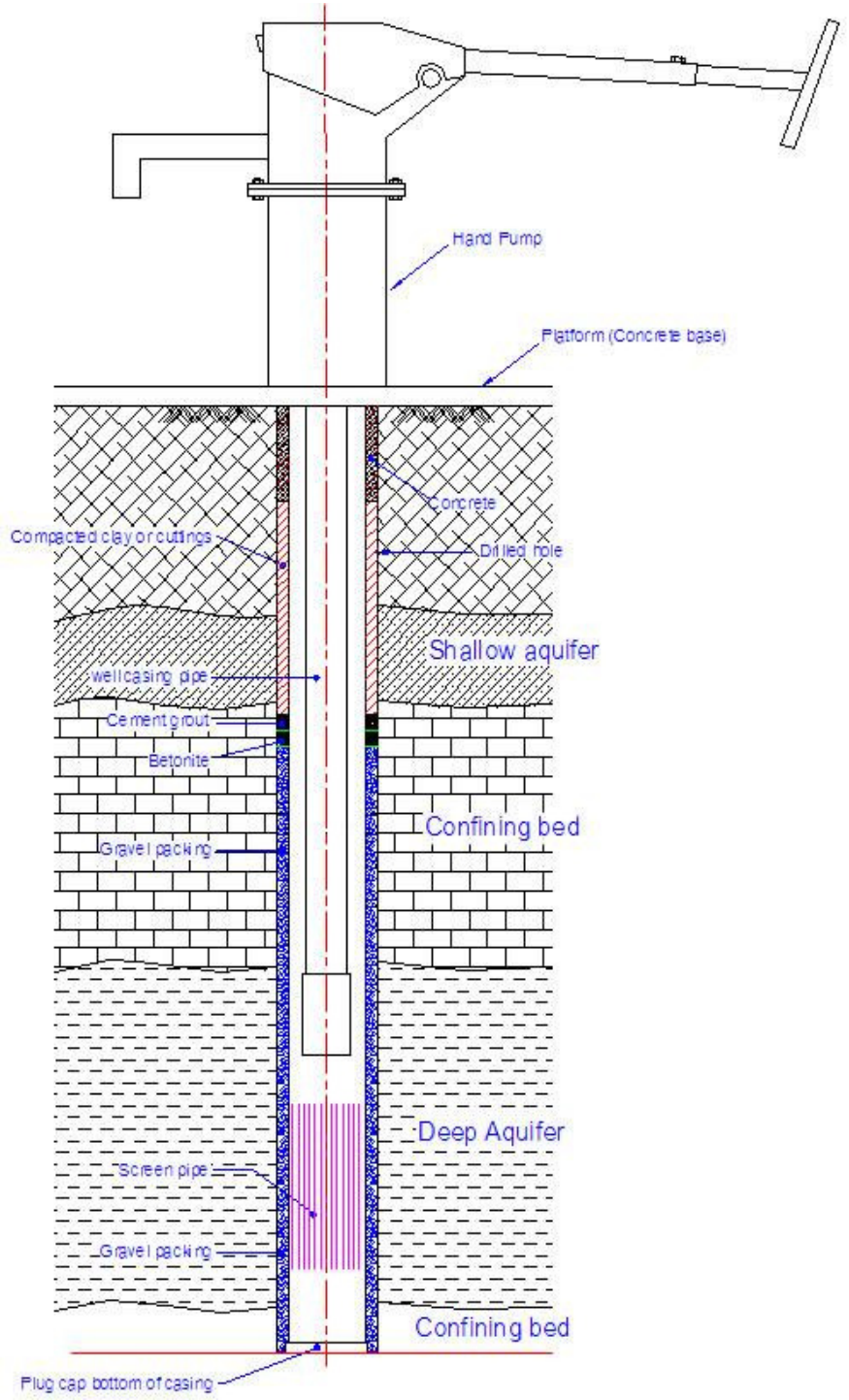
- Gravity Fed System (Gravity Flow System)
- Tube Well (Deep Borehole)
- Dug Well (shallow Wells with ring)
- Pipe Scheme
  (Water Supply System with Elevated Tank)
- Rain Water Jar and Tank

Gravity Fed System (Gravity Flow System)

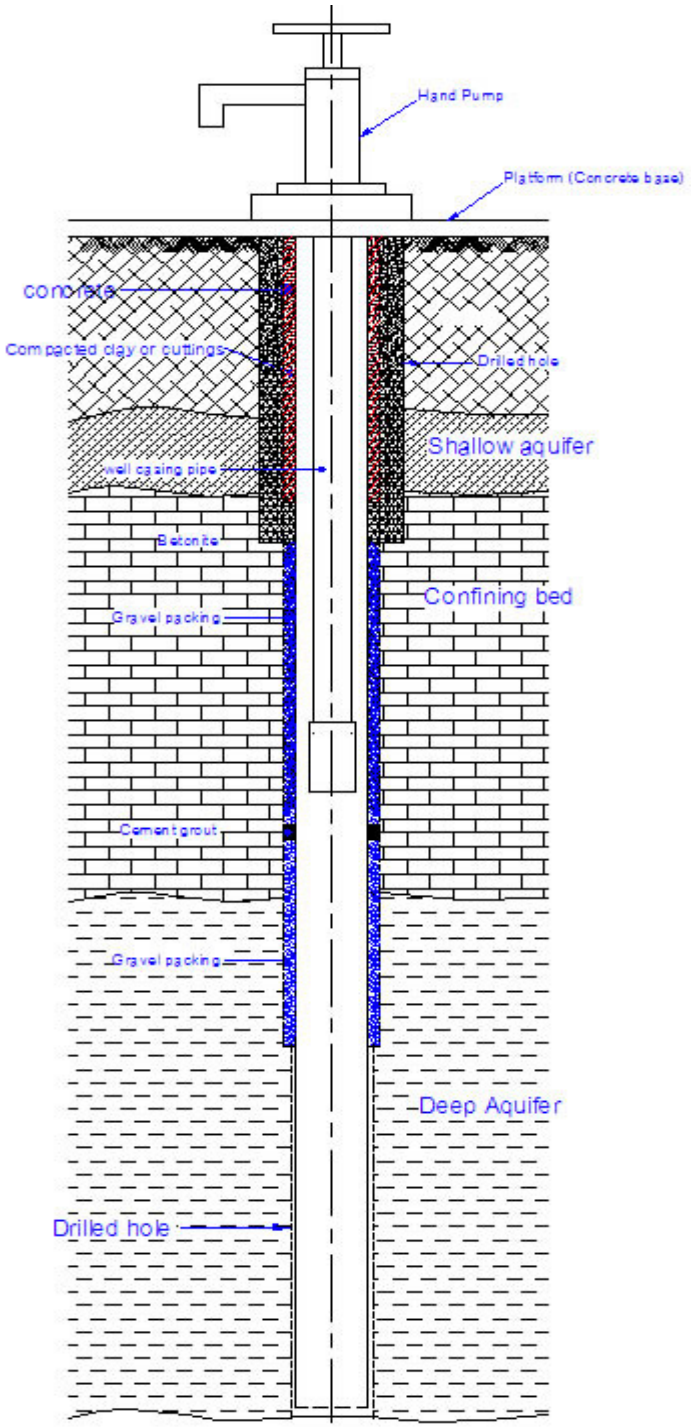


Tube Well (Close BH)

(Deep Borehole)

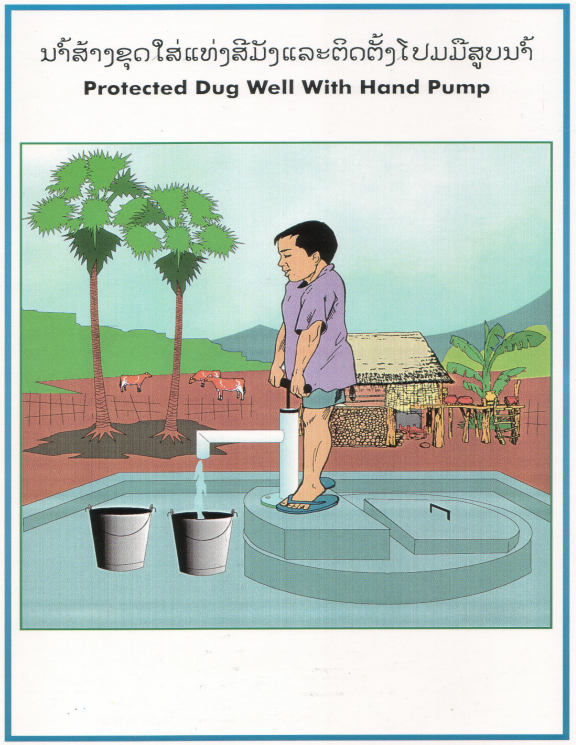


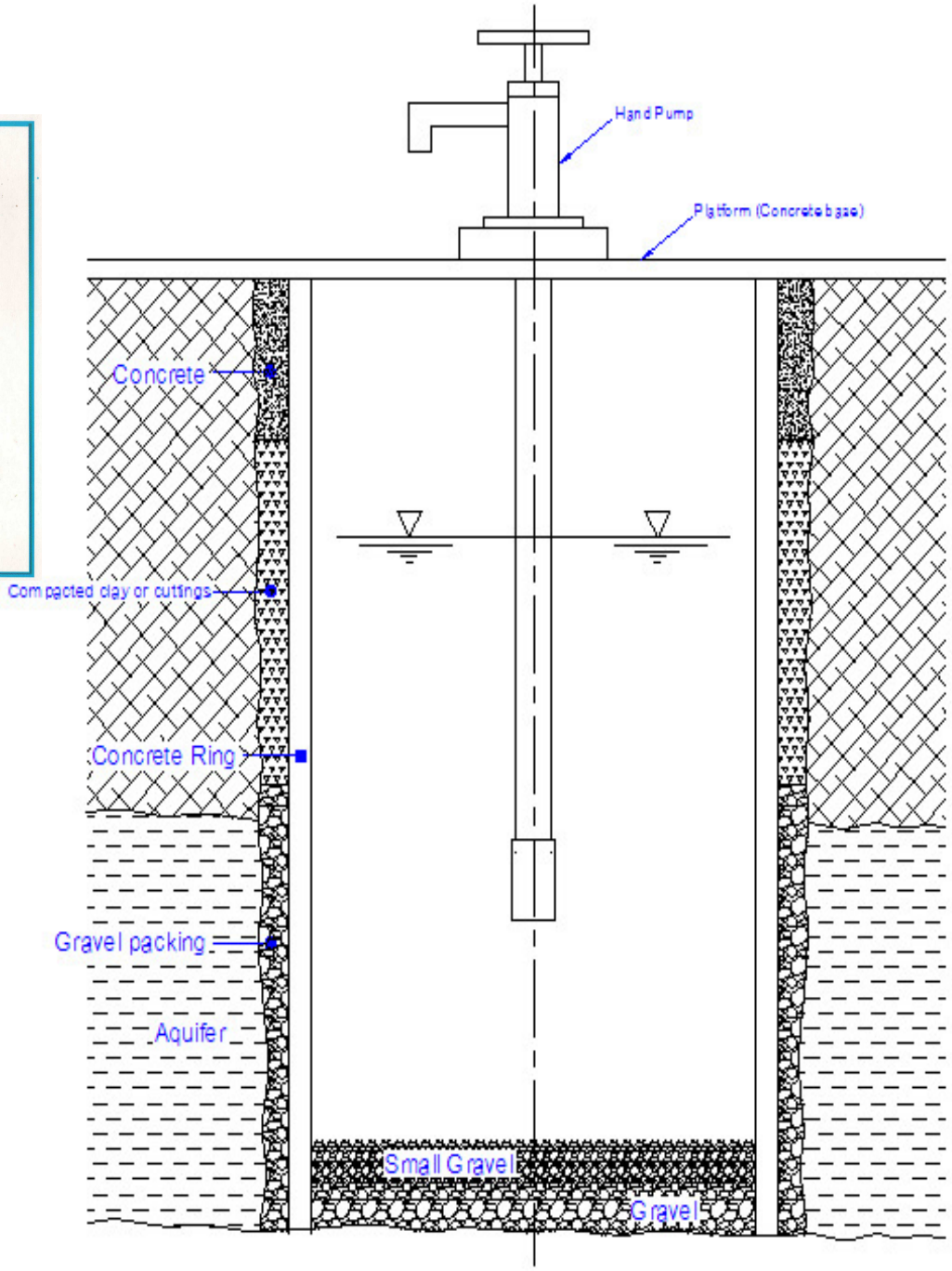
Tube Well (Open BH)
(Deep Borehole)



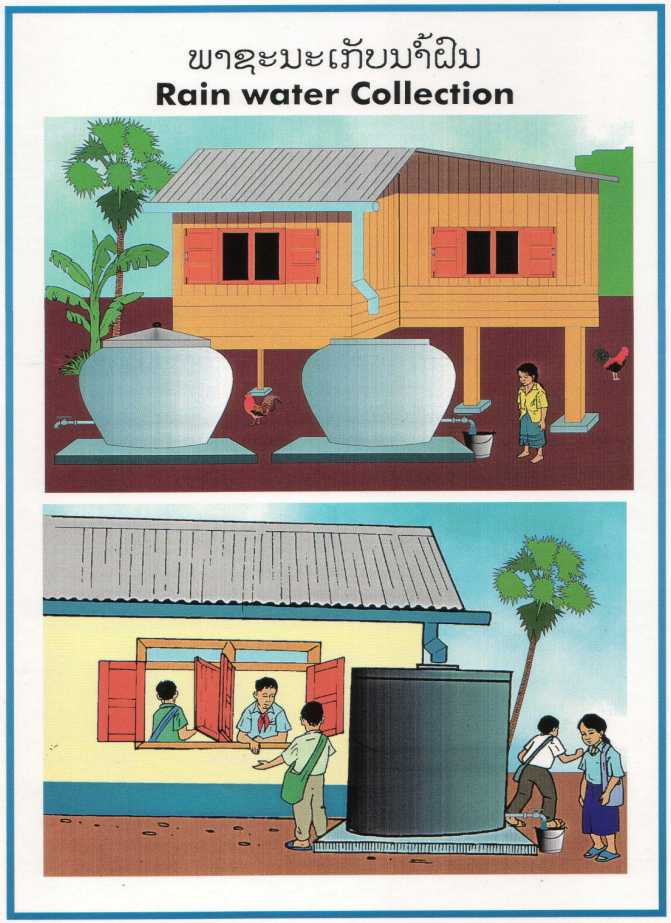
Dug Well


ນ້ຳສ້າງຂຸດໃສ່ແຫ່ງສີມັງ
Protected Dug Well


ນ້ຳສ້າງຂຸດໃສ່ແຫ່ງສີມັງແລະຕິດຕັ້ງໂຢມມືສູບນ້ຳ
Protected Dug Well With Hand Pump


Hand Pump
Platform (Concrete base)
Concrete
Compacted clay or cuttings
Concrete Ring
Gravel packing
Aquifer
Small Gravel
Gravel

Rain Water Jar and Tank

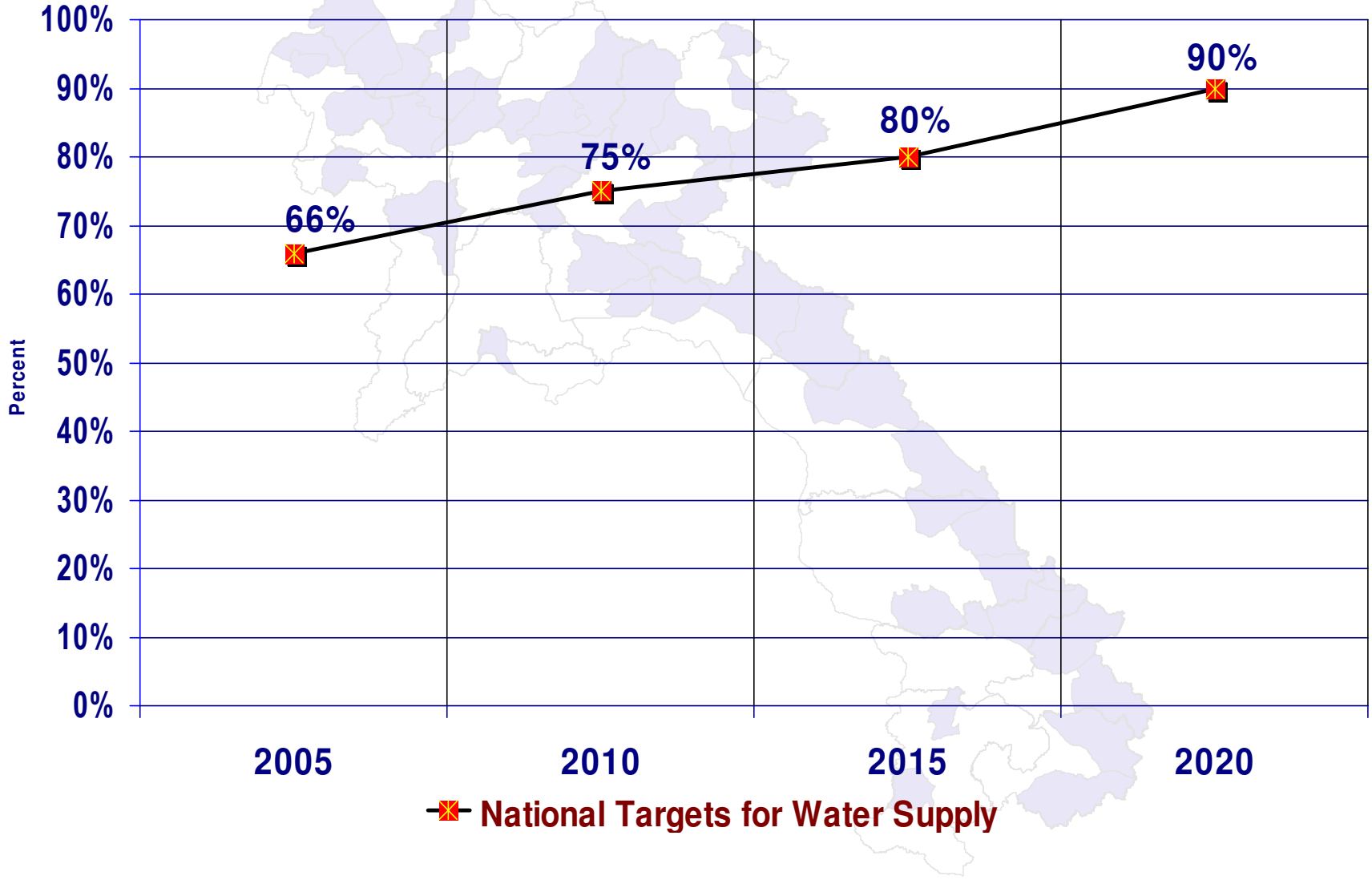


Programme Achievement until 2009

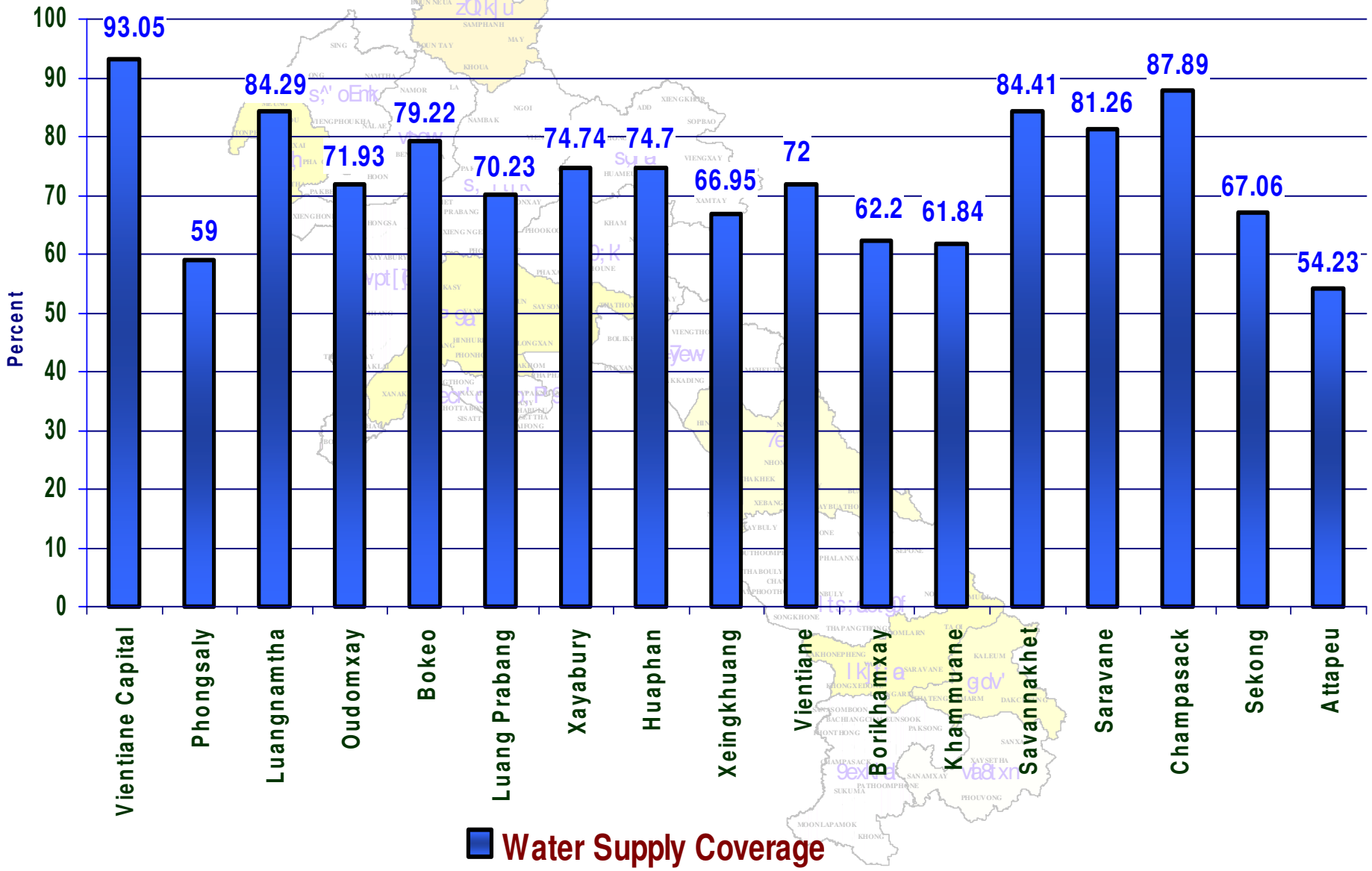
- Gravity flow system about 2,612 schemes
- Deep borehole about 11,462 boreholes
- Dug wells with concrete ring about 3,624 units
- Rain water jar about 6,262 units
- Water supply with elevated tank 36 schemes
- Improved spring water source 40 sources

- About 20% of programme achievement had big broken down (can not repair)
- About 30% of programm achievement had small broken down and water sources were not in use during dry season (can repair and still using)

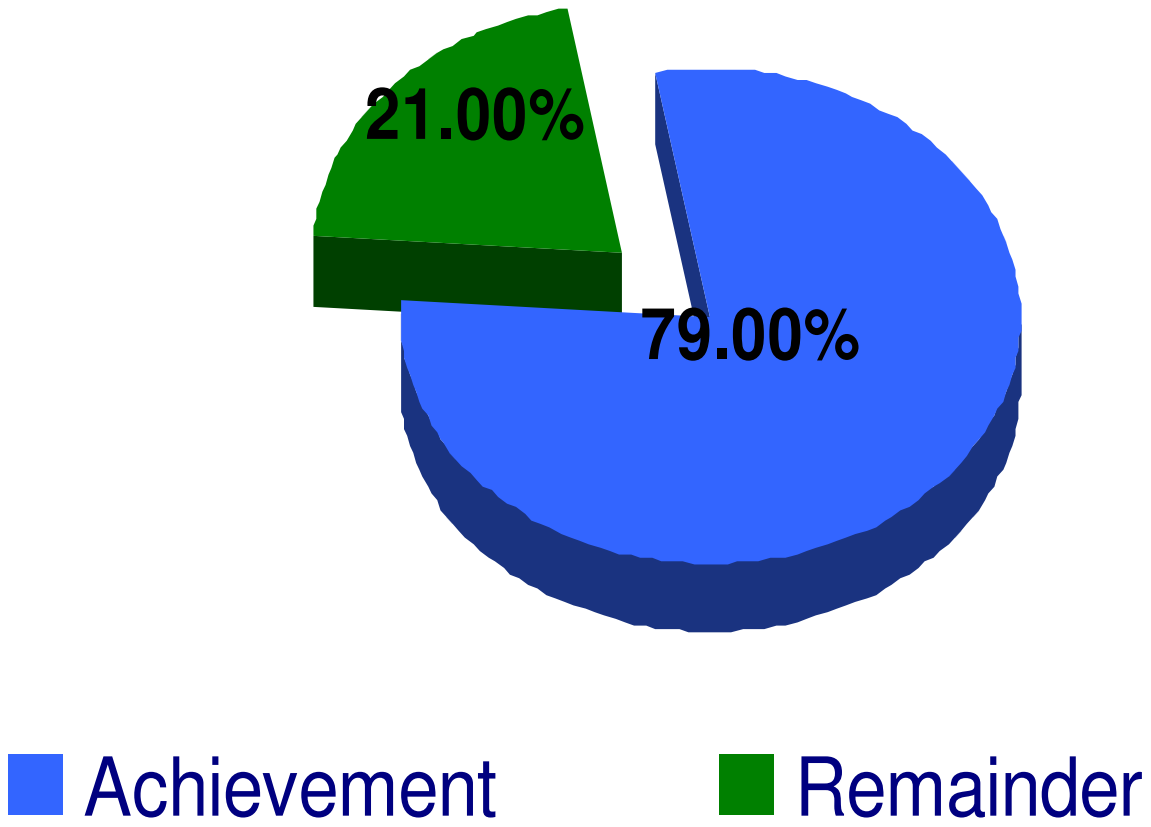
National Targets for Water Supply of the Lao PDR in the Year 2005 Œ 2020



Water Supply Coverage in 17 Provinces (data source from provinces until 2009)



Water Supply Coverage until 2009 (by collecting from 17 provinces)



New figure proposal of programme achievement coverage

Refer to Data Source from:

. National Center for Environmental Health and Water Supply (Nam Sa-at)

. JMP 2008

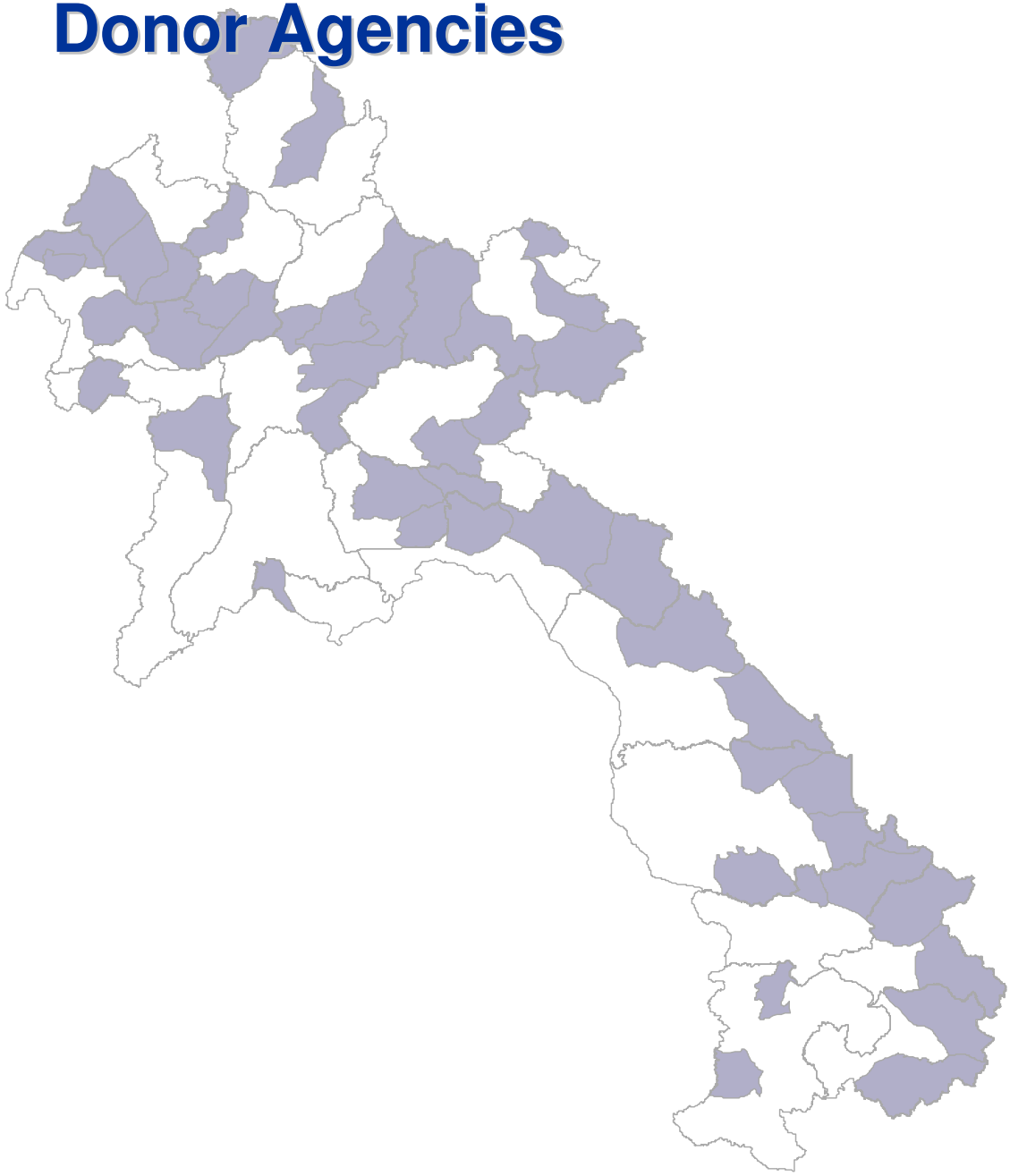
. National Center of Logistic 2005

. Mother and Child Survey 2006

- Water Supply (Urban and Rural) about 58% (2009)
- Water supply in Rural area about 52%
- Community Sanitation (Urban and Rural) about 55% (2009)
- Community Sanitation in Rural area about 40%
- Water and Sanitation in School about 28% (2009)

Donor Agencies

- UNICEF
- SIDA
- JICA
- WB
- WHO
- BTC
- NGO's



Water Quality

- Deep wells are generally uncontaminated (Feacal coliform).
- Dug wells are generally contaminated in some dug wells.
- Rain water are usually uncontaminated.
- GFS are contaminated in some schemes.
- Maximum high iron content of ground water 10mg/l.
- Maximum high fluoride content 150mg/l.
- High arsenic content in some small areas of the southern provinces maximum 0.1mg/l

Result of water quality analysis for 17 provinces in 2006

- 17 provinces
- 156 districts
- 2,143 villages
- 26 health care centers
- 26 hospitals
- 139 schools
- 1,653 boreholes
- 62 dug wells
- 536 GFS
- 2251 total of water samples

Parameters	> standard	
Hardness	49	Samples
Coliform	191	Samples
Turbidity	147	Samples
Taste & Odour	89	Samples
Conductivity	87	Samples
Fe	186	Samples
pH	372	Samples
F	216	Samples
Mn	14	Samples
As	30	Samples

Problems and Challenges

- Water supply technology
- Rural water supply coverage (%)
- Water quality
- Sustainability
- Awareness of beneficiaries
- Private sector
- Capacity of staffs
- Budget

Keys Solution

- IEC
- Community participation
- Upgrade of technology
- Planning
- Financial supply
- Human resources development.

Operation and Maintenance of Rural Water Supply in Lao PDR

Village Agreement

. Members of agreement parties for signing of the agreement

- District Governor
- Chief of District Health Office
- Chief of Village
- Chief of Provincial Water Supply Office
- Director of Provincial Health Department

. Community participation:

1. Project planning, design and selection of water supply source
2. Stage of construction work

- Preparation of the construction work area
- Support to workers
- Contribution labor, materials and cash

3. Project sustainability

- Organization of village committee
- Organization of village caretakers and financial officer
- Collection of water fee
- Proper O&M
- Proper sanitation and hygiene practices
- Protection of surrounding water source areas

Village Water Committee
(WATSAN Committee)

The minimum members required:

- Chief
- 2 Assistants
- Accountant
- 3 Caretakers

The conditions for selecting the above members:

- Must be a permanent resident in the village
- Must be willing to serve
- Should be able to read and write
- Should have leaderships qualities
- Should be willing to receive training

The main function for Village Water Committee (WATSAN Committee)

- Clean and maintain the water supply system
- Supervise and advise on use and maintenance of taps, hand pumps and etc
- Collect water fees and keep accounting
- Organize meeting and discussion to solve problems related to water use
- Distribute work responsibilities among men and women
- Make small repairs
- Monitor and promote sanitation and hygiene
- Control waste into water sources
- Prevent contamination of the environment
- Make the monthly, yearly report about O&M, finance and ,,,

Improvement requirement for village water committee

- Explain function of the committee and confirm their understanding
- Train village committee on project operation
- Train village caretakers on project maintenance
- Train members on maintenance fee collection, as well as bookkeeping and accounting
- Explain importance of gender balance
- Provide basic hand tools and spare parts for simple repairs
- Provide basic necessary handbook and manual on repair and maintenance

Village Requirements for O&M

. Regular inspections
. Minor repairs and replacements have to be made as soon as possible when the water supply had broken
. Village committee must have an appropriate fee collection method a properly keep an accounting system to pay for the required efforts
. The main activities required for O&M of each of water supply need to be understood by the villagers
. Responsibilities and required knowledge
. Cost recovery (Recurrent costs and Willingness to pay by users)

O&M activities Chart for example of borehole water supply

Activity	Frequency	Person responsible	Materials requirement	Equipment requirement
Pump cleaning and Maintenance	Every week	Village caretaker Water users		Bucket, brush, etc
Drainage and platform cleaning	Every month	Water users		Shovel, hoe, Scraper, etc
Water quality analysis	Seasonally	Provincial Namsaat District Namsaat	Analysis kit Chemicals	Sampling bottle
Repair of fence and roof	Whenever necessary	Water users	Wood, nails	Saw, hammer, shovel, knife, etc
Repair of foundation and drainage	Whenever necessary	Village caretaker Water users	Cement, sand, Gravel, wood, etc	Bucket, spade, saw, knife, etc
Hand pump repair and maintenance	Whenever necessary	Village caretaker District Namsaat	Spare parts	Repair tools
Replacement of new hand pump	Whenever necessary	Village caretaker District Namsaat Provincial Namsaat	Hand pump	Repair tools

Constraints in O&M in some villages

- O&M skill of village water committee chief
- Technical skill of caretakers
- No Incentive for WATSAN committee
- Villagers/ beneficiaries are not willing to pay for water use fee
- No transparence in use of water collection fee
- No communities contribution in preliminary of water supply system selection, planning, design, construction works and etc,,
- Quality of project construction
- Attitude of caretakers
- Migration of village water supply committee members
- Water quality problems
- No regular supervision, monitor and inspection by water supply District and Province
- No regulation for water use and received water source management


Thank you