

**SOCIALIST REPUBLIC OF VIETNAM**

**Results-based Scaling-up Rural Sanitation and Water Supply Program**

**Technical Assessment**  
**(TA)**

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PREPARED BY  
THE WORLD BANK

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## List of Acronyms

BCC	Behavior Change Communication
CATS	Community Approaches to Total Sanitation
CEMA	Committee for Ethnic Minority Affairs
CLTS	Community Led Total Sanitation
DANIDA	Danish International Development Agency
DARD	Department of Agriculture and Rural Development
DFAT	Department of Foreign Affairs and Trade (Australia)
DFID	UK's Department for International Development
DLI	Disbursement-Linked Indicator
DoET	Department of Education and Training
DoH	Department of Health
EMs	Ethnic Minorities
FSR	Feasibility Study Report
GDP	Gross Domestic Product
GFS	Government Financial System
GoV	Government of Vietnam
IDA	International Development Association
IEC	Information, Education and Communication
IT	Information Technology
IVA	Independent Verification Agent
M&E	Monitoring and Evaluation
MARD	Ministry of Agriculture and Rural Development
MDG	Millennium Development Goal
MoET	Ministry of Education and Training
MoF	Ministry of Finance
MoH	Ministry of Health
MoNRE	Ministry of Natural Resources and Environment
MPI	Ministry of Planning and Investment
NCERWASS	National Center for Rural Water Supply and Sanitation
NGO	Non-Governmental Organization
NIN	National Institute for Nutrition
NM-CH	Northern Mountains and Central Highlands
NTP/NTP2/NTP3	National Target Program/ National Target Program for Rural Water Supply and Sanitation / Phase 2 / Phase 3
NTP-SO	National Target Program Standing Office
O&M	Operation and Maintenance
ODF	Open-Defecation-Free (Community)
PAD	Project Appraisal Document
PAP	Program Appraisal Document
PCERWASS	Provincial Center for Water Supply and Sanitation
PDO	Program/Project Development Objective
PFM	Program Financial Management
PforR	Program for Results
PO	Program Outline
POM	Program Operational Manual
PPC	Provincial People's Committee
PSC	Provincial Steering Committee
RB-RB-SupRSWS	Results-based Scaling up Rural Sanitation and Water Supply
RF	Resettlement Framework

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RRD	Red River Delta
RWSE	Rural Water Supply Enterprise
RWSS	Rural Water Supply and Sanitation
SAV	State Audit of Vietnam
SIL	Specific Investment Loan
TA	Technical Assessment / Assistance
UNICEF	United Nations Children's Fund
USD	United States Dollar
VBSP	Vietnam Bank for Social Policies
VIHEMA	Vietnam Health Environment Management Agency
VND	Vietnamese Dong
WHO	World Health Organization
WSP	World Bank Water and Sanitation Program

## Executive Summary

### *Strategic Relevance*

1. Vietnam has an impressive record on economic growth and poverty reduction over the past twenty five years. However, poverty rates remain high and access to basic services are extremely low in many rural provinces, and especially in mountainous, remote and Ethnic Minority (EM) areas. In these areas, achieving universal and sustainable access to hygienic water and sanitation facilities remains a major challenge. The Government of Vietnam (GoV) recognizes that improving access to sanitation is a priority and has formally committed to eliminating open defecation (OD) by 2025.
2. While the overall rate of poverty for the country in 2012 was 9.6 percent (with an additional 6.6 percent classified as near poor),<sup>1</sup> this figure masks regional differences. The poverty rate for the remote Northern Mountains and Central Highlands (NM-CH) regions is significantly higher at 23.8 percent and 17.8 percent, respectively.<sup>2</sup> There is a considerable difference in the poverty level between the Kinh/Hoa majority and ethnic minorities groups. Average income among EM households is only equal to one sixth of the national average. According to the 2014 Vietnam Taking Stock report, 41 percent of EM children below the age of five are stunted compared to the rural average of 25 percent. Across the NM and CH regions, and specifically for EMs, who make up 50 percent of the population in the NM-CH, the rates for sanitation and safe water access are among the lowest in the country. These regions have the highest morbidity rates in Vietnam for diarrhea<sup>3</sup> and parasitic infections.<sup>4</sup> Collective health gains through high levels of hygienic sanitation coverage are critical to addressing these problems.
3. From an environmental and social perspective, improving hygiene and sanitary conditions in rural populations will reduce disease incidence and improve the quality of life of the rural population. By targeting sanitation in marginalized EM communities, the operation will foster social inclusion. From an economic perspective, sanitation is a sound investment in support of a return to strong and inclusive growth for the country. Support to the NTP3 is therefore considered to be a highly strategic intervention.

### *Institutional Context*

4. The institutional framework is well established at the central level. However, significant support needs to be provided to the 19 target provinces in order to facilitate implementation.
5. At the Central level, the key institutions are the National Target Program Standing Office (NTP-SO), the National Center for Rural Water Supply and Sanitation (NCERWASS) and the Vietnam Health Environment Management Agency (VIHEMA). NTP-SO leads the National Target Program implementation and has good capacity for

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<sup>1</sup> Assessed against a threshold of 570 thousand Dong for rural areas.

<sup>2</sup> General Statistics Office data for 2012.

<sup>3</sup> Department of Preventive Medicine – 2009.

<sup>4</sup> WHO 2007.

implementation; it is reliant on NCERWASS and VIHEMA for technical expertise. NCERWASS has good technical capacity in water supply and wastewater management and is relatively well resourced; however, they have struggled in supporting Provinces to ensure sustainability of investments, as described later. VIHEMA has good technical capacity in the rural sanitation and hygiene sector; however, it is still constrained by lack of human resources to provide guidance and management of rural sanitation programs to the provincial level. VIHEMA is currently working with the World Bank Water and Sanitation Program (WSP) and the United Nations Children's Fund (UNICEF) to develop simpler definitions for hygienic latrine coverage and guidelines on defining and verifying Open Defecation Free villages and communes. Ideally the Disbursement-Linked Indicators (DLIs) would align with these new guidelines if/when they are adopted nationwide.

6. In addition, under the Program for Results (PforR) instrument, an Independent Verification Agent (IVA) is required to complete the annual verification of results and an independent audit of the Program. The State Audit of Vietnam (SAV) was selected to verify Program results using protocols agreed with the Bank. SAV is the auditor of the NTP3 and the ongoing Rural Water Supply and Sanitation (RWSS) PforR. However, the annual audit coverage of overall NTP3 covers only 20–25 of the 63 provinces; thus, additional capacity will be required to ensure full scope audit on 19/19 provinces for this Program.
7. These four key institutions (i.e., NTP-SO, NCERWASS, VIHEMA, and the IVA) have gained experience in implementing Program-for-Results through the Results-Based Rural Water Supply and Sanitation under the National Target Program (World Bank project code P127435). These institutions are also currently being supported by Technical Assistance (TA) under that same program to improve governance and develop guidelines and procedures for rural water supply design, management, community mobilization and incentives for hygiene and sanitation promotion.
8. The Ministry of Education and Training (MoET) and the Committee for Ethnic Minority Affairs (CEMA) are also critical organizations -- MoET for implementation of interventions in schools and CEMA for advice on working with Ethnic Minorities. Additional efforts are need to be made to ensure that these two Ministries are fully engaged.
9. At the Provincial level, the Provincial People's Committee (PPC) is critical in ensuring that activities under the Program are properly resourced. The technical capacity of the Provincial Center for Water Supply and Sanitation (PCERWASS) and the Department of Health (DoH) is generally good in terms of infrastructure provision. However, water supply schemes are sometimes over designed and issues related to long term scheme sustainability are not properly considered. Support to infrastructure sustainability is often weak. In general, investments into less tangible activities – such as preventive maintenance, sanitation and hygiene promotion – are not prioritized and capacity is much lower. DoH in some provinces has experience in conducting different types of behavior change communication and sanitation promotion approaches, for example working with UNICEF and WSP.

### *Expenditure Framework*

10. The government has in place budget and expenditure management systems and practices that support the NTP in reaching its expected results. However, spending on Information, Education and Communication (IEC) activities is minimal. Around US\$50 thousand/year is allocated for recurrent costs for each Province, of which communication activities make up a small fraction. In addition the activities and expenditure on hygiene promotion activities are limited under NTP3. Decision 366/QD-TTg, which established the NTP3, limits the budget for communication, capacity building and all other soft investment to US\$95 million (less than 10 percent of the total budget). Circular 04/2013/TTLT dated January 16, 2013 provides a guideline for using the Government budget under NTP3 and does not allow for new approaches in hygiene and sanitation promotion. The circular allows for training and capacity building costs including 50,000 VND/person/day for meals and the printing of materials in line with government cost norms and the available budget. Expenditure on promotion materials and mass media (including TV and radio) and the design and printing of materials such as posters and banners is permitted, provided that the budget is available. There is also an allowance for two motivators per commune at VND 100,000 (\$US 5)/month/person for flat areas, and VND 120,000 (\$US 5)/month/person for mountainous and coastal areas. Monitoring and Evaluation can be funded including training and data collection. Provided that the design and cost of the latrine is approved by the PPC (based on the available budget and in consultation with DoH), latrine subsidies are available at 70 percent of the total latrine cost for poor and ethnic minority families and at 35 percent for near-poor families. Excluded activities under Circular 04/2013/TTLT include triggering, competitions, entertainment activities and mural painting. In addition to these excluded activities, there are limits on the application of cost norms that relate to human resources which can only be used for capacity building, some promotion activities, and for monitoring and evaluation (M&E). There are no clear cost norms for direct consumer contact activities. Both Decision 366/QD-TTg and Circular 04/2013/TTLT will expire at the end of 2015.
11. Key issues to be addressed within the Program design and agreements include (i) reducing delays in budget approval, (ii) better linking annual budgeting and planning process to multi-year plans and overall targets, increasing the current limited spending on software, specifically hygiene and sanitation promotion activities, and O&M components to increase effectiveness and sustainability of services, and (iii) financing mechanisms to reach the poor. Improvements are planned and expected through various measures taken by the government, which will be enhanced through the PforR Program.

### *Technical Soundness of Investments*

12. **Sanitation and hygiene promotion.** Sanitation investments mainly support capital investment for institutional facilities and subsidized demonstration latrines for households. There is insufficient focus on creating demand for sanitation. Sanitation facilities in schools and clinics are often poorly maintained. Although households who received the demonstration latrines have largely used the latrines provided, they had little impact on coverage. A number of health staff as well as village leaders feel that



fund allocation should be diverted from building model latrines to other more effective methods<sup>5</sup>. There is little systematic support to the development of the sanitation and hygiene supply chain and technical knowledge of low-cost latrine options is often low at community level. There appear to be few local champions for sanitation and hygiene. Hygiene promotion and behavior change communication is limited in scope under NTP3. Hygiene and sanitation promotion is led through the Village Health Worker network, which is established in almost all villages, but has limited technical capacity and resources. Allocation of funds to hygiene and sanitation promotion has often been limited as hardware is prioritized. The Ministry of Health (MoH) is well aware of the importance of IEC but also understand that achieving sustained behavior change is a significant challenge.

13. Outside of NTP3, VIHEMA is developing and piloting other approaches to promotion but in general, the pilots remain small scale or are in the preliminary stages. Community-Led Total Sanitation (CLTS) has been the only demand creation method applied at large scale in Vietnam, with positive results. There has been a sharp increase in the number of provinces applying CLTS, from five provinces in 2009 to 20 provinces in 2013. CLTS has proved to be effective in most researched provinces, in terms of accelerating latrine coverage, cost-effective community engagement, and as a process that is applicable across a variety of regional, social and geographic contexts. However, the effectiveness of CLTS has been evaluated mainly in an environment where latrine subsidies were available; however, the standard CLTS process used in Vietnam has not worked well in ethnic minority groups. Special approaches need to be developed based on research into motivations underlying their hygiene and sanitation-related behaviors, and in some cases their human excreta-reuse practices linked to livelihood activities. UNICEF is currently providing support for an adapted form of CLTS in seven Provinces called Community Approaches to Total Sanitation (CATS). This approach has had marked success across a number of communes by expanding CLTS to incorporate other aspects. CATS is based on community triggering using CLTS which works based on ideas of shame and disgust, and then adds follow-up promotion events – including School Led Total Sanitation (SLTS) work in schools, hygiene promotion, support to sanitation marketing including the supply chain and improving construction quality of latrines.
14. In Hoa Binh, two supply chain models have been identified and will be implemented over the coming months:
  - *One Stop Shop (OSS) model.* Working with existing local retailers, the model would seek to improve the offer of standardized designs and technologies at different prices with supporting materials. The OSS could offer associated services including transport/home delivery to reduce purchase and transport costs and difficulty, installation services, and other services (consulting on hygienic latrine types, product choice, use and maintenance, warranty). The One Stop Shops have two types of concrete ring mould -- one is very durable for offsite concrete ring production as described below, and the other is a light mould for on-site concrete ring production in areas where transport is difficult.

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<sup>5</sup> Rural Sanitation Sector Capacity Assessment Report, Vietnam 2014.

- *Medium Scale Off-Site Concrete ring production and installation by producers.* In this model, the local producer buys materials, fabricates concrete rings at a workshop, transports the concrete rings to the customer's household, and potentially installs the latrine. The producer could provide: (a) both the concrete ring and installation service; or (b) just the concrete rings, and then the customers could hire the mason to install the concrete rings together with constructing other parts of the latrine. As there are now local producers of concrete rings for water projects, this model could be adopted more easily. The local producer could be offered some technical instructions on latrine concrete ring construction. Promotion of this new service would be needed for customer buy-in.
15. Mobile hygiene promotion teams based at the Provincial level have been attempted in at least one province, but have not been sustained due to the high overheads and long distances. In light of the assessment, a range of approaches are needed under the Program for sanitation and hygiene promotion covering demand generation and supply and considering innovative financing methods. The proposed Program would also need to increase the involvement of Ministry of Education and Training with respect to sanitation and hygiene promotion activities. The proposed Program would mainstream hand washing into *ante-natal* and *neo-natal* care, through close coordination with the National Institute for Nutrition (NIN).
16. **Water supply.** There is a high level of failure in water supply systems in the NM-CH regions due to the lack of local technical expertise and appropriate management models, seasonal water sources that result in water scarcity during the dry season, and lack of funds to cover operation and maintenance costs. Surveys have been completed for water supply schemes across 53 cities and Provinces, led by NCERWASS, identifying current status. This survey identified that overall only 33 percent of water supply schemes were operating sustainably and more than 26 percent of schemes were either entirely out of use or were operating poorly. These figures are worse for the NM-CH regions, where 15-23 percent of schemes are operating sustainably and 33-48 percent of schemes were either entirely out of use or were operating poorly. The key reasons identified for scheme failure are the following:<sup>6</sup>
- Investment preparation: Low staff capacity, incomplete or poor quality surveys, water resources were not properly surveyed or future changes not properly estimated, and design appraisal did not incorporate whole life costs;
  - Construction: Poor construction supervision and schemes were not completed;
  - Operation and maintenance: Routine repair and rehabilitation of schemes is not completed by local Government, technical capacity for community management of schemes is low, no Government funds are available for O&M, and water tariff rates do not cover operating costs; and
  - Damage to schemes located in complex topography, or constant impacts by natural disasters, floods, or landslides.

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<sup>6</sup> Solutions for improved performance of operation and management of rural piped water schemes, NCERWASS, December 05, 2014

17. The 2016-2020 Mid Term Plans have been developed and are available – including both rehabilitation and new construction – however initial high unit costs indicate that there may be issues in scheme design.

#### **Results Framework, Monitoring and Evaluation**

18. Currently monitoring, evaluation and reporting is completed on a quarterly basis under the auspices of the RWSS NTP. However compliance with communication and reporting regulations in implementing agencies has often been poor and reported information and data through NTP3 was inconsistent with data reported by MoH. Similarly, water quality data is collected regularly across the two regions, but data is often incomplete and sometimes does not reflect the actual service quality. To date no reliable information is available on the actual practice of behaviors – including hand washing and open defecation. Scheme sustainability is also not monitored, apart from periodic surveys. The focus of the results framework on infrastructure limits the sustainability of any intervention and it is difficult to access quality M&E data for planning and budgeting purposes. The proposed Program would support the development of an improved M&E system, linking to the work to develop data collection systems and an open source information technology (IT) portal under the RWSS PforR in the Red River Delta.

#### **Economic Analysis**

19. Public funds are essential for scaling up and regulating water supply and sanitation services, especially in rural locations with low effective coverage (where both markets and consumer demand are currently weak) and a high proportion of ethnic minority and poor households. The existence of private benefits from water supply and sanitation services provides an avenue to mobilize private sector and household financial resources for sustaining the services. Poor sanitation has been estimated to cost Vietnam at least 1.3 percent of the Gross Domestic Product. Although cost-benefit studies on water supply are not available for Vietnam, the health, convenience and time savings of closer and better quality water supply are well recognized, leading to economic benefits that are greater than the costs of supply. For sanitation (pit latrine), the economic returns have been estimated at between 2 and 9.7 *per VND* invested in rural Vietnam. In addition to the health and time saving benefits included, improved latrines are also associated with improved environment, comfort/convenience, and dignity/status (especially for women).

#### **Recommendations**

20. The following recommendations are made for program design and should be detailed in the Program Operational Manual (POM):
  - Under water supply, activities the Program should support both new connections (new schemes, extensions from existing schemes and moving from shared to individual household connection) and the rehabilitation of schemes which are currently not functional or functioning in a limited capacity;
  - Greater priority should be given to improving mechanisms and financing for O&M and software;
  - Behavior Change Communication (BCC) approaches for hygiene and sanitation should be developed building upon the work completed to date and expanding the

successful interventions already piloted. This would cover both demand generation and supply chain support. The development and delivery of the BCC and supply chain strengthening activities should be included in the Program Action Plan (PAP) as well as under the DLIs; and

- Technical assistance covering the three critical areas of BCC approaches for hygiene and sanitation, water scheme sustainability and maintenance of public sanitation facilities, should be provided during program implementation. The implementation of technical assistance and capacity building should be incentivized through the DLIs.

21. **Program Action Plan.** In addition to the recommendations above, the following action should be included in the Program Action Plan (PAP):

22. GoV and the Program implementing agencies should implement the BCC component of the Program as per the Program Operational Manual.

#### *Additional Provinces*

23. During negotiations, the Government of Vietnam requested the inclusion of two additional provinces in the Program; Ninh Thuan and Binh Thuan. The Bank agreed to the inclusion of these two additional provinces. Following this agreement, the Bank carried out a further desk-based technical assessment of Ninh Thuan and Binh Thuan. The technical aspects of the Program, including the benefits and risks of the Program to Ninh Thuan and Binh Thuan provinces, were found to be consistent with those identified through the findings of the initial assessment of the 19 original provinces. The technical recommendations and the risk rating of this assessment are therefore considered to be appropriate for all of the provinces under the Program including Ninh Thuan and Binh Thuan. Further details of the desk based assessment of Ninh Thuan and Binh Thuan are included as an Addendum to this document.

## A. Program Description

### RWSS NTP3 (the 'program')

24. The Government of Vietnam gives high priority to development of rural water supply and sanitation. The National Rural Clean Water Supply and Sanitation Strategy to 2020 (developed in 2000 and updated in 2011) has set the overall vision and goals for the sector. The key principles of the strategy include community participation, sustainability and cost recovery. The sector strategy also emphasizes the focus on poverty, ethnic minority groups and remote areas. The government recognizes that improving access to sanitation is a priority and has committed to eliminating OD in Vietnam by 2025. In the short term, the focus is to target poor communities where water and sanitation coverage is low and malnutrition is high. Improving hygiene practices has been a long term goal of the government. To implement the strategy, GoV established a National Target Program for Rural Water Supply and Sanitation (NTP) which has resulted in considerable progress over the past ten years. Since 2001, rural water supply and sanitation has been financed through a dedicated National Target Program; in three phases the second RWSS NTP ran from 2006 to 2010. NTP2 upgrading water services for 5.4 million people and sanitation services for 6.8 million people.
25. This Technical Assessment relates to the third National Target Program for Rural Water Supply and Sanitation (hereafter referred to as NTP3) which runs from 2012 to 2015. NTP3 is specifically intended to promote investment in poor, remote, ethnic, border and island areas as well as areas where water is polluted or scarce. The NTP3 includes the following components:
- a) Construction and rehabilitation of water supply schemes, promotion of clean water use, improved control of water quality and support to sustainable systems;
  - b) Construction and effective use of latrines at households, schools, health clinics and public places;
  - c) Information, Education and Communication activities to raise awareness on the importance of clean water and sanitation and hygiene practices;
  - d) Continued development of the legal framework for the implementation of the RWSS strategy;
  - e) Promotion of international cooperation; and
  - f) Capacity building.
26. Nationally, NTP3 aims to reach the following indicators in rural areas by 2015; 85 percent coverage of hygienic water, of which 45 percent meets water quality standards as per QCVN 02-BYT; 65% coverage of hygienic latrines and 100 percent of commune clinics and schools (excluding satellite schools) that have hygienic water supply and sanitation facilities. To date NTP3 has achieved 82 percent coverage of hygienic water (40 percent meeting QCVN 02-BYT) and 60 percent coverage of hygienic latrines. However the level of achievement across the provinces is highly variable, with almost all low performing provinces in the mountainous and poor areas.

27. Following lessons learned from the first two phases, NTP3 has been structured to support both water supply and sanitation (domestic and environmental sanitation), improve sustainability and assign clear responsibilities to the Ministry of Agriculture and Rural Development (MARD) for water supply infrastructure and Ministry of Health (MoH) for sanitation and hygiene. NTP3 had an increased focus on the sustainability of water systems, Information Education Communication (IEC) activities and incorporated sanitation under the mandate of MoH.
28. A proposal to transfer the components of the current NTP3 to the successor program in 2016, expected to be the New Rural Area NTP, has been developed within MARD.

### Results-based Scaling up Rural Sanitation and Water Supply (RB-SupRSWS) PforR (the 'Program')

29. The approach taken under the Program is to strengthen the Government of Vietnam's NTP3 and its successor program the New Rural Area NTP (Box 1) in the 19 provinces of the NM-CH Regions with the lowest sanitation coverage to support the existing efforts of the government to scale up access to sanitation and improved hygiene practices. The RB-SupRSWS Program will include interventions to support demand generation through innovative approaches in BCC at the local level, coupled with national level interventions to build awareness of the importance of sanitation to the national economy and obtain public commitment at the highest level. Support will also be provided to strengthen the supply chain to improve the design, availability and affordability of sanitation products and services. Participative approaches will be used at all levels in order to ensure that interventions are appropriate and effective. Construction, rehabilitation and extension of new sanitation and water supply facilities will facilitate improved hygiene practices, and will not be implemented as a standalone intervention. Behavior change communication programs would both work through nutrition programs as well as reinforce them. Technology used will be

#### **Box 1. Transition of NTP3 to the New Rural Area NTP**

Following a request from the Standing Office of the New Rural Area NTP (SO NRA NTP), on March 13, 2015, the Irrigation Department within MARD submitted proposal 342 to the SO NRA NTP on March 19, 2015 on the integration of the rural water supply and sanitation components of NTP3 into the NRA NTP in 2016. This proposal included the purpose and rationale, costing, human resource requirements, the implementation mechanism, relevant recommendations as well as the beneficiaries, and implementation plan and targets.

It proposed to follow the components of NTP3 under the NRA NTP through a rural water supply and environment component that includes schools, and a rural water and sanitation component in households and commune health centers including behavior change communication.

MARD and the Irrigation Department will continue to lead the water supply and sanitation components under the NRA NTP and will continue to collaborate with the same agencies as under NTP3 (VIHEMA, MoET, etc.). SO NRA NTP will be responsible for supervising and monitoring the components. An additional indicator will be included relating to the environment (indicators for water and sanitation already exist under the NRA NTP).

On April 3, 2015, letter 1928 from MPI confirmed that the NTP for water supply and sanitation will be transferred to the NRA NTP

appropriate, cost effective and accessible for poor households. The Program will also support the provision of sanitation, hygiene and water supply services to schools and health clinics through the construction of facilities and the strengthening of the management model for sustainable operation and maintenance of the system.

30. The institutional and financing arrangements will be aligned with the structures of GoV. Funds will pass from the central level to the Provincial People's Committees (PPC) in the 19 recipient provinces. Fund allocations will be made on the basis of provincial plans and within the framework of NTP3. These funds will be used to finance NTP3, including water supply, sanitation and hygiene promotion. It will be the responsibility of the Provincial People's Committees (PPC) in each of the 19 recipient provinces to plan investments and allocate funding to the appropriate technical departments at that level in accordance with the inter-ministerial guidelines. For National level activities, funding for the Program will be allocated by the Ministry of Finance (MoF) to the related ministries. The amount of funds allocated to different ministries under the Program will be based on the anticipated funds required to achieve the DLI targets as well as the amounts corresponding to the DLI results that are verified as completed.
31. The Program will be designed in coordination with existing socio-economic, rural development programs and activities managed by other line Ministries. In order to effectively implement the Program and target remote regions, effective and multi-sectoral approaches to commune-wide sanitation will need to be developed. Linkages with the health and education programs and with nutrition will be key given the links between poor access to sanitation and stunting and the need to develop a sustained system. Schools, in particular, will be a critical focal point for developing an integrated strategy for water supply, sanitation and hygiene. For integration strategies with nutrition, synergies can specifically be found in the outreach programs to mothers and care-givers. Relevant baseline data for the Program can be found in Annex 1.

#### Institutional Arrangements

32. The institutional arrangements are described below:
- MARD will coordinate the implementation of the Program, through a national steering committee comprising MARD, MOH, MOET, CEMA, MPI and MOF. Fully empowered teams will be established nationally in MARD and VIHEMA in order to monitor and support implementation in all Provinces under the Program
  - At the central level VIHEMA will be the technical lead for the sanitation and hygiene promotion activities. NCERWASS will lead activities relating to community water supply. A strong coordination mechanism will be needed in order to promote integrated water and sanitation projects to support hygiene practices.
  - PPCs will lead Provincial level steering committees for coordination and supervision comprising DoH, PCERWASS, the Department of Education and Training (DoET), DPI, DoF and CEMA. PCERWASS will be the program owner at the Provincial level.
  - Independent Verification Agent (IVA); The IVA role is to provide independent confirmation of the results reported by the provinces through MARD. State Audit of Vietnam was selected to verify Program results using protocols agreed with the

Bank. This choice is based on SAV's role as a constitutional body with both the independence and the mandate to conduct NTP audits. SAV has good management capacity and can sub contract verification works for which it does not have the technical expertise in-house. SAV is the IVA under the RWSS PforR and has performed satisfactorily; it has subcontracted the physical verification of sanitation and water supply connections to a specialist firm. SAV provided adequate oversight of the surveys teams and reporting process.

33. The Women's Union, potentially other mass organizations, village health workers and similar groups will be critical for implementation of the hygiene promotion components. These groups will be incorporated into the institutional structure of implementation to assist in community mobilisation. The Women's Union will also be engaged to support grievance redress channels. These routes are also potential channels for the effective engagement of EM groups in implementation.
34. Learning from global and Vietnam-specific experience, the proposed program would have the following three closely interrelated elements corresponding with the projects under the RWSS NTP3 which support delivery of behavior change communication, provide basic services and infrastructure to support behavior change, support sustainable services and build capacity:

**a. Rural domestic water supply and rural environment:**

- (i) Provision of hygienic sanitation, hand washing facilities and adequate water supply in schools – including consideration of the needs of all children – and support for putting in place the system for operation and maintenance of the facilities;
- (ii) Increasing water supply coverage for villages – using small-to-medium sized community-based systems – focusing on rehabilitation and extensions from existing systems. New water supply schemes would be constructed as required using appropriate technology. Investments would be demand responsive and would balance willingness to pay with prioritizing areas with higher levels of poverty; and
- (iii) Provision of TA for improved operation and maintenance procedures, management and tariff collection, and accounting procedures at village/commune levels. The role of PCERWASS in supporting this process, specifically in their technical backstopping role for community based systems, will be strengthened.

**b. Rural sanitation and hygiene**

- (i) Provision of hygienic sanitation, hand washing facilities and adequate water supply in health clinics – along with support for putting in place the system for operation and maintenance of the facilities;

**c. Support for scaling up domestic hygiene and sanitation to achieve Commune Wide Sanitation:**

- (i) Demand side interventions would be implemented through existing channels, including clinics, schools, government health system staff, and traditional



- leadership structures. In addition, at the village level, local leaders along with the women's union and commune and village health workers would be supported with new tools and to adapt existing approaches, such as CATS, which have demonstrated effectiveness. Counseling of mothers and caregivers in clinics would also support scaling up existing successful programs combating malnutrition;
- (ii) Supply side interventions such as support to the private sector to strengthen the capacity of local builders, manufacturers and suppliers of sanitation products and services, in order to supply a menu of affordable and appropriate household sanitation and hand washing hardware options and services. The intervention will build on the work already being done by VIHEMA and other Development Partners; and
- (i) Additional targeted support to households for latrine construction with affordable technology options and potentially strengthening micro-financing through Vietnam Bank of Social Policy (VBSP). This intervention would also identify how to improve the delivery of the existing subsidy systems for poor households, for example as rebates directly to households or voucher systems to be redeemed at local sanitation suppliers.

**d. Capacity building, communication and supervision, monitoring and evaluation of NTP3**

- Focused capacity building of national, provincial and local agencies involved in the Program to develop their implementation and management capacity and improve inter-sectoral collaboration including; (i) capacity to promote hygienic behavior change and provide sustainable sanitation services; (ii) planning, monitoring, evaluation and reporting and; (iii) supporting improved environmental, social and fiduciary systems;
- Policy support where needed, for example to enhance the role of PCERWASS in supporting institutional capacity development at the commune levels, for school water supply, sanitation and hygiene (WASH), water pricing framework and development of sanitation markets;
- Improving sustainability of access to sanitation and improved water supply through technical assistance for community management and support to PCERWASS and DoH/DoET;
- Verification of Program Results and External Audit of the Program by the Independent Verification Agent; and
- Launch of a national and provincial high-level advocacy campaign to raise the political profile of sanitation and hygiene.

**Financing and program costs**

35. The budget for the NTP3 Program at the national level is VND 27,600 billion (US\$1.3billion). The main sources of funding are the central government (49 percent - directly or through the provision of concessional credit to users), provincial governments (11 percent), donors (30 percent) and users (10 percent).
36. In the nineteen provinces supported by the Program, the total scale of the financing is estimated to be US\$300 million. Within this context, the GoV seeks an IDA Credit at an indicative funding level of US\$200 million, or 15 percent of the overall NTP3 Program.

### Additional Provinces

37. During negotiations, the Government of Vietnam requested the inclusion of two additional provinces in the Program; Ninh Thuan and Binh Thuan. The Bank agreed to the inclusion of these two additional provinces. Following this agreement, the Bank carried out a further desk-based technical assessment of Ninh Thuan and Binh Thuan. The technical aspects of the Program, including the benefits and risks of the Program to Ninh Thuan and Binh Thuan provinces, were found to be consistent with those identified through the findings of the initial assessment of the 19 original provinces. The technical recommendations and the risk rating of this assessment are therefore considered to be appropriate for all of the provinces under the Program including Ninh Thuan and Binh Thuan. Further details of the desk based assessment of Ninh Thuan and Binh Thuan are included as an Addendum to this document.

## B. Program Strategic Relevance

### National Context

38. Vietnam has an impressive record on economic growth and poverty reduction in the space of twenty five years. Reforms have transformed Vietnam from one of the poorest countries in the world, with per capita income below US\$100, to a lower middle-income country. Using the ‘basic needs’ criterion, the poverty headcount fell from 58 percent in the early 1990s, to 14.5 percent by 2008. However, poverty (especially non-income dimensions of poverty) rates remain high and access to basic services extremely low in many rural provinces, and in mountainous, remote and Ethnic Minority areas. In these areas, achieving universal and sustainable access to hygienic water and sanitation facilities remains a major challenge.
39. The government recognizes that improving access to sanitation is a priority and has formally committed to eliminating OD by 2025, including in the challenging remote and EM areas of Vietnam. In the short term, the focus is to target poor communities where water and sanitation coverage is low and malnutrition is high. Improving hygiene practices has been a long-term goal of the government. In 1961, President Ho Chi Minh highlighted the need for all children to ‘maintain very good hygiene’ (*Giu gin ve sinh that tot*), a phrase that continues to be taught in schools all over Vietnam.<sup>7</sup>
40. GoV has also implemented a number of important poverty reduction programs in EM areas over the past two decades, including Program 135 and other socio-economic development programs targeted at EMs. The NM-CH regions have also benefitted from relatively greater budgetary transfers under the 16 National Target Programs (NTPs).
41. The proposed Program would build on and leverage a number of other Bank supported operations in different sectors in the NM-CH regions, including: the Central Highlands Poverty Reduction Project which is enhancing living standards by improving livelihood opportunities in the Central Highlands of Vietnam, targeting those who have a higher poverty rate in terms of income and access to basic services including sanitation; the ongoing Second NM Poverty Reduction Project, which is currently trying to incorporate sanitation into project activities. The proposed Program would also build on lessons learned from the RWSS PforR in the Red River Delta. The World Bank assistance to develop and support this Program would facilitate the sharing of lessons learned from successful rural water and sanitation projects globally. The Bank will also bring leading international experts in sanitation and hygiene, from within and outside the Bank to inform the design and support the implementation of the proposed Program.

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<sup>7</sup> Ho Chi Minh, 1961

## Regional Context

42. In addition to the regional variation, there is a considerable difference in the poverty level between the Kinh/Hoa majority and ethnic minorities groups (EMs). In 2010, EMs accounted for 70 percent of individuals in the lowest income decile, up from 53 percent in 2006, even though they make up less than 15 percent of the total population. Average income among EM households is only equal to one sixth of the national average.<sup>8</sup> Slower progress in the gains of EM groups is also reflected in nutrition and education. Recent evidence has shown that diarrhea and chronic environmental enteropathy in children linked to a lack of sanitation and in particular, the practice of defecating in the open, has a significant impact on childhood development amongst EMs. According to the 2014 Vietnam Taking Stock report, 41 percent of EM children below the age of 5 are stunted compared to 25 percent in all rural areas<sup>9</sup>. Collective health gains through high levels of hygienic sanitation coverage are critical to addressing these problems.<sup>10</sup> Only 9 percent of non Kinh groups have completed upper secondary school and higher as compared to 23 percent for Kinh people.
43. Ensuring equity of growth in Vietnam will require a sustained focus on reducing rural poverty and increasing access to basic services in rural areas including access to adequate sanitation and water supply and the practice of proper hygiene. Vietnam's decade-long commitment to meeting the Millennium Development Goals (MDG) and the recent initiative to accelerate achievement of the MDGs, also underscores this priority. Achieving this in the CH region and in particular in the NM region is especially challenging given the lack of access to remote areas.

## Scale of the service gap

44. While the overall rate of poverty for the country in 2012 was 9.6 percent (with an additional 6.6 percent near poor), this figure masks regional differences. The poverty rate<sup>11</sup> for the remote Northern Mountains and Central Highlands regions is significantly higher at 23.8 percent and 17.8 percent, respectively.<sup>12</sup>
45. According to data from the JMP, Vietnam has already met the MDGs on water and sanitation. In rural areas, access to an improved toilet facility rose from 31 percent to 67 percent from 1990 to 2012, with open defecation (OD) dropping from 39 percent to just 2 percent by 2012. Over the same period, access to an improved water supply rose from 54.4 percent in 1990 to reach 93.6 percent by 2012. However, many stakeholders in the sector consider these impressive figures to be an overestimate. Uncertainty in

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<sup>8</sup> Committee on Ethnic Minority's report to MOLISA, 2013.

<sup>9</sup> UNICEF (2010-11) MICS4 – Multiple Indicator Cluster Survey 2010–2011 for Vietnam.

<sup>10</sup> Quattri, M et.al, 2014. Investing in the Next Generation: Children grow taller, and smarter, in rural, mountainous villages of Vietnam where community members use improved sanitation. WSP Research Brief.

<sup>11</sup> Assessed against a threshold of 570 thousand Dong for rural areas

<sup>12</sup> General Statistics Office data for 2012

the actual coverage exists due to unreliable monitoring systems, multiple sources of data and the use of different definitions.

46. According to the government, coverage levels are lower and access to water supply and sanitation in rural areas remains a significant challenge. Across the NM and CH regions, government data suggests that 21 percent of the rural population practice OD and 39 percent have unhygienic toilets. For EMs, who make up 50 percent of the population in the NM-CH, the rates for sanitation access are amongst the lowest in the country. OD is practiced by 31 percent of EMs and 47 percent of EMs have unhygienic toilets. In addition to inadequate sanitation, 27 percent of people in rural areas of the NM-CH do not have access to a safe water supply; many of the schemes installed are no longer functioning - largely due to poor maintenance. What little data exists on hand washing in Vietnam suggests that it is not widely practiced. A country wide survey highlighted that only 13 percent and 15 percent of people washed their hands with soap before eating and after defecating, respectively. Even lower rates were found for poor households, the northern mountainous regions and among ethnic minority groups<sup>13</sup>. Reliable, local level data on access to water and sanitation in schools and health clinics and the practice of hygienic behaviors is sparse. Nationally, approximately 12 percent of schools and 37 percent of health centres have access to hygienic sanitation according to government standards. Approximately 21 percent of schools in Vietnam do not have water for hand washing, and only 11 percent of students washed their hands after defecating<sup>14</sup>.

### Relevance of Improving Hygiene Behavior, Sustaining Access to Sanitation and Reducing Open Defecation

47. The lack of access to adequate sanitation and safe water in communities and at institutions in the rural and in particular the EM areas of the NM-CH regions and the poor hygiene behaviors practiced by the population, contributes to the highest morbidity rates in Vietnam for diarrhea in (Department of Preventive Medicine – 2009) and parasitic infections (WHO 2007) which are the number two leading cause of morbidity in the northern mountainous regions.<sup>15</sup> Hand washing and sanitation are two of the most cost effective public health interventions. Evidence shows that washing hands with soap can reduce the risk of diarrhoeal diseases by 42-47 percent and has the potential to avert approximately one million diarrhoea deaths globally.<sup>16</sup> Interventions to promote proper hygiene practices offer excellent value for money; one year of life free from disability costs only US\$3.<sup>17</sup> From an economic perspective,

<sup>13</sup> Ministry of Health (MoH), UNICEF. 2007. Summary: National Baseline Survey on the Environmental Sanitation and Hygiene Situation in Viet Nam. Hanoi: Ministry of Health and UNICEF.

<sup>14</sup> Ministry of Health (MoH), UNICEF. 2007. Summary: National Baseline Survey on the Environmental Sanitation and Hygiene Situation in Viet Nam. Hanoi: Ministry of Health and UNICEF.

<sup>15</sup> Perspectives on child diarrhoea management and health service use among ethnic minority caregivers in Vietnam, Rheinlander 2011

<sup>16</sup> Curtis V, Cairncross S. Effect of washing hands with soap on diarrhoea risk in the community: a systematic review. *Lancet Infectious Diseases* 2003; 3(5): 275-281.

<sup>17</sup> Jamison D.T., J.G. Breman, A.R. Measham, G. Alleyne, M. Claeson, D.B. Evans, P. Jha, A. Mills, and P. Musgrove, eds. 2006. *Disease Control Priorities in Developing Countries*. 2nd edition. New York: Oxford University Press.

sanitation is an excellent investment in support of a return to strong and inclusive growth for the country; in Vietnam, for every US\$1 invested in sanitation between US\$2 and US\$9.5 are returned.<sup>18</sup>

48. To date there has not been a sufficiently large and transformational operation focusing on hygiene promotion and sanitation in the NM-CH regions, aimed at tackling open defecation among EMs.
49. From an environmental and social perspective, improving hygiene and sanitary conditions in rural populations will reduce disease incidence and improve the quality of life of the rural population. By targeting sanitation in marginalized EM communities, the operation will ensure social inclusion. The program will also focus more attention on other non-income dimensions of poverty including health, education and nutrition.
50. On governance, the proposed Program is designed to reinforce and strengthen the Government's own systems for delivery of sanitation and hygiene behavior change services by building sound fiduciary, environmental and social management practices. The burden of poor access to sanitation often falls most heavily on women. On gender, the proposed PforR will strengthen gender-based monitoring and reporting. In addition, the World Bank's Country Partnership Strategy places critical importance on the issue of resilience to climate change in Vietnam, the impact of which is particularly pronounced in the water sector.
51. At the international level, the Program will contribute directly to the achievement of the MDG targets for which progress on sanitation is lagging. If the more ambitious targets being developed to replace the MDGs after 2015 are to be met then it will be necessary to develop and implement effective approaches to improve access to sanitation on a large scale.

### C. Program Technical Soundness

#### Track record

52. The GoV has considerable experience in the delivery of targeted national investment programs. In the rural water supply and sanitation sector, the National Target Program (NTP) model has been the driver for considerable progress over the past 15 years. The main achievements of the second and third phases of the NTP are provided above. The key challenges of the NTP in rural water and sanitation has been in ensuring sustainability of services and in reaching the poorest groups. Sustainability of services has been difficult for a number of reasons, but primarily due to lack of budget for operation and maintenance and limited investment in building ownership of systems and behavior change communication. These issues are elaborated further in the following sub sections.

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<sup>18</sup> WSP 2012. Economic Assessment of Sanitation Interventions in Vietnam

53. Experience under a complementary World Bank-supported project (RRD-RWSSP), which was completed in 2013, has been positive. Covering the four provinces of Thai Binh, Nam Dinh, Ninh Binh and Hai Duong, the Project served an estimated 830,000 people. This project demonstrated the efficiency of choosing the most competitive available procurement options and successfully established enterprise management models for improved and more sustainable service through cost recovery from users. The RRD-RWSSP was able to reach a unit cost of US\$110 per capita, significantly less than the standard NTP per capita estimates of up to US\$200. The project has also demonstrated the successful model of scaling up sanitation using on-lending mechanisms. The RRD-RWSSP worked through NCERWASS, the technical agency for water supply under the NTP.
54. Following the completion of RRD-RWSSP in 2013, the lessons learned were fed into the development of the US\$200 million Rural Water Supply and Sanitation Program for Results (RWSS PforR) which aims to increase sustained access to water supply and sanitation services and improve sector planning, monitoring and evaluation under NTP3 in eight rural provinces of the Red River Delta region (Bac Ninh, Ha Nam, Hanoi, Quang Ninh, Phu Tho, Vinh Phuc, Thanh Hoa, and Hung Yen). In these provinces while there are relatively robust institutions and capacity is relatively good, there also exist particular water quality challenges (agricultural runoff and arsenic). In addition to public sanitation and hygiene education, the target in these eight provinces was to provide: safe water to an additional 1.7 million people; and household latrines to an additional 650,000 people. The RWSS PforR is being implemented by the Ministry of Agriculture and Rural Development (MARD) and it seeks to address the weaknesses identified by government in the existing NTP system and ultimately, to integrate the lessons into the broader NTP. The program implementation period runs from 2013 to 2017.
55. While the first two years of implementation of the RWSS PforR have been largely positive and yielded good results, a few challenges are being faced as described later. One of them, however, is that the PPCs in most provinces are reluctant to allocate funds to 'soft' investments such as IEC, secondly the unit costs for many water supply schemes is higher than that realized under the RRD-RWSSP. Despite these challenges, during the first year of implementation the implementing agencies achieved 84 percent of the planned targets and are expected to achieve over 70 percent in the second year. Following the successful early years of this first PforR program the Government are keen to expand the approach into areas where the institutions are weaker and where additional support is needed to increase lagging sanitation coverage.

## Sanitation and hygiene promotion

### ***Overview of Sanitation and Hygiene under the NTP3***

56. The following sanitation objectives are included under NTP3 (NTP Standing Office, Ministry of Agriculture and Rural Development, 2012):
- (iii) 65 percent of rural households have hygienic latrines;

- (iv) 45 percent of husbandry household have hygienic livestock pens; and
- (v) All pre-schools, schools and health clinics have water and sanitation facilities which are properly managed.

57. Institutional responsibilities for sanitation in NTP3 are divided as follows:

- (vi) sanitation facilities in pre-schools and schools and the development of hygienic livestock pens falls under Component 1: Rural Domestic Water Supply and Rural Environment, which is managed by MARD;
- (vii) construction of hygienic household latrines and construction of sanitation facilities for clinics falls under Component 2: Rural Sanitation, which is managed by MoH; and
- (viii) behavior change interventions, clustered under the heading of IEC falls under Component 3: Capacity Building, IEC, Supervision and Monitoring, which is managed by MARD.

58. Under NTP3, MoET is currently not a major actor and the education sector budget does not reflect the level of need for water supply and sanitation at schools.

#### ***Assessment of NTP3 implementation to date***

59. Currently, sanitation investments mainly support capital investment for institutional facilities and subsidized demonstration latrines for households. Coverage of institutional facilities has significantly increased, however the operation and maintenance is often poor. Sanitation facilities in schools and clinics are often poorly maintained and often designed without using an integrated approach toward water supply and sanitation, for example pour flush latrines are installed where there is no running water. Coverage increases have been slow, particularly in the poorer provinces. This is partly due to the lack of effective BCC and partly due to the limited financing sources for household sanitation.

60. Households who received the demonstration latrines have largely used the latrines provided; however the construction was not replicated by other households. Some provinces have reported that these subsidies can reduce the demand for sanitation, this is supported by international experience which also shows that subsidies can crowd out the local private suppliers and make the BCC effort less effective. However studies have indicated that, to have a significant impact on stunting, large scale public investment in sanitation and health promotion may be needed.<sup>19</sup> Any targeted support to the poor in the form of subsidy needs to be carefully structured and transparent. It should be noted that the financial guidelines for the NTP3 do not permit for extensive use of rebates, such as those used in Output Based Aid (OBA).

61. In the last few years of NTP3, there has been increasing focus on building ownership for communities and local authorities to take up a greater role and responsibility for ensuring improved household sanitation, including specifically increased involvement of the Women's Union. The Women's Union was reported to have had some success in

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<sup>19</sup> Gertler et al, How Does Health Promotion Work? Evidence From The Dirty Business of Eliminating Open Defecation, 2015



promoting households to save for latrine construction in at least one province. Loans for sanitation are rare as household economic development is normally prioritized over sanitation improvements. Although some efforts have been taking place in training masons there is no systematic support for the development of the sanitation and hygiene supply chain and technical knowledge of low-cost latrine options is often low at community level.

62. Hygiene promotion and behavior change communication is limited under NTP3 and the level of investment in “soft” activities has not been sufficient to result in an observable impact. Typically, hand washing activities are completed largely as part of short campaigns in response to outbreaks of disease and are not included systematically under NTP3. Information, Education and Communication (IEC) activities are very limited and often adopt traditional didactic methods based on health messaging. To date IEC campaigns have covered; training on toilet construction techniques; communication campaigns to promote toilet construction and monitoring of the use of constructed toilets. These have also been supported by Periodic commune meetings and meetings held by mass organizations (such as women unions, the youth unions, farmers unions, or war veteran unions) on waste collection and building, improving and maintaining hygienic toilets.
63. Hygiene and sanitation promotion is led through the Village Health Worker network, which is established in almost all villages, but has limited technical capacity and resources. There appear to be few local champions for the sector and sanitation access among Local leaders and Village Health Workers is often low. There is limited or no incentive to coordinate sanitation investments with hygiene promotion activities (through IEC and the outreach activities of the VBSP) to achieve commune-wide impacts. This could significantly limit the extent to which health gains can be sustained at scale. MoH are well aware of the importance of IEC but also understand that that achieving sustained behavior change is a significant challenge.

#### ***Developments supported by the RWSS PforR***

64. The overall impact of sanitation on community health will be limited unless coverage rates are substantial and latrines are properly used and maintained so that the pathogen load in the environment is substantially reduced. This means that even where sanitation coverage is relatively high, health benefits may be limited if a small number of people continue to defecate in the open or if public facilities are not provided at institutions such as schools and clinics. Two long-term dimensions of domestic sanitation provision in low density rural areas are therefore critical; firstly that coverage (rates of using hygienic latrines) reaches the level required to realize significant health benefits in any given community and all members of the community use the latrines on a regular basis and secondly that latrines are properly maintained. Under the RWSS PforR the use of Commune Wide Sanitation (CWS) was introduced to reflect the importance of the collective health gains. CWS, which was considered to be effective in promoting the high levels of sanitation required rather than focusing on a small number of subsidized latrines, was defined as follows:

- 100 percent of public kindergarten, primary and secondary schools have: clean water for drinking, as defined by Government Standards, but including as a minimum the 14 parameters listed under MoH's QCVN 02:2009/BYT standard but using the maximum limit values of QCVN 01:2009/BYT; water for hand washing defined by the Standards for Hygienic water as issued through the Ministry for Agriculture and Rural Development's Decision No. 2570 /QD-BNN-TCTL, dated October 22, 2012; and hygienic sanitation facilities according to MoH standards (Circular QCVN 01: 2011/BYT).
- 100 percent of Commune Health Centers have: clean water for drinking, as defined by Government Standards, but including as a minimum the 14 parameters listed under MoH's QCVN 02:2009/BYT standard but using the maximum limit values of QCVN 01: 2009/BYT; water for hand washing defined by the Standards for Hygienic water as issued through the Ministry for Agriculture and Rural Development's Decision No. 2570 /QD-BNN-TCTL, dated October 22, 2012; and hygienic sanitation facilities according to MoH standards (Circular QCVN 01: 2011/BYT);
- at least 70 percent of households have an IHSL; and
- 100 percent of households use latrines of some kind.

65. Under the current Program given the challenging context this may need to be modified to allow for incremental improvements – with a bonus for full completion which realizes the full benefits of complete coverage.

66. In addition the RWSS PforR is supporting the implementation of additional Technical Assistance to:

- Develop a Sanitation Action Plan to support demand creation, supply strengthening and effective sanitation finance;
- Assist the Provincial Centers for Preventive Medicine to Implement the Action Plan by intensive training and on the job daily support;
- Design and Implement a Community Rewards Program for achieving Commune-Wide Sanitation; and
- Support Advocacy, Reporting and Monitoring for Results.

67. This Technical Assistance is still at an early stage. It is focusing on the Red River Delta, but is also expected to inform the design of the Program.

### ***Hygiene promotion and sanitation activities outside of NTP3***

68. Outside of NTP3, VIHEMA is also developing and piloting other approaches that are in line with global best practice for sanitation and hygiene promotion; focusing on creating demand for sanitation, building the sanitation supply chain and developing the needed enabling environment for improving sanitation service delivery. A number of approaches have been introduced by MoH such as the Community-Led Total Sanitation (CLTS), evidence-based Behavior Change Communication (BCC) and sanitation marketing (including developing a manual of low-cost latrine designs). Hand washing with soap was also introduced in the past. These approaches are a significant move away from the traditional didactic approaches, however in general the pilots

remain small scale and the technical assistance being developed has rarely reached the commune and village level.

69. CLTS, a community approach for collective action to stop open defecation. CLTS works well in the area where the community bond is strong and feelings of disgust and shame are taken very seriously -- so it may not be applicable to all cultures. It was first introduced in Vietnam in 2008 through a pilot with support from SNV. The SNV pilot operated in 43 villages in three North West provinces of Lao Cai, Lai Chau and Dien Bien. A review of SNV's pilot found that open defecation was the dominant sanitation practice prior to the application of CLTS, with coverage rates for toilets of 10 to 30 percent. Following CLTS triggering, coverage rates increased to 60 to 80 Percent.<sup>20</sup> Some villages raised sanitation coverage from as little as 10-100 percent in the space of a few months. The review identified a number of factors that were considered important to the success of the pilot. These factors include: Commitment to the process through mutual support between households, community spirit and participation and participation and commitment by the Government; Knowledge of the benefits of sanitation including the links between sanitation and disease, the effectiveness of the CLTS communication in explaining the effects of open defecation and the involvement of well-trained persons in the CLTS approach; Knowledge of low cost latrine models that can be easily built using local materials including the sharing of construction knowledge between neighbors and the use of demonstration latrines; Mobilization of the community by the Village head and groups such as the Women's Union who set the example, monitoring at the commune, district and province level and close collaboration between commune and village heads; Village level regulation established on building and using latrines.
70. Following the pilot by SNV, CLTS has been implemented with different scale in at least 17 provinces with support of various organizations including UNICEF, SNV, Plan International, World Vision, etc. and has experienced a varying degree of success. In Vietnam around 17 percent of all the villages triggered achieved ODF status; partly because people built poor quality latrines with a short design life and subsequently reverted to open defecation and partly due to a lack of well trained and effective facilitators. As of 2012, there were more than 1000 CLTS facilitators trained by MoH and other partners. However there is no data on the number of active facilitators and a review of CLTS<sup>21</sup> indicated that the effectiveness of facilitators remains low at 0.7 communities triggered per trained facilitator. The great variation in the reported cost of CLTS per commune – irrespective of commune size – for CLTS (US\$1,500-50,000) suggests that cost effectiveness varies widely and may in some cases be quite low. UNICEF is also supporting VIHEMA to develop an ODF verification and certification guideline.
- (ix)
71. In addition, UNICEF is currently providing support for an adapted form of CLTS in seven Provinces, Community Approaches to Total Sanitation (CATS). This approach has had marked success across a number of communes by expanding CLTS to incorporate other aspects. CATS is based on community triggering using CLTS which works of ideas

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<sup>20</sup> Vietnam sanitation demand creation - a strengths-based review, SNV 2010

<sup>21</sup> Robinson, A., CLTS in EAP: Progress, Lessons and Directions, Unicef 2013

of shame and disgust, and then adds follow-up promotion events – including work in schools, hygiene promotion, support to the supply chain and improving construction quality of latrines.

72. Sanitation marketing has happened in various locations on pilot scale basis. Sanitation marketing was introduced in Vietnam in 2003 with the support of NGO IDE. The approach has evolved overtime and has been applied by a number of organizations. Despite these initiatives, there is no systematic mechanism that develops and supports the local private sector in delivering sanitation services at scale. However, supporting small scale private entrepreneurs to complete latrine construction in remote areas such as Northern Mountains and Central Highlands faces a number of logistical barriers. In addition actors in the private sector have limited capacity in terms of technical competency in sanitation, business management and marketing. WSP, in collaboration with VIHEMA, has recently conducted a supply chain analysis in Hoa Binh province and has identified two potential business models: (a) One-stop-shop model: working with local retailers to service standardized latrine products to rural households; and (b) Off-site concrete ring production and installation: working with local concrete makers to produce concrete rings that are used for pit lining and to provide installation service to rural households. These business models are currently being tested in Hoa Binh.
73. In addition to the subsidies under NTP3, various models of sanitation financing have been applied in Vietnam including Output-Based Aid (OBA), microfinance and hardware subsidies. Previous OBA programs in Vietnam paid USD32.40 per latrine and were cost effective; however they relied upon access to credit from VBSP. Sanitation loans are available from VBSP which cover toilets, bathrooms, animal husbandry, biogas, drainage and waste containers, however it is often reported that the poor are not able to access these loans. International experience shows that properly designed and targeted subsidies along with other interventions, such as demand and supply strengthening, could help the poor gain access to sanitation.
74. OBA has not yet been sustained or scaled up within public sector sanitation programming however, the NGO Plan is currently implementing an output based Community and School Water, Sanitation and Hygiene Promotion Project from 2013 to 2017. The project, which focuses on EM areas, uses CLTS and SLTS to create demand and Sanitation Marketing to meet the demand. Payment is made against the achievement of specific predefined milestones. The project also addresses gender and social inclusion by improving WASH related work sharing and participatory decision making by males and females in households and by empowering women through their leadership role in WASH activities. In addition to Plan's work, the NGO East Meets West (EMW) piloted OBA for sanitation in Vietnam from 2010-2011 with the support of USAID and DFAT. With support from the Gates foundation EMW is now scaling up access to household sanitation through OBA and Conditional Cash Transfers (CCTs) in Vietnam. DFAT recently approved AUD 10 million for WASH in Vietnam, Cambodia and Lao PDR using payment by results for public-private partnerships in rural and small town water supply programs, and household sanitation and hygiene from 2013 to 2017.

75. BCC for sanitation improvements is only at the very early stage of testing and development in Vietnam. Formative research has been conducted in Hoa Binh province by VIHEMA, with the support of WSP, to understand the barriers and the drivers for rural households to build, improve and maintain a hygienic latrine at home. BCC tools, which are centered on pride, cleanliness, modernity and affordability, are being developed and tested by WSP based on this formative research. The BCC tools developed will be specific to the area and the EM groups present.
76. A BCC campaign for hand washing implemented between 2006 and 2010 attempted to rapidly scale up hand washing nationwide. The results showed that although the level of awareness increased, there was little observed difference in actual hand washing practice.<sup>22</sup> This was thought to be due to the difficulty of moving front line VHWs and other local agents from didactic health messaging to more effective techniques and also lack of supervision in implementation. Other steps which may have made the intervention more effective include support to providing dedicated household hand washing facilities. The campaign also looked at working through schools. Research in Vietnam revealed that children had very little free time and that teachers were already overburdened with a heavy curriculum. Therefore, the entertainment education approach was used to develop games and activities as extracurricular activities that would complement rather than compete with the existing curriculum.<sup>23</sup> These tools, were developed through the campaign should be adapted under the Program.
77. A locally branded Happy Tap hand washing product, called LABOBO, was put into market testing by WaterSHED in Tien Giang and Vinh Long provinces of southern Vietnam. This aimed to commercialize a hand washing system that meets the need and aspiration of consumers, however the scale remains limited.
78. In addition to the interventions described above VIHEMA and provincial agencies also complete promotion through national and international awareness days including; the World Day on Hand Washing with Soap, World Toilet Day, National Day for Cleaning up (which covers waste collection and disposal, removing mosquito larvae, and preventing dengue fever) and World Environment Day. Some provinces have also benefitted from projects financed by INGOs or the private sector projects for hygiene and sanitation promotion, capacity building for health workers, and training for toilet construction workers, for example Bac Giang (PLAN) and Yen Bai (Unilever).

### **Nutrition**

79. The close links between sanitation, hygiene and stunting highlight the importance of close coordination between sanitation and nutrition to reduce risk in early childhood; however there are no explicit links between NTP3 and the nutrition interventions ongoing in parallel.

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<sup>22</sup> WSP 2012. Hand washing Behaviour Change at Scale: Evidence from a Randomized Evaluation in Vietnam

<sup>23</sup> The Power of Primary Schools to Change and Sustain Hand washing with Soap among Children: The Cases of Vietnam and Peru, WSP, 2013

80. The nutrition program has recently experienced budget cuts of up to 70 percent in 2014 and 2015 and its future is uncertain. In recent years, interventions for stunting improvement have not been implemented due to insufficient resources which have limited the impact of the program. Despite the limited budget, each province has formulated the annual provincial nutrition plan with varying degrees of quality and nutrition activities are being carried out at both clinic and village level through village health workers. In addition nutrition activities are being carried out by the Women's Union, Youth Union and MoET.
81. The Child Nutrition Improvement Project Plans to 2016<sup>24</sup> aim to promote cross-sectoral coordination and build the environment and policies serving malnutrition prevention. This is an important opportunity for BCC on hygiene promotion and sanitation to be mainstreamed into nutrition programs in clinics.

### ***Recommendations for future development***

82. In light of the assessment, a range of approaches are needed under the Program for sanitation and hygiene promotion covering demand generation and supply. These are additional to the current NTP3 scope and will need to be properly resourced and implemented in parallel with a capacity building program in order to be effective. Additional approaches would include:
- a) developing evidence based sanitation and hygiene BCC tools tailored to EM groups;
- depending on the geographical and cultural context, conducting community based CLTS-type approaches such as CATS<sup>25</sup> to create collective commitment to stop open defecation and BCC activities to improve sanitation and hygiene behavior, coupled with commune level incentives for achievements where appropriate;
  - developing local supply chain for sanitation at the commune level; and
  - systematically building capacity of village health workers and the Women's Union in pioneering and delivering sanitation and hygiene promotion, and introducing simple technical know-how for latrine construction to the village through village health workers.
  - increasing involvement of MoET with respect to hygiene and sanitation promotion activities in order to build interventions through schools and improve the sustainability of school facilities
  - supporting the poor through innovative financing (e.g. voucher schemes) and strengthening use of microfinance sanitation loans through stronger collaboration with Vietnam Bank for Social Policies (VBSP).
83. The proposed Program would also need to mainstream hand washing into antenatal and neonatal care, targeting pregnant women in parallel with supporting the scale up

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<sup>24</sup> Performance Report of the 2011-2015 Period and Proposed Plan for the 2016-2020 Period Child Nutrition Improvement Project, 2014

<sup>25</sup> CATS is based on community triggering using CLTS which works of ideas of shame and disgust, and then adds follow-up promotion events – including work in schools, hygiene promotion, support to the supply chain and improving construction quality of latrines.

of existing successful programs for combating malnutrition. The integration of the activities should be at the health clinic through nutrition consultation and outreach activities by village health workers where the hand washing messages and other nutrition specific intervention messages are integrated. The National Institute for Nutrition (NIN) would coordinate with VIHEMA on the implementation.

84. It is recommended that the Program continues to adopt the concept of Commune Wide Sanitation in order to maintain the focus on widespread use of latrines. Additional attention should be paid to the long terms maintenance of institutional facilities.

## Water supply

### ***Overview of Water Supply under the NTP3***

85. NTP3 seeks to significantly improve the sustainability of water systems and the quality of the water produced. Two types of water supply interventions are supported: community solutions through piped networks and individual solutions for households outside of piped service areas. Household systems are financed by households themselves, supported by access to subsidized credit. Community water systems benefit from government funding through a combination of grants and concessional loans, which meet about 90 percent of capital financing.
86. Institutional responsibilities for water supply in NTP3 are divided as follows:
- water supply to households, pre-schools and schools falls under Component 1: Rural Domestic Water Supply and Rural Environment, which is managed by MARD;
  - construction of water supply facilities for clinics falls under Component 2: Rural Sanitation, which is managed by MoH; and
  - behaviour change interventions, clustered under the heading of IEC falls under Component 3: Capacity Building, IEC, Supervision and Monitoring, which is managed by MARD.

### ***Assessment of NTP3 implementation to date***

87. Water supply coverage in Vietnam has increased significantly since the start of the NTP; increasing from 73 percent in 2001 to 94 percent currently (World Development Indicators, 2013). However this high level of coverage masks regional disparities and the high level of failure in water supply systems. Based on a comprehensive survey completed by NCERWASS in 2013 overall more than 26 percent of existing schemes are either not functional or providing a very poor quality service. Only 32.7 percent of water supply schemes are considered to have sustainable management systems in place. The Northern Mountains and Central highlands have some of the lowest coverage of sustainably managed schemes, estimated at 23 percent and 15 percent, respectively, and the highest percentage of non-functioning schemes, 16 percent and 33 percent, respectively. However; there is a high level of failure of water supply schemes and many of the schemes installed are no longer functioning - largely due to poor maintenance. In the Central Highlands 48 percent of water schemes are operating

poorly or are idle. In the NM, the figure is 33 percent.<sup>26</sup> See Table C1 below, for more detail.

No.	Region	Total no. of schemes	Sustained operation		Normal operation		Poor operation		Idle operation	
			#	%	#	%	#	%	#	%
1	Northern area	5.998	1.381	23	2.597	43	1.047	17	973	16
2	Red River Delta	474	247	52	146	31	29	6	52	11
3	Northern coastal Centre	324	94	29	120	37	62	19	48	15
4	Southern coastal Centre	862	213	25	290	34	250	29	109	13
5	Highlands	408	62	15	152	37	59	15	135	33
6	South-East region	111	64	58	36	32	8	7	3	3
7	Mekong delta	2.823	1.535	54	1.185	42	67	2	36	1
	<b>Total</b>	<b>11.000</b>	<b>3.595</b>	<b>32,7</b>	<b>4.526</b>	<b>41,1</b>	<b>1.523</b>	<b>13,8</b>	<b>1.355</b>	<b>12,3</b>

88. NCERWASS have identified the main reasons for the lack of sustainable schemes and poor performance as follows:

- Investment and management has been decentralized in many provinces, however there is insufficient technical support and capacity building provided to district and commune levels. Technicians often have low capacity and motivation;
- Poor preparation impacts negatively on subsequent implementation; project investment reports, surveys and designs are less than optimal and the participation of stakeholders is lacking meaning that impacts of seasonal changes, water source depletion and climate change are not properly forecasted and integrated;
- Efficiency, operation and maintenance are not considered fully at the design phase; leading to over designed schemes. There is a focus on the construction of schemes, without proper attention paid to the routine repair and rehabilitation of schemes;
- Poor quality or incomplete schemes where only head works and trunk pipes have been constructed, without the completion of the distribution network and household connections. This results in low capacity or non-operational schemes that degrade rapidly and provide poor a poor quality service;

<sup>26</sup> NCERWASS report: Solutions for improved performance of operation and management of rural piped water schemes, 2014



- Management of schemes is poor; and limited budget is available for operation and maintenance, from either the community or local authorities. Community management systems are generally not sustainable and water from shared systems is generally provided for free. Systems with household connections may cover operation costs, but not major repairs. Most provinces have not adopted the water tariff subsidy policy according to Joint Circular No.75/2012/TTLT-BTC-BXD-BNNPTNT dated 15/5/2012. There is lack of awareness of local people of the importance of protecting schemes and a mind-set of relying on government support;
- Damage to schemes occurs due to landslides, floods etc.

89. In addition the following issues are noted:

- In many cases the roles and functions of the units managing and operating water supply schemes were not well defined at the start of investment. Very few localities follow the regulation that investors should be in charge of operation and management of the constructed schemes. There have been some exceptional successes where enterprises or PCERWASS were designated to be investors and contractors as well as being responsible for the operation and management of piped water schemes.
- The small scale of most investments in NTP appears to have resulted in a lack of competent contractors bidding for construction contracts. This may also have affected the quality of the works.
- Preparation for investment was generally slow. Often, project documents and technical designs were prepared only after budgets were allocated. In most cases construction work started very late, normally just before end of the year. This consequently caused delays in disbursements and slowed down completion.
- Under the NTP procedures, detailed engineering designs must also be carried out for all water supply systems before contracts can be tendered. Of concern is the issue of the fees paid to attract good professional consultant engineering services. These fees are dictated by the Ministry of Construction's "cost norms". The cost norms are generally on the low side (as percentages of the construction cost) of internationally and regionally accepted fees and may lead to poor quality designs and inefficient use of financing.

90. NCERWASS and PCERWASSes have some experience with household level water systems (household wells, water filters etc) to target the poorest and lowest density rural areas. In addition DFAT has had some success in initial pilots distributing and supporting use of water filters in Vinh Phuc. However there are some limitations in this approach as it requires a high level of community mobilization and support to supply chains into these remote areas.

### ***Developments supported by the RWSS PforR***

91. A significant issue noted under the RWSS PforR was that designs are often not cost effective. The current design standards are focussed on urban supply schemes and are therefore not appropriate to rural areas. For example current standards specify high

residual pressures, high consumption levels and large storage tanks. Under the technical assistance being implemented under the RWSS PforR these issues are being addressed through a full review of the technical norms and standards and recommendations of revised standards. The management and maintenance issues noted above are also addressed under this technical assistance through a review of managerial aspects of rural water supply systems and also support to water quality testing.

92. This Technical Assistance is still at an early stage. It is focussing on the Red River Delta, but is also expected to inform the design of the Program.

### ***Issue specific to the target area***

93. A number of challenges to provision of sustained services exist in the Northern Mountains and Central Highlands regions. These challenges include the availability and quality of water for domestic consumption as well as the management of water supply and the recovery of costs to finance the operation and maintenance of small scale water supply systems.
94. The proposed Program will finance small scale piped water supply systems. Water delivered through a tap on the plot, or with 5 minutes collection time, reduces health concerns from high to low.<sup>27</sup> In the Central Highlands these systems typically use ground water although surface water sources are also utilised in some areas. In the Northern Mountains the rural population are largely reliant on gravity fed spring systems. In both regions, rainwater is used on a seasonal basis to supplement water supplied from other sources. In the Central Highlands, falling groundwater levels over recent years mean that many community schemes are seasonal and fail to provide sufficient and regular water supply for a large part of the year. Although the conditions vary geographically, boreholes often have to be drilled to a depth of 50-100m to reach the water table. There are competing demands for available water from multiple sectors including for power generation, irrigated agriculture and domestic consumption. There are currently limited controls in place governing the exploitation of groundwater.
95. The treatment of water for drinking is not universal in the Central Highlands and Northern Mountains, in some cases communities use untreated ground water and surface water for drinking. While well-constructed and sited deep boreholes can potentially provide water that meets the bacteriological quality required for drinking, surface water is unlikely to meet this requirement. Deep boreholes in the Central Highlands are also reported to face problems of high levels of calcium and iron. Although hard water is not normally associated with adverse health effects, the actual water quality needs to be confirmed. Arsenic occurs in some areas of the Central Highlands but it is not common. There is also a risk that people may choose unsafe surface water sources over groundwater due to taste preferences. Water quality is

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<sup>27</sup> Domestic Water Quantity, Service, Level and Health, World Health Organization, 2003.

tested at the district level where sufficient capacity is reported to exist, however insufficient budget means that testing does not occur regularly.

### ***Cost Effectiveness of Designs***

96. The per capita costs in many of the target Provinces are very high, due in part to over design, but also due to the logistical costs of working in remote and mountainous areas.
97. Unit costs for water supply schemes have been assessed further to identify what reasonable range of unit costs should be adopted under the program. This assessment included a broad based cost calculation which accounted for the extra efforts required in work components to be carried out in the high and inaccessible hills for the systems in each of the above typology. The indicative costs for different categories in the Northern Mountains are given in Table C2 and for Central Highlands in Table C3. This review also included an assessment of the existing design standards. It identified that many schemes were designed to excessively high standards and made some recommendations to be considered in future design development. A full description of the work completed is included in Annex 2.

Table C2 - Cost matrix for Northern Mountains

	Range	Costed for households	Cost per person	Spring scheme with 1 day storage only
			USD	USD
<b>New system</b>				
Surface water schemes				
	Small 10 to 50 household	27	1111	
	400 - 700 household	537	247	
	700 - 1250 household	805	253	
	1250 - 1900 household	1610	241	
	1900 - 2500 household	2146	241	
	<b>Average</b>		<b>246</b>	
Ground water schemes				
	Small 10 to 50 household	27	306	
	400 - 700 household	537	139	
	700 - 1250 household	805	189	
	1250 - 1900 household	1610	216	
	1900 - 2500 household	2146	225	
	<b>Average</b>		<b>192</b>	
Spring based schemes				
	Small 10 to 50 household	27	549	143
	50 - 200 household	134	482	135
	200 - 350 household	268	531	185
	350 - 500 household	402	534	210
	500 - 650 household	537	547	221
	Actual for Toa & Nieng	195		102
	<b>Average</b>		<b>528</b>	<b>179</b>
<b>Rehab works of existing systems</b>				
	Minimum	110	18	
	Maximum	17	104	
	<b>Average</b>		<b>61</b>	
<b>Extension of existing systems</b>				
	Minimum	200	89	
	Maximum	162	118	
	<b>Average</b>		<b>103</b>	
	<b>Weighted Average</b>			<b>143</b>

Table C3 - Cost matrix for Central Highlands

	Range	Costed for households	Cost per person USD
<b>New system</b>			
Surface water schemes			
	Small 10 to 50 household	27	1109
	400 - 700 household	537	241
	700 - 1250 household	805	247
	1250 - 1900 household	1610	234
	1900 - 2500 household	2146	234
	<b>Average</b>		<b>239</b>
Ground water schemes			
	Small 10 to 50 household	27	312
	400 - 700 household	537	139
	700 - 1250 household	805	187
	1250 - 1900 household	1610	214
	1900 - 2500 household	2146	223
	Tan Tien Commune	1341	276
	<b>Average</b>		<b>191</b>
<b>Rehab works of existing systems</b>			
	Minimum	200	15
	Maximum	160	40
	<b>Average</b>		<b>27.5</b>
<b>Extension of existing systems</b>			
	Minimum	250	95
	Maximum	1647	109
	<b>Average</b>		<b>102</b>

### ***Recommendations for future development***

98. The 2016-2020 Mid Term Plans have been developed in all 19 provinces within the Program; however detailed designs are not yet available. A full review of these designs will be needed when they become available, with the guidance for unit costs provided above.
99. The Program should support both new connections (new schemes, extensions from existing schemes and moving from shared to individual household connections) and the rehabilitation of schemes which are not functional. Sustainability of water supply schemes

should also be supported and monitored, including development of sustainable management models through professionalization of the schemes and support to community capacity building for operation and maintenance. The proposed Program would seek to work with the Government to implement the recommendations from the JAR 2013 report, including the development of a water price framework, which would support allocation of funds for water price compensation, prioritizing water supply schemes in mountainous and remote areas.

## D. Institutional Context

### Summary of Program implementation arrangements

100. The program will rely on the existing NTP3 implementation and management arrangement, with particular features at central and provincial levels as follows:

#### **Central Level:**

101. MARD is in charge of NTP3 and is the lead agency taking responsibility for implementation of the Program. MARD will coordinate Program implementation under the guidance of a national steering committee consisting of MARD, MOH, MOET, Commission for Ethnic and Minority Affairs (CEMA), Ministry of Planning and Investment (MPI), and MOF. Fully empowered teams will be established nationally in MARD and VIHEMA in order to monitor and support implementation in all Provinces under the Program
102. During implementation, the NTP Standing Office will act as the supporting agency, providing guidance to provinces in preparing plans, monitoring and compiling the Program results and providing technical assistance for the 19 provinces. NTP-SO and the WRD will support the development of the annual Program reports and plans at the central level and in the 19 provinces. NTP-SO and the WRD will also be responsible for ensuring that arrangements are in place for monitoring and reporting progress against the Disbursement Linked Indicators. NTP-SO and the WRD will also report on progress made against the Program Action Plan.
103. NCERWASS is the technical lead for water supply. NCERWASS will be responsible for coordination as well as supporting provinces in planning and in monitoring and evaluating results relating to water supply which will feed in to the ICT M&E platform being developed through the RWSS PforR. NCERWASS will also assign provincial level staff to engage in capacity building activities; provide guidance to PCERWASS in developing budget estimates, technical designs and annual plans related to the provision of water supply for schools, clinics and households under the program; and provide information on Program monitoring to MARD.

104. The Ministry of Health (MoH) is responsible for management of health, focusing on guiding and disseminating the standards on water quality for drinking and domestic uses, directing sanitation implementation and developing public and household sanitation programs in rural areas. VIHEMA under MOH will be the technical lead for the sanitation and the behavior change activities. A PMU within VIHEMA and will be responsible for overall design, management, coordination and monitoring of sanitation and hygiene promotion activities at the central level as well as technical support to the Provincial level. At the central level VIHEMA will be responsible for procuring and implementing development of BCC strategies and related capacity building requirements, a national media and advocacy campaign and policy review for all issues relating to sanitation. VIHEMA will also be responsible for arranging the required technical support for provincial level implementation of community-approaches for rural sanitation, BCC activities and capacity building to support market-based approaches. This is expected to require inputs from international experts. Provincial level support includes: mobilizing regional institutes under MOH-public health to support provincial level capacity building; assigning provincial level staff to engage in capacity building activities; guiding the development of budget estimates and annual plans related to the sanitation and hygiene promotion activities for schools, clinics and households under the Program; supervising the status of implementation of activities related to sanitation and hygiene promotion; and providing information on Program monitoring to MARD. VIHEMA will be responsible for supporting provinces in planning and in monitoring and evaluating results relating to behavior change and sanitation which will feed into the ICT M&E platform being developed through the RWSS PforR.
105. Independent Verification Agent (IVA); The IVA role is to provide independent confirmation of the results reported by the provinces through MARD. State Audit of Vietnam was selected to verify Program results using protocols agreed with the Bank. This choice is based on SAV's role as a constitutional body with both the independence and the mandate to conduct NTP audits. SAV has good management capacity and can sub contract verification works for which it does not have the technical expertise in-house. SAV is the IVA under the RWSS PforR and has performed satisfactorily; it has subcontracted the physical verification of sanitation and water supply connections to a specialist firm. SAV provided adequate oversight of the surveys teams and reporting process.
106. MOET will support activities in schools. This will include support for the development and promulgation of policies relevant to the Program, including ensuring that suitable operation and maintenance of the water supply and sanitation facilities at schools are put in place, assigning staff to engage in capacity building activities and the implementation support to schools in their implementation of hygiene BCC activities, guiding on the development of budget estimates and annual plans for activities falling under the MOET's mandate; supervising the status of implementation of these activities in schools; and providing information on program monitoring to NCERWASS/VIHEMA as required.

107. CEMA will have an advisory role and will support the Program to develop interventions which are sensitive to the requirements and diversity of different ethnic groups in Vietnam. Multi-sectoral links will be established including with CEMA to support with knowledge on EMs and with MOET to provide support for activities in schools including monitoring the implementation of school sanitation and lead elements of BCC delivered through schools;
108. Other agencies involved include the Ministry of Planning and Investment (MPI) who will be responsible for final budget allocations to Program components and MOF that will, through SBV, receive the funds disbursed by the World Bank and channel them to the Participating Provinces.

***Provincial Level:***

109. The Provincial Peoples Committee will lead Provincial level steering committees for coordination and supervision comprising DoH, PCERWASS, DoET, DPI, DoF and CEMA.
110. The PPCs will assign responsibilities for developing the Provincial Plan for RWSS. Provincial Plans are a key component of the Disbursement-Linked Indicators and must have content specific information on access to water and sanitation in the province, mapping of socio-economic data, and projection of investments for the next five year period on a yearly bases. The information contained in the provincial plans needs to be updated periodically, based on progress during implementation and information on key project indicators.
111. DARD is the lead agency at the provincial level and is in charge of general reporting, information gathering and assessment, including reporting on annual results and coordinating all the monitoring activities required to deliver the programme. In addition, this agency is also responsible for conducting training activities for capability enhancement, communication, construction investment of water supply facilities and rural environmental sanitation.
112. During the implementation of the program, PCERWASS is responsible for the design, implementation, supervision and monitoring of water supply schemes in communities and in institutions.
113. DoH is responsible for guiding and executing all hygiene and sanitation activities under the Program. DoH will also have a key role to play in monitoring water quality. The Health workers at village and commune level will participate in the monitoring process.
114. DoET is responsible for sanitation in schools and will work closely with PCERWASS on providing water in schools as well as supporting schools to operate and maintain water and sanitation facilities.



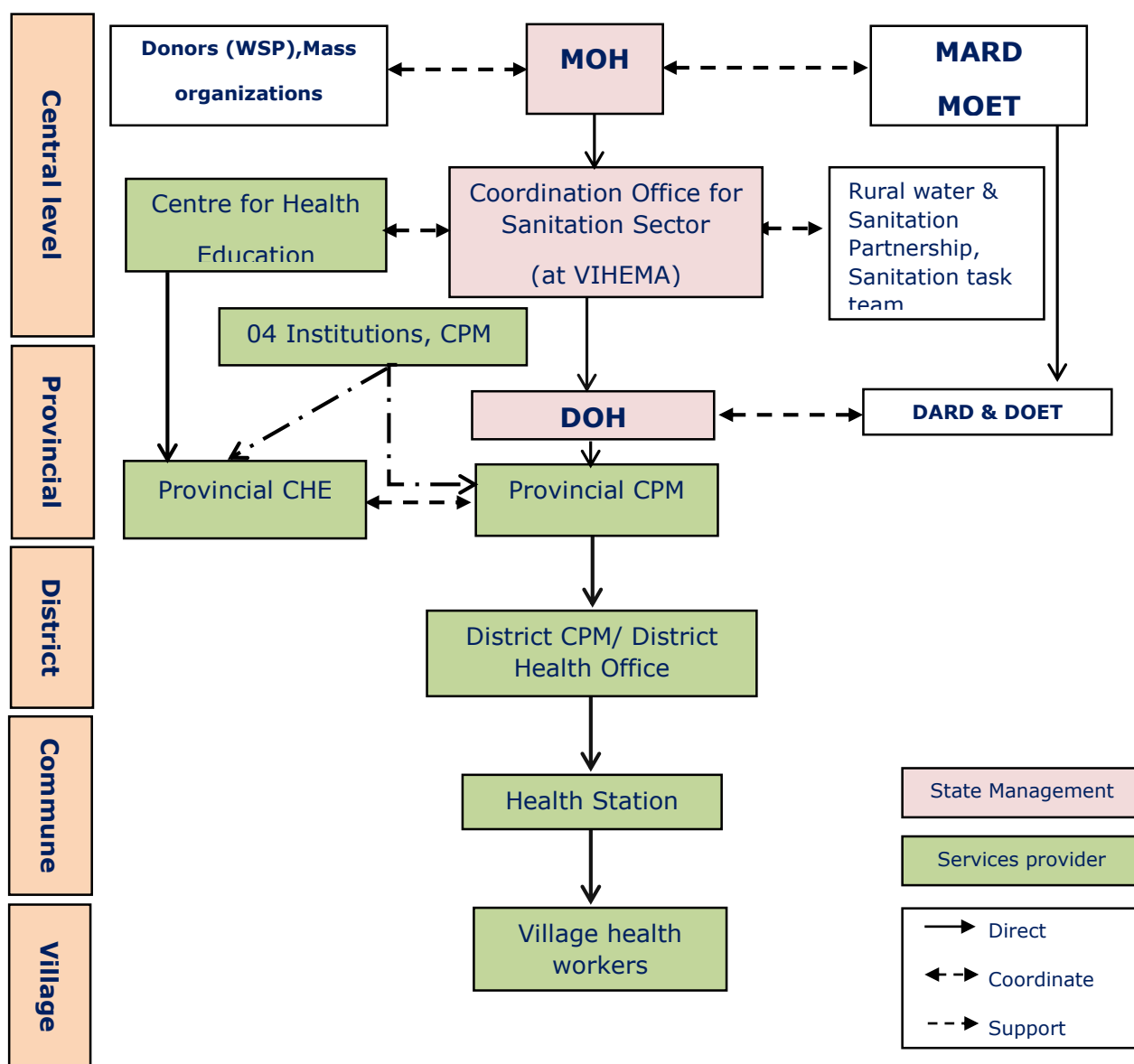
115. Local networks of health workers, the Women’s Union and Commune leaders will be instrumental in program implementation, specifically on implementation of the hygiene and sanitation promotion activities.

### **Institutional Capacity**

#### ***Sanitation Institutional Capacity***

116. Figure D.1 below shows the institutional arrangements for rural sanitation in Vietnam.

Figure D.1: Institutional Arrangements for Rural sanitation



117. A recent institutional capacity assessment was carried out for the Vietnamese health system which included rural sanitation. The assessment found that although the leadership and management capacity in the sanitation sector is generally adequate with a well-defined structure and clear roles and responsibilities for rural sanitation, there is a lack of capacity for organizational development. Relevant training materials and guidance documents do exist and national level institutions have conducted some training for staff, however this has been on an ad hoc basis, dependent on budget availability and not part of a formal capacity building strategy. There is a need to train Provincial and District staff, whose capacity is weak, on the latest international techniques and approaches being practiced in the sector, particularly on behavior change. Rural sanitation also suffers from

insufficient staff available for implementation, at all levels. On average, one Provincial rural sanitation staff member is responsible for sanitation in close to 180 communes and one district rural sanitation staff member typically covers more than 30 communes. Relationships and collaboration with other stakeholders such as donors and NGOs is well established at the national level and stakeholders have a good understanding of the targets and objectives of the Program. However, at the provincial/ district level this collaboration is much less developed. At all levels, there is a lack of guidelines for the rural sanitation sector on working with the private sector and involving mass media. In order for the institutions working in rural sanitation to continue to work actively in the sector after NTP3 ends, further funding support will be required from the Government. At the present, there is no long-term fundraising plan for RS programs although VIHEMA has sourced funding from international donors.

### **VIHEMA**

118. VIHEMA, under the MOH, is responsible for advising the Minister of Health and implementing functions related to environmental health. VIHEMA's relevant roles and responsibilities under the proposed Program include:

- Coordination of RWSS-NTP3 Project 2 (Rural Sanitation) including collaborating with MARD on planning, allocating budget for project 2 and submitting a master plan to the steering committee of RWSS-NTP3;
- Leading development of strategy, programs, projects, and planning for rural sanitation, personal hygiene and water quality management;
- Providing advice, and issuing guidance on implementation of rural sanitation, construction of public toilets, household latrines, communication of personal hygiene and water quality
- Development and introduction of appropriate latrine options;
- Dissemination of communication approaches, including methods that effectively mobilize community action for sanitation and promote sanitation; and
- Capacity building for sanitation-related aspects including organization of communication and behavior change activities at central level, development of materials, organization of training courses.

119. Demand **creation and behavior change communication experience**: the majority of the VIHEMA staff have a good understanding of demand creation and behavior change communication. However, experience of the range of methods for demand creation and communication is limited. Although, there is broad experience (100 percent of staff) of using Community Led Total Sanitation (CLTS), knowledge of other approaches is more limited. Only 43 percent of staff have used Community Hygiene Output Based Aid (CHOBA), 29 percent have used the Community Health Club approach (CHC) and Sanitation Marketing, 14 percent have used School Led Total Sanitation (SLTS) and Participatory Hygiene and Sanitation Transformation (PHAST). No staff have used Child Sanitation and Hygiene Training (CHAST) or Participatory Action Oriented Training (PAOT).

120. Strengthening **sanitation supply chain capacity**: VIHEMA staff understands the importance of this aspect of sanitation and acknowledges that this is a critical need but lacks practical experience.
121. **Providing advice and developing/issuing guidance documents for rural sanitation**: Although VIHEMA prioritizes the provision advice and the issuing of guidance documents, there are typically significant delays which mean that the advice and guidelines are not provided in good time for implementation.
122. **Management of information**: Although VIHEMA has a simple and easy-to-use Management Information System (MIS) to receive and summarize information, the system does not meet the demands of sector information sharing and learning as it does not include a professional data base and its staff are not trained to analyze data. The Health Environment Information Center exists under VIHEMA but the center has not been assigned with tasks relating to managing data on rural sanitation. As a result, annual rural sanitation implementation plans for 2012-2015, mainly utilize data available from the Health system.
123. **Human resource management system for rural sanitation programs**: There is lack of a robust human resource management system for rural sanitation. VIHEMA intends to assign 12 staff to the Environmental and Community Health Department, however, there are currently only eight staff in post. Staff are capable, but lack rural sanitation experience. No job descriptions exist for rural sanitation staff which provides no basis for job delegation and performance evaluation. Human resource recruitment is carried out without specific qualifications or specialization criteria for rural sanitation staff selection. For instance, the qualification required for recruitment of specialized rural sanitation staff is only a general bachelor degree. There is a lack of a performance evaluation system for rural sanitation work, and no incentives for high performance. Training for rural sanitation staff is only carried out in response to short-term demands and is not based on any long-term capacity building plan for the sector.
124. **Budget and expenditure**: The monitoring and evaluation mechanism for budget and expenditure is too slow to ensure that the actual implementation plans and activities of provinces are compliant with the budget approved by MoH. In addition, although rural sanitation budgets are allocated to the provinces according to the VIHEMA's proposal, the budget allocations are channeled differently in each province via the PCPM or the DPC and VIHEMA does not have control over the actions of all of the receiving institutions. Actual expenditures during 2013 showed many deviations from the approved budget in all provinces. Only very few province were able to demonstrate a degree of the compliance between program spending and MOH-approved budgets.
125. No guidelines for funds utilization have been provided by VIHEMA along with the budgets, thereby making monitoring and evaluation of budget utilization and

effectiveness, impossible. There is a clear need for a budget utilization framework and monitoring and evaluation mechanism to ensure the effectiveness of rural sanitation budget allocations and spending.

126. **Rural sanitation capacity building:** Organization of training courses and capacity building programs consumes a large portion of VIHEMA's staff time because there is still a lack of institutional procedures and systems for management. This situation results from the lack of a capacity building framework for rural sanitation staff at different levels, the absence of a monitoring and evaluation system for training materials and the need for VIHEMA to adopt the training methods and learner-centered participatory communication activities recommended in Decision No. 36621. There is also a need to establish a process for the evaluation of training effectiveness and post-training impact as well as developing personal application plans for skills gained through training. Furthermore, no plan exists to manage and develop key trainers at different levels for rural sanitation.
127. **Collaboration with the private sector:** VIHEMA has attempted to engage with the private sector on rural sanitation implementation by; a) inviting masons, shop owners and suppliers to participate in sanitation trainings and events in order to connect supply to demand for rural sanitation and introduce new sanitation materials, b) inviting large companies such as Unilever, Viglacera to support hygienic latrine construction and design and c) inviting experts from industry to provide short training courses for health staff. In addition, annual activities have been carried out to engage the private sector on the technical aspects of latrines, sanitation materials and human resources. However, these activities have been sporadic and not designed as a part of a strategic engagement effort. No long-term partnerships with the private sector have resulted from these efforts, as VIHEMA does not yet have a strategic roadmap to engage the private sector.
128. **Collaborating with mass media services:** There is an emerging awareness of the need to partner the media services among VIHEMA management, however VIHEMA does not have a strategy or a long-term plan for collaborating with mass media services. There is also no evaluation of the impact of rural communication activities on community attitudes or behavior. VIHEMA needs to forge a long-term and strong partnership with the mass media services, through which it can channel BCC campaigns for rural sanitation, and, in the process build up its own public identity as the official national government agency providing technical, policy and financial leadership to the rural sanitation sector.
129. VIHEMA is a well-developed institution working on rural sanitation, with strong leadership and management and good external relations. However, in order to create a more enabling environment for the lower level institutions working on sanitation to function effectively, the institution needs to consider reinforcing its human resources and its policy development and advocacy capacities. In terms of sustainability for both the institution and the broader sanitation sector, it is recommended that VIHEMA develops a capacity building framework for the whole sector and provides timely guidance, monitoring and evaluation of the implementation of the framework. Most importantly,

VIHEMA needs to carry out policy advocacy in order to gain a more significant say in budget allocation in the provinces and to assure that the rural sanitation budget is aligned with the program methodology and directions of the rural sanitation programs.

### ***Department Of Health (DOH)***

130. DOH's sanitation related responsibilities include:

- Coordinating with provincial agencies including DARD, PPC, and others to consolidate plans and budget for the sanitation component of NTP3.
- Advising the PPC on the issuance of documents (including policies and sanctions) for lead state agencies and departments for the promotion of household sanitation.
- Proposing sanitation indicators to the Provincial Communist Party (PCP), the Provincial People's Council and the PPC, for inclusion in the social and economic development plans at all levels of the province.
- Instructing the provincial CPM, together with the district health centres and commune health stations, on how to implement the program.
- Based on the proposal of the provincial CPM, to submit and approve plans for communication activities, including demonstrations for relevant stakeholders.

131. **Demand creation, behavior change communication and supply strengthening experience:** DOH staffs are assessed to need support in implementing demand creation and BCC activities. There is no significant difference in terms of capacity between staff in charge of rural sanitation and other supporting staff at the district level. Provincial staffs need extensive development in strengthening their capacity in relation to developing sanitation supply chains on which their knowledge is weak.

132. **Sanitation target setting:** DOH is not active in proposing appropriate and feasible sanitation targets based on the actual situation at the provincial level. Many provinces have low rates of household latrine coverage, and these provinces have set a high target of 65 percent of households having hygienic latrines by 2014. In order to achieve this target, the provinces will have to increase the hygienic latrine coverage by 6-8 percent annually, which is not considered to be realistic.

133. **Provision of advice on rural sanitation:** The sanitation related advice and proposals provided to the Province Party's Committee, People's Committee and People's Council by DOH is often delayed. Criteria on household latrine coverage have not been included in the provincial social economic development plans and DOH does not intervene to propose timely adjustments to funding allocations when they are not aligned with the rural sanitation program methodology and components. There is also a need for DOH to provide guidance on building the commune level as the key implementation unit for rural sanitation.

134. **Collaboration on sanitation at the local level:** DOH tends to assign all rural sanitation responsibilities to the Province Center of Preventive Medicine (PCPM). Coordination among implementing institutions and their managing institutions at the district and commune levels in the province needs to be strengthened. Some District Health Centers are not members of district NTP3 program Steering Committee. There is also a lack of long term planning by DOH on rural sanitation because the Sanitation Component of NTP3 is regarded as a project with a limited timeframe (2012-2015). Linked to this, DOH does not provide clear guidance on the number and type of rural sanitation staff needed in the Centers of Preventive Medicine in the province, districts and communes, as well as in DOH.
135. In summary, provincial, district and commune level staffs are unable to function well in relation to their responsibilities on sanitation as DOH does not provide clear guidance on how to implement rural sanitation programs. If the commune is to take a central role in implementing rural sanitation programs, DOH needs to create an enabling environment to support this by giving clear guidance and direction, developing long term plans and managing effective coordination mechanisms for sanitation in the province.

#### ***Provincial Centre of Preventive Medicine (PCPM)***

136. The PCPM's roles and responsibilities include:
- Preparing implementation plans and advising DOH on implementation of the Rural Sanitation (Project 2) of the NTP3.
  - Leading the preparation and submission of annual and periodic plans to DOH as well as submission of the annual plan for Rural Sanitation required for NTP3 to DARD.
  - Organizing annual evaluation and planning workshops for rural sanitation.
  - Developing quotations for demonstration latrine options, for approval by the PPC.
  - Providing guidance, support, and supervision of project implementation by the district CPM and commune health stations to achieve annual targets.
137. **Demand creation, behavior change communication and strengthening supply chain experience:** PCPM staffs are assessed to require support in implementing demand creation and BCC activities. A range of communication methods are used in all the provinces including: promotion materials, flyers, village meetings and household visits. However, little emphasis is placed on developing demand creation strategies, plans and budgets, and on monitoring & evaluation of progress. Provincial staffs require extensive support to strengthen their capacity to develop sanitation supply chains.
138. **Provision of advice, coordination and capacity building on rural sanitation:** PCPMs do not fully implement their responsibility to provide advice to DOH on the content of the annual implementation plan for rural sanitation in the province and do not actively propose adjustments to provincial funding allocations to better align them with NTP3 program methodology. PCPMs have not established a coordination mechanism with related projects in the province to help communities to achieve ODF outcomes. This lack

of coordination also extends to the activities carried out by the Women's Union and the Province Center of Communication and Health Education.

139. In relation to capacity building, PCPMs only develop training or capacity building plans for district or commune level when there is funding allocated from program/project steering committee. The PCPMs are not proactive in preparing funding for these activities and so little actual capacity building occurs. Those capacity building activities that do take place, currently focus only on existing capacity to support the current work program, without planning for a long-term target or goal. This results in most staff of the district CPM and Commune Health Stations lacking a full understanding of the NTP3 program methodology and how to apply it.

140. In summary, PCPMs are the provincial focal points for rural sanitation. They are capable of developing annual implementation plans for rural sanitation in the province as well as leading and guiding the realization of the plans. However, PCPMs lack expert human resources for rural sanitation. It is critical that the PCPMs improve coordination between their organisation and the various stakeholders within and outside health sector and strengthen their capacity to provide technical guidance and support to district and commune levels for rural sanitation implementation.

### ***District Centre for Preventive Medicine (DCPM)***

141. The roles and responsibilities of the DHCs include:

- Advising the District People's Committee (DPC) on providing instructions, coordinating communication activities, creating demand and supporting service providers in relation to sanitation;
- Developing implementation plans for rural sanitation projects based on the provincial program plan;
- Guiding, supporting, and monitoring the rural sanitation communication activities of commune health stations;
- Providing guidance, support and supervision for project implementation by commune health stations to achieve annual targets;
- Organizing monthly district meetings and reviewing the progress of communes in monthly meetings; and
- Summarizing and reporting data to the provincial program management unit including conducting regular field monitoring visits to villages and communes.

142. Demand **creation, behavior change communication and strengthening supply chain experience**: DCPM staffs require support in implementing demand creation and BCC activities of which they have little or no knowledge. In addition, the DCPM staff know very little about supply chain strengthening. They have not implemented any such activities, nor ever received any training or guidance on the subject.



143. **Provision of advice, coordination and capacity building on rural sanitation:** The lack of staff knowledge and experience means that the DCPMs are unable to support the DPCs with guidance and coordination for communication, demand creation and sanitation supplier support activities. Instead, the DCPMs focus on providing technical guidance to communes on latrine construction, monitoring and evaluation, and communication related to rural sanitation. The DCPMs do not provide guidance on rural sanitation implementation methods and good practices and Commune Health Stations are therefore not aware of NTP3 program methodology, demand creation and supply chain strengthening.
144. Some coordination takes place through meetings held with the commune health station every 1-3 months, in which commune health stations report on their implementation progress and planned activities for the forthcoming period. However, planning for collaboration with other stakeholders is limited.
145. Training courses for commune and village level have so far been only covered latrine construction techniques, and monitoring; no training has been held on demand creation and BCC, or supply chain strengthening. There is a need to establish TOT programs on key themes of NTP3 program such as: demand creation and BCC, supply chain strengthening, and M&E.
146. **Human resources** are insufficient and weak in technical aspects of rural sanitation and there has been no plan to add staff or build their capacity. Most rural sanitation staff have other responsibilities besides rural sanitation which makes it difficult for them to provide training to front line staff. The staffing structure of DPCM depends heavily on whether or not they are allocated with program-specific funding.

### ***Commune Health Station (CHS)***

147. The roles and responsibilities of the CHCs include:
- Advising commune peoples' committees in providing instructions, coordination of communication activities, demand creation and support to sanitation service suppliers;
  - Providing guidance, support and supervision for project implementation by village health workers to achieve annual targets;
  - Developing plans for implementation of rural sanitation projects based on the district plan.
  - Coordinating with local agencies and mass organizations to implement sanitation related activities;
  - Collecting monitoring data at commune level. Examining and summarizing data provided by village motivators and reporting it to the District Program Management Unit.
  - Conducting regular field monitoring visits to villages. Reviewing village level progress in monthly meetings; and

- Organizing monthly meetings for commune health network;

148. Demand **creation, behavior change communication and strengthening supply chain experience**: At the commune and village levels, staffs possess little knowledge on rural sanitation demand creation and BCC which translates into weak front line capacity to influence behavior related to sanitation and hygiene. Amongst village leaders, 15 percent are unaware of approaches for demand creation and BCC; 44 percent are able to conduct demand creation and BCC activities under the guidance of others and only 19 percent can handle these activities independently. Demand creation and BCC channels mainly consist of combined activities with the Women's Union and the Farmers' Union; household visits; and village meetings, communications via village loudspeakers and flyers. CHSs are unable to effectively coordinate between households, masons and sanitation suppliers in the commune.

149. Although most CHSs consider that their main responsibility is to participate in communication activities and to convince people to build hygienic latrines, they typically have limited capacity to give advice to the Commune People's Committee to manage activities on communication, demand creation and sanitation supply chain strengthening.

150. Human **resources**: There is limited capacity to support rural sanitation as there are shortages in staff and sanitation is not allocated as a specific task. In many Health Stations there is only one staff responsible for water supply and sanitation of which rural sanitation is a component. This member of staff is the focal contact for all the programs and projects being implemented by the CHS. Responsibilities include gathering data, carrying out communication activities and writing reports. There is no guidance provided on how to perform sanitation related tasks and there is no clear documentation of roles and responsibilities in rural sanitation programs at the CHS level.

151. **Budgeting**: CHSs are typically not aware of the importance of fundraising to support rural sanitation programs and do not have fund raising plan. This results in a lack of budget for rural sanitation at the CHS level.

152. **Coordination**: Although CHSs are aware of the importance of the commune level in implementing the rural sanitation program, most haven't fulfilled their roles in coordinating among sectors and organizations whose work is related to sanitation in the commune. Some have developed their own coordination mechanism; or participate in the People's Healthcare Steering Committee, but many CHSs do not have procedures for coordination with stakeholders due to lack of active guidance from the upper levels. An important responsibility of CHSs is to connect service providers (e.g. Masons) with local people, however, the majority of CHSs do not maintain lists and contact information of masons, shops, and sanitation product manufacturers as they are either unable to collect the information or they perceive that it is not their responsibility.

153. In summary, CHSs play an important role in RS programs, particularly under the NTP3 Program Methodology. They have the potential to take the lead in convincing local people to change sanitation and hygiene behaviors and to build hygienic latrines by themselves. However, there is a need to create both an enabling environment as well as to build the institutional capacity of the upper levels and develop the technical capacities of CHS staff in order to realise this.

### ***Water Supply Institutional Capacity***

154. MARD has delegated the responsibility for RWSS related technical issues and project preparation to NCERWASS at the national level who provide oversight, technical support and advice to the provincial level through PCERWASS.

155. PCERWASSs, who are in charge of project implementation, have a variable number of staff. In some provinces, there is no PCERWASS department *per se*, and staffs in charge of NTP projects are not exclusively dedicated to implementation of the NTP program, but are also responsible for irrigation and water resources management projects. Although PCERWASS usually has units for Administration and Planning (including accounting and M&E functions), Technical, and Construction Management, the capacity of the implementation units to prepare technical specifications for bidding documents, to conduct technical assessments or to supervise works is generally low, mainly due to low technical skills and insufficient staff. In particular, there is a lack of understanding of best-practice in technical design of community water supply. In addition, where PCERWASS is responsible for managing community water supplies through the Program, strengthening of their management and technical capacity for operation and maintenance will be necessary in order to ensure financially sustainable and cost-efficient piped water supply schemes. Where other entities such as rural water supply enterprises and community management groups are responsible for the operation and maintenance of water supply, PCERWASS will need to be strengthened in order to develop the capacity of those operators.

### ***Nutrition Institutional Capacity***

156. At the national level, the National Institute of Nutrition (NIN) under Ministry of Health is the leading institution responsible for research, training and implementation activities in the field of nutrition, food sciences and clinical nutrition in Viet Nam. The specific responsibilities of the NIN include:

- Research on nutritional requirements and dietary intake of Vietnamese people in relation to physiological status and socio-economic conditions of the country;
- Food and nutrition surveillance, nutritional epidemiology studies and other nutrition-related health problems;
- Research on nutritive values and health aspects of Vietnamese foods, food hygiene and food safety;

- Developing the food- based dietary guidelines for Vietnamese people;
- Coordinating the nutrition network for the whole country and implementing the different nutrition action programs; and
- Assisting the Government in developing the nutrition policy.

157. At the provincial level, there is a department of nutrition, food hygiene and safety in each of the 63 Provincial Preventive Health Centres in Vietnam. The Reproductive Health network has nutrition coordinators at the provincial, district and commune levels and there is nationwide coverage of over 100,000 nutrition coordinators and collaborators. In addition, the nutrition network incorporates staff from the central down to the local levels within MoET, MARD, the Farmer's Association and the Women's Union who participate in implementing the National Nutrition Strategy.

158. **Nutrition implementation knowledge and experience:** Within the nutrition network, there is inadequate knowledge on nutrition due to a lack of trained staff. This is compounded by a high rate of nutrition staff turnover as well as a general shortage of qualified nutrition staff working at the community level as well as in school and hospital settings. Awareness of nutrition issues amongst local authorities remains limited. Nutrition departments in medical and non-medical schools have been set up and operate training programs in the field of nutrition and technical training courses have been held for multi-sector staff working in nutrition. This should contribute to more effective implementation of nutrition programs in the future.

159. **Budget allocation:** Although the Government have increased investment in nutrition programs/activities, the budget allocation is limited. This means that insufficient resources reach the local level and as a result, many provinces have been unable to meet the nutrition objectives. The majority of the budget that has been allocated to nutrition does not focus on important nutrition issues such as stunting.

160. **Coordination and planning:** In some provinces, steering committees have been set up to coordinate the implementation of the National Nutrition Strategy, however in general, there is a lack coordination both within and between sectors relating to nutrition. In addition, nutrition indicators have not been integrated in local annual resolutions and socioeconomic plans.

161. Each province has developed an annual provincial nutrition plan which covers inter-sectoral collaboration, budget allocation and nutrition activities implemented through village health workers at both the clinic and village level. These plans are typically very general and do not allocate sufficient budget for the planned activities.

### ***Independent Verification Agent (IVA)***

162. The IVA role is to provide independent confirmation of the results reported by the provinces through MARD. State Audit of Vietnam (SAV) has been selected to verify Program results using protocols agreed with the Bank. This choice is based on SAV's role as a constitutional body with both the independence and the mandate to conduct NTP audits as well as SAV's prior experience as IVA for the RWSS PforR. National or international expertise will be contracted as needed to assist with and undertake the verification work in accordance with the agreed methodology.

### **Borrower Commitment**

163. The NTP for rural water and sanitation is a priority program in the Government Development Agenda, as it intends to make a considerable step towards fulfilling the 2020-RWSS strategy and achieving Millennium Development Goal seven (MDG7). MARD has played a strong role in coordinating the program showing leadership and commitment to sector sustainability, establishing clearly defined sector targets and monitoring indicators. Field visits conducted during this assessment confirmed the high demand for both behavior change, sanitation and water supply in the target provinces.

### **Institutional strengthening under PforR Operations**

164. Use of the results-based program instrument is relatively new for Vietnam although some early experience exists through implementation of the RWSS PforR. Use of the PforR instrument places a strong emphasis on good planning and requires rigorous monitoring and evaluation. The use of the instrument is made possible in large part because of the excellent work done by GoV and donor partners, particularly DFAT, DANIDA and DFID, to strengthen budgeting and financial management under the NTP. However, further work could be done to strengthen the technical capacity of the key institutional partners in several areas including:

- Improving capacity of institutions to develop, plan and implement large scale, cutting edge behavior change;
- Improving planning, M&E and reporting, for water and sanitation activities; and
- Augmenting procurement and financial management practices, particularly at the provincial level.

165. These institutional strengthening activities will be carried out as a part of the Program.

## E. Program expenditure framework

### Introduction

166. The Expenditure Framework focuses “on those government budget and expenditure management issues that may put at risk the capacity of the program to reach its expected results.” It includes an assessment of the level, efficiency, transparency, and effectiveness of the expenditures included in the Program. To do so, it draws extensively on experience with the preceding NTPs managed by Ministry of Agriculture and Rural Development (MARD), particularly the current NTP3, in clarifying both policy and practice in program implementation. Also, given that significant funds will be channelled under this PforR through the NTP to the Ministry of Health (MoH) and Ministry of Education and Training (DoET), the expenditure frameworks of these ministries are also reviewed, in particular MoH. For all agencies implementing the Program, assessment is conducted at both central and provincial levels.
167. The analysis concludes that the government has in place budget and expenditure management systems and practices that, with some well-recognized difficulties, support the NTP in reaching its expected results. The Program in the 19 provinces of the Northern Mountains and Central Highlands shares most of the characteristics of the national program, but in particular areas, including that of the level of expenditures, their transparency and effectiveness, the results-based approach under the Program mitigates difficulties that have been identified in the NTP.
168. Some of the key issues identified which should be addressed within the Program design and agreements were: (1) Delays in budget approval leading to activities commencing well into the financial year; (2) Annual budgeting and planning process not linking strongly to multi-year plans and overall targets; (3) Historically low spending on software such as sanitation and hygiene promotion activities, including in RRD provinces within the existing PforR; (4) High level of rural water supply schemes not sustained due to inadequate financing and mechanisms; (5) Expected decline in access of poor and near-poor households to VBSP loans due to withdrawal of donor support; (6) Uncertainties in level of Government (central and provincial) financing for WASH after current NTP3.
169. Indeed, improvements are planned and expected through various measures taken by the government, which will be enhanced through the new PforR, including: (1) Refined criteria for budget allocation to provinces, focusing on level of need and poverty level; (2) Greater priority to improving mechanisms and financing for O&M and software; (3) Overall significantly increased resources to water supply, sanitation and hygiene activities in the 19 provinces; (4) development of low cost sanitation options and targeted financial support to poor households under the PforR; and (5) focus of the Project Action Plan (PAP) and Program Operations Manual (POM) such as improved quality of planning and funding flow mechanisms.

## Budgeting Process

170. The budget process is fully described and evaluated in the Integrated Fiduciary Assessment (IFA). In brief, the NTP Standing Office has developed an overall proposal for NTP3 for 2012 – 2015, including all sources of funds (central, local, donors, community and private sector) needed for program delivery. At provinces level, the PPC assigns responsibility (usually) to the PCERWAS to prepare an implementation plan for the NTP program. The implementation plan becomes the basis for preparation of the proposed NTP annual budget proposal, which is reviewed by the provincial DOF and provincial DPI. After all provincial requests are reviewed at the national level by line ministries, and adjusted to meet the available resources, a proposed comprehensive annual budget proposal is sent to the NA for approval. Initial plans are then adjusted depending on the amount of budget allocated. The PPC has the power to determine which elements of their annual plan will be funded, without further reference to the central level.

171. The strengths and weaknesses of NTP3 system as identified in previous assessment are summarized below (Table E. 1). One major issue identified is that of timing: because of the lack of funds and the usual budget revision process, the final annual budgets for NTP in some provinces are approved very late, causing delay to provincial NTP activities. Budget for 2014 was allocated by Yen Bai PPC in February 2014 and by Dak Lak PPC in April 2014. MOH normally approves budget for all programs and projects in April of the year while MARD approves in February. Second, the budget development process is very much input-oriented, rather than output- or outcome-oriented, resulting in a weak link between multi-year sector plans and strategies and the annual budget. The budget estimates typically lack clarity as to purpose, tasks and priorities. Budget negotiations themselves focus predominantly on controlling budget numbers rather than on allocating resources efficiently and strategically. This weakness has been largely addressed in the Bank-financed ongoing RWS PforR, where the provinces prepare their budget proposal based on the amount of funds required to complete the expected DLIs, the entitled advance amount and entitled disbursement received for the achieved and verified DLIs in the last period.

**Table E. 1: Key Strengths and Weaknesses of the Budget Process**

Strengths	Weaknesses
Vietnam's PFM legal framework provides a good foundation for government budgeting at both central and local level.	Weak link between provinces and sector plans and strategies and the budget. Typically, unrealistic plans by provinces
There is a well-defined budget preparation calendar and regulated budget development process.	Province budget approval is delayed due to lack of funds and the budget revision process.
At the provincial level, PCERWASS, as assigned by PPC, prepares a 5-year financial plan for the NTP program conducted in the province, as part of the provincial overall 5- year plan.	The NTP 5-year plan lacks details (e.g. no breakdown by province, sub-project, activities or spending unit).
The budget classification system is broadly in line with	The budget classification system is being used for

the 1986 GFS Manual (cash system).	accounting and reporting, but not fully for budgeting, leading to inconsistencies.
The overall budget presented in NTP3 has included all sources of funds (central, local, donors, community and private sector).	Limited consultation process with provinces during the process of budget allocation by the central level.
	The formulation and management of recurrent and capital budgets in not integrated.

Source: Fiduciary Assessment Report for Red River Delta RWS PforR, 2012

172. To overcome some of the current weaknesses in budgeting process, the Joint Annual Review (JAR) in 2014 recommended that NTP Standing Office together with MoH and MoET prepare detailed guideline on NTP budget allocation for 2015 and agree these with donors before issuing. The guideline should emphasize priorities in recurrent and investment budget to align with NTP3 targets, especially emphasize allocation of at least 50 percent of recurrent budget to DoH for IEC activities. Furthermore, donors fund allocation would prioritize supporting 20 weak provinces who are willing to implement innovation/reform activities.

173. The new budget allocation criteria are shown in Table E. 2, recently issued by the NTP Standing Office in response to the JAR Recommendation. The criteria include both total and proportional lack of access to water supply and sanitation services, as well as proportion of poor households. For water supply, priority is given to extension of completed facilities and renovation/upgrading of degraded facilities in order to enhance efficiency.

**Table E. 2. Criteria for Allocations of State Budget to Provinces**

Area	Criteria	Point Scoring Rule
<b>Capital investment budget</b>		
Water supply	Number of rural people not having access to hygienic water (1,000 persons)	< 100: 0.5 100 - 250: 1.0 250 - 350: 1.5 > 350: 2.0
	The proportion of rural people having access to hygienic water	< 70%: 0.5 70 - 75%: 0.3 75 - 80%: 0.2
	The proportion of poor households	> 40%: 0.5 30 - 40%: 0.3 20 - 30%: 0.2
	Poor districts having the proportion of poor households of over 50%:	> 4 districts: 0.5 2 - 4 districts: 0.3 < 2 districts: 0.2
	For the provinces which frequently face drought, difficulties in water sources and having polluted water sources	0.2 - 1.0
	New rural communes	No criteria yet
	Implementation capacity of provinces	If a high proportion of budget is from the province, then not all the criteria are applied
School water supply and sanitation	The proportion of schools having water supply and sanitation facilities	To be determined by MoET
	Provinces' implementation capacity	
Clinic water supply and sanitation	The proportion of clinics having water supply and sanitation facilities	To be determined by MoH
	Provinces' implementation capacity	
<b>Public service budget</b>		
Household hygiene and sanitation	Number of rural people (million persons)	< 0.5 million: 1.0



		0.5 - 1 million: 1.5 1 - 1.5 million: 2.0 1.5 - 2 million: 2.5 > 2 million: 3.0
	The proportion of households having hygienic latrines:	>85%: 1.0 75 - 85%: 1.5 65 - 75%: 2.0 50 - 65%: 2.5 40 - 50%: 3.0 30 - 40%: 3.5 < 30%: 4.0
	Number of poor households (1,000 households)	10 - 30: 0.5 30 - 50: 1.0 50 - 70: 1.5 > 70: 2.0
IEC, M&E	Number of rural people (1,000 persons)	< 500: 1.0 500 - 1,500: 1.5 > 2,000: 2.0

### Budget Sufficiency

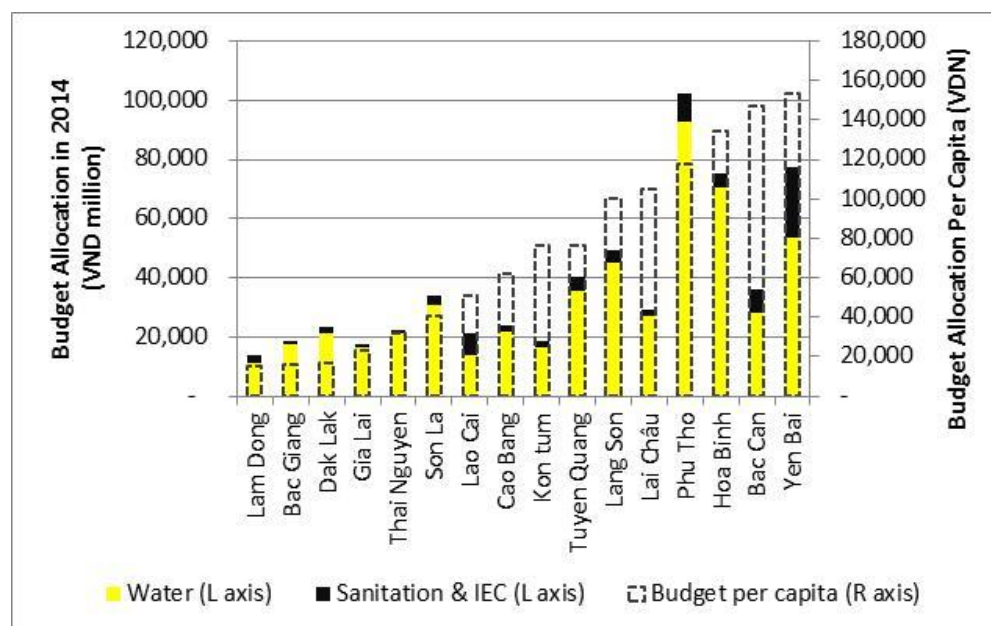
174. Budget allocations to VIHEMA for implementing the sanitation component of the NTP are shown in Table E. 3. Budget allocations have declined since 2011, with a very significant fall in budget and expenditure from 2012 to 2013.

**Table E. 3. Budget allocations and expenditure of VIHEMA from 2011 to 2013 (Million VND)**

Item	2011	2012	2013
Total budget for this year	6,470	6,290	3,274
Budget received this year	6,148	5,693	2,255
Budget utilised this year (expenditures)	6,061	5,553	1,979
Budget cancelled this year	209	704	521
Budget carried over to next year	200	33	774

175. The size of decentralized budget allocation in relation to the overall estimated costs of reaching national targets is not routinely assessed. Budget allocations are made at central and provincial level on the basis of fund availability, and these allocations vary significantly between provinces – in fact, there is almost a ten-fold difference between per capita budget allocations to the 19 target provinces – varying from 15,000 VND to 153,000 VND in 2013 (see Figure E. 1). Furthermore, estimation of fund requirements is made difficult by the fact that many water supply systems need maintenance or rehabilitation to bring them back to full functioning order, and many lower quality latrines need to be replaced after a short period of time.

**Figure E. 1. Total and per capita budget allocations from center to provinces, in 16\* provinces, 2014**



\* 3 provinces did not have complete data

176. Under the NTP3 budgeting process, provinces typically submitted annual plans that would need significantly more resources than they know to be available, and receive allocations of approximately 30-50 percent of their request. Given not all the activities can be funded, the PPC has the power to determine which elements of their annual plan will be funded, without further reference to the central level. This means that specific activities requested by central level have the potential to not be funded if the provincial level (PPC) does not prioritize these activities. Activities such as software, which provinces do not have significant experience with, tend to be overlooked in favor of capital expenditure.
177. Allocations to MoH and MoET for household sanitation and institutional WASH remain a small proportion of the overall NTP allocations, and decentralized allocations for software (communications and IEC) are well below 10% of the allocations in all provinces (see Figure E. 1). Despite the priority given to the area in NTP3, 2013 provincial budget allocations for sanitation IEC were lower than in NTP2 in many provinces. This has an impact on the capacity of the province to increase household sanitation coverage and change hygiene practices. Similarly, 14 provinces did not allocate any 2013 recurrent budget for M&E and many provinces did not allocate any funding for DoH (and DoET) IEC and training activities. Few provinces continue to provide training on M&E despite high staff turnover at provincial and lower levels. Some provinces have not coordinated with the health or education sectors in data collection or quality assurance.
178. As part of their support to the NTP, donors conduct an annual expenditure tracking and verification study in a number of selected provinces, which vary from year to year. For these provinces, the division of overall funds at provincial level and below is shown in

Table E. 4. Considerable variation is observed between provinces as well as between years. In 2013, DOH and DOET together received 7 percent of the overall decentralized funds.

**Table E. 4. Budget Breakdown for Selected Provinces\*, from Annual Donor Expenditure Tracking and Verification Studies, from 2011-2013**

Spending Unit	2011		2012		2013	
	Allocation Billion VND	%	Allocation Billion VND	%	Allocation Billion VND	%
DARD	89.7	58%	81.9	72%	223.3	84%
DOH	4.2	3%	9.6	8%	10.3	4%
DOET	10.7	7%	5.4	5%	7.6	3%
Districts (DPCs)	49.7	32%	16.3	14%	23.8	9%
<b>Total</b>	<b>154.0</b>	<b>100%</b>	<b>113.1</b>	<b>100%</b>	<b>265.0</b>	<b>100%</b>

\* Provinces vary by year. 2011: 6 provinces - Ha Giang, Tuyen Quang, Ben Tre, Binh Dinh, Quang Ngai, Tra Vinh; 2012: 5 provinces - Ha Tinh, Quang Tri, Lao Cai, Tay Ninh, Ca Mau; 2013: 11 provinces - Son La, Hoa Binh, Hau Giang, Quang Ngai, Bac Ninh, Vinh Phuc, Hung Yen, Hanoi, Thanh Hoa, Quang Ninh, Phu Tho

179. While the share of provincial recurrent budgets allocated to DOH has increased in each year since 2011, a large proportion (in excess of 60 percent) is accounted for by household subsidies. With the change in financial regulations and issue of Circular 04, greater flexibility is available to the allocation of recurrent budget for IEC activities. Indeed, it is encouraged. Similarly, GoV policy now limits the allocation of subsidies to poor households. These changes are reflected in provincial DoH recurrent budget requests for 2014 that propose subsidies should account for no more than 25 percent of DoH recurrent budget allocations.

180. Given households are expected to finance their own latrine construction, sanitation loans are vital pre-condition for reaching sanitation targets. The JAR 2013 review concludes *“Sanitation loans made under the VBSP W&S loan program were a major driver of increases in hygienic household latrine access. In 2012, 482,870 loans were provided for rural sanitation.”* The VBSP itself has remarked that donor funding (largely from DFID) and technical assistance supported the Bank to expand its lending program for RWSS and to improve pro-poor targeting. Current debit balance at May 2014 is 2.3 trillion VND in the 19 target provinces, reaching 310,000 customers – an average outstanding loan of 7.5 million VND (US\$370) per customer. Table E. 5 shows a provincial breakdown.

181. However, funding from donors to the VBSP has almost come to a close and will not be continued. Hence, in order to scale up sanitation in these 19 provinces with poverty rates higher than the national average and hence limited cash savings, additional subsidies or a new source of loan financing will be needed.

**Table E. 5. Vietnam Bank for Social Policies Loans for the Year until May 2014**

Province	Total Debit Balance (Million VND)	Number of debit customers	Accumulated works constructed with loans since the beginning of the year		
			Total	Of which	
				Water Supply	Sanitation <sup>28</sup>
<b>Northern Mountains</b>	<b>1,636,148</b>	<b>215,397</b>	<b>67,738</b>	<b>33,220</b>	<b>34,518</b>
Phu Tho	332,995	42,905	11,254	5,334	5,920
Bac Giang	176,546	23,329	7,073	3,533	3,540
Lao Cai	78,216	9,962	3,044	1,524	1,521
Yen Bai	123,271	16,653	4,437	2,211	2,226
Thai Nguyen	162,705	21,390	8,680	4,284	4,397
Bac Kan	81,523	10,757	1,644	814	830
Lang Son	93,108	11,423	4,490	2,198	2,291
Tuyen Quang	118,808	16,082	5,935	2,919	3,016
Cao Bang	48,235	5,805	3,378	1,634	1,744
Ha Giang	65,705	8,510	1,057	521	536
Lai Chau	38,194	4,833	1,633	833	801
Son La	145,074	18,661	9,649	4,708	4,940
Hoa Binh	157,664	23,214	4,913	2,416	2,497
Dien Bien	14,103	1,873	551	290	261
<b>Central Highlands</b>	<b>704,360</b>	<b>95,318</b>	<b>37,715</b>	<b>19,054</b>	<b>18,661</b>
Dak Lak	214,506	31,037	9,578	4,884	4,694
Gia Lai	184,776	24,721	11,091	5,675	5,417
Kon Tum	83,816	10,494	3,534	1,761	1,774
Dak Lak	132,166	17,548	8,482	4,257	4,225
Dak Nong	89,097	11,518	5,029	2,478	2,551
<b>TOTAL (19 Provinces)</b>	<b>2,340,508</b>	<b>310,715</b>	<b>105,453</b>	<b>52,274</b>	<b>53,179</b>

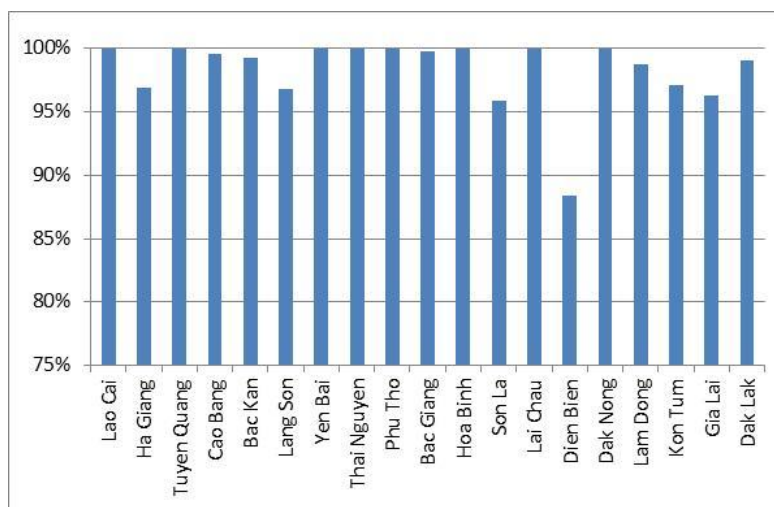
### Budget Execution

182. For the national program, NCERWAS has spent 100% of its budget in recent years, except one year (2011) where it was 60 percent because of low spending on water supply funds. After 2011 the allocations to water supply funds reduced drastically.

183. Overall, budget execution in the 19 provinces is high at over 95 percent, with some exceptions in 2012 (see Figure E. 2). In 2013, all provinces had 100 percent budget execution of central level funds for both water supply and sanitation activities, except Son La (62 percent for water supply and 35 percent for sanitation/IEC) and Dak Lak (81 percent for both water supply and sanitation/IEC). Hence, the late budget approvals do not seem to represent a major problem for spending the funds in most provinces, although this might be because the funds are only a fraction of what are needed.

**Figure E. 2. Budget Execution (Expenditure / Budget Allocation) for 19 provinces in 2012**

<sup>28</sup> Loans for sanitation include toilets, bathrooms, animal husbandry, biogas, drainage and waste containers



184. In the current RWS PforR in the Red River Delta, the financial conditions of the PforR (i.e. payment after results achieved) have not been internalized to the system of contracting - thereby impacting cash flow for capital intensive investments.

185. Hence a question to answer is whether the provinces, districts and communes have the capacity to execute significantly increased IEC budget allocations. The 2012 central budget allocation to the 19 provinces of almost a trillion VND (or US\$ 23 million) would be boosted to upwards of US\$ 40 million per year over 5 years under the PforR. Hence, the spending would increase significantly for water supply while for sanitation (in particular IEC) it would increase multiple-fold.

### Program Financial Sustainability and Funding Predictability

186. Table E. 6 shows funding for the NTP has reduced from 8.4 trillion VND in 2011 to 6.6 trillion VND in 2013. While central funds and international grants remains relatively constant, the cash and in-kind contributions of local residents has reduced. It is not clear if this is due to a real reduction, or a change in accounting or data available. On the other hand, allocations by provinces has increased to 0.85 trillion VND in 2013. Figures E. 3 and E. 4 show the significant fluctuations for some provinces in the funds received from central level over the period 2010-2014, for water supply and sanitation/IEC, respectively. On average across the five year period, expenditure on water supply has been VND 27,500,000/province/year while expenditure on sanitation/IEC has been VND 3,700,000/province/year.

**Table E. 6. Budget for NTP implementation, and % implemented from 2011-2013**

Source	2011		2012		2013	
	Budget (Billion VND)	Percent execution	Budget (Billion VND)	Percent execution	Budget (Billion VND)	Percent execution

Central budget & donor fund	1,918	95%	1,368	86%	1,352	100%
Allocations by provinces	450	147%	600	100%	850	58%
International grant	250	72%	940	89%	850	58%
Cash and in-kind contributions of local residents	3,382	118%	600	99.8%	948	32%
Preferential credit	2,400	123%	3,300	106%	2,600	146%
<b>Total</b>	<b>8,400</b>	<b>114%</b>	<b>6,808</b>	<b>99%</b>	<b>6,600</b>	<b>98%</b>

Figure E. 3. Central level funds allocated to provinces for water supply from 2010 to 2014

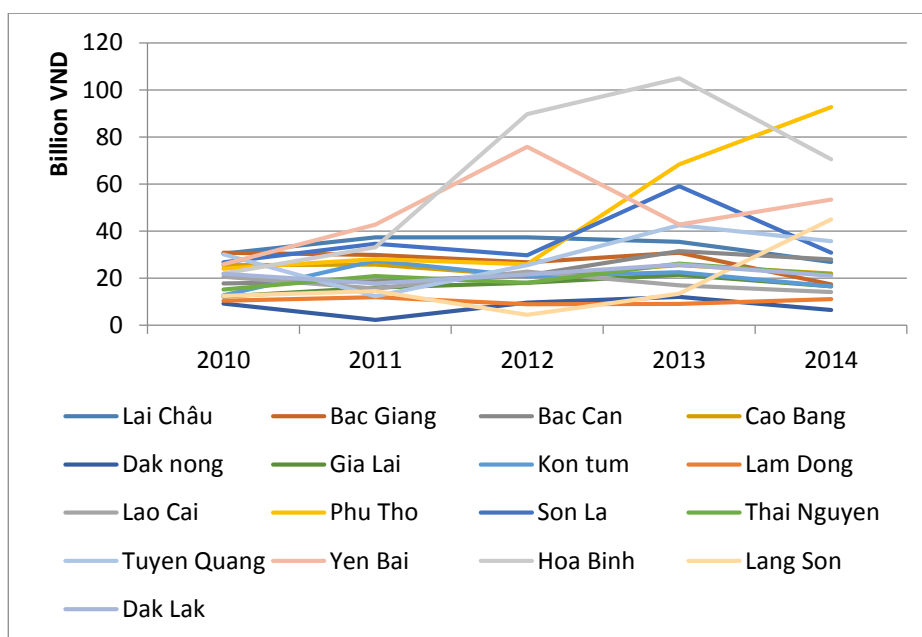
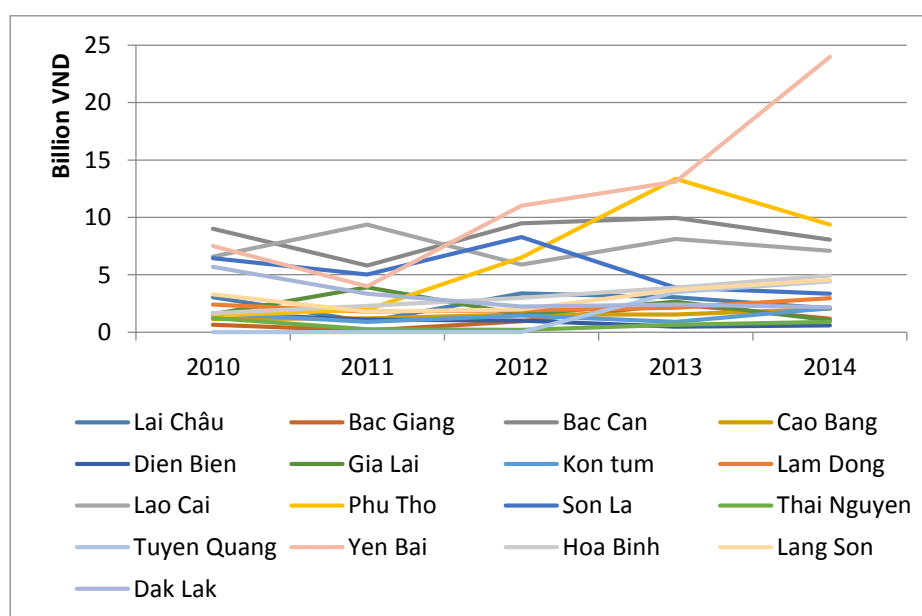


Figure E. 4. Central level funds allocated to provinces for sanitation/IEC from 2010 to 2014



187. The funding envelope of the government program that succeeds the NTP3 is not known, although government has committed to its continuation, albeit in a different form. Also, US\$50 million will be provided as counterpart funding to the PforR, or US\$10 million per year. It is also not clear whether mobilization of VBSP concessional loan resources will continue by donors. A question is whether provincial and lower-tier governments will be able to contribute a higher share given their growth in tax base, and to effectively mobilize household participation, given growth in household incomes. Currently, there are no funds pledged from any major donors for the future form of the overall NTP, nor for the 19 provinces although DFAT has indicated that their future aid program in Vietnam will include a focus on water and sanitation. Hence there is limited funding predictability at this point in time, other than that provided for by the loan funds under the PforR.
188. As well as investment funding, operations funding is crucial given many communities are not able or willing to pay for the continued operations of water supply systems. Sustainable operating funding has two dimensions – that of sufficient resources being available for operations and of good management of those resources. Reacting to the first challenge, Government has implemented a series of tariff measures that provide the legal and regulatory basis for adequate revenue generation. But regulatory outcomes still depend on appropriate decisions at the provincial level. On the management side, the “poor” operational performance (which embodies more than financial sustainability) was found in a significant number of water supply systems.
189. Another operational sustainability element identified in reviews of NTP experience has been the importance of involving beneficiary communities in the selection of the service level and design. That involvement must include a clear understanding of the likely costs of service.
190. Where the sanitation investments benefit government institutions such as schools and health clinics, those institutions become responsible for the subsequent management and financing of the facilities. Under NTP2, the central government evaluation revealed that the management and use of latrines at schools, health clinics and markets, faced a number of difficulties. There were a number of newly constructed latrines locked and unused. Typically, there was no budget for repair of damaged facilities. School children’s awareness and behavior in using latrines remained low. Many schools had no budget for daily cleaning services.

### **Adherence of the Budgeted Program Expenditure and its Execution to the Government’s Priorities**

191. The Government’s priority for the NTP is that it helps realize the national strategy on rural water supply and sanitation up to the year 2020. The main elements of that strategy are to improve the living conditions of the rural population by increasing access to water

supply and sanitation, raise awareness of the need for changes in sanitation behavior and mitigate potential damage from environmental pollution.

192. The NTP3 program, like those of NTP1 and NTP2, is decentralized in design and execution, with the province being the level of government with primary implementation responsibility. That said, the central government has a clear view (supported by the donor community) of the appropriate mix of program elements, be they in water, sanitation, or hygiene promotion and institutional strengthening.
193. Achieving that mix would be the best demonstration that the central government's priorities have been adhered to. However, the initial situation varies significantly across provinces and historically the central government has not been able to deliver full and timely funding for the program (recognizing that a high percentage of the funding obligation rests with localities and beneficiaries). In that environment, each province prepares plans consistent with the national goals, with those plans subject to national-level sign-off. If full funding is not identified, the province is free to choose their specific investment priorities as long as they fall within the approved plan. In effect, given the ambitious initial annual targets from each province, at the provincial level any use of funds that advances realization of any of the NTP sub-goals has been deemed to adhere to budgeted program expenditure framework. Tested against this metric, performance has been excellent: "The 2010 extended value for money audit carried out by the State Audit of Vietnam under terms of reference and supervision of DFAT found that, as in previous years, less than 1 percent of the expenditure was unauthorized. It is expected that, as has been the case in previous years, all unauthorized expenditure will be paid back to the state treasury by the provincial and other bodies responsible."
194. The proposed approach to support the water supply, sanitation and hygiene programs after 2015 relies on two elements to encourage alignment between national and provincial goals – and their realization. The first is funding certainty over the five-year period that corresponds with provincial plans incorporating all elements found in the national priorities. The second is the DLI structure that releases funds only with attainment of goals across the spectrum of activities; thus, provincial front-running in water supply, for example, will not lead to a disbursement until the sanitation and hygiene goals have also been achieved. Indeed, in later years, sustainability is incorporated as a metric, providing a strong incentive to continued attention to that goal at levels above the beneficiaries themselves.
195. The rural water and sanitation NTP has goals that overlap with many other national development goals. In the area of gender, a donor review found that for this NTP "field visits suggest that there is fair gender equality and women and men are actively involved in the planning and operation of water schemes and sanitation facilities. This is mainly through the Women's Union who is the key player in identifying beneficiaries, managing loans and IEC activities. Women are also the key beneficiaries of the program as they are



typically responsible for health, hygiene and sanitation in the family, including giving instructions on personal hygiene to family members and children.”

196. In the 2011 Vietnam Public Expenditure Tracking and Verification Study, it was noted that the participation of the DOH and the DOET remain limited despite the fact that most provinces have implemented decentralization in management. Moreover, there were weaknesses in developing medium term plans to achieve water and sanitation objectives. Additionally, legal documents such as circulars or instructions on preparation for medium term plans were not informed to officials of related departments in a timely manner. Hence, the team recommended that the cooperation among departments in management of the program should be improved. Also, a mechanism should be developed to help relevant officials who are in charge of the program better understand regulations and reach timely instructions from national level.
197. In terms of poverty reduction, the JAR 2013 review found some improvements in the poverty orientation of the program. Indicators to measure access to hygienic water and latrines among poor households have been included in the revised RWSS-NTP M&E indicator set. On the other hand, the revised program cost norms (Circular 04) restrict the targeting of household latrine subsidies to poor and near poor households, a gap that has not been filled by the increase in VBSP loans (given that it is harder to reach poorer households with loans).

### Efficiency of Program Expenditures

198. This discussion of the efficiency of program expenditures looks at two elements of efficiency. The first is to assess the resource mix (overheads, recurrent costs, salaries, etc). The second is to assess whether program investments provide value-for-money.
199. On the first question, the recurrent budget allocation in 2013 was still below the absolute amount allocated in 2011 and the recurrent share of the total budget at 8.3 percent was well below historical levels in excess of 10 percent. Given that the recurrent budget covers a wide range of critical activities (household sanitation subsidies; IEC; training; O&M; and M&E), the demand for recurrent budget at provincial level far exceeds available budget. Although line item breakdowns were not collected at provincial level, it is likely that a high proportion of salaries in the recurrent budget, thus limiting the funds available for financing non-hardware items. The planned Program will correct the imbalance, focusing more on providing the funds needed to address the issues of behavior change and sustainability.
200. The recent 18 province NTP audit concluded that the organization and apparatus for the Program implementation at central level and in provinces have been established and perform their duties quite efficiently. The 2011 public expenditure tracking study that

reviewed experience in six provinces also suggests that administrative overheads have been reasonably efficient.

201. On the second question, for services to be efficient, they must be functioning according to design. In general, the types of water supply technology selected are simple and relatively inexpensive. However, due to inadequate funds and mechanisms for O&M there is a high level of breakdown. Performance remains only partially satisfactory for a significant proportion of small community managed piped water supply schemes. Data presented in the JAR 2013 indicate only 35 percent of piped water supply schemes are operating sustainably; 36 percent are operating adequately; and 29 percent are poorly functioning or not functioning. Most of the poorly functioning or not functioning schemes are small community managed piped water supply systems located in difficult mountainous regions. In one province (Lao Cai), the percentage of sustainable projects is low (17.1 percent), even water supply works in use contain threats of high unsustainability due to complicating conditions and unstable supply of water. In many provinces the local agencies at commune and district levels lack capacity and have difficulties in identifying and applying appropriate management models that are financially and technically sustainable.
202. Awareness of O&M issues and the need to ensure sustainability of investments has been improving, at both central and provincial level. An Action Plan (Decision Ref. /QĐ-BNN-TCTL) issued by MARD in 2014 focuses on how to improve O&M for rural water supply schemes, and the planning guidance for 2015 indicates to give greater priority to ensure appropriate budget allocated for O&M and water quality monitoring. In most provinces PCERWASS are effective in managing and maintaining larger piped schemes, including those with water treatment. However, there is some reluctance by PCERWASS to charge full cost recovery, including depreciation, for these large systems. This will impact on sustainability in the longer term, as there will be insufficient reserves available to undertake major repairs and replace assets as they age. In some provinces, O&M responsibility is decentralized to the districts, but lack of resources and technical capacity of the districts are constrain the O&M performance at this level.
203. For sanitation, subsidized demonstration latrines were built for households who were prepared to have their latrine showcased in the community. However, commonly these latrines were above the ability to pay of many community members, hence it was felt that this strategy did not have much impact.
204. The NTP3 uses construction cost norms established by the central government as the basis for planning and bidding projects. Investments themselves are designed against Government standards that specify assumptions in areas such as per capita consumption and call for service quality levels based on urban norms that may not be appropriate for rural systems. Based on outcomes in the IDA-financed Red River Delta project, the IDA team working on NTP has recommended that a study look at the basic design assumptions and conduct a sensitivity analysis on the impacts on project costs for design parameters.

The use of published construction cost norms provides bidders with clear guidance on the maximum bid that will be deemed compliant. Although this puts a cap on costs, when combined with a process that underutilizes fully open and competitive bidding (by overusing shopping as a procurement method) it also tends to put a floor on them. The IDA-funded, on-going, Red River Delta RWSS Project provides evidence that the cost norms and procurement practices may be a source of inefficiency. RRD investments are in water supply systems similar in scope and scale to those in the NTP. When looking at the per capita investment costs under that project, it would appear that a study may well assist the provinces to reduce these unit costs and therefore serve more people with the same total investments. On the other hand, the schemes under the new Program may incur higher unit cost than previous projects (e.g. Red River Delta) due to the highland and mountain geography, where construction cost is much higher and hence tendering is less attractive.

205. Apart from design and contract costs, in some provinces investments have faced a drawn out construction period as a result of starting construction before full funding was available (a problem exacerbated by rules restricting carry-over of budgeted sums across fiscal years). In the State Audit office audit of 18 provinces, three were found to have at least some projects with excessively long construction periods due to resource shortages in a given year. An extended construction period delays the realization of project benefits and may drive up costs through inflation. The financing certainty that comes with IDA funding in NTP3 should address resource shortage issues.

## F. Results framework and monitoring and evaluation

### Assessment of existing M&E framework and Program's M&E capacity

206. The NTP has a well-established M&E system which uses a set of 8 indicators to track progress on program implementation. These indicators are:

- Proportion of rural population having clean water (%)
- Proportion of rural population (%) using safe water satisfying the safe water standard in decision No.9/2005/QD-BYT dated 11/3/2005 issued by MoH
- Proportion of schools having clean water and hygienic latrine (the latrine should satisfy the TC 08 standard (3A) (%), of which proportion of schools having safe water, met with TC 09 standards (3B) (%).
- Proportion of commune health centre having clean water and hygienic latrine (the latrine should satisfy the TC 08 standard (4A)(%), of which, proportion of commune health centre having safe water, met with TC 09 standards (4B)%
- Proportion of public works (Market, CPC office) having clean water and hygienic latrine (the latrine should satisfy the TC 08 standard (5A)(%), of which proportion of public works having safe water met with TC 09 standard (5B) %
- Proportion of households (HHs) having hygienic latrine met with TC 08 standard (%)

- Proportion of HHs having hygienic cattle shed (%)
- Proportion of trade villages having waste water and waste treatment system (%)

207. This system has been rolled out over the past five years after a national coordination and consultation effort supported by DFAT DANIDA and UNICEF, which has also assisted in the development of a geographical information database (WESmapper), a key tool to facilitate program supervision, monitoring and evaluation. The national M&E system produced its first national data set in 2011.

208. Currently monitoring, evaluation and reporting is completed on a quarterly basis under the auspices of the RWSS NTP. Data is typically collected at the village level through the village Health Workers or village Leaders. Data is collated at the commune and district levels and processed at the provincial level. The staffs of PCERWASS are typically responsible for compiling the data. Summary reports on investments and progress on the M&E indicators are sent to NCERWASS which compiles the information at the national level.

209. In practice progress monitoring is completed fairly consistently. However as noted in the JAR 2013 report, compliance with communication and reporting regulations in implementing agencies has often been poor and information and data reported through NTP3 was inconsistent with data reported by MOH. Data on latrine coverage is often over reported, partly because the hygienic latrine definition is not clearly understood, and partly because Village Health Workers have numerous responsibilities and few resources. Similarly, water quality data is collected regularly across the two regions, but data is often incomplete and sometimes the coverage reported does not reflect the actual service quality.

210. To date no reliable information is available on actual behaviors including on hand washing and open defecation. Scheme sustainability is also not monitored, apart from periodic surveys. The focus of the results framework on infrastructure limits the sustainability of any intervention and it is difficult to access quality M&E data for planning and budgeting purposes.

211. The proposed Program would support the development of an improved M&E system, linking to the work to develop data collection systems and an open source ICT platform under the RWSS PforR in the Red River Delta. This ICT platform builds on WESmapper in order to share relevant Program information, including progress on performance indicators, and information on costs, bidding processes or complaints, among Program stakeholders. It is intended that this will make a positive contribution to social accountability and improved governance by ensuring that all stakeholders have access to relevant information in real time. The proposed Program will build on this platform to leverage improvement in M&E, transparency and accountability relating to the activities specific to the Program.

### Results framework for the RB-SupRSWS Program

212. The proposed key results areas and corresponding DLIs are presented below.

Result Area	DLIs
<p><b>Result Area 1</b> Key hygienic behaviors changed among the target population and increased access to basic services</p>	<ol style="list-style-type: none"> <li>1. Number of approved Behavior Change Communication Plans implemented by Participating Provinces</li> <li>2. Number of new Communes achieving Commune-Wide Sanitation in the Participating Provinces</li> <li>3. Number of new or rehabilitated Functioning Water Supply Connections to households in the Participating Provinces</li> </ol>
<p><b>Result Area 2</b> Provision of sustainable water and sanitation services</p>	<ol style="list-style-type: none"> <li>4. Number of households in the Participating Provinces with Sustainable Water Systems.</li> <li>5. Number of Communes in the Participating Provinces, which have achieved Commune-Wide Sanitation two CY ago, where all public kindergarten, primary and secondary schools and health centers maintain Hygienic Status</li> </ol>
<p><b>Result Area 3</b> Improved capacity at the provincial, commune and village levels to implement, manage and sustain hygiene, sanitation and water supply</p>	<ol style="list-style-type: none"> <li>6. Number of Annual Program Plans and Program Reports disclosed</li> <li>7. Number of approved Annual Capacity Development Plans implemented</li> </ol>

213. During program preparation, a complete Results Framework containing Performance and Disbursement Indicators will be developed. Intermediate indicators of good practice (such as efficient procurement processes), and outcome indicators will also be developed to measure achievement against the PDO. The following preliminary list of outcome indicators has been identified. This list will be further refined during preparation:

1. Number of people practicing key hygienic behaviors including hand washing and use of a toilet;
2. Number of people with access to sustainable water supply services;
3. Number of people with access to sustainable sanitation; and
4. Percentage of communes achieving commune-wide sanitation status.

Indicators 1, 2 and 3 will be disaggregated by gender.

### Disbursement and verification process

214. The initial targets will be set using the baseline information from the Participating Provinces, MOH and MARD and the World Bank financed study. In addition an assessment will be undertaken by the IVA to validate the baseline information submitted by the provinces. The verification process will be dovetailed into SAV's annual auditing cycle and a validation of the baseline will also be carried out.
215. MARD will support the provinces to monitor progress using the existing M&E system. Reporting will be done on a monthly basis, including progress towards meeting the DLIs. Annually MARD will carry out detailed field visits for the Completion Results Report (CRR) and the results across the Program region will be aggregated as the basis for meeting the DLIs. Once satisfied with the accuracy of the reporting, MARD will present evidence of the DLI achievement to the SAV, which, as the IVA, is tasked with verifying the results. In order to validate the disbursement request submitted by MARD, SAV will verify all DLI target indicators through both a desk review and physical inspection that tests the accuracy and quality of results claimed. Physical inspection will include household surveys (with a sample large enough to give a high level of confidence in the results) and a complete survey of institutions. In accordance with good audit practice, physical verification will take place against a sampling framework and frequency. Details will be provided in the Operational Manual
216. On the basis of results of the verification process, the IVA will prepare a Results Verification Report which will be shared with MARD, MoH and the World Bank. A key use of the Results Verification Report will be to determine the amount of the eligible disbursement to be made based on results achieved. If the Bank finds that the disbursement request meets the terms of the Credit, the Bank will disburse the corresponding funds to the MoF.
217. At the start of the program advances up to 25 percent of total Program financing ("advance") can be made by the Bank to MoF. After consulting the provinces, MARD and MoF will jointly determine how much of an advance will be requested. When the DLI(s) against which an advance has been disbursed are achieved, the amount of the advance will be deducted (recovered) from the total amount due to be disbursed under such DLI(s). The advance amount recovered by the Bank is then available for additional advances ("revolving advance"). The Bank requires that the borrower refund any advances (or portion of advances) if the DLIs have not been met (or have been only partially met) by the Closing Date, promptly upon notice thereof by the Bank. If the Bank establishes after the Closing Date that the Withdrawn Financing Balance exceeds the total amount paid for Program Expenditures, exclusive of any such amounts financed by any other financier or by the Bank under any other loan, credit or grant, the Borrower shall, promptly upon notice from the Bank, refund to the Bank such excess amount of the Withdrawn Financing.

## G. Program economic evaluation

### Rationale for Public Provision and Financing

218. Safe water helps protect individual and community health, while improved access to safe water reduces costs that tend to be disproportionately borne by girls and women. Basic sanitation coverage is required across the whole community in order to realise the public health gains. In addition, household level sanitation provides private benefits through convenience and dignity. Washing hands with soap is a cost-effective barrier to the transmission of disease via the faecal-oral pathway and may reduce the risk of diarrhoea in the community by 47 percent.<sup>29</sup> Stunting and impaired cognitive function are also linked to a lack of access to sanitation.<sup>30</sup> Studies have found relatively linear relationships between reducing open defecation reduction and malnutrition; significant reductions in open defecation are required to have a detectable effect on child height.<sup>31</sup>
219. There is evidence that the less-poor households in Vietnam have made investments in improved sanitation using private funds. However, for poor households, the up-front capital costs are a barrier to access and Vietnam lacks financial markets that can fully provide the private financing needed for such services. As noted in the Program Expenditure Framework (section E), the Vietnam Bank for Social Policies has become more active in providing loans for sanitation in recent years, largely through donor intervention. However, there are concerns that few of these loans reach the poorer households, due to both demand and supply constraints. In the absence of public financing, service access and levels would grow very slowly. The public financing delivered through the NTP strongly accelerates service access.
220. The Government recognizes that water and sanitation services offer a mix of private and public benefits. The existence of a private benefit provides an avenue to mobilize private financial resources, complementing the public resources in the NTP. This is achieved through cost-recovery through water supply tariffs. For private sanitation investments, the main financing avenue is loans to households through the VBSP. Although made at concessionary rates, these loans, too, serve to shift the long run financing burden toward the private users who enjoy most of the benefits.
221. **Public versus private service provision.** NTP3, while focused on public financing of investments, does not focus on public provision of the related services. Private sector involvement in water services delivery is a core principle of the Program while private sector masons are the main agents for construction of sanitation facilities. Public

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<sup>29</sup> Cairncross and Curtis, Effect of washing hands with soap on diarrhoea risk in the community: a systematic review, 2003

<sup>30</sup> Nokes et al., Parasitic helminth infection and cognitive function in school children, 1992.

<sup>31</sup> Gertler et al, How Does Health Promotion Work? Evidence From The Dirty Business of Eliminating Open Defecation, 2015

provision is primarily reserved for those elements of the program that have primarily public benefits which is primarily Information, Education, and Communication (IEC) activities. These support improved hygiene practices and environmental protection which have primarily public health benefits by increasing uptake of sanitation goods and services and hygiene practices. Government agencies take the lead in IEC work, complemented by community organizations such as the Vietnamese Women's Union and NGOs.

### Economic Impact of the NTP3

222. No economic studies have been conducted specifically on the NTP3. In 2006, poor sanitation (which shares many of the same diseases as poor water supply) was estimated to cost Vietnam at least 1.3 percent of the Gross Domestic Product of the country<sup>32</sup>. Globally, water supply and sanitation have been estimated to have economic returns of at least 2 and 5.5 times, respectively.<sup>33</sup> Cost-benefit studies on water supply are not available for Vietnam. However, the health, convenience and time savings of closer and better quality water supply are well recognized, leading to economic benefits. Given the household-piped, community-level, low cost technologies used under NTP3 for the majority of rural areas, it is highly likely the economic returns are significantly greater than the costs. The remaining challenge, as noted above, is the number of poorly operating or idle schemes due to poor operations and maintenance, which will affect the economic returns.

223. For sanitation (pit latrine), the economic returns have been estimated at between 2 and 9.7 per VND invested across seven rural sites in Vietnam based on actual usage by the household. Benefits included are health benefits (averted healthcare, health-related productivity and premature mortality costs) and time savings, and in some locations, the value of safe reuse of human excreta for fertilizer.<sup>34</sup> Latrines were also associated with improved environment, reduced flies and smell, comfort, higher status and independence for women in rural areas of Northern and central Vietnam. Hence, assuming an appropriate low cost technology continues to be used under the NTP3, one that ensures a clean environment, a good user experience and continued usage of latrine, then the economic returns will be well above the latrine costs.

### Value added of Bank support

224. The proposed operation is closely aligned with the Bank's twin goals of ending extreme poverty and boosting shared prosperity, as well as the overarching theme of sustainability. Nationally, the SEDP stresses the importance of developing the NM-CH regions and, in particular, focusing on EMs. Improving hygiene behavior, increasing and sustaining access to sanitation and significantly reducing open defecation responds to all

<sup>32</sup> Water and Sanitation Program, World Bank (2008). Economic impacts of sanitation in Vietnam.

<sup>33</sup> World Health Organization (2012). Global costs and benefits of drinking-water supply and sanitation interventions to reach the MDG target and universal coverage. WHO/HSE/WSH/12.01.

<sup>34</sup> Water and Sanitation Program, World Bank (2012). Economic assessment of sanitation interventions in Vietnam.



three pillars as well as the two cross-cutting themes of improved governance and gender within the CPS.

225. The World Bank assistance to develop and support this Program would facilitate the sharing of lessons learned from successful rural water and sanitation projects globally, while also building capacity for results-based planning and financing in the national Program. In particular, Bank support provides incentives for balanced, efficient investment in water supply on the one hand and sanitation and hygiene on the other. It also provides incentives for improved governance and financial processes. The Bank will also bring leading international experts in sanitation and hygiene, from within and outside the Bank to inform the design and support the implementation of the proposed Program.
226. The proposed Program would build on and leverage a number of other Bank supported operations in different sectors in the NM-CH regions, including: the Central Highlands Poverty Reduction Project which is enhancing living standards by improving livelihood opportunities in the Central Highlands of Vietnam, targeting those who have a higher poverty rate in terms of income and access to basic services including sanitation; the ongoing Second NM Poverty Reduction Project, which is currently trying to incorporate sanitation into project activities. The World Bank assistance to develop and support this Program would facilitate the sharing of lessons learned from successful rural water and sanitation projects globally. The Bank will also bring leading international experts in sanitation and hygiene, from within and outside the Bank to inform the design and support the implementation of the proposed Program.
227. The proposed Program would also build on lessons learned from the RWSS PforR in the Red River Delta; The key lessons learnt include; (i) integrating technical assistance and capacity building for implementation into the Disbursement Linked Indicators (DLIs) in order to incentivize their timely delivery – specifically related to the sanitation, hygiene and communication activities; (ii) strengthening Program Action Plan compliance by integrating specific actions into the DLIs to make them a condition for disbursement; (iii) incorporating the Bank’s right to investigate, as described in the PforR Anticorruption Guidelines (ACGs) into the Government approval processes; (iv) improving the Program’s flexibility during implementation through careful structuring of the POM; (v) engaging more closely at the policy level during preparation in order to support the ‘change of thinking’ required by Government to apply results based approaches; (vi) careful consideration of cash flow and the pre financing required for successful achievement of results; (vi) incentivizing water scheme sustainability as a DLI in addition to parallel technical assistance, and the importance of allowing both for rehabilitation and new schemes in program design; and (viii) the benefits of using smart phone data collection and a shared IT platform to improve monitoring and evaluation.

## Results of Economic Evaluation: Additional Economic Impact of the Program with PforR Support

228. There are three main ways in which the Program with PforR support will enhance efficiency of water supply and sanitation services. First, it will help the poor gain access to these services – both through targeting hard-to-reach areas as well as providing the needed financial support to make the services accessible to poor people. The poor and more likely to suffer from diseases or conditions associated with poor water supply and sanitation, and hence their potential to benefit is greater. Second, the Program will support identification and development of technologies and behavior change approaches that can be scaled up in isolated, hard-to-reach ethnic minority populations. In particular, a sanitation design that reduces the amount of materials that require transport to isolated communities that has a lower cost and is therefore more affordable for poor households. Third, the Program will focus on increasing the sustainability and uptake of services. Improved management of community water supply schemes will lead to more efficient outcomes, with greater benefit for households who receive a continuous service and lower long-term unit costs of service provision (due to avoiding costly major repairs/renovations). With greater focus on creating sanitation and hygiene demand, behavior change will be improved and sustained, leading to greater returns on the hardware investments. Furthermore, with the low cost intervention of hand washing with soap, even greater health benefits will be enjoyed<sup>35</sup>. These three pathways for increasing the efficiency of the existing NTP3 program will be enhanced by the payment by results focus of the PforR.

### H. Technical risk rating

229. The overall risk is rated “Substantial”. This rating reflects the risks prior to the mitigating activities planned under the Program.

230. The client now has experience in the implementation of the PforR lending instrument in eight provinces of the Red River Delta and the NTP3 has a twelve year history of increasingly robust performance, with international donors playing a significant and on-going role in that development. The NTP3 has an explicit focus on sustainability of water supplies and the importance of sanitation. This depth of experience informs the Program and significantly reduces the sustainability risk in the new rural water supplies. However there are significant risks remaining under the Program as identified in the preceding technical assessment. The risks and proposed mitigation measures are summarized in Table H.1 below.

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<sup>35</sup> Cairncross S, Valdmanis V. Water supply, sanitation and hygiene promotion. In: Disease Control Priorities in Developing Countries, 2nd edition.

**Table H.1: Technical Risks and Mitigation Measures**

<b>Risks</b>	<b>Mitigation measures</b>
Project impact may be limited unless the BCC campaign results in actual behavior change	Investment during project preparation to ensure international good practice is integrated into project design, including introducing innovative BCC approaches. Provide additional support during implementation, through WSP, for the effective application including locally based staff to support supervision and also supporting the development of tools which can be easily applied to prevent hygiene promoters reverting to health messaging.
Surveys to provide a high level of confidence for actual (rather than self-reported) behavior change will be expensive – requiring time intensive structured observations	Use a mix of physical checks (for hand washing points and feces), self-reported behaviors and structured observations. Agree level of confidence required with Government for point estimates for disbursement.
The project would involve three ministries, MoH, MARD and MoET at the central and provincial levels. The coordination required between the three ministries and their provincial offices could potentially result in delays and a lack of clear roles and responsibilities. Coordinating interventions in 19 Provinces will require significant investment of time and effort. MARD are managing the NTP3 which has reporting and monitoring procedures in place nationally. MoH - VIHEMA will support sanitation interventions in 19 provinces.	In order to support coordination the project would establish a steering committee chaired by the MoH Minister and composed of all relevant ministries. A dedicated and empowered PMU within VIHEMA will support implementation and enhance capacity. Finances have been allocated within the Government Project Outline for enhanced monitoring and evaluation
Reluctance to invest in soft activities and competing budget priorities mean that investment is not allocated for hygiene promotion at the provincial level or to VIHEMA at the central level.	The Financing Agreement would link disbursement to actions in specific sectors DLI disbursement place greater weight – through DLI allocations - on observed behavior change at the village level.  Additional implementation support from WSP is provided.
Institutional and community infrastructure is not maintained properly and funds are not available for future repairs and replacement	Sanitation: Build on work on low cost latrines currently being done by VIHEMA and ensure institutional designs are appropriate – for example using pit or compost latrines where water supply is intermittent.
Institutional and community infrastructure is not maintained properly and funds are not available for future repairs and replacement	Water supply: Adapt systems to local capacity as far as possible, support supply chains for water systems as well as sanitation. Good technical design and management practice will be supported through the Program
Cash flow needs to be carefully assessed by the Government. The Provinces will need to have	Support the Government to clarify cash flow requirements during the development of the

funds available in addition to the advance in order to achieve the target results.	Feasibility Study
Provinces are not familiar with the PforR lending instrument	Organize joint meetings between the eight provinces under the ongoing PforR and the 19 target provinces Work closely with Provinces through preparation and early implementation to support the 'change of mind set' required for results based financing
Large unknowns and poor quality baseline, particularly regarding hygiene practices makes it difficult to set realistic targets	DLIs are being carefully and repeatedly discussed and agreed with implementing agencies to ensure the DLI structure properly reflects the planned investments and is consistent with government fiscal regimes. A strong MARD-based M&E practice will provide continuous oversight and early warning of any problems. That, in turn, will be supported by the verification protocol

## I. Inputs to the program implementation support plan

231. During the implementation of the PforR operation technical support is envisaged to be provided, with the support of the World Bank Water and Sanitation Program (WSP). This support will focus on strengthening the implementation of behavior change communication and the provision of sanitation. In order to be successful, intensive support will be needed on this aspect, as discussed further below. In addition support will be provided in the verification of results and in institutional capacity building during implementation. The main areas of support are summarized in Table I.1.

**Table I.1: Implementation Support Plan: Technical team**

Technical Area	Type of support	Skills needed	No. Staff weeks average / year
Monitoring Program risks and progress	Supervision	Monitoring and evaluation; ICT monitoring systems; Water and sanitation	8
Results Verification	Training and supervision of verification;	Water and sanitation; Evaluation and survey design;	5
Hygiene promotion and sanitation promotion	Embedded support at the Provincial level and centrally to mainstream new approaches described in this Technical Assessment into working practices	Water and sanitation; Behavior centered design;	Detailed below
Institutional capacity building	Technical assistance to improve (i) monitoring and evaluation	Legal; Fiduciary; Institutional; Social;	8

	approaches (ii) sustainability of water supply schemes; (iii) maintenance of institutional sanitation and (iv) planning and reporting	Water and Sanitation; Economics; Engineering/ procurement	
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232. WSP would provide additional targeted support for the hygiene promotion and sanitation part of the program. As described in this Technical Assessment these are the main two areas which require strengthening in order for the Program to be successful. Support is proposed in a number of different areas and would target the first two years of implementation to support rapid roll out of the program and bridge the gap in terms of central and local capacity. Envisaged activities include the following:

233. **Advocacy and institutional strengthening.** Support of advocacy to national stakeholders and provincial PPCs to increase prioritization of sanitation and hygiene promotion implementation in target areas. Supporting to planning and budgeting for sanitation and hygiene. Development of financial and non-financial reward systems for provincial, commune and village level Government.

234. **BCC capacity building.** Training on behavior centered design and support for implementation of activities.

235. **Supply chain strengthening.** Support to proof test business models in some locations; and adaptation of toolkit. Capacity building of provincial business coordinators and Provincial CPMs jointly with VIHEMA. Inputs to product design, including market research, design, prototyping and testing.

236. **Learning and innovation.** As these approaches have not been implemented at scale the Program will need to include space for learning and to adapt these approaches over the Program period. Experience will be shared between provinces and more widely through development of knowledge products.

237. Through their presence on the ground WSP would also make a first step to addressing the increasingly critical gender agenda. This would include the situation analysis on menstrual hygiene management.

## J. Recommendations and Inputs to the Program Action Plan

238. The following recommendations are made for program design and should be detailed in the POM:

- Under water supply activities the Program should support both new connections (new schemes, extensions from existing schemes and moving from shared to

individual household connection) and the rehabilitation of schemes which are currently not functional or functioning in a limited capacity;

- Greater priority should be given to improving mechanisms and financing for O&M and software;
- BCC approaches for hygiene and sanitation should be developed building upon the work completed to date and expanding the successful interventions already piloted. This would cover both demand generation and supply chain support; The development and delivery of the Behavior Change Communication and Supply chain strengthening activities should be included in the PAP as well as under the DLIs.
- Technical assistance covering the three critical areas of BCC approaches for hygiene and sanitation, water scheme sustainability and maintenance of public sanitation facilities, should be provided during program implementation. The implementation of technical assistance and capacity building should be incentivized through the DLIs.

239. **Program Action Plan (PAP).** Based on the technical assessment and the above identified risks, the key technical issue to be addressed through the PAP is the BCC component of the project. Given the continued low level of investment into IEC, and the fact that the new approaches on demand generation and supply side support need to be scaled up effectively in order to achieve the intended impacts, the development and delivery of the Behavior Change Communication and Supply chain Strengthening activities are included in the PAP as well as under the DLIs. The PAP action should be:

240. “GoV and the Program implementing agencies implement the BCC component of the Program as per the Program Operational Manual”

## K. Addendum: Desk-based assessment of Binh Thuan and Ninh Thuan Provinces

241. Following the addition of Binh Thuan and Ninh Thuan provinces to the Program, a desk-based technical assessment of the two provinces was carried out.
242. The assessment findings for Binh Thuan and Ninh Thuan in relation to the expenditure framework, the soundness of investments, the results framework, monitoring and evaluation as well as the economic analysis, do not differ significantly from those in the original 19 provinces.
243. As such, the recommendations, risk rating and the inputs into the Program Action Plan made for the original 19 provinces are considered to be appropriate for all of the provinces under the Program including Ninh Thuan and Binh Thuan.
244. Additional data for Ninh Thuan and Binh Thuan provinces on combined water and sanitation budget allocation and expenditure for the year 2012 are presented in table K.1 below. Loans made by the Vietnam Bank for Social Policies in the two provinces for the Year until May 2014 are shown in Table K.2 below.

**Table K.1: 2012 Water Supply and Sanitation Budget Allocation and Expenditure for Ninh Thuan and Binh Thuan Provinces**

	Binh Thuan	Ninh Thuan
Budget Allocation	28.089	57.000
Expenditure	23.198	37.800

**Table K.2. Vietnam Bank for Social Policies Loans for the Year until May 2014 for Ninh Thuan and Binh Thuan provinces**

Province	Total Debit Balance (Million VND)	Number of debit customers	Accumulated works constructed with loans since the beginning of the year		
			Total	Of which	
				Water Supply	Sanitation <sup>36</sup>
Binh Thuan	244,673	40,382	8,080	4,093	3,987
Ninh Thuan	37,591	1,796	399	42	373

245. Additional data on water supply and sanitation access are presented in Table K.3 below.

<sup>36</sup> Loans for sanitation include toilets, bathrooms, animal husbandry, biogas, drainage and waste containers

**Table K.3: Water supply and sanitation data for Ninh Thuan and Binh Thuan Provinces**

Province/City	Rural population	Hygienic water supply coverage (%)	Rural poor residents connected to hygienic water (%)	Latrine coverage (%)	Hygienic latrine coverage (%)	Hygienic latrine coverage for poor households (%)	Added hygienic latrines in 2013	Hygienic water supply and latrine coverage in schools (%)	Sustainable WS scheme coverage (%)	Idle WS scheme coverage (%)
Binh Thuan	791,419	93	88	79	77	03	6.882	66	79	2
Ninh Thuan	442,858	85,51	69,62	70,18	68,03	37,11	4,032	84,71	79,52	14,46



## Annex 1: Baseline data: NTP3 2013

Province/City	Rural population	Hygienic water supply coverage (%)	Rural poor residents connected to hygienic water (%)	Latrine coverage (%)	Hygienic latrine coverage (%)	Hygienic latrine coverage for poor households (%)	Added hygienic latrines in 2013	Hygienic water supply and latrine coverage in schools (%)	Sustainable WS scheme coverage (%)	Idle WSscheme coverage (%)
<b>Northern mountainous provinces</b>	<b>11089069</b>	<b>81</b>	<b>61</b>	<b>83</b>	<b>52</b>	<b>26</b>	<b>90839</b>	<b>73</b>	<b>23</b>	<b>16</b>
Hà Giang	730036	65	25	49	33	13	1574	79	52	10
Lào Cai	517951	83	74	68	53	41	9036	55	17	2
Hòa Bình	828989	78	59	95	44	29	6502			
Sơn La	814670	74	65	81	33	16	3196	51	15	24
Điện Biên	415616	73	52	45	33	15		87	7	14
Lai Châu	352101	71	64	59	24	15	3910	71	47	26
Tuyên Quang	653477	72	64	87	36	16	2687	81	31	19
Lạng Sơn	590910	81	55	77	32	15	1574	66	2	0
Yên Bái	627170	79	68	97	50	34	4932	95	17	25
Thái Nguyên	855520	80	48	92	60	37	3877	95	19	26
Phú Thọ	1213962	86	73	95	59	26	21932	89	20	33
Cao Bằng	507168	84	72	75	33	9	1509	49		
Bắc Cạn	262854	97			56			92		

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Quảng Ninh	454777	92	81	93	73	40	4352	100	57	8
Bắc Giang	1457483	89	96	97	81	54	9907	96	14	0
<b>Northern mountainous provinces</b>	<b>7559666</b>	<b>78</b>	<b>51</b>	<b>92</b>	<b>52</b>	<b>26</b>	<b>51327</b>	<b>73</b>	<b>29</b>	<b>15</b>
Thanh Hóa	3054529	81	65	94	47	25	19204	94		
Nghệ An	2554158	70	26	89	46	15	16077	57		
Hà Tĩnh	1160746	84	73	98	72	54	12972	78	51	8
Quảng Bình	331612	78	63	87	56	35	3074	25	19	11
Quảng Trị	458621	84	64	84	63	33		87	28	17
<b>Highlands</b>	<b>2308649</b>	<b>83</b>	<b>68</b>	<b>78</b>	<b>50</b>	<b>21</b>	<b>12278</b>	<b>62</b>	<b>15</b>	<b>33</b>
Gia Lai	984423	83	70	64	39	13	4782	50	12	32
Đắk Lắk	1324226	83	67	88	57	29	7496	86	26	35
Đông Nam Bộ	2880359	96	86	96	90	69	12998	99	58	3
Bà Rịa Vũng tàu	652463	98	95	95	92	76	2771	100	100	
Bình Phước	766764	86	61	90	72	43	4241	97	45	0

## Annex 2: Technical Assessment for Water Supply Scheme Development

The Bank commissioned a consultant to carry out a review of water supply schemes and designs to be included in the CH-NM for the purpose of the Program. The objectives of the consultancy were:

- To review the designs developed to date in terms of cost effectiveness
- To develop a typology of schemes and identify a reasonable unit cost – or range of costs; both overall and for each type of scheme

The executive summary of the report and relevant sections of the report are included in this annex.

### Executive Summary

The World Bank is preparing for financing a PforR project for Results-based Scaling up Rural Sanitation and Water Supply in 19 provinces of Northern Mountain and Central Highlands regions in Vietnam. The water supply schemes in the area have high percentage of non-functional and poor functioning systems. The challenge also include institutional set up for the management of the schemes, the financial unsustainability, water level depletion in dry season, the inadequate capacity of staff to operate and maintain the systems. The areas are remotely located. The project aims at providing sustained water supply to the residents in the area.

A reasonable unit cost of the schemes per person is required to present the number of connections in the "Disbursement Linked Indicator (DLI)" in the Project Appraisal Document and further in negotiations and Agreement. A mission was commissioned between 9th March to 22nd March 2015 to review the feasibility studies carried out by Govt. of Vietnam, visit the sites of the representative schemes assess and come out with its recommendation for the unit cost.

The mission consisting of Mr. Rajendra Holani, and Mr. Pham Sy Hung, visited the sites and carried out the assessment.

The Feasibility Studies could not be made available to the mission. However in absence of it, the methodology consisted of discussions with NCERWASS and PCERWASS officers, formulating typology of the schemes to be financed in the project, visits to actual sites of the schemes of different typology in the Provinces and discussions with Community People's Committees.

The typology of schemes which are generally feasible in these parts of Vietnam are:

- Surface water source systems with treatment and supply
- Ground water systems with tube well / bore well as source and with treatment
- Spring based water supply systems with entire gravity supply and Stream water source in high mountains with entire gravity water schemes including treatment

- Rehabilitation of existing systems
- Extension of existing system with excess capacity to cover additional population

The gross level designs of the schemes were developed for each typology and for different representative population size such as 100 (very small habitations), 2000, 3000, 6000 and 8000 persons. For the spring based water supply systems which can supply water sustainably to smaller populations only; the same was carried out for the population sizes of 100, 500, 1000, 1500 and 2000 persons. The gross design was also prepared for the schemes which were visited in the provinces.

A most probable mix of the different types of the scheme was selected and weighted average cost for Northern Mountains and Central Highland is arrived at USD 143 and 138 per person respectively.

The detail findings and recommendations are incorporated in this report. The key recommendations are:

- The design norms as considered for the block costing be adopted. Further refinement to it may be carried out using Technical Assistance program. The sample designs for various types of system to be developed under TA program.
- The Gravity systems, although costly in capex are preferred if found to represent the least cost on a life cycle cost basis.
- The capital cost per person with a basket of different types of schemes works out to USD 143 for the Northern Mountains and 138 for the Central Highlands.
- The Tariff shall include the minor maintenance funds required annually. The same shall be kept aside for the specific purpose and used whenever problems arise. This will ensure sustainability. Telescopic tariff system shall be used so that those who use more water pay higher for the excessive use.

### **Typology of the Schemes**

The following approach developed after several discussions with NERWASS and PCERWASSes and the site visits to the water supply schemes existing and proposed in Tuyen Quang province of Northern Mountains and Dak Lak province of Central Highlands; is used to arrive at the per person cost of the water supply scheme financed in this project.

A commune can be provided water through different types of sources. The types available for the areas covered in this SUPS project can be broadly classified as (1) Surface water (2) Ground water and (3) Spring water. A new system can be developed using any of these sources.

There are existing water supply systems which have become non-functional after delivering service for some period of time for several reasons. If they are rehabilitated, they can supply water.

There are existing water supply systems which have surplus capacity, which can be used to extend the service to nearby consumers / villages.

A combination of rehabilitation and extension of service to adjoining areas is also feasible where the non-functional or under-performing system has excess capacity and water resource availability.

### **Broad design criteria**

In the actual site visits by the mission it is observed that the citizens drawing water from the existing systems show a trend of average consumption of about 6 to 8 m<sup>3</sup>/month. The average household size is 4 in Northern Mountains and 5 in Dak Lak. The consumption indicates a 40 to 55 lpcd water requirement.

The population for design is considered as 15% more than the present population.

The houses observed in these rural areas consist of a ground storey only and the electricity availability is practically 24 hours. The hours of pumping to meet the demand of the design population is considered to be 16 hours.

A commune consists of 2 to 12 habitations. Sometimes the distance between the habitations is very large. In the mountainous region like Northern Mountains or Central Highlands, the elevation of location of these habitations also differs quite a lot. Therefore one commune can not necessarily have a single water supply scheme. Individual solutions for the habitations are also required. Some of the close habitations with little difference in elevation can be clubbed under a centralised water supply scheme. For typical designs the distance between habitations is considered as 1 Km and the distance of the first village from the source as 400 m.

Both these areas have remotely located sites of springs and pipes from the spring to the village, which do not have access road. As such, it is challenging to transport the materials to such an area. In the villages, the distribution network does not have such challenge. The ground water sources in the form of bore wells or surface water sources in flat areas such as rivers are accessible but the service reservoirs are provided on hills to take advantage of elevation so that gravity distribution is possible. In such cases, the source, part of the length of rising mains and the distribution lines are accessible but the water treatment plant and Service Reservoir do not have accessibility and are located on hills.

Based on observations, international practices and the discussions with NCERWASS, the following criteria have been used for the broad design and sample costing of the schemes to arrive at the indicated per capita cost.

**Table 1 - Broad Design Parameters**

<b>Design Parameters</b>			
<b>S.N.</b>	<b>Parameter</b>	<b>Proposed standard</b>	<b>Rationale</b>
1	LPCD	60	There is no sewer system & observed consumption is 40 to 50
2	T&D losses	15%	Achievable figure
3	Utility consumption	5%	standard figure varies between 2 to 5 % for RSG filters

4	Hours of pumping	16	Availability of electricity
5	Residual pressure in distribution	6 to 8 m	Ground floor houses only
6	peak factor in distribution	2.5	
7	Velocity of water in pipes	1 m/s	
8	Clarification rate	36 to 40 cum/sqm/day	
9	Filtration rate	6 to 8 cum/sqm/hr	

**Broad Indicative Plan for the typical system**

**a) Surface water source**

The planning for the surface water source systems is such that the water is abstracted from a river or stream through an intake well and via a pump to the Water Treatment Plant located in the nearest village of the commune. The treated water will be stored in a 4 hour storage capacity RCC tank. The treated and disinfected water will be pumped to the village/s in the commune (Figure 1). Two pumps each, for average flow and peak flow are considered. The pumped distribution assumes a velocity of 1m/s for peak flow and a pressure of 30 to 35m for pumping so that ultimately at the consumer connection it is 6 to 8 m. The distribution pipeline length is considered to be between 3 to 5 m per person depending on the density of the houses. The consumer connection is considered to be an HDPE pipe of 20 mm diameter with a mechanical meter of 20 mm diameter. It is considered that 90% of the households will connect to the system. These assumptions for the distribution system apply to all types of schemes.

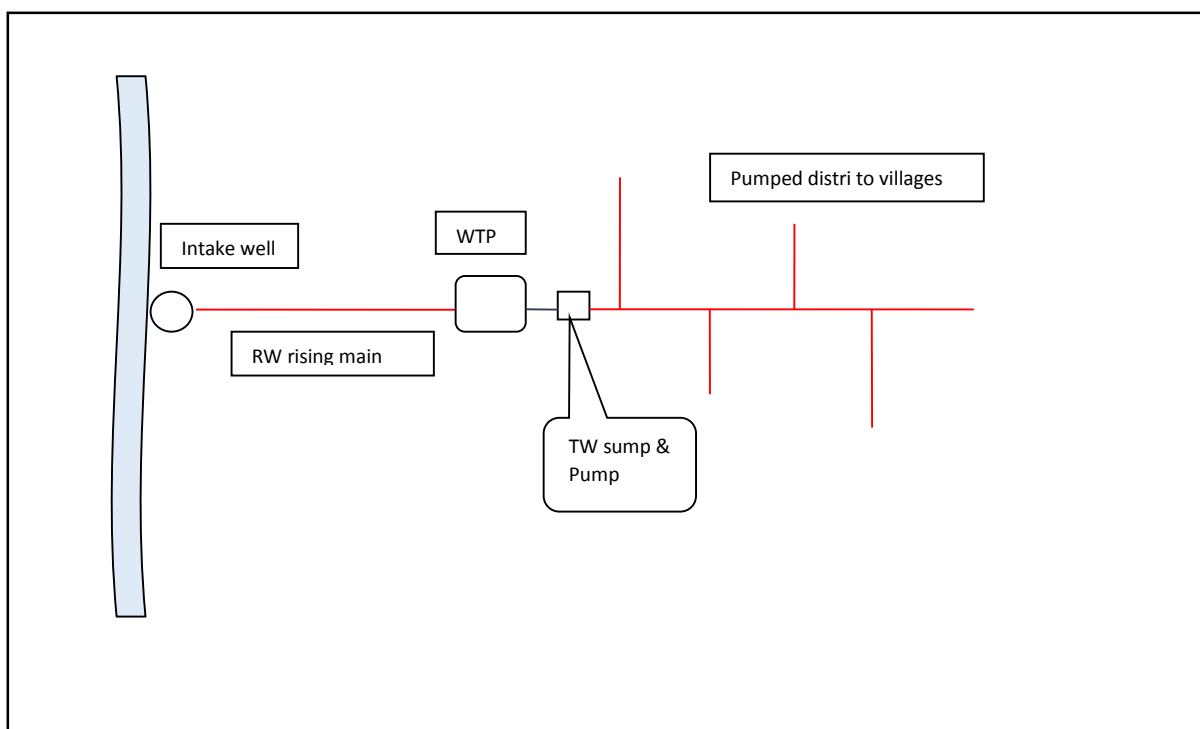


Figure 1 - Surface water system with pumped raw and treated water to distribution

Another typology in planning is a stream or river water source with water pumped to the treatment facility. In a second type of the scheme, the treatment plant is located at a higher elevation in the close vicinity such that the treated water does not require pumping but is delivered by gravity. In such case, the total head is on the pumps installed at source (Figure 2).

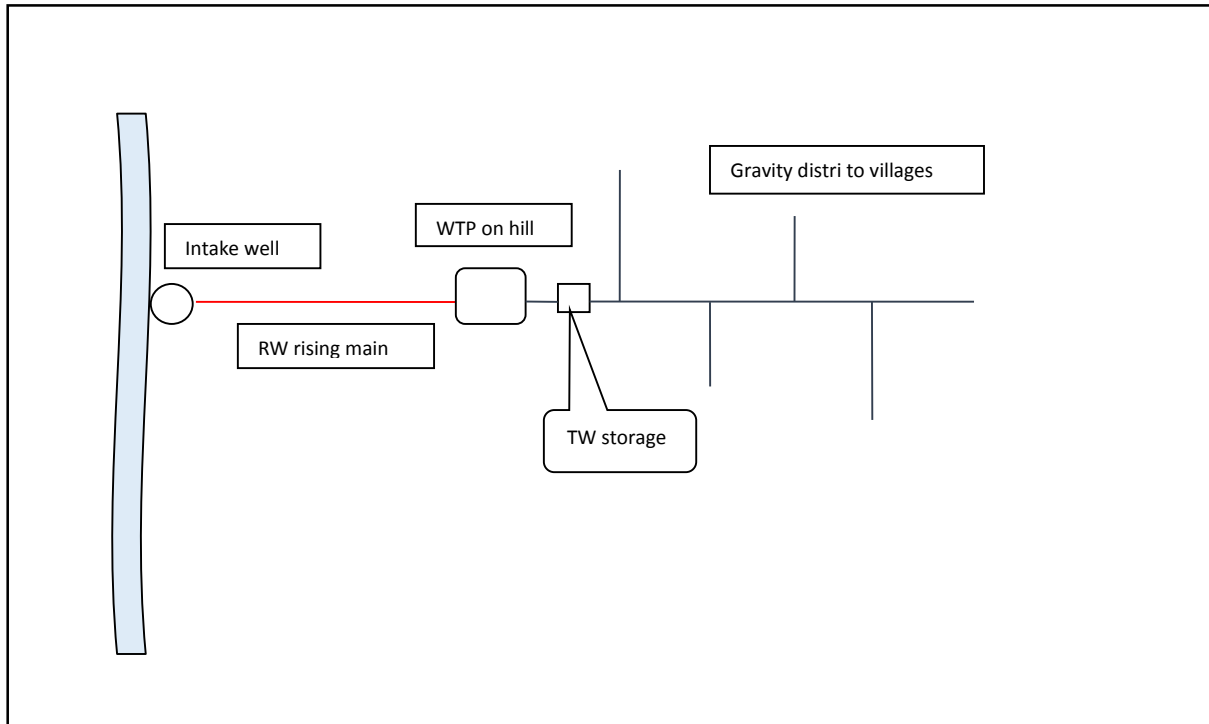


Figure 2 - Surface source with pumped raw water and gravity treated water

The third typology is a stream water source located at a higher elevation than the village where from the water can be abstracted and conveyed to a treatment plant by gravity, treated and supplied again by gravity to the villages (Figure 3). In this typology an innovative method of providing a small dam of very low height on the stream and placing sand media topped by large rubble stone packing behind the dam provides filtered water without having the need for a treatment plant. This is the system used at Toa and Nieng villages.

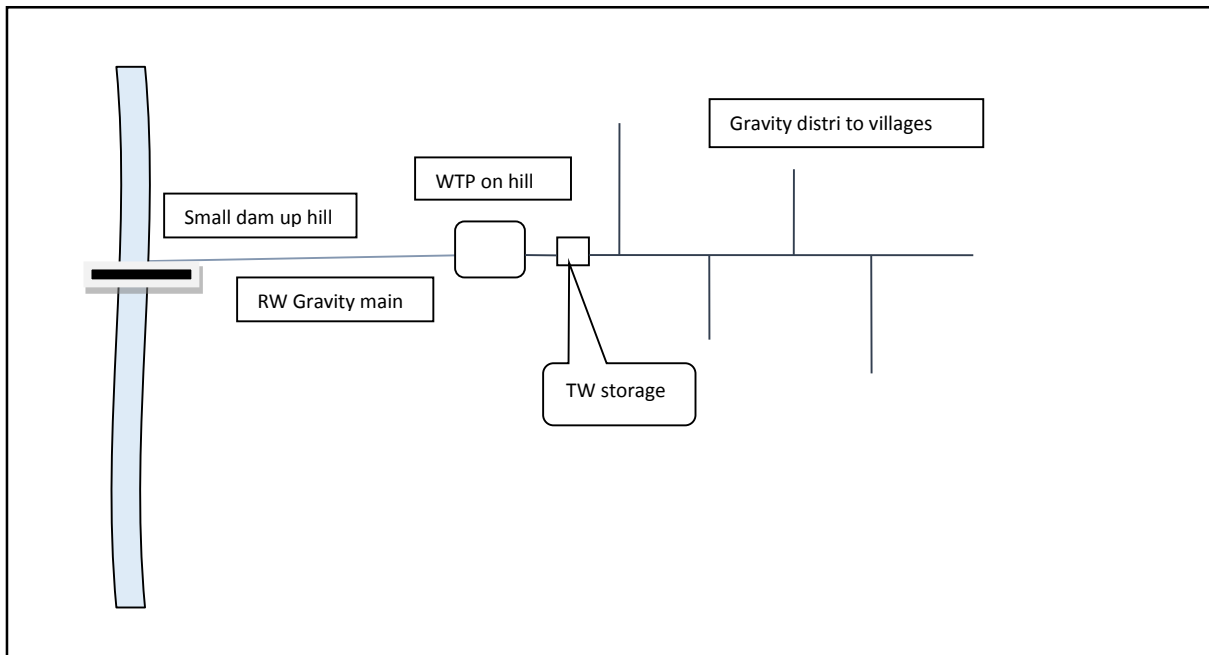


Figure 3 - Total gravity water supply system with surface source tapped in up hills

#### b) Ground water source

For ground water sources, the shallow wells have the possibility of pollution and therefore the general trend in the area is to go for bore wells. Bore well location has to be decided by geophysical exploration as well as the quality of water. In the broad design, it is presumed that a bore well will provide  $10\text{m}^3 / \text{hr}$  of water. The number of bore wells required for the population is calculated based on this criterion. It is possible that the bore well water may or may not need treatment depending on the quality. In some cases it is likely that the Iron (Fe) may be present in the water. The treatment is considered as aeration, sedimentation and sand filtration followed by disinfection. The treated water is proposed to be stored in a 4 hour capacity tank. The water is proposed to be pumped in distribution network using two pumps each of average discharge and peak discharge, one working and one as a stand by (Figure 4). The distribution network proposed, remains similar irrespective of source.



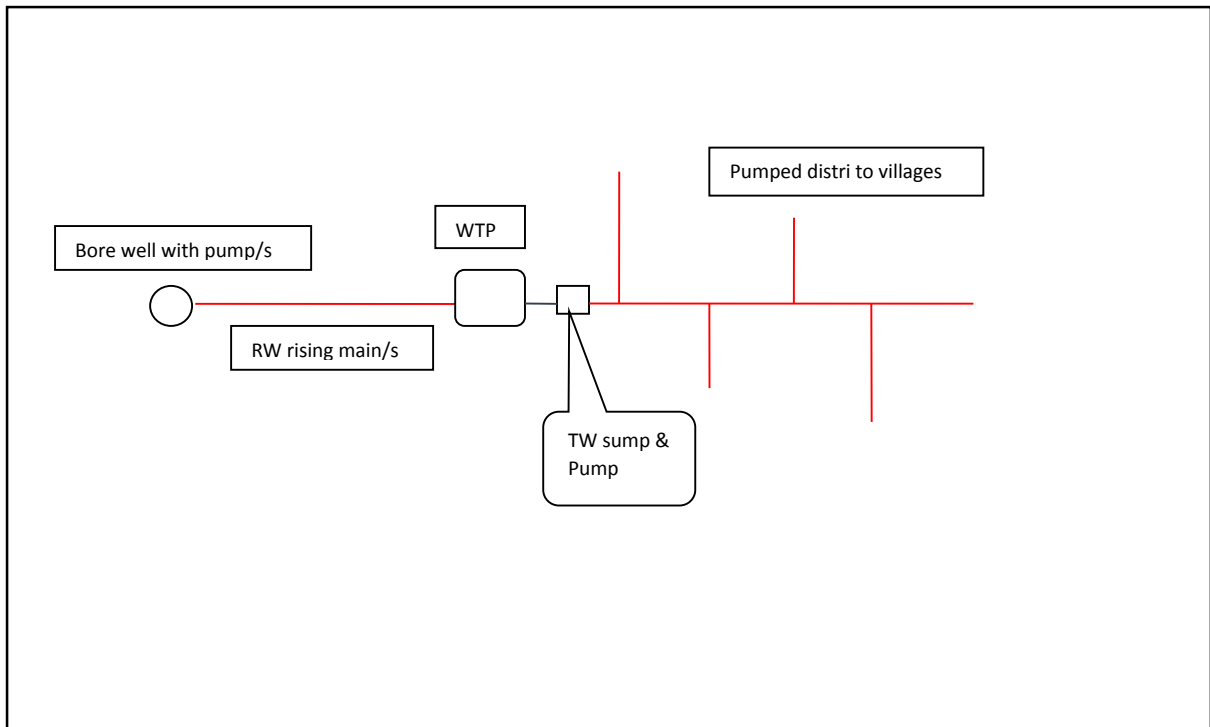


Figure 4 - Ground water system with bore well as source & pumped raw & treated water

Another alternative is to locate the treatment plant at convenient height on the hill so as to avoid the pumping of treated water. In this alternative, the treated water is distributed by gravity to the consumers through a distribution network (Figure 5). In this case the total head is on the pumps installed at source.

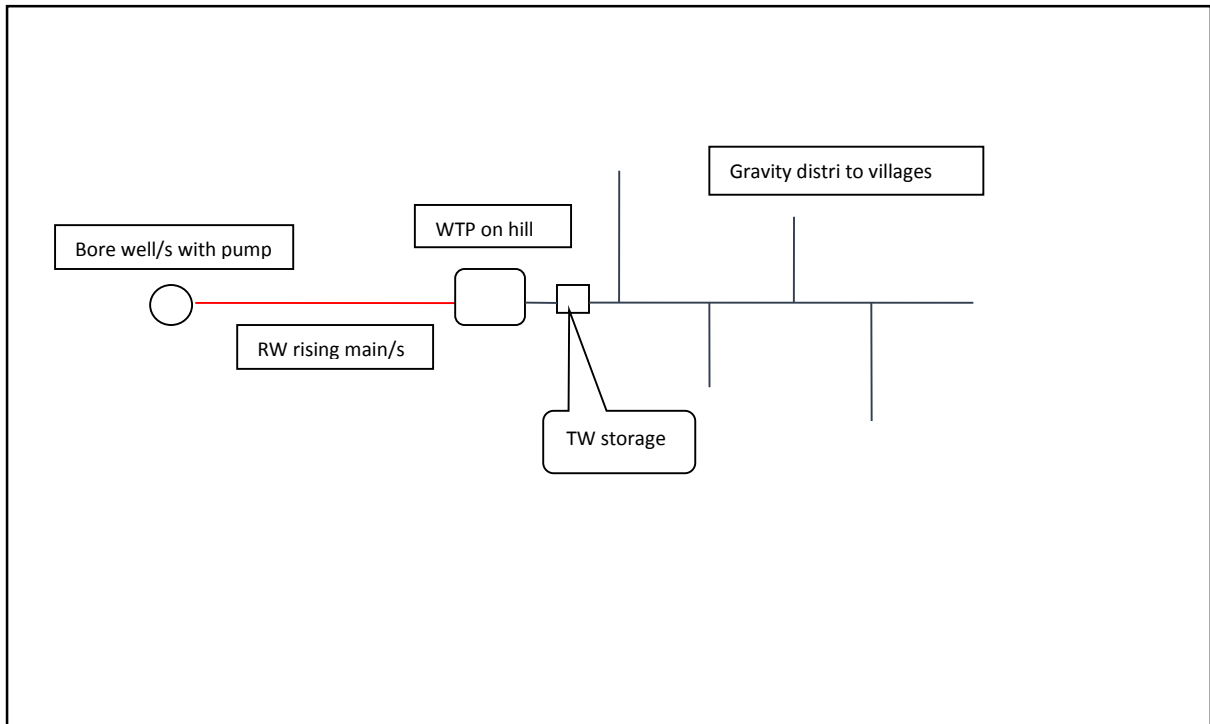


Figure 5 - Ground water from bore well with WTP on hill to gravitate treated water

In the event that the ground water source does require treatment, water can be pumped directly to a service reservoir and then fed by gravity for distribution (Figure 6).

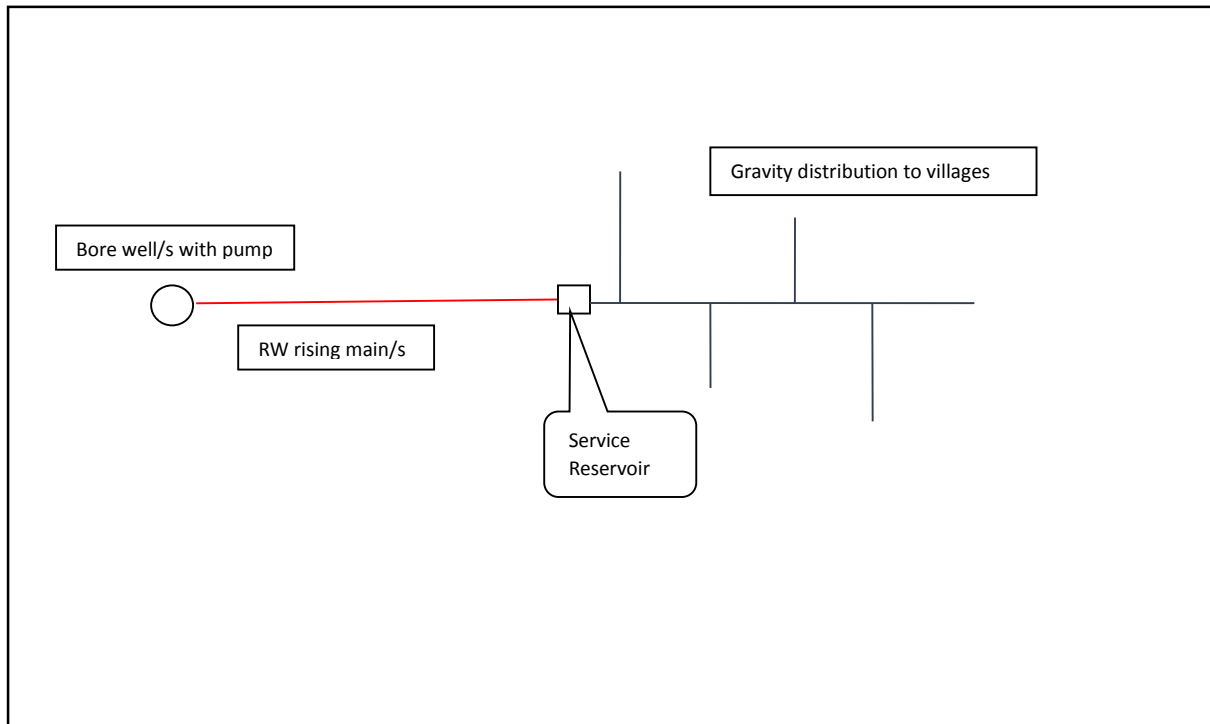


Figure 6 - Ground water requiring no treatment pumped to Service Reservoir & gravitated to village/s

### c) Spring as source

In this system, high altitude perennial springs are tapped and water is provided to the households by gravity. The system needs careful development of the spring and a very small tank of height not more than 20 to 30 cm entirely below the spring level. The gravity pipeline from this tank leads to a tank of capacity equal to one day's requirement (Figure 7). The water then is fed by gravity to the houses through the distribution network. The number of houses that can be sustainably connected with a one day capacity storage tank depends on the water availability from the spring in the dry months.

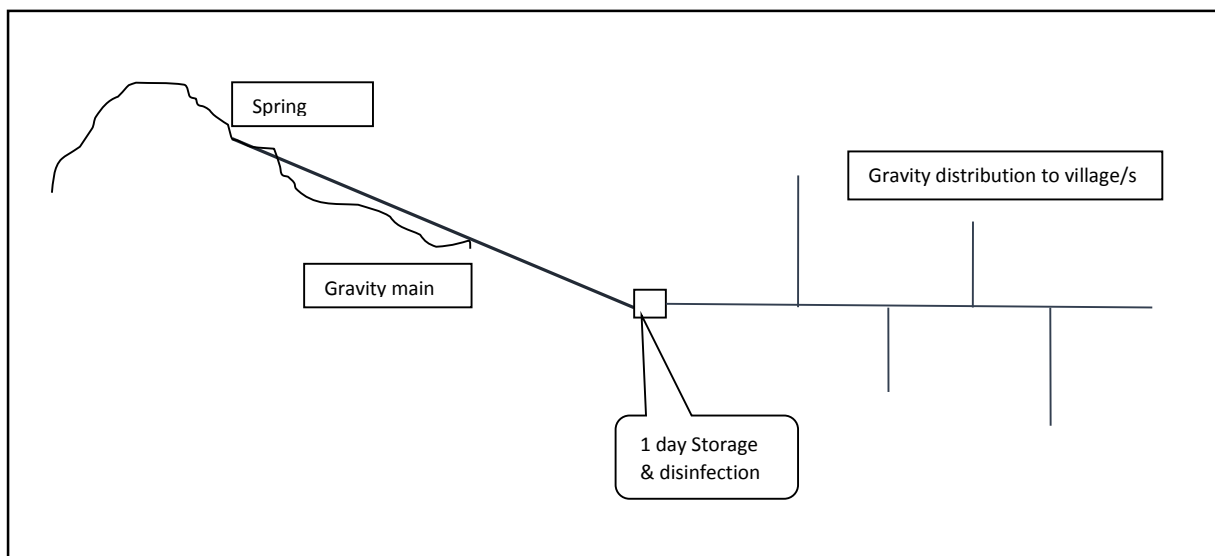


Figure 7 - Spring water supply system with one day storage

If a water storage tank with a two month storage capacity is constructed, then it can enhance the performance and sustainability for a larger population (Figure 8). This depends on the yield of the spring in rainy season. This proposal has high initial capital cost and has been considered in designs and costing.

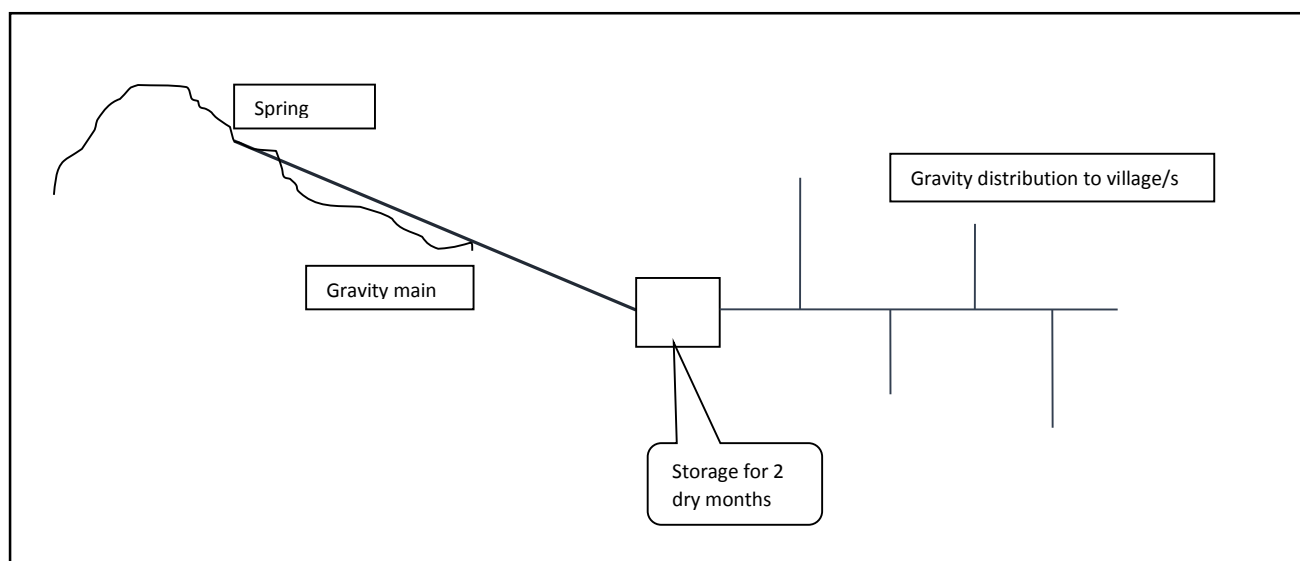


Figure 8 - Spring water supply system with storage for dry months

### Rehabilitation of existing schemes

It is observed that schemes have gone non-functional due to breakdowns which are not repaired. This has either stopped the system or working for a lower capacity than the design and therefore serving less number of households.

The problem lies in the absence of a proper institutional structure for operation and maintenance management including financial sustainability. This requires shutting down the system when it comes to major repairs. The typical problems associated with these systems are:

- Pumps out of order and need repair / replacement
- Pipelines corroded and leaking and need repair / part or full replacement
- Pipelines in high mountains passing through streams are dislodged due to floating tree trunks in floods hitting the pipes.
- Filters need sand replacement, valve replacement etc.
- Consumer meters out of order and need replacement
- Chlorination system need repairs
- Leakages in distribution system

Broad indicative Costing for some of the schemes of this type which are actually visited is carried out. After repairs / rehabilitation such schemes will restore delivery of service to the connections which stopped getting it.

Some schemes when repaired and put back in operation has capacity sufficient to connect some additional households by extending its distribution network. Such extension costs are considered in the category of extension schemes.

### **Service extension of existing schemes**

Some of the existing schemes are observed to have capacity in excess of their requirements. For example the Hung Loi system in Tuyen Quang province need only 3 hours of pumping to satisfy its needs. Using such excess capacity the service can be extended to nearby conveniently located villages.

The requirement of such extension schemes is normally extension of distribution networks. In some systems excess raw water capacity exists, and the treatment and distribution systems are required to be created.

The broad level cost calculations for such systems based on the actual site visit to such existing schemes in both the Northern Mountains and Central Highlands was carried out. The repairs / rehabilitation to existing assets which are going to be used for extension schemes are also required to be considered.

### **Indicative per person cost**

A broad based cost calculation which accounted for the extra efforts required in work components to be carried out in the high and inaccessible hills for the systems in each of the above typology was carried out. The per person cost for each of them was determined by the mission which visited these systems.

The mix of the schemes is assumed as follows:

1. 40% new schemes with 10% as surface water source, 10% as ground water source and 20% with spring as source.
2. In spring as source in Northern Mountains it is assumed that 20% of spring schemes will require 2 month storage for dry season while 80% will not. In Central highlands, the same is considered as 30% and 70% respectively.
3. 60% schemes to be of rehabilitation and extension schemes of which 30% to be rehabilitation and 30% to be extension schemes.

With this basket of schemes from the five categories a weighted average for the per person cost was found to be 143 USD for Northern mountains and 138 USD for Central Highlands.

The indicative costs for different categories for Northern Mountains is given in Table 2 and for Central Highlands in Table 3.

Table 2 - Typology wise cost matrix for Northern Mountains

Typology and Cost matrix - Northern Mountains						
	Range	Costed for households	Cost per person	Spring scheme without 2 month storage, with 1 day storage	Combination	Remarks
			USD	USD		
<b>New system</b>						
Surface water schemes						
	Small 10 to 50 household	27	1111			Not to be used
	400 - 700 household	537	247			
	700 - 1250 household	805	253			
	1250 - 1900 household	1610	241			
	1900 - 2500 household	2146	241			
	<b>Average</b>		<b>246</b>		<b>10%</b>	
Ground water schemes						
	Small 10 to 50 household	27	306			Not to be used
	400 - 700 household	537	139			

	700 - 1250 household	805	189			(Xay Moi and 10 villages scheme)
	1250 - 1900 household	1610	216			
	1900 - 2500 household	2146	225			
	<b>Average</b>		<b>192</b>		<b>10%</b>	
Spring based schemes						
	Small 10 to 50 household	27	549	143		
	50 - 200 household	134	482	135		
	200 - 350 household	268	531	185		
	350 - 500 household	402	534	210		
	500 - 650 household	537	547	221		
	Actual for Toa & Nieng	195		102		Spring, pipeline upto tank & tank already developed
	<b>Average</b>		<b>528</b>	<b>179</b>	<b>20%</b>	4 of 20% to have 2 month storage and 16 with 1 day storage
<b>Rehab works of existing systems</b>						
	Minimum	110	18			Sua Chia
	Maximum	17	104			Hung Loi
	<b>Average</b>		<b>61</b>		<b>30%</b>	
<b>Extension of existing systems</b>						
	Minimum	200	89			Sua Chia
	Maximum	162	118			Hung Loi
	<b>Average</b>		<b>103</b>		<b>30%</b>	
	<b>Weighted Average</b>			<b>143</b>		

Table 3 - Typology wise cost matrix for Central Highlands

Typology and Cost matrix - Central Highlands						
	Range	Costed for households	Cost per person USD	Spring scheme without 2 month storage, with 1 day storage USD	Combination	Remarks
<b>New system</b>						
Surface water schemes						
	Small 10 to 50 household	27	1109			Not to be used
	400 - 700 household	537	241			
	700 - 1250 household	805	247			
	1250 - 1900 household	1610	234			
	1900 - 2500 household	2146	234			
	<b>Average</b>		<b>239</b>		<b>10%</b>	
Ground water schemes						
	Small 10 to 50 household	27	312			Not to be used
	400 - 700 household	537	139			
	700 - 1250 household	805	187			
	1250 - 1900 household	1610	214			
	1900 - 2500 household	2146	223			
	Tan Tien Commune	1341	276			Tan Tien actually visited scheme
	<b>Average</b>		<b>191</b>		<b>10%</b>	
Spring based schemes						
	Small 10 to 50 household	27	556	150		
	50 - 200 household	134	473	126		

	200 - 350 household	268	522	176		
	350 - 500 household	402	526	202		
	500 - 650 household	537	540	215		
	<b>Average</b>		<b>523</b>	<b>174</b>	<b>20%</b>	6 of 20% to be with 2 month storage and rest with 1 day storage
<b>Rehab works of existing systems</b>						
	Minimum	200	15			Hoa Xuan
	Maximum	160	40			Hoa Le
	<b>Average</b>		<b>27.5</b>		<b>30%</b>	
<b>Extension of existing systems</b>						
	Minimum	250	95			Hoa Le Commune
	Maximum	1647	109			Krong Kmar system extension
	<b>Average</b>		<b>102</b>		<b>30%</b>	
<b>Weighted average</b>			<b>138</b>			



### **Elements in O&M cost**

The operation and maintenance cost is comprised of several elements depending on the types of scheme. In order to determine the life cycle costs, capitalization of O&M costs with an agreed discounting factor must be performed in order that the water tariff shall also include these costs along with depreciation.

Following are the main elements of O&M costs

- a) Electricity
- b) Coagulant Chemical
- c) Disinfecting Chemicals
- d) Skilled Manpower such as supervisors, pump operator, electrician, filter operator, meter reader and billing clerks, Consumer relation staff
- e) Unskilled Manpower such as valve man, labor, bill distributors, helpers, gardeners, security staff
- f) Quality testing charges
- g) Laboratory Chemicals
- h) Spares for pumps, electrical, valves, blowers, and other equipment
- i) Spares for chlorination plant
- j) Spare consumer meters
- k) Billing and other stationary
- l) Communication, telephone, internet etc.
- m) Vehicle rents for maintenance
- n) Oil and lubricant
- o) Preventive maintenance and replacement of moving mechanical parts and electrical items
- p) Repairs of leakages in pipes, connection valve glands, etc.
- q) Pump overhauling cleaning, oiling and greasing
- r) Burnt electrical motor rewinding
- s) Bank charges
- t) Taxes

### **FINDINGS AND CONCLUSIONS**

Major findings are:

- a) The water requirement of the people is as low as 40 to 50 lpcd.
- b) The tariff covers only cost of operation and do not cover the minor maintenance requirements. Money has to be collected from people whenever maintenance work arises. This leads to the scheme sitting idle.
- c) Most of the villages have single storey houses only and hence 6 to 8 m of residual head in the distribution network is sufficient
- d) There is no institutional framework for O&M in many communes and it should be developed.
- e) Gravity systems are more sustainable and wherever possible they are recommended to be used.

- f) The systems from springs do not have adequate capacity storage.
- g) Some of the systems such as Hung Loi in Tuyen Quang province and Krong Kmar in Dak Lak province have excess capacity and can be extended to provide coverage for nearby villages.

## **RECOMMENDATIONS**

Following recommendations emerge out of the studies -

- a) The design norms as considered for the block costing should be adopted. Further refinement may be carried out through technical assistance. The sample designs for various types of system should be developed through technical assistance.
- b) The gravity systems, although costly in capex are preferred if found to be the least cost option on a life cycle cost basis.
- c) The capital cost per person with basket of different types of schemes works out to US\$143 for the Northern Mountains and US\$138 for the Central Highlands.
- d) The tariff should include the minor maintenance funds required annually. The same shall be kept aside for the specific purpose and used whenever problems arise. This will ensure sustainability. A telescopic tariff system should be used so that those who use more water pay proportionally more for the excessive use.
- e) Small automation like pump on/off systems based on the water level in the tank and using GSM communication system can effectively reduce the cost of a pump operator.