PERFORMANCE ASSESSMENT OF
GAVI-HSS INTERVENTIONS
IN 20 TOWNSHIPS
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Executive summary

The performance assessment of GAVI-HSS interventions in 20 townships was jointly conducted by the two international experts and the Myanmar team from the World Health Organization (WHO) country office and Ministry of Health (MOH) officials between June and August 2013. The objectives of the joint assessment of the first twenty townships are:

- To review and assess the program implementation process, and the program's key outputs and outcomes
- To provide policy recommendations for the ongoing HSS program implementation.

This joint assessment applies many methods, including a) review of relevant program documents, secondary data analysis, b) primary data collection through a questionnaire survey of Auxiliary Midwives and Community Health Workers, and c) field visits and interviews with key health staff in two selected townships.

The GAVI HSS Program is developed in line with national health policy and plans, with strong engagement and ownership from multiple stakeholders including relevant Departments of the MOH, international development partners, and civil society organizations. The design of the GAVI HSS Program is evidence-based (in consideration of the township assessment and local specific coordinated township health plan) and implementation is proceeding in the right direction. Measurable outputs of GAVI HSS Program include: a) the number of outreach services offered to hard-to-reach areas (who might not, in normal situations, get access to care due to physical, economic and financial barriers), b) the number of new community based health volunteers notably auxiliary midwives and community health workers being trained and who serve in their community, c) the number of beneficiaries of the hospital equity fund. After two full years of the program, these outreach services contributed to increased coverage of key indicators such as ANC, TT2, SBA, DTP3 and BCG implementation.

In 2012, the total estimated resource needs for 20 townships--as judged from the township assessment--were 6.552 billion Kyat. In reality, there was a shortfall of 51% of total resource required. Only 3.189 billion Kyat was available (56% contributed by the MOH and 44% by GAVI HSS program). The MOH budget is
for staff salary while the GAVI HSS is for program operations. The expenditure, per head of population from the GAVI HSS program to hard-to-reach villages, is as low as US$2.3 and US$1.2 in 2012 and 2013, respectively. Although such a marginal per capita investment by targeting hard to reach areas has resulted in improved access to the basic primary care services, significantly more resources are needed.

Health infrastructure is one among many challenges. Out of the total 115 RHC and 617 Sub-centers in the 20 townships, many required major renovation as they are more than 45 years old. In 117 sub centers (19%), there is no building for service provision. In addition, public utilities such as electricity, water, and sanitary latrines were inadequate. Realizing this, Government is recently planning to invest in construction of health facilities. GAVI HSS is going to support a construction of 30 sub-rural health centers.

Similar to other developing countries, Myanmar is facing classic challenges of health workforce shortage and mal-distribution. Out of the total 108 RHC in 20 townships, only 8 RHC (7%) had reached the MOH standard of having 13 health professionals; 23 RHC (21%) had 9 health professionals and the remaining 77 RHC (72%) had less than 9 professionals. These 108 RHC serves the total 3.023 million in 20 township, on average one RHC covers around 28,000 population. On average, one midwife is responsible for more than 5,000 people--ranging from 1,816 in Htilin to 10,000 in Hsipaw. Noting this five-fold difference, the balance of midwife allocation across townships needs to be reviewed and corrective measures are urgently needed. An average of 0.2 midwife per 1,000 population of these 20 townships is far below the global benchmark of 2.28 doctors/nurses and midwife per 1,000 people.

Voluntary health workers become an indispensable and unique in Myanmar. Community members were recruited to attend six-month auxiliary midwife (AMW) and one-month community health worker (CHW) training courses. AMW and CHW living in hard to reach villages, sharing the same language and cultural identity with the community, are invaluable health workforce in supporting health services in the local communities. GAVI HSS program supports recruitment, training and refresher courses for the AMWs and CHWS in the GAVI HSS program support townships. Due to resource constraints, each township has a quota of 20 new (six-month) trained AMWs and 20 newly (one-month trained) CHWs--as well as 50 refresher courses for both AMWs and CHWs.
Of the total GAVI HSS spending US$ 2.437 million were spent in 2012 including US$ 0.9 million (37%) on hard-to-reach areas [such as supervision activities, training of AMW/CHW including kits, continue training of BHS, Health Systems Strengthening officers, data quality assessment, support in producing CTHP and motorcycles]. The remaining was spent in ‘non-hard-to-reach’ areas. The proportion of expenditure in hard-to-reach areas increased in 2013 to be 49% of the total GAVI HSS program expenditure for that year.

It’s generally acknowledged by most in the healthcare sector that an increased investment in outreach services will increase health service coverage, and this report puts this concept beyond doubt. From the statistics of MCH service coverage, which were township-wide data, HMIS data shows overall township coverage rather than disaggregate data at the village level. Such limitation hinders the assessment of direct contribution of GAVI HSS Program. But comparing the 2013 achievements with the 2010 level (prior to the program) we note a significant improvement of a few MCH service coverage. Out of 20 townships, 19 demonstrate increased coverage of antenatal care, 15 demonstrate increased SBA coverage, 11 demonstrate increased TT2 and BCG coverage. The secondary data analysis showed that outreach services to hard-to-reach communities four times a year boosts ANC, SBA, TT2, DTP3 and BCG coverage. Without these outreach services, people residing in hard-to-reach villages would not gain access these services. The total 2,342 sessions of outreach services (in 2012 equivalent to 10 sessions per township per month) is likely to boosts MCH service coverage. The civil unrest in Rakhine State interrupts implementation of routine and GAVI HSS program services significantly.

Due to limited GAVI HSS Program resources, stretched over 180 townships throughout the country, an annual amount of US$ 10,000 was earmarked to each township Hospital Equity Fund, to subsidize the poor in the whole township. With an average population of 160,000 per township and poverty rate of 25.6% in 2010, there are some 40,960 poor people living under national poverty line in each township. Hospital Equity Fund budget is US$ 0.24 per capita poor people in a district. After a full year implementation, by June 2013, the total US$ 149,822 was used benefiting 2,072 inpatients, an average US$ 72 per capita expenditure was noted.

Hospital Equity Fund prevents potential maternal deaths or complication from life threatening obstetric conditions such as obstruct labour, hypertensive
in pregnancies require emergency obstetric care; for example, out of total 1,327 obstetric cases, 743 (56%) were cesarean section and 348 (26%) vaginal delivery. Hospital Equity Fund serves as an innovative first step of a long journey towards more comprehensive financial risk protection that targets the poor and focuses on MCH services to accelerate progress of MDG 4 and 5. The Hospital Equity Fund can and should be scaled-up if the government has more fiscal reserves and a continued political commitment.

Recommendations were proposed.

1. Program management: There is a need for regular township assessment in order to support annual Coordinated Township Health Plan and to judge progress. Regular meetings should be maintained among township health officers, RHCs and Sub-centers. The rapid turnover of township medical officer, through mandatory transfer or rotation every 2-3 years, should be evaluated as to its pros and cons. The continuity of township management is essential for rural health systems development in Myanmar.

2. Outreach services to hard-to-reach villages: This is the vital program component that should be sustained and improved. The government should scale-up supply-side capacities; especially at sub-centers. It indicates significant need for investment in health infrastructure. Adequate supplies of basic equipment, medicines and medical supplies as well as motorbikes for transportation to enable basic health staffs to better perform their functions. Offering outreach services to the hard to reach areas are essential, it should be maintained as an interim measure until static services are gradually established and accessible by them. In view of change in government policy in providing free medicines, the supplies of five items of medicines from GAVI HSS program should be reviewed.

3. Health workforce:
   a. Basic Health Staffs, midwives are the backbone of health delivery systems in Myanmar, they are the most valuable assets in delivering quality MHC and primary health care services to rural people not able to attend hospital and doctor services. The recommendations made by Kyawt Sann Lwin are in line with WHO recommendations for decentralized recruitment of young rural women--especially from hard-
to-reach areas—for midwifery training, where necessary exemption mechanism for recruitment is needed.

b. Health volunteers, traditional birth attendants and auxiliary midwives hold quite a meaningful share of antenatal care and delivery in rural Myanmar. Given their important role and contributions, the MOH and local government should continue to scale up training as well as provide refresher courses, supervision and support by sub-centre and RHC.

4. Financial risk protection: The Hospital Equity Fund should be continued. In line with current policy discourse on universal health coverage by the government, the initial provision of free MCH services to all pregnant women and under five should be the entry point of the long march closer to universal health coverage. It is noted that the government needs to continue to spend more on the health of the population. Note that when universal free MCH service for all is adopted, the burden of means-testing (to verify poor status, as is the current practice in Health Equity Fund) will be annulled.

Financial support by GAVI HSS program is tiny compared to the overall resources requirement in the 20 Townships and at only the amount of 2.3 and 1.2 US$ per capita in hard-to-reach villages in 2012 and 2013 and it seems to spread too thin to many activities and many townships. This is less than a drop of water in the ocean of health needs of population. Nonetheless, it is valuable as it is the only program from International Development Partners on health system strengthening.

Importantly, the GAVI HSS program is an externally funded program, it is not sustainable in the long term, mechanism for longer term sustainability should be considered, such as other development partners as well government budget.
Introduction

The Global Alliance for Vaccines and Immunization (GAVI) supports the strengthening of the Myanmar health system with a four year Health System Support (HSS) program (2011-2015). This program is being undertaken via phased implementation; covering 20 townships in the first year, and 60 townships by 2013. By 2015, it will cover 180 townships. Two international experts were hired, Drs. Viroj Tangcharoensathien and Walaiporn Patcharanarumol, to conduct a program assessment in order to assess and review the overall performance of HSS interventions in the first 20 townships, and suggest strategic recommendations to guide a way forward.

The objectives of the assessment

This assessment was jointly conducted by the two international experts and the Myanmar team from the World Health Organization (WHO) country office and Ministry of Health (MOH) officials between June and August 2013. Although the Myanmar team was involved with the design, coordination and support of the GAVI HSS program, the local and international team had a role to ensure the objectivity of the assessment. The objectives of the joint assessment of the first twenty townships are:

- To review and assess the program implementation process, and the program’s key outputs and outcomes
- To provide policy recommendations for the ongoing HSS program implementation.

This joint assessment applies multiple methods, including a) review of relevant program documents, secondary data analysis, b) primary data collection through a questionnaire survey of Auxiliary Midwives and Community Health Workers, and c) field visits and interviews with key onsite stakeholders in two selected townships. This assessment focuses at the implementation and outputs of the GAVI HSS program. It aims to answer ‘what’ but not ‘how’ and ‘why’ of the GAVI HSS program. Many topics are very important for example governance on the program design but it is outside the scope of this assessment.

Since 2010 national elections, Myanmar is going along with rapid changes in the political system and administrative structures. The new Myanmar government is carrying out many reforms, including health sector. Many policy changes for example
‘people center concept’ are designed and implemented in parallel with GAVI HSS program implementation. The assessment team realizes these changes and takes them into account as context of the Myanmar society but does not plan to measure them as a confounder of the GAVI HSS program implementation.

**Structure of the assessment report**

The assessment report consists of seven chapters.

**Chapter One**: an illustration of the development of the GAVI HSS proposal since its beginning until its approval and preparation for implementation.

**Chapter Two**: an assessment of the GAVI HSS program preparations, implementations, and key outcomes in 20 townships.

**Chapter Three**: an assessment of the trend of maternal and child health (MCH) service coverage between 2008 and 2011 (which is considered as pre-GAVI HSS program) and 2012-2013 (when the HSS program was implemented in 20 townships). This assessment looks into seven indicators: 2nd dose of tetanus toxoid coverage among pregnant women, coverage of antenatal care, coverage of skilled-birth attendance, coverage of BCG, coverage of DTP3, coverage of oral re-hydration solution for under 5 years children, and coverage of sanitation.

**Chapter Four**: an assessment of the implementation and outcome of the hospital equity fund; including its level and profiles of expenditure.

**Chapter Five**: an assessment--using literature reviews and self-administered questionnaire surveys--of the life and works and contributions of midwives, and health volunteers (including auxiliary midwives and community health workers).

**Chapter Six**: a description and assessment of field visits in two selected GAVI HSS townships about how the program was implemented and what are the main strengths and weaknesses.

**Chapter Seven**: this chapter serves as a discussion section, a conclusion section, and a recommendation section (the latter with regards to policy recommendations).
Chapter 1

GAVI HSS proposal development

In recognition of the health system challenges in Myanmar (notably, the limited government investment in health, inadequate human resources, capacity, logistics and infrastructure, and the challenge of sustaining high level of immunization coverage) the Board of Global Alliance for Vaccines and Immunization (GAVI), invited the Myanmar Ministry of Health (MOH) to submit a Health System Strengthening (HSS) proposal in 2005.\(^1\)

By 2008, 51 eligible countries had applied for GAVI HSS support; of which 39 countries (54% of eligible countries), including Myanmar, had been recommended to the GAVI Board for funding.\(^2\) The application for Myanmar GAVI HSS funding was submitted in March 2008 and approved in August 2008.\(^3\) Due to sanctions in Myanmar and GAVI’s requirement for Myanmar to meet their Financial Management Standards, GAVI did not disburse the funds until agreement was reached with WHO and UNICEF in administering GAVI HSS funds in 2011.

The aim of the GAVI HSS proposal from Myanmar is to achieve and sustain increased immunization coverage, through strengthening the capacity of the health system to provide immunization and other related health services at the community level with a focus on improving child and maternal health.\(^4\) The proposal is in line with the National Health Policy of Myanmar focusing on primary health care strengthening, especially in rural areas, through the provision of adequate and equitable distribution of health service to meet the needs of the population.\(^5\)

1.1 GAVI HSS proposal: country ownership and alignments

The GAVI HSS proposal was initially drafted in early 2007. All the GAVI HSS stakeholders in Myanmar agreed that an in-depth health system analysis to would be required in order to identify health service gaps and develop an evidence-based HSS framework for the GAVI HSS proposal.\(^6\) The Ministry of Health (MOH) fully supported the in-depth health system analysis which took about 12 months until the HSS strategy was drafted.

The design process was driven by the Myanmar government which undertook to form coordinating bodies and a technical working group (whilst WHO and UNICEF rendered technical support). It was also aligned with Myanmar Health Vision 2030.
and The Health Sector-National Health Plan 2006-2011. This is a similar set-up to those of other countries of the region (for e.g. Indonesia, whose proposal was aligned with the Indonesian Ministry of Health Strategic Plan, 2004-2009, which aimed to mobilize and to empower the community to live healthy and to improve primary care services). However, in some countries, for example: Cambodia, GAVI HSS is aligned not only with the Health Sector Strategic Plan 2 (2008-2015) but is integrated within a sector-wide approach program collaborating with other major partners including the World Bank, AUSAID, DFID and the AFD, and also works to complement and build upon the GFATM HSS project currently under implementation.

1.2 Gap analysis: health systems barriers

Between August and November 2007, five studies and desk reviews were conducted jointly by Department of Health, Department of Medical Research, and Department of Planning, which included a midwifery Study, studies into community perceptions of health, a review of management effectiveness, an EPI Desk Review and also a mapping of NGO activity in health services support in Myanmar. All these studies culminated in the publishing of a Health System Working Paper entitled ‘Health Systems Barriers to Improving Immunization and MCH coverage in Myanmar’.

In brief, the gap analysis highlighted 3 main barriers in the health system access: (a) service delivery (b) program coordination and (c) human resource management, which focused at the township level and below and on the hard-to-reach areas and the never-reached areas.

1.3 Coordinating bodies and technical working groups

In Myanmar, the National Health Sector Coordinating (NHSC) Body for HSS, headed by the Director General of the Department of Health, was formed in early 2007 with high level officials and technical personnel from multi-sectoral departments as members, to oversee development and implementation of the national health system strengthening strategies. This included activities to ensure alignment of GAVI HSS goals with National Health Plans, including the coordination of inputs from central level departments and from a broad range of stakeholders about how to develop the HSS strategy and draft the proposal.

The terms of reference were clearly defined and meetings of the NHSC were held regularly (at least twice a year--and they may also be convened as required) from September 2007 to guide the drafting of the proposal. The Technical Working
Group (TWG) led by the Planning Division of the Department of Health, was also assigned to provide oversight and to coordinate the HSS application process and to lead the drafting of the proposal/application (with technical inputs from the Planning Division and the Public Health Division of the Department of Health (and other related departments, especially EPI and the State/Regional Health Directors). The Technical Working Group met more frequently, averaging almost once a month during the HSS proposal development. A smaller HSS working group was also formed for conducting special studies, such as a detailed health system analysis, which provided evidence-based input into the GAVI proposal. The members of the NHSC also provided inputs at a meeting on the 26th September 2007; when the proposed HSS objectives, activities, and HSS implementation strategy (outlined at the WHO/SEARO HSS development workshop) were presented.

Similarly, in other countries of the region, various national level bodies (either already-formed or newly-formed) were involved in overseeing the development of the proposal. In the Lao PDR, since 2005, there has been a coordinated effort. Here, the members of the Sector Working Group for Health at the policy level, as well as the operational level, and also the MCH/EPI Technical Working Group, all participated in the development of the application. In Sri Lanka, the Health Master Plan Implementation Steering Committee (which is a part of the National Health Development Committee and which has been operational since 1983) provided oversight for the development of the GAVI HSS proposal.

In Myanmar, the representatives of local NGOs with close links to the government (such as the Myanmar Maternal and Child Welfare Association, Myanmar Red Cross Society, Myanmar Women’s Affairs Association, Myanmar Medical Association, Myanmar Health Assistant Association) participated in the proposal development. Civil Societies, which were very few during that period, and also the private sector, were not involved.

1.4 Strategic planning workshop and approval for submission

The HSS Technical Working Group convened a 5 day workshop in Mandalay in November 2007, with participation from township medical officers, Regional/State Health Directors, consultants from WHO SEARO and UNICEF and national advisors. At this workshop, the findings of the HSS assessment, studies and barriers were presented. Based on clearly-defined priority barriers, a logical framework for the strategy was formulated that linked health systems gaps to the health system
objectives, activities, and monitoring and evaluation. These frameworks were also aligned with the priority gaps and strategies of the National Health Plan. Here also at the workshop, a consensus was reached for the final version of the GAVI HSS application.

A review meeting was held in January 2008, where international NGOs were invited to review and provide comments on the draft proposal. The peer review process commenced in mid-January 2008 and the draft proposal was circulated to all the stakeholders. The proposal was revised and finalized in early February 2008, after taking into account all relevant comments of the reviewers. A meeting of the National Health Sector Coordinating Committee held was on February 15th 2008, where the application which was endorsed then sent for final approval by the Ministers of Health, Finance and Revenue. Subsequently it was submitted to the GAVI Board in March 2008.

1.5 Selection of townships for GAVI HSS program

The criteria for selection of the proposed 180 townships (55% of total townships in the country) were based on them exhibiting DPT 3 coverage below 80% and skilled birth attendance (SBA) less than 60%, including 103 townships with “catch-up immunization” (where services are provided to children under three during 3-4 rounds a year when seasonal accessibility is possible. The first phase, involving twenty townships, was variously chosen because they fulfilled the above criteria and they represented the hilly, plains, coastal and delta regions.

The site selection process in Myanmar GAVI HSS program was similar to that of other countries. For example, in Bangladesh, 13 districts were chosen where immunization coverage rates were low, the community clinics were in poor condition and lacked of equipment, the staffing was inadequate, and the clinics were located in remote areas with few roads or areas only accessible by boat.

1.6 Concluding remarks

The content of the Myanmar GAVI HSS proposal is driven by evidence through gaps analysis of barriers to primary health care (with special focus on immunization and maternal and child health services). It is also developed in line with national health policy and plans, with strong engagement from multiple stakeholders including various relevant Departments of the MOH, International Development Partners, and NGOs.
Chapter 2
Preparations, implementations and key outcomes in 20 townships

2.1 Background

GAVI HSS program covers four years: mid-2011 to mid-2015. GAVI supports Myanmar through three different windows: introduction of new and underused vaccines, immunization service support and health systems strengthening (HSS). GAVI HSS is designed to support three program areas, see table 2.1

**Table 2.1 Status of implementation by programmatic areas**

<table>
<thead>
<tr>
<th>Program areas</th>
<th>Implementing partners</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall HSS strategic interventions</td>
<td>MOH &amp; WHO</td>
<td>Implementation started in 20 townships since early 2012 and expanded to 60 townships by 2013.</td>
</tr>
<tr>
<td>Procurement and supply of basic drugs and vaccines</td>
<td>MOH and UNICEF</td>
<td>Implementation started in 20 townships since early 2012 and expanded to 60 townships by 2013.</td>
</tr>
<tr>
<td>Infrastructure (construction of sub rural health centers)</td>
<td>Myanmar Red Cross is Identified to construct the facilities.</td>
<td>GAVI approved Proposal from MRCS and Grant Agreement signing under process.</td>
</tr>
</tbody>
</table>

HSS Fund, approved by GAVI Board, was disbursed to and managed by Myanmar MOH and principle development partners (namely WHO and UNICEF). In addition, GAVI is in the process of signing a Grant Agreement with Myanmar Red Cross Society, a local NGO, and Ministry of Health to implement construction of sub-Rural Health Centers.

A significant portion of the HSS programme in Myanmar is implemented jointly by WHO and MOH following the conditions mentioned in Aide Memoire signed between WHO-GAVI-MOH. UNICEF is responsible for procurement of supplies of basic medicines and kits for the GAVI-supported townships.
The National Health Sector Coordinating (NHSC) body, established in 2007, was mandated to support GAVI HSS proposal development and to oversee the implementation of HSS program. The NHSC, chaired by the Director General of Department of Health and with members drawn from the MOH and in-country development partners, meet on a quarterly basis.

### 2.2 Goals and strategic activities

GAVI HSS program aims to accelerate DTP coverage for children (under 12 months old) from 70% to 90% at a national level, and increase the assistance of Skilled Birth Attendants (SBA) from 67.5% to 80% (in HSS targeted townships) in the 180 priority townships by 2015. According to GAVI proposal, these outcomes are expected to achieve through management strengthening, resourcing, implementing and monitoring of coordinated townships health Plans (55% of all townships), staffing of rural health centers in 90 townships (28% of all townships) in line with national standards. To achieve these goals, implementation is expanded in a phased manner; activities were implemented in 20 townships in the 1st year (2011-2012) and by end of 2013, it was expanded to 60 townships, and is planned to cover 180 townships by 2015. See Figure 2.1.

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**Figure 2.1 Flow Diagram for the GAVI HSS Program**

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A comprehensive and inter-related set of strategic activities includes the following interventions:

- Assessments, including data quality and service quality assessment. This exercise verifies if routine reporting, such as EPI and MCH services, is valid and reliable.
- Develop a coordinated Township Health Plan specific for each township.
- Provide free health service packages (including EPI, MCH nutrition & Water Sanitation) by issuing additional daily allowances to groups of Basic Health Staff.
- Supply basic items, including midwifery kits, basic medical equipment, clean delivery kits, and office equipment for Township Hospitals and rural health centers,
- The drafting of a National Strategy on health sector human resources, research on rural retention of heath workforce, and training and recruitment of community health workers,
- Pilot studies of demand-side financial initiatives such as Hospital Equity Fund and Maternal and Child Health Voucher Scheme.

See Figure 2.2 below describing major activities conducted prior to the GAVI HSS program and its program implementation until 2013.

**Figure 2.2** chronological events of preparation and implementation of the GAVI HSS Program 2010-2013
2.3 Township Health System Assessment

Health system assessments were conducted in all 20 HSS Townships using the Township Assessment Guidelines to identify and assess health delivery and health workforce gaps, with particular focus on the hard-to-reach areas. Such assessment provides evidence for the development of a Coordinated Township Health Plan, specific for each Township.

Assessment was conducted by the team from DOH, DHP, WHO, and by Health system strengthening Officers and Township Medical Officers. Four main research instruments were used for the health system assessment as follows:

- A facility and management questionnaire for Townships and Rural Health Centers (RHCs)
- Infrastructure, essential drug, and equipment questionnaires and inventories.
- Mapping of hard-to-reach areas
- Use of questionnaires and registers for assessment of household-level data and services.

Surveyors applied a range of research methods in order to collect and analyze the health system information. Examples include: a) collection and analysis of quantitative health system data (such as infrastructure, human resources ratios, population data, essential drugs), b) in depth interviews with health staff regarding availability and accessibility of services in hard-to-reach areas, c) Focus Group Discussion (FGD) with Township Health Committee (THC) to understand issues affecting community participation, d) mapping hard-to-reach areas (to estimate the number of target populations, barriers to health services such as physical, social and economic), e) conducting Data Quality Assurance (DQA) and Service Quality Assurance (SQA) in 3 RHC (one easy to reach and to hard-to-reach RHC) to check consistency of data according to data flow across tiers of health facilities (sub-centre, RHC and THC) and consistency of data between data in the registers and clients in the community through door to door home visit and interview, as well as the assessment of quality of services provided by basic health staffs.
2.4 Health workforce situations

Assessment includes number and distribution of health workers in the RHC and Sub-center and the population covered by them in the catchment areas. Out of the total 108 RHC in 20 townships, only 8 RHC (7%) had reached the standard of health workforce, namely 13 health professionals; 23 RHC (21%) had nine health professionals and the remaining 77 RHC (72%) had less than 9 professionals, see Figure 2.3. Note also that these 108 RHC serves the total 3.023 million in 20 township, on average one RHC covers around 28,000 population. The workforce capacity in RHC is very stretched.

![Diagram](image)

Figure 2.3 HC with different health workforce standards

2.5 Population to midwife ratio

Even with the limited health workforce, maldistribution was observed. Of the total 108 RHC, only 44% of midwives are responsible for less than 4000 people per midwife, 50% of them are responsible for a range of 4,000-10,000 population per midwife; while 6% of the them covered more than 10,000 populations per midwife, see Figure 2.4. The huge workload shouldered by midwives should be shared and spread to other BHS such as HA, LHV, PHS2 and by some neighborhood midwives. Midwives also have problems in tracking and offering health services to the mobile population who are working and residing in the farms and rubber plantations.
Figure 2.4 Population to midwife ratio

Table 2.2 Population to midwife ratio by townships

<table>
<thead>
<tr>
<th>Township</th>
<th>Township Population</th>
<th>Midwives</th>
<th>Population per one midwife</th>
<th>Midwife per 1000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bamaw</td>
<td>108,021</td>
<td>27</td>
<td>4,001</td>
<td>0.25</td>
</tr>
<tr>
<td>2. Shwegu</td>
<td>83,718</td>
<td>23</td>
<td>3,640</td>
<td>0.27</td>
</tr>
<tr>
<td>3. Demawsoe</td>
<td>77,336</td>
<td>41</td>
<td>1,886</td>
<td>0.53</td>
</tr>
<tr>
<td>4. Hlaingbwe</td>
<td>257,688</td>
<td>47</td>
<td>5,483</td>
<td>0.18</td>
</tr>
<tr>
<td>5. Hakha</td>
<td>40,452</td>
<td>24</td>
<td>1,686</td>
<td>0.59</td>
</tr>
<tr>
<td>6. Ye U</td>
<td>126,579</td>
<td>32</td>
<td>3,956</td>
<td>0.25</td>
</tr>
<tr>
<td>7. Myeik</td>
<td>273,062</td>
<td>32</td>
<td>8,533</td>
<td>0.12</td>
</tr>
<tr>
<td>8. Yedarshay</td>
<td>198,795</td>
<td>31</td>
<td>6,413</td>
<td>0.16</td>
</tr>
<tr>
<td>9. Tharyarwaddy</td>
<td>153,828</td>
<td>33</td>
<td>4,661</td>
<td>0.21</td>
</tr>
<tr>
<td>10. Kyaintong</td>
<td>161,162</td>
<td>34</td>
<td>4,740</td>
<td>0.21</td>
</tr>
<tr>
<td>11. Htilin</td>
<td>50,848</td>
<td>28</td>
<td>1,816</td>
<td>0.55</td>
</tr>
<tr>
<td>12. Lewe</td>
<td>221,535</td>
<td>38</td>
<td>5,830</td>
<td>0.17</td>
</tr>
<tr>
<td>13. Pyinnmar</td>
<td>155,745</td>
<td>17</td>
<td>9,161</td>
<td>0.11</td>
</tr>
<tr>
<td>14. Mudon</td>
<td>213,445</td>
<td>35</td>
<td>6,098</td>
<td>0.16</td>
</tr>
<tr>
<td>15. Thahtan</td>
<td>250,641</td>
<td>43</td>
<td>5,829</td>
<td>0.17</td>
</tr>
<tr>
<td>16. Nyaungshwe</td>
<td>166,120</td>
<td>35</td>
<td>4,746</td>
<td>0.21</td>
</tr>
<tr>
<td>17. Hsipaw</td>
<td>190,341</td>
<td>19</td>
<td>10,018</td>
<td>0.10</td>
</tr>
<tr>
<td>18. Kawhmu</td>
<td>141,530</td>
<td>24</td>
<td>5,897</td>
<td>0.17</td>
</tr>
<tr>
<td>19. Ngaputaw</td>
<td>152,468</td>
<td>29</td>
<td>5,258</td>
<td>0.19</td>
</tr>
<tr>
<td><strong>Twenty townships</strong></td>
<td><strong>3,023,314</strong></td>
<td><strong>592</strong></td>
<td><strong>5,107</strong></td>
<td><strong>0.20</strong></td>
</tr>
</tbody>
</table>

On average, one midwife is responsible for more than 5 thousand people—ranging from 1,816 in Htilin to 10,000 in Hsipaw; see Table 2.2. Noting this five-fold difference, the balance of midwife allocation across townships needs to be reviewed and corrective measures are urgently needed. An average of 0.2 midwife per 1000 population on the last column is far below the global benchmark of 2.28 doctors/nurses and midwife per 1000 people[^14].

2.6 Health workforce cadre-mix

While the standard ratio of midwife to Public Health Supervisor II, is one to one, in reality, the ratio in these 20 townships is ten to one. Suggestions from the Township Medical Officers were to create balance between the two categories by filling up the Public Health Supervisory II positions and allowing PHS II to share the workload of midwives. See Table 2.3. Midwives have become multipurpose health workers providing immunization, environmental sanitation, nutrition in addition to their primary midwifery function. To release the work burden apart from midwifery, more relevant health workers, such as the government has been taken this issue PHS II should be recruited to reach the standard norm of 1:1. The midwife to PHS II ratio in table 2.3 was from the township health system assessment in 2010 for the first 10 townships and 2011 for the second 10 townships. During 2013, the government has seriously implemented the policy in order to meet the standard of 1:1.

In addition to its support at the township level, the program influenced strategic policy change at the national level through the development of Health workforce strategic plan 2012-2017.

Table 2.3 Midwife to PHS2 ratio by Township

<table>
<thead>
<tr>
<th>Township</th>
<th>Midwives</th>
<th>PHS II</th>
<th>Midwife to PHS II ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kawmhu</td>
<td>24</td>
<td>1</td>
<td>24:1</td>
</tr>
<tr>
<td>Bamaw</td>
<td>27</td>
<td>1</td>
<td>27:1</td>
</tr>
<tr>
<td>Hakha</td>
<td>24</td>
<td>1</td>
<td>24:1</td>
</tr>
<tr>
<td>Htilin</td>
<td>28</td>
<td>1</td>
<td>28:1</td>
</tr>
<tr>
<td>Demawsoe</td>
<td>41</td>
<td>5</td>
<td>8:1</td>
</tr>
<tr>
<td>Lewe</td>
<td>38</td>
<td>4</td>
<td>9:1</td>
</tr>
<tr>
<td>Maungtaw</td>
<td>32</td>
<td>2</td>
<td>16:1</td>
</tr>
<tr>
<td>Ngaputaw</td>
<td>29</td>
<td>1</td>
<td>29:1</td>
</tr>
<tr>
<td>Yedarhlay</td>
<td>31</td>
<td>2</td>
<td>15:1</td>
</tr>
<tr>
<td>Thayarwaddy</td>
<td>33</td>
<td>15</td>
<td>2:1</td>
</tr>
<tr>
<td>Pyinmanar</td>
<td>17</td>
<td>5</td>
<td>3:1</td>
</tr>
<tr>
<td>Naung Shwe</td>
<td>35</td>
<td>3</td>
<td>12:1</td>
</tr>
<tr>
<td>Hsipaw</td>
<td>19</td>
<td>2</td>
<td>10:1</td>
</tr>
<tr>
<td>Hlaing Bwe</td>
<td>47</td>
<td>1</td>
<td>47:1</td>
</tr>
<tr>
<td>Kyaing Tong</td>
<td>34</td>
<td>2</td>
<td>17:1</td>
</tr>
<tr>
<td>Shwegu</td>
<td>23</td>
<td>0</td>
<td>23:0</td>
</tr>
<tr>
<td>Mudon</td>
<td>35</td>
<td>10</td>
<td>4:1</td>
</tr>
<tr>
<td>Ye U</td>
<td>32</td>
<td>4</td>
<td>8:1</td>
</tr>
<tr>
<td>Myelk</td>
<td>32</td>
<td>2</td>
<td>16:1</td>
</tr>
<tr>
<td>Thaton</td>
<td>43</td>
<td>0</td>
<td>43:0</td>
</tr>
<tr>
<td><strong>Total 20 townships</strong></td>
<td><strong>624</strong></td>
<td><strong>62</strong></td>
<td><strong>10:1</strong></td>
</tr>
</tbody>
</table>
2.7 Mapping hard-to-reach areas

This mapping exercise aims to identify hard-to-reach areas in these 20 townships (and their physical, economic and/or social nature, as experienced by the population as they sought access to health services), see Figure 2.5 below.

Physical Barriers were evident in Hakha, Hsipaw, Ye U, Htilin and Hlaingbwe. However, Maungdaw, Hakha, Hlaingbwe, and Hsipaw had more social barriers—in particular communication and language barriers—while some religious beliefs also restrain certain communities from seeking health services. Economic barriers were profound in all twenty Townships, with highest-level problems in Myeik and lowest-level problems in Nyaung Shwe. This information is based on Focus Group Discussion with the BHS, including midwives from the sub RHC.

![Graph showing hard-to-reach areas](image)

**Figure 2.5** Physical, economic and social barriers to care in 20 Townships

Climate and seasonal factors significantly affect physical access to health services. For example, in Shwe ku, during the rainy season, streams are swollen by mountain run-off (taung kya chaung) which prevents communities from travelling from one place to another. During the dry season, roads become dusty, sandy and not feasible to reach by motorbikes. In such conditions, midwives may have to walk three to four hours to reach a village for immunization procedures, see Figure 2.6.
2.8 Source of health financing

There are three main sources of financing existing in the twenty townships. 1) The Government budget mainly finances healthcare worker’s salary, 2) numerous projects are financed mostly by international development partners (with specific objectives, mandates and timelines), and 3) household payments for such as expenses as the Revolving Drug Fund, Community Cost-Sharing (government-sponsored user-pay services provided within public facilities). There are also Trust Funds and Donations which support health services in some cases.

Government is the major source of financing; comprising 68.4 % of the health budget in the 20 townships that we studied (followed by community cost-sharing at 13.6%), see Figure 2.7. However, the government budget is used mainly for salaries and not for other costs such as drugs and equipment; for which the patients have to pay through community cost-sharing and informal payments. Note that the National Health Account in Myanmar 2011, showed that public source of financing accounted for 13.6% of Myanmar’s Total Health Expenditure (THE), whilst private sources accounted for 79.3% of THE, and donor sources accounted for 7.1% of THE. In turn, Out-of-pocket payments--OOP--by householders accounted for 92.7% of private sources (or 73.5% of THE). In surveying the 20 Townships, there is no expenditure by household in the private sector.
Figure 2.7 Source of health financing in 20 townships

Note: Household out of pocket does not cover spending in private sector.

2.9 Health infrastructure and support systems

Out of the total 115 RHC and 617 Sub-centers in the 20 townships, many required major renovation. The age of these health infrastructure ranges from two to 45 years. In 117 sub centers (19%), there is no building for service provision at all, and midwives have to offer services in the village administration offices or in the house of the village head. There are no living quarters for staff, and some midwives must stay in the house of community members. Realizing this, Government is recently planning to invest in construction of health facilities. However, there is still need to mobilize additional resources for health infrastructure. Proposal for construction of 30 sub-rural health centers through GAVI HSS is underway.

The majority of the health facilities have no electricity. Water is usually sourced from shallow wells or ponds in the vicinity. Sanitary latrines were present but their infrastructure was inadequate. Transport facilities for midwives to support Outreach service were also inadequate. Some midwives were provided with bicycles from different projects (which were more than 10 years old) but many were not functional. Many midwives purchased their own motorcycle with no maintenance and fuel cost subsidized by the government.
2.10 Data quality and service quality assessment

Data quality and service quality assessment was conducted alongside the township health system assessment. It was done in two segments, 10 townships covered in 2010 and another 10 in 2011.

**Figure 2.8** DQA: verification of register with home visit and by service type: first batch of 10 townships

When attempting to verify the names of clients in the RHC records (registers) against home visits by DQA team in the first 10 township (see figure 2.8) three percent of clients could not be identified by the home visit team. So, in all, only 97% were identified. Of these 97% identified clients, 13% reported that no services were rendered to them; while 84% confirmed that services were given. DTP3, TT2 and delivery by skilled birth attendants were not delivered to individuals that were mismatched with registered data at RHC.

**Figure 2.9** DQA: verification of register with home visit and by service type: second batch of 10 townships
The results of DQA in the second batch of ten townships, see Figure 2.9, was less favorable than the first batch. Of the total 96% of clients able to be identified by DQA team, 16% reported no services offered; for which DTP3 and under five children services were the most common services not offered, a mismatch between client interviews and registers.

Table 2.4 Summary DQA, verification factor of four steps of data comparisons.

<table>
<thead>
<tr>
<th>Township</th>
<th>Township and RHC</th>
<th>RHC and SC reports</th>
<th>SC reports and register of MW</th>
<th>Sample from register of MW and Clients at field visit</th>
<th>Overall data quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>First batch of 10 townships</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>84.1%</td>
<td>84.1%</td>
</tr>
<tr>
<td>Second batch of 10 townships</td>
<td>100%</td>
<td>100%</td>
<td>67.2%</td>
<td>79.8%</td>
<td>53.6%</td>
</tr>
<tr>
<td>Total 20 townships</td>
<td>100%</td>
<td>100%</td>
<td>83.6%</td>
<td>81.9%</td>
<td>68.5%</td>
</tr>
</tbody>
</table>

Four steps of data quality are demonstrated in Table 2.4. Data between RHC and township and between SC and RHC are consistent (100% quality), data between sub-centre report and the registries by midwives in the 2nd batch was only 67.2%. The consistency between the sample from registry of midwives and clients in field visit are 81.9% (84.1% and 79.8% for the first and second batch). The overall data quality of first and second batch was 84.1% (0.841*1*1*1) and 53.6% (0.672 * 0.798 *1 *1). The overall verification factor of the twenty townships is 68.5% (0.819 * 0.836 * 1 *1). While the agreed benchmark verification factor is 80% for acceptable quality of data, this needs significant improvement to enable a good quality of data, a good quality of reporting and management, and a good quality of service provision.

2.11 Coordinated Township Health Plans (CTHP)

The Coordinated Township Health Plans (CTHP) were developed based on the assessment findings using CTHP guidelines to reorient health service delivery towards be more coordinated between public health intervention and curative services. CTHP aims to improve coverage of skilled birth attendant and third dose of Pentavalent vaccine (DTP-HepB and Hib) from the base line in 2011. Four key steps of Coordinated Township Health Plan are shown in Figure 2.10. Note that CTHP lists the annual activities for Comprehensive township health system strengthening and estimates total resource needs and notes available budget from financing sources of MOH and GAVI and highlights resource gap. Huge resource gap around 51% is noted
to cover everything that is planned in the comprehensive CTHP. Hence, priority of CTHP is focused on strengthening outreach services to hard to reach areas. CTHP introduces a coordinated approach of delivering package of services (EPI, MCH, Nutrition, Environmental Health) by team of basic health workers to the hard to reach areas. This coordinated approach allowed the Basic Health Staffs from easy to reach areas to support the basic health staffs placed in hard to reach areas in delivering the outreach services. CTHP then calculates actual costs for delivering the planned number of outreach services to cover hard to reach areas within the townships.

According to the planned schedule and cost calculation in CTHP, Outreach Services were implemented by respective townships. In 2012, activities were implemented in 19 of the 20 townships, as activities were put on halt in Maungdaw, Rakhine state due to unrest in that township.

**Figure 2.10** Four key steps in deriving a coordinated township health plan

### 2.12 Monitoring and Evaluation system

Eighteen Health System Strengthening Officers (HSSOs) were recruited and deployed by WHO; 14 at the township level and 4 at the central level. HSSOs work very closely with the State and township health authorities. They conduct field visits to monitor and supervise the delivery of Outreach services in hard-to-reach areas, and they also supervise the implementation of the hospital equity fund and submit monthly...
reports to the MOH. Since these HSSO’s are recruited by WHO, they also submit their duty/travel reports to WHO for every visit they make.

TMOs, Health Assistants and Lady Health Visitors also make monthly visits to the RHCs and Sub-RHCs to track progress status of package of services delivery (EPI, MCH, Nutrition and Environmental Health) in hard-to-reach areas. Furthermore, random monitoring visits are made by the Planning Unit, Department of Health, MOH, to review the status of implementation in the townships.

The fund release for each activity from WHO to MOH is subject to receipt of proposals (APW and DFC) by WHO from the MOH. Proposals must detail every activity and highlight the timeline and budget breakdown for their implementation. The GAVI HSS technical unit in WHO monitors the implementation status of each activity in line with timelines and budgets as highlighted in the proposal. WHO does not accept any delay in activity implementation and deviation in budget use by MOH, unless proper technical justification is provided by the central team of the MOH.

Service delivery is monitored through monthly and quarterly review meetings held at the townships. Mid-term assessments with support of external experts are organized by WHO and MOH to review and advise the overall program process, progress and guide way forward. The National Health Sector Coordination Committee oversees the overall implementation of HSS activities. Minutes of NHSC meetings are recorded and shared with an Independent Review Committee at the GAVI HQ in Geneva, which approves annual funding for countries based on the annual progress report submitted by recipient countries.

### 2.13 Number of outreach services in 2012

A total of 2,342 Outreach services were provided to population in hard-to-reach areas in 19 townships during 2012, see Table 2.5. The services included: a) immunization of children, including zero dose children (who had not been immunized at all since birth), b) maternal and child health services, c) nutritional promotion, and d) environmental health advocacy. These Outreach services were provided on site by teams of 3 to 4 Basic Health Staff. They conducted all the activities necessary at the village level. Note on average, there are 123 sessions (2342 / 19 township) of Outreach services per township, or 10 sessions per month per township. Number of visits depended on the number of hard to reach areas in a township identified in the CTHP.
Table 2.5 Number of sessions of Outreach service offered to hard-to-reach areas in 2012

<table>
<thead>
<tr>
<th>ID</th>
<th>Township</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ngaputaw</td>
<td>122</td>
</tr>
<tr>
<td>2.</td>
<td>Yedershae</td>
<td>159</td>
</tr>
<tr>
<td>3.</td>
<td>Tharyarwaddy</td>
<td>169</td>
</tr>
<tr>
<td>4.</td>
<td>Hakha</td>
<td>73</td>
</tr>
<tr>
<td>5.</td>
<td>Bamaw</td>
<td>75</td>
</tr>
<tr>
<td>6.</td>
<td>Shwegu</td>
<td>86</td>
</tr>
<tr>
<td>7.</td>
<td>Demawsoe</td>
<td>88</td>
</tr>
<tr>
<td>8.</td>
<td>Hlaingbwe</td>
<td>109</td>
</tr>
<tr>
<td>9.</td>
<td>Htiiin</td>
<td>109</td>
</tr>
<tr>
<td>10.</td>
<td>Lewe</td>
<td>253</td>
</tr>
<tr>
<td>11.</td>
<td>Pyinmanar</td>
<td>114</td>
</tr>
<tr>
<td>12.</td>
<td>Mudon</td>
<td>127</td>
</tr>
<tr>
<td>13.</td>
<td>Thaton</td>
<td>123</td>
</tr>
<tr>
<td>14.</td>
<td>Ye U</td>
<td>212</td>
</tr>
<tr>
<td>15.</td>
<td>Kyaing Tong</td>
<td>56</td>
</tr>
<tr>
<td>16.</td>
<td>Hsipaw</td>
<td>103</td>
</tr>
<tr>
<td>17.</td>
<td>Naung Shwe</td>
<td>156</td>
</tr>
<tr>
<td>18.</td>
<td>Myeik</td>
<td>83</td>
</tr>
<tr>
<td>19.</td>
<td>Kawhmuy</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>2,342</strong></td>
</tr>
</tbody>
</table>

It should be noted that there was civil unrest in Muangdaw township in Rakhine State; so it was not possible to continue the GAVI HSS program there as planned.

During the Outreach services, the BHS conducted a series of activities, including: antenatal care, post natal care, immunization, monitoring the weight of under-five year olds, and environmental sanitation activities (such as examination of latrine and water sources) and also health education.
Figure 2.11 Profiles of outreach services 2012

Figure 2.11 shows the profile of Outreach services: a total of 62,683 people benefited from the Outreach services—the majority from the MCH service (EPI 26%, ANC 24%, PNC 5%), the remaining 45% from general treatment (of which 10% are services for under-five year old children, and 35% for the general population).

A total of 90,064 children under five were weighed for nutritional monitoring by Basic Health staff during the Outreach package. BHS found 0.41% and 10.74% suffered severe and moderate malnutrition for which BHS provided health education to caregivers, see Figure 2.12.

Figure 2.12 Monitoring nutritional status of children under five, 2012

During the Outreach package of services, health education on various topics was
given to the community. Key topics included, for example, education about MCH,
contraceptives, EPI, nutrition, environmental health, and communicable and non-
communicable diseases.

2.14 A large gap between total resource needs and availability

The CTHP, a bottom-up micro-level planning administration at township level,
provided an estimate of the total resource needs for implementing comprehensive
health system strengthening activities for the whole township to improve skilled
birth attendance rate and immunization coverage (measured by DPT3). Eight
major groups of activities are described in Box 2.1. These activities are essential in
strengthening health services at township level but there roll-out into the township
is also thought to be very ambitious.
Box 2.1 Eight groups of HSS activities,

1. Health planning and management
   - Annual planning meeting
   - Quarterly Review
   - Supervision of Outreach services: daily allowance and transport allowance
   - Conduct data quality and service quality assurance for Central, State and Division levels
   - Administrative Cost for Township Health Department

2. Service delivery
   - Package of Service (hard-to-reach) daily and transport allowance for BHS
   - Routine Outreach services
   - EPI Surveillance
   - ARI treatment
   - Maternal death review (30,000 Kyat per case, and expected cases are 10 per township)
   - Neonatal & child death review
   - Salary for all Township Health Department

3. Human Resource Development
   - Capacity Building program for MCH, Nutrition
   - MEP five day Training
   - Health systems research 3 day training for all HA and hospital staff

4. Community participation and communication
   - THC /RHC Committee Meetings (as per quarterly meetings)
   - THC Advocacy programs (estimated 3 sessions per year for 10 persons)
   - Training and functioning of VHW(AMW/ CHW/ CSG) in hard-to-reach areas
   - AMW 6 months
   - CHW 30 days
   - CSG 3 – 7 days
   - AMW Refresher Training (50 per year) -5 days
   - CHW Refresher Training (50 per year) - 5 days
   - Amplifier for training

5. Infrastructure
   - Construction and renovation of new RHC
   - Renovation and renovation of RHC
   - Communication Equipment at sub-centers (SH, RHC, S-RHC)
   - Communication running cost (10,000 Kyat per phone per month)

6. Medicines and equipment
   - RHC drug Kit (UNICEF kit), two supplies per year
   - Sub-centre drug Kits, one supply per year
   - Clean Delivery Kits for RHC and sub centre (5 CDK per midwife per month)
   - Cold Chain boxes
   - HA Kit
   - Midwife Kit
   - PHS 2 Kit

7. Transport
   - Bicycle
   - Motorcycle
   - Boat for supervision and referral
   - Ambulance

8. Health Financing and Financial Administration
   - Health financing scheme tested
   - Health financing scheme implemented
   - Emergency Referral Fund (8,000,000 kyats – covering transport and treatment costs for the poor)
     (approx 80 patients complemented by other sources of fund including trust fund)
   - Revolving Drug Fund
   - Community Cost Sharing
   - Fund for Poor Pregnant Woman (15 persons)
   - Computer/Printer Township level
Based on this program of activities, each township participated in drafting the CTHP which total resource requirement were estimated, Table 2.6 describes total resource needs (compared to resources available) from two sources: the MOH and the GAVI HSS program for 2012.

<table>
<thead>
<tr>
<th>For year 2012</th>
<th>Resource needs, million Kyat</th>
<th>Resources available by sources, million Kyat</th>
<th>Shortfall between available and needs, Million Kyat</th>
<th>Shortfall, % of total needs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gov’t</td>
<td>GAVI</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>1 Bamaw</td>
<td>448.9</td>
<td>209.4</td>
<td>70.8</td>
<td>280.2</td>
</tr>
<tr>
<td>2 Shwe Gu</td>
<td>286.5</td>
<td>55.9</td>
<td>71.1</td>
<td>127.0</td>
</tr>
<tr>
<td>3 Demawoie</td>
<td>244.2</td>
<td>8.3</td>
<td>70.4</td>
<td>78.7</td>
</tr>
<tr>
<td>4 Hlaing Bwe</td>
<td>314.1</td>
<td>78.6</td>
<td>72.6</td>
<td>151.3</td>
</tr>
<tr>
<td>5 Hakha</td>
<td>331.9</td>
<td>78.6</td>
<td>71.7</td>
<td>150.4</td>
</tr>
<tr>
<td>6 YeOo</td>
<td>327.7</td>
<td>78.6</td>
<td>70.3</td>
<td>148.9</td>
</tr>
<tr>
<td>7 Myawk</td>
<td>461.3</td>
<td>226.1</td>
<td>69.4</td>
<td>295.5</td>
</tr>
<tr>
<td>8 Yedarshay</td>
<td>313.0</td>
<td>78.6</td>
<td>71.6</td>
<td>150.3</td>
</tr>
<tr>
<td>9 Tharrawaddy</td>
<td>313.2</td>
<td>78.6</td>
<td>70.2</td>
<td>148.8</td>
</tr>
<tr>
<td>10 Htilin</td>
<td>322.1</td>
<td>78.5</td>
<td>70.8</td>
<td>149.5</td>
</tr>
<tr>
<td>11 Lewe</td>
<td>317.6</td>
<td>78.6</td>
<td>70.7</td>
<td>149.3</td>
</tr>
<tr>
<td>12 Pyinnmar</td>
<td>311.6</td>
<td>78.6</td>
<td>71.5</td>
<td>150.1</td>
</tr>
<tr>
<td>13 Mudon</td>
<td>354.3</td>
<td>82.5</td>
<td>71.9</td>
<td>154.4</td>
</tr>
<tr>
<td>14 Thaton</td>
<td>310.2</td>
<td>78.6</td>
<td>69.8</td>
<td>148.5</td>
</tr>
<tr>
<td>15 Maung Daw</td>
<td>314.4</td>
<td>78.6</td>
<td>70.0</td>
<td>148.6</td>
</tr>
<tr>
<td>16 Kyraing Tung</td>
<td>314.5</td>
<td>78.6</td>
<td>72.0</td>
<td>150.6</td>
</tr>
<tr>
<td>17 Hsipaw</td>
<td>339.1</td>
<td>88.2</td>
<td>72.7</td>
<td>160.9</td>
</tr>
<tr>
<td>18 Nyaung Shwe</td>
<td>314.3</td>
<td>78.6</td>
<td>69.6</td>
<td>148.2</td>
</tr>
<tr>
<td>19 Kwarthmu</td>
<td>308.0</td>
<td>78.6</td>
<td>70.1</td>
<td>148.8</td>
</tr>
<tr>
<td>20 Ngaputaw</td>
<td>305.1</td>
<td>78.6</td>
<td>69.8</td>
<td>148.4</td>
</tr>
<tr>
<td>All 20 Townships</td>
<td>6,552.2</td>
<td>1,771.2</td>
<td>1,417.9</td>
<td>3,189.2</td>
</tr>
</tbody>
</table>

|                          | 56%                       | 44%                         | 100%                                       |

Table 2.6 Total resource needs, resource available and shortfall; CTHP 2012

Source: Analysis from coordinate township health plan 2012

In 2012, total resource needs for 20 township were 6,552 billion Kyat of which 3,189 billion Kyat was planned available, there was a shortfall of 51% of total needs. MOH budget mainly for staff salary had 56% share, while GAVI HSS has 44% share mostly for program activities and additional incentives such as daily and travel allowance for Outreach services by BHS.

Of the total GAVI HSS spending US$ 2,437 million were spent in 2012 including US$ 0.9 million (37%) on hard-to-reach areas [such as supervision activities, training of AMW/CHW including kits, continue training of BHS, Health Systems Strengthening officers, data quality assessment, support in producing CTHP and motorcycles]. The remaining was spent in ‘non-hard-to-reach’ areas. The proportion of expenditure in hard-to-reach areas increased in 2013 to be 49% of the total GAVI HSS program expenditure for that year.
Table 2.7 Hard-to-reach villages and populations, 2011

<table>
<thead>
<tr>
<th>Township</th>
<th>Total Township Population</th>
<th>Hard-to-reach population</th>
<th>HTR pop. %</th>
<th>Total villages</th>
<th>HTR villages</th>
<th>HTR village, % total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ngaputaw</td>
<td>152,468</td>
<td>9,921</td>
<td>6.5</td>
<td>418</td>
<td>55</td>
<td>13.2</td>
</tr>
<tr>
<td>Yedarshay</td>
<td>198,795</td>
<td>44,344</td>
<td>22.3</td>
<td>320</td>
<td>114</td>
<td>35.6</td>
</tr>
<tr>
<td>Tharyarwaddy</td>
<td>153,828</td>
<td>10,433</td>
<td>6.6</td>
<td>264</td>
<td>58</td>
<td>22.0</td>
</tr>
<tr>
<td>Hakha</td>
<td>40,452</td>
<td>12,150</td>
<td>30.0</td>
<td>68</td>
<td>29</td>
<td>42.6</td>
</tr>
<tr>
<td>Barnaw</td>
<td>108,021</td>
<td>6,304</td>
<td>5.8</td>
<td>92</td>
<td>25</td>
<td>27.2</td>
</tr>
<tr>
<td>Shwegu</td>
<td>83,718</td>
<td>8,029</td>
<td>9.6</td>
<td>85</td>
<td>28</td>
<td>32.9</td>
</tr>
<tr>
<td>Demawsoe</td>
<td>77,555</td>
<td>9,782</td>
<td>12.6</td>
<td>173</td>
<td>35</td>
<td>20.5</td>
</tr>
<tr>
<td>Halingwwe</td>
<td>257,688</td>
<td>24,360</td>
<td>9.5</td>
<td>382</td>
<td>102</td>
<td>26.8</td>
</tr>
<tr>
<td>Htilin</td>
<td>56,848</td>
<td>23,586</td>
<td>47.2</td>
<td>92</td>
<td>57</td>
<td>62.0</td>
</tr>
<tr>
<td>Leewe</td>
<td>221,535</td>
<td>31,937</td>
<td>14.4</td>
<td>261</td>
<td>14</td>
<td>5.4</td>
</tr>
<tr>
<td>Pyinmanar</td>
<td>155,745</td>
<td>8,553</td>
<td>5.5</td>
<td>144</td>
<td>42</td>
<td>29.2</td>
</tr>
<tr>
<td>Mudon</td>
<td>213,445</td>
<td>2,429</td>
<td>1.1</td>
<td>54</td>
<td>0</td>
<td>0.0</td>
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<tr>
<td>Thahton</td>
<td>290,641</td>
<td>17,162</td>
<td>6.8</td>
<td>197</td>
<td>8</td>
<td>4.1</td>
</tr>
<tr>
<td>Ye U</td>
<td>126,579</td>
<td>24,523</td>
<td>19.1</td>
<td>183</td>
<td>48</td>
<td>26.2</td>
</tr>
<tr>
<td>Kyaingtong</td>
<td>161,152</td>
<td>24,152</td>
<td>15.0</td>
<td>731</td>
<td>177</td>
<td>24.2</td>
</tr>
<tr>
<td>Hlapa</td>
<td>190,341</td>
<td>52,711</td>
<td>27.7</td>
<td>497</td>
<td>256</td>
<td>51.5</td>
</tr>
<tr>
<td>Nyaungshwe</td>
<td>166,120</td>
<td>32,370</td>
<td>19.5</td>
<td>454</td>
<td>66</td>
<td>14.5</td>
</tr>
<tr>
<td>Myitk</td>
<td>273,062</td>
<td>11,728</td>
<td>4.3</td>
<td>140</td>
<td>22</td>
<td>15.7</td>
</tr>
<tr>
<td>Kawthna</td>
<td>141,530</td>
<td>29,760</td>
<td>21.0</td>
<td>133</td>
<td>38</td>
<td>28.8</td>
</tr>
<tr>
<td>20 townships</td>
<td>3,023,319</td>
<td>384,444</td>
<td>12.7</td>
<td>4,684</td>
<td>1,174</td>
<td>25.1</td>
</tr>
</tbody>
</table>

The data in Table 2.7 was excerpted from all CTHP across these twenty townships. There are a total of 1,174 hard-to-reach villages spread over these 20 townships. Those in hard-to-reach villages number 384,444 (12.7%) out of a total population of 3.02 million.

When comparing the total GAVI HSS program expenditure in 2012 and 2013 and population in hard-to-reach areas, the per capita population expenditure in hard-to-reached areas, despite its low level, was higher than the non-HTR areas: US$ 2.3 and 1.2 in 2012 and 2013 versus US$ 0.58 and 0.18 respectively, see table 2.8. Per capita expenditure for these particular 20 townships in 2012 was higher as it included the preparatory expenses (assessment, trainings, and supplies of office equipment's) whereas the expenditures of 2013 were only for implementation of activities in 20 townships. This reflects the favorable targeted outcome of the GAVI HSS interventions in hard-to-reach areas. It is note that such a marginal per capita investment by targeting hard to reach areas, though it has resulted in increase in accessibility to some basic primary care services; significant more resources are needed to implement the range of services identified in CTHP.

Table 2.8 Per capita population spending of the GAVI HSS program, 2012 and 2013.

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per capita GAVI spending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTR area</td>
<td>2.3</td>
<td>1.2</td>
</tr>
<tr>
<td>non-HTR areas</td>
<td>0.58</td>
<td>0.18</td>
</tr>
<tr>
<td>Discrepancy ratio, HTR to non-HTR areas</td>
<td>4.0</td>
<td>6.6</td>
</tr>
</tbody>
</table>