

Joint appraisal report

Country	Cambodia
Reporting period	2015
cMYP period	<i>Ends in 2015</i>
Fiscal period	<i>January to December</i>
Graduation date	<i>Not applicable</i>

1. EXECUTIVE SUMMARY

1.1. Gavi grant portfolio overview

<ul style="list-style-type: none"> • Cambodia is an example of seamless synergies between the immunization programs and HSS strengthening, with common implementation structures. Over a period of 15 years, the coverage for each antigen has increased substantially; five new and underutilized (Hepatitis B, Hib, measles 2nd dose, rubella and PCV) vaccines were introduced into routine immunization; another three new and underutilized vaccines are planned for introduction in future; HSS funds utilized in ten districts with an approach that is now being scaled up to entire country with new HSS funding. There have never been significant delays in new vaccine introduction than planned. • The focus of new HSS grant is on immunization system especially on equity – social-economic, geographic and ethnicity. The 1,832 high risk communities have been identified, mapped and planned for intense provision of services through regular and more frequent outreach services. • The Government’s contribution for immunization program has also increased over the time and MOH secured the funds for the traditional vaccine’s procurement and regularly paying co-financing part of new and underutilized vaccines which already introduced in the system. Cambodia is a low income country with no possibility of graduation in coming years.

1.2. Summary of grant performance, challenges and key recommendations

Grant performance (programmatic and financial management of NVS and HSS grants)
<p>Achievements</p> <ul style="list-style-type: none"> • In March 2015, the country's remarkable achievement in immunization was internationally recognized when the Regional Verification Commission for measles elimination verified that the country has achieved measles elimination. Validation assessment for Maternal and Neonatal Tetanus Elimination (MNTE) is scheduled in June 2015. • The 2014 WHO-UNICEF Joint Reporting form (JRF) shows coverage with Pentavalent of 101% and 97% for its first and third dose respectively, with 28% percent of the target children living in districts with less than 90% coverage for Penta3 and 53% of the target children living in districts with coverage equal or greater than 95%; a remarkable achievement as compared to 2005 when no child lived in districts with at least 95%. • Coverage for the first dose measles containing vaccines reached 94% while the second dose measles reached 73% (10 percentage point increase as compared to the 2013), with 71% of children living in districts with coverage below 90%, while 26% live in districts with coverage ≥95%. At the time of the joint appraisal, coverage for PCV13 was not available.

- Another source of national coverage is provided by the preliminary findings from the national Demographic and Health Survey (DHS) conducted in 2014. The survey found coverage for the third dose of Pentavalent vaccine of 83.7% with 10% drop-out from the first dose; coverage for the third dose of oral polio vaccine was found 82.3% with 12% drop-out from the first dose; BCG coverage was 96.1%, while the coverage of the birth-dose of hepatitis B vaccine was 82.8% and of the first dose of measles containing vaccine was 78.6%.
- A post introduction evaluation (PIE) of the second dose of measles vaccine was also conducted in 2014(2nd dose measles vaccine was introduced in mid-2012). The PIE found differences in understanding of the existence and implementation of policies related to the administration of measles vaccine. The PIE also found a general lack of clarity among health staff on the appropriate vaccine to use (MR vs M), the appropriate recording (in-target vs out-of-target) and reporting of doses administered to children at different ages; caretakers also were not aware of the need for a second doses and the age recommended.
- In 2014 no vaccine stock-outs were notified and the national immunization programme is preparing guidelines for the introduction of IPV in October this year and will prepare the same for JE introduction in January 2016. Lessons from the MR PIE shall alert country that the relative short time until the planned introduction represents a hazard to a successful introduction and calls for intensified efforts to ensure proper understanding by district and lower level staff and communities of IPV introduction.

Challenges

- Stopping of routine and High Risk Communities' outreach activities induced by sub-decree 216.
- Difficulties in achieving planned target coverage e.g., Measles second dose (MR2).
- Lack of capacity for financial management in NIP and NMCH.
- Lack of capacity, particularly at sub-national, causing persistent cross-cutting health systems issues and bottlenecks to improvement.
- Expenditures for immunization program remain reliant on donor funding
- Strategic focus of new grant may not be conducive in achieving sustainability.

Key recommended actions to achieve sustained coverage and equity (list the most important 3-5 actions)

- Identify key bottlenecks to nationwide low MCV2 coverage and develop feasible plan to improve MCV2 coverage.
- Implement the outreach activities for routine and high risk community strategies
- Build up the financial management capacities at the NMCHC and NIP to manage the new and larger HSS grant. As the focus is on service delivery, the financial transactions will increase.
- MOH should evaluate existing HSS grant and gathered lessons learnt and explore approaches for achieving sustainability.
- Introduce dedicated monitoring of the progress in 1,832 high risk communities through regular data collection and analysis, say every six months.

1.3. Requests to Gavi's High Level Review Panel

Grant Renewals

New and underused vaccine support

- *Renewal of Pentavalent vaccine*
- *Renewal of Pneumococcal conjugate vaccine*
- *Renewal of Measles second dose vaccine*

Health systems strengthening support

- *Not applicable*

1.4. Brief description of joint appraisal process

The JA process consisted of agreement with Government officials on the objectives, dates and key processes such as visit to Central Medical Store and endorsement by the Technical Working Group on Health (TWGH) which represents both ICC and HSCC in Cambodia. The members for the appraisal team consisted of in-country and out of country partners – Prof. Sann Chan Soeung, from National Immunization Program; Mr. Aun Chum and Dr. Xiaojun Wang from UNICEF; Dr. Md. Shafiqul Hossain, Dr. Chham Samnang, Dr. Momoe Takeuchi, Dr. Jorje Mendoza and Dr. K. Lam from WHO; and Dr. Raj Kumar from Gavi. Large numbers of officials both from MOH and partners were also met by the team during the JA process. Other key processes contributing to the JA process included meeting with Prof. Eng Huot, Secretary of State, meeting of TWGH, meeting with Health development partners and visit to the Central Medical Stores. Further, UNICEF and WHO participants had own discussions on the needs and way forward for technical assistance for 2016 and onward. The final draft report of the JA was shared with Government officials for comments before its final adoption.

2. COUNTRY CONTEXT

2.1. Comment on the key contextual factors that directly affect the performance of Gavi grants.

The oversight of both EPI and HSS programs is provided by the Technical Working Group on Health (TWGH). The TWGH meets every month, is chaired by Secretary of State, has members from the Government (both National and Provincial) and development partners, and its decisions are followed up for the required actions. JA team participated in the TWGH meeting with a dedicated agenda on the appraisal and endorsement of the broad recommendations.

There is high level political commitment for immunization as evidenced by significant domestic funding, around 45% of the total in 2014 (sub-national level funding/expenditures was not able to obtain, hence not counted) and introduction of several new vaccines. Cambodia organized the Gavi Board meeting in December 2013 with the participation of the Prime Minister in the opening ceremony. The country was a Gavi Board member earlier.

Based on the 2014 DHS survey, immunization coverage for the third dose pentavalent vaccine (DTP-HepB-Hib) and first dose measles containing vaccine was 83.7% and 78.6% respectively, with significant difference among different wealth quintiles (e.g. 94.7% among the highest vs 65.9% among the lowest for MCV1). Various programme reviews organized by MOH have indicated that the most un/under-vaccinated children are from the high-risk communities (HRC), including remote rural locations, urban poor, migrants and mobile workers and ethnic minority groups. The Ministry of Health (MOH). Cambodia has developed and implemented an immunization high-risk community strategy to address this issue with 1832 high-risk communities identified; and the existing HSS (since 2014) and the new HSS grant provide funding support to implementation of the HRC strategy.

It has been reported by NIP, after issue of Sub-decree 216 in 2014; routine outreach immunization services and implementation of the HRC strategy have been both largely stopped in the past several months. Given nearly 40% vaccination services are provided through outreach services in the country, both NIP and the key EPI partners have raised a deep concern on possible sharp decline of immunization coverage and return or outbreaks of vaccine preventable diseases such as measles in the near future.

There are still significant gaps in immunization supply chain systems including management. About 60-70% fridges are aging and requiring timely replacement; and maintenance of cold chain equipment has been identified as one of the weakest areas in immunization supply chain management with only one technician available at the national level. In a visit to the Central Medical Store (CMS), large stocks of vaccines (e.g. MR) and AD syringes (over 5 million units) were observed and lack of good practices was also noticed; for example no regular physical counting of vaccines, discrepancy existing between the recorded stock and on-site counting of PCV vaccine, and same vaccines being stored in several cold rooms. Also the existing EVM Improvement Plan (developed following the 2012 EVMA) was not adequately developed (missing essential management elements, e.g. responsibility & funding sources). The above issues should be effectively tackled through the upcoming EVMA opportunity; and the new HSS grant is expected to facilitate the replacement of aging cold chain equipment and adequate implementation of the EVM IP following a new EVMA scheduled in July 2015.

Capacity, particularly at subnational levels, has been highlighted as one of main bottlenecks to improvement of the programme. Further, in recent year a new generation of workforce entering public health services (with many presenting in health centres) has raised an emerging need to build capacity and sustain institutional memories/good practices. There are also many lessons learned in the past. In training and supportive supervision, tremendous support was made from the government and partners hence contributed a lot of progresses and achievements in immunization program. This support needs to be continued with innovative strategies and approaches.

Programme management presents another area for attention and improvement, which has been repeatedly highlighted by several departments in MOH who have been involved in the implementation of the current HSS grant. Particularly given there is a shift in funding management for the new HSS grant, from the Department of Budget and Financing to the national MCH Centre of MOH, great challenges will be expected particularly in the beginning of the new HSS grant which will involve tremendous transactions to subnational levels; thus enhanced capacity will be critically required including additional hands.

Over 100% vaccination coverage is frequently reported and difference in coverage is observed between reported coverage and survey coverage (e.g. 94% in 2014 JRF vs 79% from the 2014 DHS for MCV1). There are some concerns raised regarding accuracy of target population (denominator) at each level; on other hand, increasing population migration has added complexity in recording and reporting vaccination status. The high reported coverage (over 90% for MCV1) may lead to over-confidence on current level of coverage.

3. GRANT PERFORMANCE, CHALLENGES AND RENEWAL REQUESTS

3.1. New and underused vaccine support

3.1.1. Grant performance and challenges

From 2001 to 2008 Gavi supported the country with the introduction of Tetravalent vaccine (DPT-Hib) into its routine immunization program and from 2010 with Pentavalent vaccine (DPT-Hib-HepB), From 2012, the country also receives support for the second dose of measles vaccine and in 2013 Gavi supported the introduction of rubella containing vaccine through MR (measles-rubella) campaign which was followed by the routine administration of MR vaccine procured with national budget. MR vaccine is given as the first dose in the two dose routine schedule and the country has decided to introduce MR as the second dose too (adhering to SAGE recommendations to use the same vaccine for both doses), which should happen once the stocks of single antigen measles vaccine are consumed. The current vaccination schedule is attached in annex F

In this year 2015, the country with Gavi support has introduced pneumococcal conjugate vaccine 13-valent (PCV13) nationally and also with Gavi support is preparing for the introduction of IPV vaccine in the third quarter of this year, as recommended by the global polio end-game plan.

According to shared APR, the vaccine coverage targets have been set to 95% in line with the regional coverage targets defined by the Regional Framework for Implementation of GVAP in the Western Pacific, endorsed by the Regional Committee in 2014.

Administrative 2014 coverage for all antigens, are found in the WHO-UNICEF Joint Reporting Form (JRF), submitted yearly to WHO. The country reports high coverage for all vaccines.

Reported Pentavalent coverage in 2014 reached 101% and 97% for the first and third dose respectively; though about one third of ODs reported Pentavalent coverage above 100%. Coverage for the third dose has since 2008 fluctuated between 91% and 95%. The vaccine is procured as single dose vial and its wastage is around 5%. Coverage for the third dose (Penta3) is however not homogeneous across operational districts. In 2014, 28% percent of the target children lived in districts with less than 90% Penta3 coverage, while 53% of the target children lived in districts with coverage equal or greater than 95%. Despite fluctuating percentages since 2005, when no child lived in districts with at least 95%, it is noticeable an improving trend.

In 2014, the reported coverage for the second dose measles is 73%, a 10 percentage points increase as compared to the 2013 reported coverage. Nevertheless this improvement, the country needs to focus on improving coverage for the second dose also at subnational levels. In 2014, 71% of children lived in districts with coverage below 90%, while 26% lived in districts with coverage $\geq 95\%$.

PCV13 was introduced nationwide as planned and at the time of the joint appraisal, coverage for PCV13 was not available due to interruption of Health Information System.

From June to December 2014 a national Demographic and Health Survey (DHS) was conducted and preliminary findings were made available. The survey gathered vaccination status data from 1,460 children 12-23 months of age (750 boys and 711 girls). Coverage for the third dose of Pentavalent vaccine was 83.7% with 10% drop-out from the first dose; coverage for the third dose of oral polio vaccine was found 82.3% with 12% drop-out from the first dose; BCG coverage was 96.1%, while the coverage of the birth-dose of hepatitis B vaccine was 82.8% and of the first dose of measles containing vaccine was 78.6%. Seventy three percent of children had received all doses of the previous vaccines (BCG, measles, and three doses each of pentavalent and polio vaccine). Second dose measles coverage was not assessed by the survey.

Since the introduction of the second dose of measles vaccine, the country has faced difficulties in achieving planned target coverage (63% in 2013 and about 30% drop out between the first and second dose), while reporting high coverage with the first dose of measles containing vaccine. From 23 June to 11 July 2014 a post introduction evaluation (PIE) of the second dose of measles vaccine was conducted in 13 PHDs, 22 ODs, 44 health centers, and 44 villages, with participation of WHO, UNICEF, US-CDC and national staff. The PIE found differences among health staff at all levels in their understanding of the existence and implementation of policies related to the administration of measles vaccine, a general lack of clarity among health staff on the appropriate vaccine to use (MR vs M), and the appropriate recording (in-target vs out-of-target) and reporting of doses administered to children at different ages; caretakers also were not aware of the need for a second dose and the age recommended.

The PIE also found at the OD level wide variation of both coverage and drop-out rates, with drop-out rates as high as 90% in some ODs and MCV2 (M18) coverage was higher than MCV1 (MR9) coverage levels. The high drop-out rate was reported to be due to the lack of awareness among the mothers, community and village health support groups (VHSGs) about the need for vaccination in the second year of life.

In March 2015, the Regional Verification Commission for measles elimination after thorough review of the National Verification Committee's report agreed that the country has achieved endemic elimination status for measles; this is a remarkable achievement of the immunization programme.

In 2014 no stock-outs of vaccines were notified. It was reported that 71,528 (10%) doses of pentavalent vaccine were not received in December 2014 because of flight booking but received on 26 January 2015.

At the time of the appraisal, the NIP was preparing guidelines for the planned introduction of IPV in October this year and will prepare the same for JE introduction in January 2016. Lessons from the MR PIE shall alert country that the relative short time until the planned introduction represents a hazard to a successful introduction and calls for intensified efforts to ensure proper understanding of IPV introduction by the district and lower level staff and communities.

3.1.2. NVS renewal request / Future plans and priorities

The information on the achievements in 2014 and targets for 2016 are provided in annex A, inserted from the annual progress report. The targets are similar to ones in previous year.

Having achieved Measles elimination and possibly the MNTE following the validation due in June 2015, EPI program has planned number of activities – introduction of IPV, as stated above; a large scale campaign with JE vaccine; and, apply for Gavi support for HPV demonstration project. The new c-MYP is due. As such the collaboration with and dependence on both UNICEF and WHO country offices has increased. Cambodia also plans to shift from t-OPV to b-OPV in April 2016.

3.2. Health systems strengthening (HSS) support

3.2.1. Grant performance and challenges

The lower coverage in remote areas/ provinces, where the very poor, ethnic minorities and migrants reside, was identified as high risk population groups, and subsequently the high risk community Guidelines was developed in 2014 to enhance and accelerate the emphasis of the HSS fund on outreach activities for a list of high risk villages. The high risk community strategy was implemented nationwide in 2014 and a total of 15,295 doses of pentavalent3 and 22,776 doses of MCV1 were administered in children by conducting three rounds of outreach services. However due to the constraints of the sub-decree 216, out-reach activities within administrative districts is severely affected from the end of 2014 onwards. The MoH acknowledged the issue and has committed to propose with the Ministry of Economic and Finance on allocation of the national budget for per diem and travel expenses within the administrative district.

Data quality assessment is conducted monthly by the HIS Bureau, DPHI, and a Data Quality Index consisting of 30 criteria is used to feedback to ODs on HIS and to monitor and evaluate the progress of health facilities and performance. Cambodia presents a satisfactory alignment among the reported coverage, WUENIC and most recent DHS. The latest DHS in 2014

reported a decline in proportion of fully immunized children to 73%, as compared to 79% in 2010, and this may be attributed to vaccine stock outs in year 2013 previously reported. Further strengthening of the HIS is strongly encouraged, as the limited staff capacity on data analysis and interpretation may reduce the quality of data presented, and subsequently limit the use of information, especially at the district and health center levels.

There has been a change in fund management in 2014. In line with the funds management system of the HSS programme, funds are now disbursed to provincial Health Departments on a monthly basis, departing from an annual basis. The disbursement system for operational districts and health centers remains unchanged (i.e. monthly). The transition to new HSS grant and improvements to data quality will be the central focus in 2015, and the budgeted expenditures have been reprogrammed to focus on high risk immunization strategy and a stronger role by the Department of Planning and Health Information in conducting a Data Quality Audit. The new HSS grant will see a shift in fund management from the Department of Budget and Finance to the national MCH center in 2015.

By contrasting the agreed targets in the original HSS application and the coverage/ completion status in 2014, a total of 13* out of 22** objectives were met by the end of 2014. Of these 13 objectives, 2 objectives were newly achieved in 2014, namely 65% Hepatitis B Birth Dose within 24 hours (both National & 10 HSS OD). One objective, % OD achieving $\geq 80\%$ DTP3 Coverage, was previously met in 2013, but have regressed and fallen below the agreed target in 2014. % Health Centers trained/implementing IMCI (National) has also observed a drop from 100% in 2013 to 93% in 2014, although no agreed target was specified in the original HSS application. The expansion of number of health centers across Cambodia may have contributed to a marginal decrease, but the number of health centers that have undergone CDC spot checks is unknown, and it is difficult to ascertain this association.

* Objectives 1a, 1b, 3a, 3b, 4a, 7a, 8b, 9, 10a, 10b, 11a, 11b & 12 (Annex D for list of HSS grant objectives)

** 3 out of 22 objectives had either the measured indicator changed, re-defined, or were not specified in the original HSS application, and were not assessed by this method.

The National Immunisation Program (NIP), Department of Planning and Health Information (DPHI), Communicable Disease Control Department (CDC), Department of Budget and Finance (DBF), Preventive Medicine Department (PMD), and the Ministry of Health (MoH) Internal Audit Department (IAD), reported their stakeholder involvement in the Joint appraisal of the GAVI program in conjunction with WHO, UNICEF and a GAVI representative. All of the above stakeholders play an active role in the strengthening of the health planning system, implementation of IMCI training programs including monitoring, management of funds and contracts, capacity building, financial reporting, data quality audits, and the oversight other core national program functions such as vaccine management, surveillance and new vaccine introductions.

Specifically, some of the challenges and weaknesses highlighted by the stakeholders includes,

- NIP: high cost of new vaccines, staff capacity for management of information and planning, hard-to-reach communities, disruption in outreach immunization activities due to Sub-decree 216 (concerning remunerations for civil servant or contract staff traveling on mission on outreach immunization activities),
- DPHI: limited use of information at district and HC levels, limited capacity at HC level to support HIS (e.g. computerized reporting), quality of data, lack of involvement of HC staff during AOP's development (particularly for the new procedures on program based budgeting),
- DBF: the coverage gap, or the 'missing children', between actual population target group and estimated population as identified by the 2010 EPI review,

- PMD: lack of support for outreach activities (mainly concerning logistic support e.g. motorcycles or boat during flood seasons), insufficient focus for other activities other than immunization during outreach activities,
- IAD: lack of participation/ active involvement of the internal audit team in workshops and TWGs on financial and operational management of GAVI funds.

In general, most stakeholders voiced concerns over staff turnover and shortages, lack of incentives for staff to uptake responsibilities, and the sustainability, in both budget capacity and supervision, once GAVI funding terminates. Other key stakeholders include Provincial Health Departments and Operational Districts, health centers, village health support groups (volunteers), and CSOs under the umbrella organization of MEDICAM. NGOs under MEDICAM are not directly involved in the delivery of immunization services in Cambodia, although they play a supportive role in providing primary health care education and health financing initiatives. NGOs are not directly funded through HSS.

Revisiting the end-goals of the existing HSS, as stipulated in the proposal, is “to contribute to the reduction of maternal, new born and child morbidity and mortality ... through improved decentralized health systems and human resources management, and enhanced access by the population for a continuum of RMCNH Care”, through one of four factors, including the “Development of the Health Sector Strategy Plan (HSP)”. Given the five cross-cutting strategies of the HSP2 (2008-2015), i.e. strengthening of health service delivery, health care financing, human resource for health, health information system, and health system governance, many indicators have improved since baseline, but the detailed systems challenges identified above highlights crossing-cutting health system issues remains, and requires further strengthening in Cambodia. Given the newly approved HSS grant’s strategic focus, as detailed in Section 3.2.2, are for immunization system strengthening and increasing coverage. Independent evaluation of existing HSS should be conducted and lessons learnt from the achievements and challenges should consider for implementing for new HSS grant, which will also help for long term, sustainable and contextualized systems changes.

3.2.2. Strategic focus of HSS grant

In line with the Independent Review Committee (IRC) report in March 2015, the strategic focus of the remaining HSS grant and newly approved HSS fund will be aligned to 5 key objectives:

1. Immunization services including Outreach to High Risk Communities- in addition to outreach immunization activities, data collection and supervision will constitute 64% of the funds, and will support some demand creation efforts in high risk communities and the development of local micro-plans to identify key barriers at community level in immunization uptake and attending outreach visits.
2. Cold chain expansion (including replacement) and maintenance- two-thirds of cold chain equipment is over 10 years old, and approximately 1.78 million USD has been earmarked in new HSS grant for maintenance and repair of cold chain equipment, with an expansion target for 1,410 refrigerators and 4 cold rooms across Cambodia.
3. Accelerate demand for immunization including social mobilization- demand creation activities to increase community awareness and demand for immunization (although should not necessarily focused on immunization only), will be allocated an extra 1 million USD to support Village Health Support Groups (VHSG) activities. The HSS fund will also explore the allocation to NGOs/ CSO, who are now widely engaged in Cambodia but no funds were allocated previously, to define and develop new communication and CSO activities

4. Improve surveillance for vaccine preventable diseases- this will support training and review/coordination meetings across the National, provincial, district and HC levels. Beyond the system strengthening and capacity building, there will be introduction of some simple tools to help improve management and resource allocation in the surveillance system.
5. Improve Programme management and Capacity building- mainly allocated to quarterly supervision visits, primarily for immunization and coverage of high-risk communities. Concurring with the recommendation of the IRC and similar to above, this objective should encourage immunization staff visiting the villages to work with the VHSG at the community level to provide support on primary care, such as MCH, reproductive health and health subsidies/ voucher schemes for the poor, and establish the linkages between improving immunization coverage and strengthening of community level service delivery.

3.2.3. Request for a new tranche, no-cost extension, re-allocation or reprogramming of HSS funding / Future HSS application plans

Cambodia has already received the last tranche of existing HSS support. A sum of \$295,000 is expected to remain unspent. The country has proposed to utilize these funds by end 2015, failing which it has been advised to transfer the unspent funds to new HSS account in National MCH Center.

A sum of \$78,000 has been carried over from old ISS grant. The country was advised to either utilize these funds by end of 2015 or transfer to the new HSS account. A sum of \$41,294 of Vaccine Introduction Grant (VIG) also remained as balance. The country should utilize this funds for upcoming IPV introduction and if not utilize in 2015, should transfer to the new account.

No reallocation or reprogramming has been requested by the country. The focus of implementation of the new HSS grant planned around immunization system strengthening.

3.3. Graduation plan implementation (*if relevant*)

Not applicable

3.4. Financial management of all cash grants

For the reporting period of 01 January to 31 December 2014, the GAVI-Immunization Service Support (ISS) fund reported a balance of 78,834 USD to be carried over into 2015. The majority of the ISS fund was utilized for coverage improvement planning (CIP)-Monitoring/ Supervision (95.03%) and fixed-site immunization supervision (2.11%). During the same reporting period as above, the GAVI- Vaccine Introduction Grant (VIG) fund reported a balance of 41,294 USD to be carried over into 2015. The majority of the VIG fund was utilized for GAVI-VIG for Measles and Rubella (70.90%) and GAVI-VIG for Pneumococcal (PCV) (27.64%).

During the same reporting period as above, the GAVI- Health Systems Strengthening (HSS) fund reported a balance of 2,225,680 USD to be carried over into 2015. The majority of the HSS fund was utilized for implementation of health service delivery strategy (46.82%), project management (21.21%), and Minimum Package of Activities (MPA) capacity building (15.09%). The above ISS, VIG and HSS funds were all managed through the Department of Budget and Finance (DBF), and included in the annual operational planning system (AOP

system) of the Ministry of Health. The budget plan in 2015 (6 months) and commitments unpaid from 2014 will be deducted from the carried over balance in 2015, resulting in a remaining balance of 295,445 USD. The recommended action for carried over balances in funds e.g. ISS and HSS, is detailed in the following Section 3.5. It is worth noting the newly approved HSS fund will see a shift in the management of funds from the Department of Budget and Finance to the National MCH Centre in 2015.

Total expenditure for the immunization programme is approximately 16.8 million USD in 2014, an increase from 14.3 million USD in 2013. Government expenditure on immunization programme has increased from 3.8 million USD in 2013, to 9.2 million USD in 2014, representing a 2.4 fold increase, and became the major source of financing (54.65%) for the first time since 2009. As a proportion of the total General Government Expenditure on Health, the government expenditure on immunization programme has also increased from 1.60% in 2013 to approximately 7.13%* in 2014. From the available data, the government has not allocated in excess of 1.60% of total government budget on immunization expenditures since 2009. This increment in allocation and government ownership of the program should be strongly encouraged, as the immunization program remains heavily reliant on donor funding, which contributed on average 72.32% of the program expenditures between 2009-2013.

*GGHE as reported in 2013

Government expenditures primarily covered for other recurrent costs (32.73%), personnel costs (22.71%), and new and underused vaccines (20.27%). It is worth noting that the profile of the government expenditures has changed from 2013, where injection supplies and traditional vaccines were the major financing items of the government expenditures on immunization. Expenditures on traditional vaccines have increased from 1.3 million USD in 2013 to 2.2 million USD in 2014. In contrary, personnel costs has increased from 0.8 million USD in 2013 to 1.8 million USD in 2014, a 2.3 fold increase.

Vaccine costs (for both traditional and new vaccines), from all sources, are approximately 5.0 million USD, representing 29.68% of total expenditures in 2014; this has declined in both absolute and proportionate terms when compared to 2013. Other than activities implemented by UNICEF, WHO, GAVI is the major external donor towards vaccine costs (62.59%), and PATH is the only other external donor on vaccines (1.29%) in Cambodia, 2014. It is worth noting the vaccine schedule for Cambodia will include the introduction of IPV in 2015, and JE and HPV in 2016 (with SIA campaigns and demonstrations scheduled in 2015), and this is likely to increase vaccine costs significantly for Cambodia.

The new HSS grant is expected to be implemented by a new account in the NMCHC /NIP. For this an early FMA is to be requested to the PFO team. A cash program audit was carried out by Gavi secretariat in January 2014 which did not reveal any misdoings. The country has complied with the requirements relating to audit.

3.5. Recommended actions

Actions	Responsibility (government, WHO, UNICEF, civil society organisations, other partners, Gavi Secretariat)	Timeline	Potential financial resources needed and source(s) of funding
<p>1. Vaccine management</p> <ul style="list-style-type: none"> Regular physical count of pentavalent vaccine stock at central medical store (CMS) MOH does not need to procure AD syringes (0.5ml) only for year 2016 Ensure proper storing of vaccines 	<p>NIP, with support from UNICEF and WHO</p>	<p>June 2015</p>	<p>Part of EVM IP implementation</p>
<p>2. Outreach activities:</p> <ul style="list-style-type: none"> Ensure routine and high risk strategies' for outreach services <p>(Note:</p> <ul style="list-style-type: none"> <i>Almost 40% of immunization coverage is from outreach activities for routine and high risk communities stopped after issue of sub-decree 216 related to DSA.</i> <i>Concern about possible sharp decline in coverage may lead to disease outbreaks (measles, diphtheria)</i> 	<p>Government (Ministry of Economy and Finance, Ministry of Health)</p>	<p>As soon as possible</p>	<p>No budget requirement</p>
<p>3. Human resource capacity</p> <ul style="list-style-type: none"> Recruit two additional accountants for NIP for new HSS grant. Recruit two officers (cold chain officer and cold chain technician) in NIP. 	<p>NIP/NMCH/MOH</p> <p>NIP/NMCH/MOH</p>	<p>July 2015</p> <p>Q3 2015</p>	<p>Part of HSS grant</p> <p>Part of HSS grant</p>
<p>4. Financial management:</p> <ul style="list-style-type: none"> ISS and VIG funds should be utilized; if not done by end 2015, transfer the balance to new account 295K USD of HSS balance to be utilized for <ul style="list-style-type: none"> Evaluation of existing grant Orientation and operational planning for new grant Evaluation of incentives system <p>(If HSS existing grant cannot be used by 2015, needs to be transferred to the new account)</p>	<p>NIP/NMCH/MOH</p> <p>NIP/NMCH/MOH</p>	<p>Q1 2016</p> <p>End 2015</p>	<p>No budget</p> <p>From current HSS grant</p>

4. TECHNICAL ASSISTANCE

4.1 Current areas of activities and agency responsibilities

The following areas are the current focus of NIP of MOH, Cambodia.

- Strengthening routine immunization system
- Implementation of high risk communities strategies
- Strengthening immunization supply chain system
- Application for vaccine support and new vaccine introduction
- Strengthening the vaccine-preventable diseases surveillance system
- Developing/updating the existing policies/strategies/guidelines
- Human resource capacity building (in country and outside country)

The WHO and UNICEF have been working together to assist NIP in various aspects of immunization programme, from policy and strategy development to daily operation of the programme. In term of programmatic areas, two organizations have jointly provided assistance to the following areas:

- strengthening routine immunization system and implementation of high risk communities strategies;
- strengthening immunization supply chain system
- Introduction of new vaccine implementation
- programme review and evaluation (e.g. EPI review, EVM assessment)

In addition, WHO is involved in supporting vaccine preventable disease surveillance, strategies/ policy/guidelines development/update in all areas of immunization programmes, post introduction evaluations, development of applications of new support to Gavi and human resource capacity building in all areas of immunization programmes at all levels (including outside country).

While UNICEF assisted MOH in improving provision of immunization services in the context of integrated health services and through an equity lens. In Q1 2015, UNICEF reviewed and documented experiences and lessons learned from the implementation of RHC strategy in 2011-2014. Also Capacity building particularly at grassroots level is one of programmatic priorities.

No other development partner is working with the NIP. A broad health sector program is under development but its objectives may not overlap with the Gavi HSS grant.

4.2 Future needs

Cambodia will receive \$18.05 million through new HSS grant from 2015-2019 and main focus of the grant is to strengthening immunization system and increasing the immunization coverage. Due to capacity constraints at all levels of the immunization systems, extensive/increased technical and programmatic support from partners particularly in-country partners are essentially required.

WHO and UNICEF will provide support to implement the new HSS grant in the following objective areas stated in approved HSS proposal:

1. Increase immunization coverage in high risk communities
2. Strengthen the cold chain system through improved equipment and management
3. Increase community awareness of, and demand for, immunization
4. Strengthen the surveillance of vaccine-preventable diseases
5. Strengthen management capacity to support the immunization program

WHO

WHO will provide long term and day to day support of the 50 activities in above five objective areas of the newly approved HSS grant. Moreover, WHO will also provide support in following areas:

- Application of vaccine support and introductions of new vaccines implementation
- Post introduction evaluation/special programme reviews
- Policy/strategy/guideline development/update in all areas of immunization programme
- Vaccine regulatory support
- VPD laboratory support
- Capacity building (inside and outside country).
- Programme management

1. WHO Human resource: almost 50 activities in above five objective areas with 97% funds will be handled by the National Immunization Programme. Therefore, the NIP will need regular technical support and huge amount of staff-time investment from WHO.
Given the human resource capacity in WHO CO- Cambodia, there is critical need to get support through one additional professional staff for EPI WHO Country Office to support NIP for timely implementation of the activities with quality. Proposed budget: 139 K per year for five years.
2. EPI WHO CO Cambodia has been supporting the NIP since development of high risk community (HRC) strategies including pilot project, review and implementation of it nationally for equity and increasing the immunization coverage. WHO will continue to provide support NIP in HRC strategies' foundation, HRC outreach implementation, development of guidance documents, monitoring and supervision, review and implementation of other recommended activities. Proposed budget: 70 K per year for five years.
3. The quality of VPD surveillance widely varies from province to province. EPI WHO CO will continue to support NIP for strengthening VPD surveillance system including capacity building, policy/guidance development/update, review, supervision and monitoring at different administrative levels. WHO will also continue to support national laboratory who deals with measles, rubella and JE testing. Proposed budget: 60 K per year for five years.

UNICEF:

UNICEF will provide technical support to Implement the above HSS objectives 1,2,3 and 5, with the following focus:

1. Improve immunization supply chain management (iSCM): including implementation of a new EVM IP following 2015 EVMA and regular monitoring the implementation status (including addressing the concerns/recommendations from this JA), procurement of cold chain equipment (using new HSS funds), and scaling-up continuous temperature monitoring system by adapting new technology. Proposed budget: 80 K per year.
2. Implementation of the key recommendations from the 2015 HRC review/documentation, including set up quality assurance mechanism (e.g. quality indicators for supervisions). Proposed budget: 60 K per year for activities (including consultancy when required).
3. UNICEF Country Office (CO) has been facing a significant HR constraint in supporting immunization programme, with only one national staff dedicated who are also responsible for other programmes (e.g. national pneumonia and diarrhea programmes). Furthermore, the funding for his post for 2016 and beyond has not yet secured till today.

This situation has raised an urgent need to enhance HR in UNICEF CO, not only to secure the current HR, but also ensure sufficient expertise/staff time to carry on the tasks highlighted above, particularly in the area of iSCM.

Proposal: 50% co-fund the current HR (30 K per year) and recruit an additional long-term TA (national) (60 K per year). Total budget: 90 K per year.

5. ENDORSEMENT BY ICC, HSCC OR EQUIVALENT & ADDITIONAL COMMENTS

The preliminary findings of the JA were presented at the TWGH which represents both ICC and HSCC. There was general endorsement of renewal recommendations. TWGH organizes monthly meetings and is considered most important coordination mechanism in the country.

Issues raised during debrief of joint appraisal findings to national coordination mechanism:

- 1) The new Government order on outreach services is perceived as a bottleneck resulting into no organization of outreach services for six months in 2014. This will be resolved by making a recommendation to the Ministry of Economy and Finance.

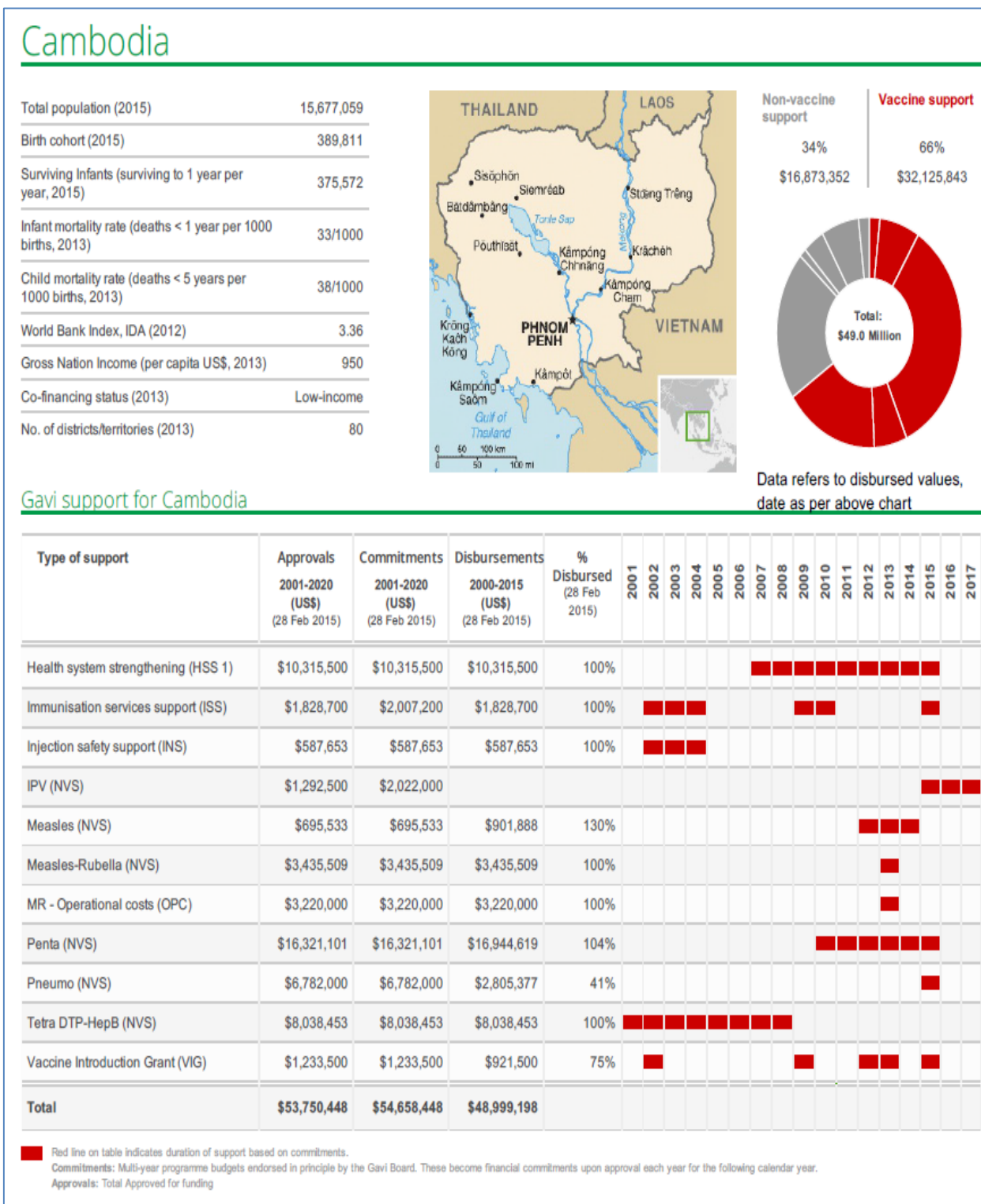
Any additional comments from

- Ministry of Health:
- Partners:
- Gavi Senior Country Manager:

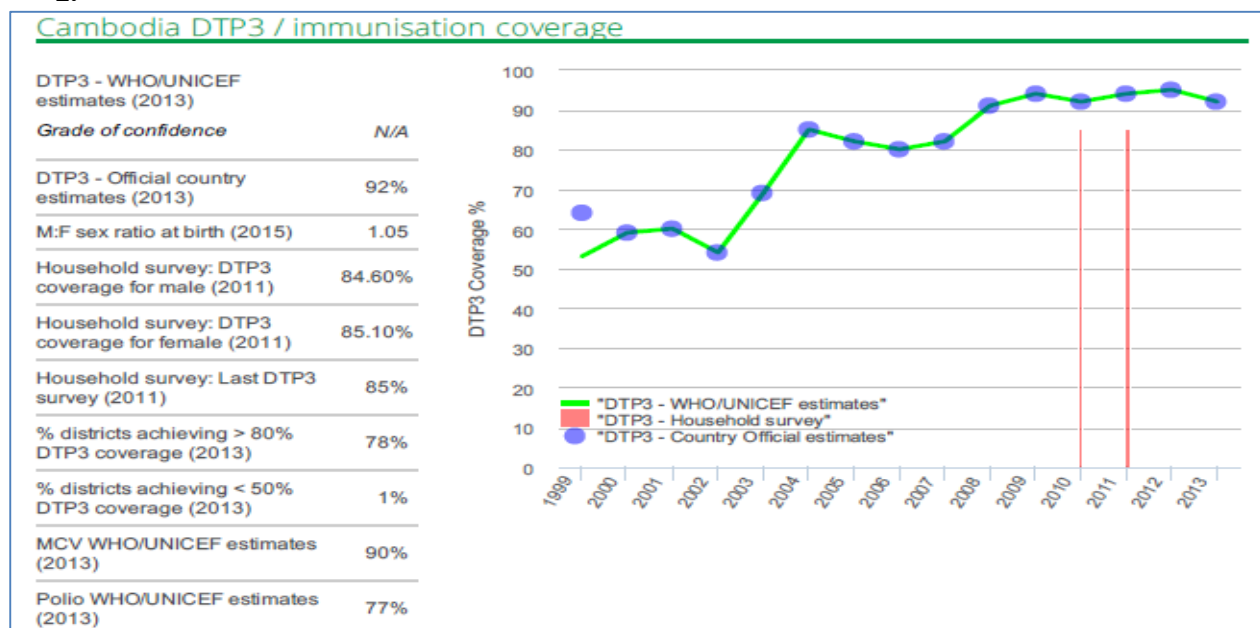
Annex A:

Key data

1.



2.



3.

Number	Achievements as per JRF		Targets (preferred presentation)							
	2014		2015		2016		2017		2018	
	Original approved target according to Decision Letter	Reported	Original approved target according to Decision Letter	Current estimation	Previous estimates in 2014	Current estimation	Previous estimates in 2014	Current estimation	Previous estimates in 2014	Current estimation
Total births	350,142	359,384	343,968	343,968		336,879		330,235		326,346
Total infants' deaths	0	9,804	0	9,631		9,433		9,247		9,138
Total surviving infants	350,142	349,580	343,968	334,337		327,446		320,988		317,208
Total pregnant women	350,142	426,078	343,968	406,600		398,220		390,366		385,768
Number of infants vaccinated (to be vaccinated) with BCG	350,142	359,384	343,968	326,770		320,036		313,723		310,029
BCG coverage[1]	100 %	100 %	100 %	95 %	0 %	95 %	0 %	95 %	0 %	95 %
Number of infants vaccinated (to be vaccinated) with OPV3	332,634	343,260	326,769	317,620		311,074		304,939		301,348
OPV3 coverage[2]	95 %	98 %	95 %	95 %	0 %	95 %	0 %	95 %	0 %	95 %
Number of infants vaccinated (to be vaccinated) with DTP1[3]	336,136	355,187	330,209	327,650		320,898		314,578		310,864
Number of infants vaccinated (to be	332,634	340,763	326,769	317,260		311,074		304,939		301,438

vaccinated) with DTP3 [3][4]										
DTP3 coverage [2]	95 %	97 %	95 %	95 %	0 %	95 %	0 %	95 %	0 %	95 %
Wastage [5] rate in base-year and planned thereafter (%) for DTP	5	2	5	5		5		5		5
Wastage [5] factor in base-year and planned thereafter for DTP	1.05	1.02	1.05	1.05	1.00	1.05	1.00	1.05	1.00	1.05
Number of infants vaccinated (to be vaccinated) with 1st dose of DTP-HepB-Hib	336,136	355,187	330,209	327,650		320,898		314,578		310,864
Number of infants vaccinated (to be vaccinated) with 3rd dose of DTP-HepB-Hib	336,136	340,763	326,769	317,260		311,074		304,939		301,438
DTP-HepB-Hib coverage [2]	96 %	97 %	95 %	95 %	0 %	95 %	0 %	95 %	0 %	95 %
Wastage [5] rate in base-year and planned thereafter (%)	5	2	5	5		5		5		5
Wastage [5] factor in base-year and planned thereafter (%)	1.05	1.02	1.05	1.05	1	1.05	1	1.05	1	1.05
Maximum wastage rate value for DTP-HepB-Hib, 1 dose(s) per vial, LIQUID	0 %	5 %	0 %	5 %	0 %	5 %	0 %	5 %	0 %	5 %
Number of infants vaccinated (to be vaccinated) with 1st dose of Pneumococcal (PCV13)			330,209	327,650		320,898		314,578		310,864
Number of infants vaccinated (to be vaccinated) with 3rd dose of Pneumococcal (PCV13)			0	317,260		311,074		304,939		301,438
Pneumococcal (PCV13) coverage [2]	0 %	0 %	0 %	95 %	0 %	95 %	0 %	95 %	0 %	95 %
Wastage [5] rate in base-year and planned thereafter (%)			5	5		5		5		5
Wastage [5] factor in base-year and planned thereafter (%)	1	1	1.05	1.05	1	1.05	1	1.05	1	1.05
Maximum wastage rate value for	0 %	5 %	0 %	5 %	0 %	5 %	0 %	5 %	0 %	5 %

Pneumococcal (PCV13), 1 dose(s) per vial, LIQUID										
Number of infants vaccinated (to be vaccinated) with 1st dose of Measles	0	327,777	326,769	320,964		314,348				
Number of infants vaccinated (to be vaccinated) with 2nd dose of Measles	332,634	255,079	326,769	317,260		311,074				
Measles coverage[2]	95 %	73 %	95 %	95 %	0 %	95 %	0 %	0 %	0 %	0 %
Wastage[5] rate in base-year and planned thereafter (%)	40	40	40	40		40				
Wastage[5] factor in base-year and planned thereafter (%)	1.67	1.67	1.67	1.67	1	1.67	1	1	1	1
Maximum wastage rate value for Measles second dose, 10 dose(s) per vial, LYOPHILISED	0.00 %	40.00 %	0.00 %	40.00 %	0.00 %	40.00 %	0.00 %	40.00 %	0.00 %	40.00 %
Pregnant women vaccinated with TT+	315,127	284,213	309,571	309,571		358,398		351,329		347,191
TT+ coverage[7]	90 %	67 %	90 %	76 %	0 %	90 %	0 %	90 %	0 %	90 %
Vit A supplement to mothers within 6 weeks from delivery	0		0	0						
Vit A supplement to infants after 6 months	0	1,093,487	0	0	N/A	N/A	N/A	N/A	N/A	N/A
Annual DTP Drop out rate [(DTP1 – DTP3) / DTP1] x 100	1 %	4 %	1 %	3 %	0 %	3 %	0 %	3 %	0 %	3 %

Annex B:**Status of implementation of the key actions from the last joint appraisal and any additional High Level Review Panel (HLRP) recommendations**

Key actions from the last appraisal or additional HLRP recommendations	Current status of implementation
Pentavalent vaccine - Renewal as per volumes estimated by GAVI secretariat. Cambodia has large stocks of AD syringes	Complied
Measles second dose - Renewal. Current stock situation and GAVI calculations indicate that Cambodia does not need further approval of Measles vaccine taking into account the stocks in hand and pending shipments from UNICEF SD. Cambodia has large stocks of AD syringes	No stock issues in spite of no additional shipments of the vaccine
Pneumococcal vaccine - Planned for introduction from January 2015	PCV introduced in January 2015
HSS - Approval of last tranche of \$553,230	Fully complied and disbursed

Annex C:

Description of joint appraisal process (e.g. team composition, how information was gathered, how discussions were held)

The JA process was initiated with Government officials agreeing on the objectives, dates and key processes required, such as visit to Central Medical Store and presentation to the Technical Working Group on Health (TWGH) which represents both ICC and HSCC in Cambodia. The key members for the appraisal consisted of in-country and out of country partners- Prof. Sann Chan Soeung, from National Immunization Program; Mr. Aun Chum and Dr. Xiaojun Wang from UNICEF; Dr. Md. Shafiqul Hossain, Dr. Chham Samnang, Dr. Momoe Takeuchi, Dr. Jorje Mendoza and Dr. K. Lam from WHO; and Dr. Raj Kumar from Gavi. Large numbers of officials both from MOH and partners were also met by the team during the JA process. Other key processes contributing to the JA process included meeting with Prof. Eng Huot, Secretary of State, meeting of TWGH, meeting with Health development partners and visit to the Central Medical Stores. Further, UNICEF and WHO participants had own discussions on the needs and way forward for technical assistance for 2016 and onward. The final draft report of the JA was shared with Government officials for comments before its final adoption.

A key element of the JA was continuous negotiations on the issues as they emerged to ensure that the Government is on board with the recommendations, for example, excess stocks of some vaccines and auto-disable syringes, organization of the outreach services within the context of recently issued Government order.

Annex D:

HSS grant overview

General information on the HSS grant							
1.1 HSS grant approval date		1 st March 2007					
1.2 Date of reprogramming approved by IRC, if any		25 th April 2008 (Phase 2)					
1.3 Total grant amount (US\$)		USD 10.32 million					
1.4 Grant duration		8 years					
1.5 Implementation year		March/2007 – June/2015					
(US\$ in million)	2008	2009	2010	2011	2012	2013	2014
1.6 Grant approved as per Decision Letter	0.34	1.01	1.03	1.05	1.07	1.09	1.10
1.7 Disbursement of tranches	1	2	1	1	2	1	2
1.8 Annual expenditure	1.38	1.14	1.17	1.17	1.10	0.78	1.26
1.9 Delays in implementation (yes/no), with reasons		None anticipated					
1.10 Previous HSS grant (duration and amount approved)		HSS1, USD 1.85 million					
<p>1.11 List HSS grant indicators</p> <p>1a %DTP-HepB3 Coverage (National)- 90%</p> <p>1b %DTP-HepB3 Coverage (10 OD)- 90%</p> <p>2a. #/% OD achieving >= 80% DTP3 Coverage (National)- 76 (100%)</p> <p>2b. #/% OD achieving >= 80% DTP3 Coverage- 10 (100%)</p> <p>3a. % Hepatitis B Birth Dose - 24 hours (National)- 65%</p> <p>3b. % Hepatitis B Birth Dose - 24 hours (10 HSS OD)- 65%</p> <p>4a. Measles Coverage (National)- 90%</p> <p>4b. Measles Coverage (10 HSS ODs)- 90%</p> <p>5a.% Pregnant Women Attending >=4 ANC (National)</p> <p>5b.% Pregnant Women Attending >=4 ANC (10 HSS ODs)- 88% (2014 target)</p> <p>6a. % Skilled Birth Attendance (National)- 90%</p> <p>6b. % Skilled Birth Attendant (10 HSS OD)- 90%</p> <p>7a. Delivery at facility (National)- 70%</p> <p>7b. Delivery at facility (10 HSS ODs)</p> <p>8a. % Health Centres trained/implementing IMCI (National)- 100%</p> <p>8b. % Health Centres trained/implementing IMCI (10 HSS ODs)- 100%</p> <p>9. # ODs reaching performance contracts targets specified in OD contracts (10 HSS ODs)- 100%</p> <p>10a # facilities implementing full MPA (national)- 100%</p> <p>10b # facilities implementing full MPA (10 HSS OD)- 100% of health centres</p> <p>11a % Immunisation at Fixed Site (National)- 40%</p> <p>11b % Immunisation at Fixed Site (10 HSS ODs)- 40%</p> <p>12. % approved budgets reaching health facilities- 100%</p>							

1.12 Amount and scope of reprogramming (if relevant)
 HSS (Phase 3) grant submitted on 23rd January 2015, (and approved by IRC), for the duration of 5 years between 2015-2019.
 Total amount requested: USD 18,058,048
 No reprogramming of the existing HSS grant
 Allocation to 5 objectives:
 1: Increase immunization coverage in high risk communities USD 6,600,120
 2: Strengthen cold chain system through improved equipment and management USD 2,796,000
 3: Increase community awareness of, and demand for, immunization USD 1,538,660
 4: Strengthen the surveillance of vaccine-preventable diseases USD 1,914,030
 5: Strengthen management capacity to support EPI USD 5,021,238

Annex E. Best practices (OPTIONAL)

Annex F:

Vaccination schedule, NIP, Cambodia

Vaccine	Age					
	Birth	6 weeks	10 weeks	14 weeks	9 months	18 months
BCG	√					
Hepatitis B	√					
OPV		√	√	√		
DTP-HepB-Hib		√	√	√		
PCV13		√	√	√		
IPV				√		
MR					√	√
JE					√	

Annex G:**Progress Report on the EVM Improvement Plan – December 2014**

(Prepared by Mr. Kong Heang Kry, National Immunization Program)

1. Background

The first effective vaccine management (EVM) assessment was conducted in Cambodia in 2012 with technical and financial assistance from WHO. Based on the assessment findings, one page of EVM improvement plan was developed. Those are the key activities for the National Immunization Program to implement in the next two years:

1. (E5). Include preventative maintenance items such as buildings, equipment and transport in annual government expenditure budget at all levels.
2. (E2). Conduct training at all levels on priority items in temperature management identified by EVM assessment.
3. (E2). Conduct a temperature monitoring study of the cold chain distribution system in Cambodia, including a pilot of cold water packs in two additional provinces.
4. (E7). Decide on change from conditioned ice to cold water packs after completion of temperature study in time for proposed introduction of pneumococcal vaccine.
5. (E3). Review available cold chain storage space at all levels for future needs to introduce new vaccines, and review options including procurement of new equipment and modification of stock management policy and vaccine distribution frequencies.
6. (E9). Establish a National Cold Chain Manual that includes standard operation procedures (SOP) and guidance documents.
7. (E3). Move the cold room and freezer room from the old compound to the new one and integrate the vaccine store at one site.
8. (E2). Conduct a temperature mapping study of all cold rooms and freezer rooms at the Central Medical Store (CMS).
9. (E3). Review available and needed storage space at province level for current vaccines, redeploy excessive cold chain equipment to cover current shortfalls, and integrate additional needs into the National Immunization Programme's cold chain equipment replacement plan.
10. (E7). Update current training programmes for health centre (HC) staff to include specific sections on vaccine diluents, vaccine vial monitor and multi-dose vial policy.

2. Progress in the implementation of EVM Improvement Plan (April 2012- Dec. 2013)

NIP conduct a review of EVM improvement plan implementation in May 2014 with UNICEF technical support. It showed that technical knowledge and financial resources within the National Immunization Programme (NIP) were limited to implement the EVM improvement plan after the assessment conducted in 2012. Only three activities recommended in the EVM improvement plan were implemented completely (activity numbers 4, 7 and 8), one was partly implemented (number 5) and several were not implemented at all (numbers 1, 2, 3, 6, 9 and 10).

In response to activity number 3, UNICEF needs to provide technical and financial assistance to improvement of temperature monitoring. Vaccines are temperature sensitive. Temperature control is vital for vaccine management and is a key performance quality indicator of the cold chain and logistics system. Effective, or quality, cold chain management is increasingly important as, along with existing vaccines (BCG for tuberculosis, oral polio, tetanus, hepatitis B, pentavalent (DPT-HepB-Hib), measles, rubella), Cambodia is introducing new and more costly vaccines: pneumococcal vaccine, inactivated polio vaccine (IPV) and a vaccine for cervical cancer (HPV).

The quality of vaccine supply chain can be defined as "no time-temperature damaged vaccines used". Unless temperature status of vaccine storage is routinely measured, especially at the time of distribution and storage, it is not possible to ensure quality of vaccines. Therefore, a potential proxy to monitor quality is cold chain temperature performance. The discarding of time-temperature

damaged vaccines is a cost issue. Improved temperature management prevents temperature damage to vaccines and therefore improves both cost efficiency and quality control.

UNICEF provided technical and financial support to implement key activities (2, 3 and 4) recommended by EVM to improve cold chain temperature monitoring. For others activities, NIP discussed with GAVI to use new health sector support fund 2016-2020 to implement cold chain related activities such as activity numbers 1, 2, 3, 6, 9 and 10 as these activities will require a lot of funds to implement them.

3. The implementation of EVM Improvement Plan 2014

As of December 2014, five of the ten activities recommended by the EVM improvement plan 2012, six activities (activity numbers 4,5,7,8, 9 and 10) were completed. Four activities were partly implemented or in progress (activity numbers 1, 2, 3 and 6). Activity number 1 remains a challenge that need further actions to improve planning and budgeting for buildings, equipment and transport maintenance at all levels.

Recommendation (E2): Conduct a Temperature Monitoring Study of the cold chain distribution system in Cambodia, including a pilot of "cold" water packs in two additional provinces.

Status of implementation: Conducted temperature monitoring study of the cold chain distribution system using WHO protocol (WHO/IVB/05.01) and temperature monitoring device Log tag trix-8 data loggers (PQS code: E006/006) in four selected provinces for "conditioned ice-packs study and two provinces for cold water packs study for a period of six months. Temperature monitoring study started in November 2014 (expected to end in May 2015).

Recommendation (E3): Review available cold chain storage space at all levels for future needs to introduce new vaccines, and review options including procurement of new equipment.

Status of implementation: The National Immunization Program undertook an update of the cold chain inventory throughout Cambodia in the last quarter of 2013, and this report and the inventory listing was finalized in April 2013. Storage space was then reviewed for both PCV13 and IPV vaccine introduction and will be further developed as part of the cMYP update in 2014. Funds for the additional requirements for both IPV and PCV vaccines have been included in the Vaccine Introduction Grant (VIG) costs. This includes \$130,000 for PCV introduction and \$50,000 for IPV introduction.

Recommendation (E9): Establish a National Cold Chain Manual that includes SOP and guidance documents.

Status of implementation: The SOP or national quality plan was revised for national level and translated in local language.

Recommendation (E2):

- Pilot introduction of 30-day temperature recorder (30DTR) for all refrigerators at provincial, district and health-centre level in two provinces. Procured of 200 fridge-tag-2 (PQS code: E006/020) devices. This was done through one Training of Trainers (ToT) of 24 participants from the two provinces (16 from Operational District level, 4 from Provincial Health Department (PHD) of Phnom Penh and Kratie); 8 from NIP, 2 UNICEF attended TOT. A total 138 health staff from 69 vaccine storage sites with refrigerators in two provinces attended one day training of FT2 and brought back with them the device. NIP and PHD conducted post training follow up which was integrated with routine activities. No report of default devices.
- Install temperature monitoring device for all central cold rooms using new temperature monitoring device "Cold Trace (NEXLEAF)" in each central WIC. Instalment completed.

Central cold store manager and NIP vaccine/ cold chain officer received twice a day SMS alert from each cold room and can access more detail information online from home or other places. They also received the monthly summary report for their future action and documentation.

Recommendation (E3): Review available and needed storage space at PHD level for current vaccines, redeploy excessive cold chain equipment to cover current shortfalls, and integrate additional needs into NIP cold chain equipment replacement plan.

Status of implementation: Discussions to purchase of walk-in cold room (WIC) has been going on for further expansion of cold chain capacity at the national level. Cold chain assessment conducted along with the PCV and IPV GAVI proposals and procurement order for refrigerators for Provinces and ODs already given to UNICEF. Discussions for purchasing more equipment from HSS grant is going on.

4. Next steps

- Conduct 2nd EVM assessment and development of EPI Improvement Plan (Jul-Aug 2015)
- Complete the temperature monitoring study of the cold chain distribution system, data collection, analysis and report writing (20 May- 3 June 2015)
- Conduct assessment of cold chain maintenance system (Mid-Sept. 2015)
- Review the introduction of temperature monitoring using Fridge Tag in 2 provinces and expand to other provinces (Jul. 2015 & Jan 2016).
- Implement cold chain logistics activities listed in the GAVI HSS proposal