



FINAL EVALUATION

Disease Surveillance Networks Initiative

Asia

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Final Evaluation of the Rockefeller Foundation's Disease Surveillance Networks Initiative in Asia

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Disclaimer: The views and ideas expressed herein are those of the authors and do not necessarily imply or reflect the opinion of the SEAMEO TROPED Network.

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ACRONYMS

ACMECS	Ayeyawady-ChaoPhraya-Mekong Economic Cooperation
ADB	Asian Development Bank
ADPC	Asian Disaster Preparedness Center
AH1N1	Swine Flu
AI	Avian Influenza
API	Avian and Pandemic Influenza
APSED	Asia Pacific Strategy for Emerging Infectious Disease
ASEAN	Association of Southeast Asian Nations
BIOPHICS	Center of Excellence for Biomedical and Public Health Informatics
CD	Communicable Disease
DAC	Development Assistance Committee
DHC	District Health Center
DSN	Disease Surveillance Network
DSS	Disease Surveillance System
EAG	External Advisory Group
EB	Executive Board
ECTAD	Emergency Centre for Transboundary Animal Diseases
EID	Emerging Infectious Diseases
EU	European Union
EWARS	Early Warning System
FAO	Food and Agriculture Organization
FETP	Field Epidemiology Training Program
FGD	Focus Group Discussion
GDPM	General Department of Preventive Medicine
H5N1	Avian Flu
HFDH	Han Fu District Hospital
HIV	Human Immunodeficiency Virus
HMN	Health Metrics Network
HPAI	Highly Pathogenic Avian Influenza
HSD-PFD	Health Statistics Division—Planning and Finance Department
ICT	Information and Communication Technology
IEC	Information, Education, and Communication
IHR	International Health Regulations
InSTEDD	Innovative Support to Emergencies Diseases and Disasters
KAP	Knowledge, Attitudes, and Practices
KII	Key Informant Interview
Lao PDR	Lao People's Democratic Republic
MARD	Ministry of Agriculture and Rural Development

ACRONYMS

MBDS	Mekong Basin Disease Surveillance
MOA	Ministry of Agriculture
MOAF	Ministry of Agriculture and Forestry
MOH	Ministry of Health
MOU	Memorandum of Understanding
NAHICO	National Avian and Human Influenza Coordination Office
NCLE	National Center for Laboratory and Epidemiology
NEID	National Emerging Infectious Diseases Coordination Office
NGO	Non-governmental Organization
NIHE	National Institute for Hygiene and Epidemiology
OECD	Organization for Economic Cooperation and Development
OIE	World Organization for Animal Health (Office Internationale des Epizooties)
OIR	Outbreak Investigation and Response
ONA	Organizational Network Analysis
PCR	Polymerase Chain Reaction
PHO	Provincial Health Office
PHS	Provincial Health Service
PHS-PB	Provincial Health Service—Planning Bureau
PI	Pasteur Institute
PPE	Personal Protective Equipment
PPMC	Provincial Preventive Medicine Center
ProMed	Program for Monitoring Emerging Diseases
Rand	Research and Development Provincial Health Services
RRT	Rapid Response Team
SAARC	South Asian Association for Regional Cooperation
SARS	Severe Acute Respiratory Syndrome
SEAMEO TROPMED	Southeast Asian Ministers of Education Organization Regional Tropical Medicine and Public Health Network
SMS	Short Message Service
STG Co.	STG Cooperation Pte LTD
USCDC	US Centers for Disease Control
VHW	Village Health Workers
VPH	Veterinary Public Health
WHO	World Health Organization
WPRO	Western Pacific Regional Office
WHO SEARO	World Health Organization South East Asia Regional Office

Executive Summary

Background and Objectives

The Disease Surveillance Network (DSN) Initiative was launched in 2007 under the new strategy of the Rockefeller Foundation and intends to:

- [1] Improve human resources for disease surveillance in developing countries, thus bolstering national capacity to monitor, report, and respond to outbreaks;
- [2] Support regional networks to promote collaboration in disease surveillance and response across countries; and
- [3] Build bridges between regional and global monitoring efforts.

In August 2009, the Board of Trustees of the Rockefeller Foundation approved funding to undertake an independent external evaluation of the DSN Initiative in Asia, Africa, and globally. This report covers the results of the Mekong region evaluation, which had the following objectives:

- [1] To assess the relevance, effectiveness, efficiency, impact, influence, and sustainability of the Foundation's support to the DSN Initiative grantees in the Mekong region;
- [2] To assess the underlying hypothesis of the DSN Initiative that robust transboundary, multi-sectoral, and cross-disciplinary collaborative networks lead to improved prediction and detection for disease surveillance and response. Specifically, improved surveillance and response will include assessment of the timeliness of response and the adherence of the rapid response team (RRT) to the World Health Organization (WHO) guidelines on outbreak investigation. The evaluation will not undertake formal disease surveillance system evaluation, but will use secondary data sources for such assessment; and
- [3] To make forward-looking recommendations to the lead evaluator and to the Foundation on the following:
 - ▶ Implications of the achievements, challenges, and lessons from the DSN Initiative in the Mekong for the strategy and investments of the Rockefeller Foundation at the regional level (which could include lessons for specific fields of work such as health, urbanization, climate change, and others);
 - ▶ Priority linkages and synergies for DSN learning to benefit the work of other Foundation initiatives, the Rockefeller Foundation Asia Regional Office, and key partners in Asia;
 - ▶ Key priorities for funding and partnerships to sustain the gains made by the Foundation in the field of disease surveillance networks in Asia; and
 - ▶ Other implications as identified.

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The evaluation also aims to contribute to the field of philanthropy by emphasizing the use of evaluation in grantmaking and by informing the field of development evaluation and assessment about methods and models to measure complex networks.

Methods

The Mekong Evaluation used a non-experimental evaluation design with observations made only at the time the evaluation was conducted. Of the 21 grants included in the Portfolio Review, 14 were still on-going, while 7 were already completed.

The DSN evaluation in the Mekong region has four components: Portfolio Review, the Two-Country Study covering Lao People's Democratic Republic (PDR) and Vietnam, One Health, and Organizational Network Analysis (ONA). For the Two-Country Study, the evaluation team visited two provinces per country and one district per province.

Various modes of data collection were utilized for each of the different components of the Mekong Evaluation, including an email survey conducted with 21 Rockefeller Foundation DSN grantees in Asia for the Portfolio Review which had a response rate of 90.5%. Other modes of data collection used were interviews involving 78 key informants, 6 focus group discussions (FGDs) with a total of 36 participants, and a desk audit/review of documents.

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Evaluation Findings

Relevance

In Asia, the Foundation's work in building disease surveillance networks has focused on the Mekong Basin Disease Surveillance (MBDS) regional network and its member countries. The focus on cross-border surveillance has been justified primarily by the geographic location of the countries, epidemiologic landscape, active economic developments, and the mobility of people and animals, which all contribute to making these borders conducive to disease transmission.

The Rockefeller Foundation is seen as a thought leader in cross-border surveillance. In the Mekong region, the Foundation is "synonymous" with cross-border surveillance as validated by the statements of development partners and country officials who describe it as "visionary, comprehensive, and cross-sectoral."

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The relevance of the inclusion of One Health in the DSN Initiative in Asia is validated by (1) global and regional developments and trends, (2) the Foundation's mission and overall strategy given the experience of highly pathogenic avian influenza (HPAI) in the region, (3) the epidemiological landscape in the region, and (4) the countries' perception of their priorities as demonstrated by the importance accorded to One Health.

The DSN grants on capacity development respond to regional issues on human resource development as confirmed by the results of the country assessments conducted by Health Metrics Network (HMN) on the health information systems of Cambodia, Lao PDR, and Vietnam in 2006.

Effectiveness

Overall, almost all of the deliverables of the grants were completed as planned.

The MBDS regional network started and created the platform for cooperation between countries at a time when there was little trust to build on. It had strong government ownership that provided political will. The MBDS regional network's relationships indicate the extensive agreements MBDS has garnered with countries, regional stakeholders, and global actors. The ties indicate informational exchanges, indications of agreements, trainings, funding, and collaborations.

Cross-border cooperation sites expanded from 4 in 2007 to 24 in 2010. Cross-border cooperation includes information exchange, joint training, and joint outbreak investigation. This indicates an increase in the areas involved in cross-border surveillance, leading to greater access to timely and relevant information that can trigger the rapid response teams that have been organized and trained with the support of the DSN Initiative.

The culture of information exchange has been internalized between the ministries and provincial health offices (PHOs) of bordering provinces and countries and spilled over to different groups at the border areas. The official cross-border information exchange happens at the level of the province following an agreed-upon mechanism for specific clusters of diseases. Informal information exchange happens both at the district and provincial levels to share timely information. This is made possible by the trust established between borders.

Joint outbreak investigations, which have been conducted in a number of cross-border sites, have improved relationships and have served as learning opportunities for both teams. Joint meetings organized by cross-border sites

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served as sharing and learning opportunities. However, the joint trainings conducted were found to have a number of barriers that make it difficult to continue. Several cross-border sites can serve as models for cross-border cooperation.

In the area of tools and technical assistance, the Pro/MBDS ProMed-mail Internet reporting system introduced through the DSN has a low level of awareness and utilization among ministry of health (MOH) staff—especially at the provincial level. Monitoring and evaluation tools developed for the MBDS activities are utilized for purposes of reporting, while its online version was just introduced during the time of the evaluation.

Overall, the DSN contributed positively in terms of outreach in building capacities at the individual level in epidemiology, surveillance, outbreak investigation, and response. This was particularly true in the MBDS provinces, districts, and villages, which is noteworthy considering that capacity development is most needed at these levels. The RRTs of the MBDS provinces have been involved in the trainings organized by the DSN grants. The Field Epidemiology Training Program (FETP) graduates have also taken up important positions and leadership roles in epidemiology at ministries of health, another indicator that the desired changes resulting from DSN inputs on capacity development have been achieved. At the national and institutional level, the FETP trainees supported by DSN grants contributed to the development and implementation of the national FETP courses developed in Lao PDR and Vietnam, which will improve access to FETP training of health professionals in these countries. Curriculum for short courses on zoonotic diseases and long-term degree programs on public health informatics were also developed.

One of the core strategies of the MBDS is the animal and human health interface which demonstrates the priority provided to the One Health concept implemented at the MBDS provinces. DSN support to One Health activities in these provinces is in the form of funding meetings, joint training, and joint investigations undertaken and organized by the health and animal sectors. Memoranda of Understanding (MOUs) at the MBDS provinces were signed between the health and animal sectors and enabled the implementation of the national policy on One Health. The comprehensive zoonotic diseases training package developed through one of the DSN grants is a useful and acceptable curriculum for the joint training of animal and human health staff as gathered from development partners, practitioners, experts, and country officials. The efforts of the countries in terms of fulfilling the challenges of the Asia Pacific Strategy for Emerging Infectious Disease (APSED) and International Health Regulations (IHR) are complementary to the transdisciplinary approach of One Health.

Efficiency

The catalytic effect of the DSN Initiative grants in the countries is shown in development partners' support through co-funding schemes of DSN-related activities. Although no significant budget increase to support MBDS-related activities in the provinces are provided by governments of member countries, in one country visited, additional human resources for health were provided for in the more active border sites.

The involvement of development partners in DSN and MBDS activities reduced the possibility of the duplication of efforts by similar development projects.

Sustainability

The MBDS network's mechanisms and structure are now being utilized by other development agencies for their own regional activities and efforts on disease surveillance. Cross-border information exchange was found to have the greatest potential for sustainability among the different types of cross-border cooperation. The culture of cross-border information exchange has been integrated in the practices of most health border officials and to some extent, of the animal sector officials at the borders. The national FETP training developed in Lao PDR and Vietnam will greatly—and positively—influence the continuation and expansion of FETP training in both countries.

Policy Influence of the DSN Initiative

Two MOUs signed by the health ministers of six countries in 2001 and 2007, provide a legal framework and allow for the exchange of information and for cross-border cooperation. MOUs were likewise signed between border provinces both in the health and in the animal sectors, which reinforced the ministerial MOUs. There have been various agreements regarding coordination between the health and animal sectors at the provincial levels of each member country.

No explicit policy influence in relation to guidelines and standards was seen since standards for surveillance, outbreak investigation, and response are based on WHO guidelines.

Impact

Field interviews done and records reviewed during the evaluation in relation to the AH1N1 and H5N1 outbreaks in Lao PDR and Vietnam show RRTs were formed in a timely manner. Cases were followed up and case findings were done until no new cases occurred. The outbreak was contained within the original group affected, and widespread transmission was averted.

The greatest impact of the DSN Initiative on the disease surveillance system of these countries is observed at the peripheral levels (provincial, district, and village) of the MBDS areas. Here, capacity-building activities have resulted in heightened awareness of early warning signs of impending disease outbreaks among community members and leaders. Also, the establishment of structures for the systematic and organized reporting of suspected cases at the community and higher levels has resulted in a more timely and efficient reporting and response system to contain potential disease outbreaks.

The thrust of the DSN Initiative at the peripheral levels is noteworthy since it seeks to improve the quality of the data source that is the foundation of the disease surveillance system of the country.

The anecdotal evidence of the cross-border, real-time information exchange related to cases of AH1N1 and dengue that triggered a timely investigation and response. The joint outbreak investigation undertaken by the animal and human health teams in response to H5N1 proved that robust collaborative networks can lead to improved prediction and detection for disease surveillance and response.

Recommendations

Implications of the Achievements, Challenges, and Lessons Learned from the DSN Initiative in the Mekong Region

- ▶ Support to the MBDS as a regional network should be continued and should focus on strengthening it in order to enhance the regional implementation of functions and activities, in addition to the bilateral efforts implemented at cross-border sites.
- ▶ The involvement of other development partners, even for information only, should be undertaken from the start of any Rockefeller Foundation initiative. This practice by the Foundation generated significant interest from the partners, and its continuation influenced the integration of the MBDS mechanism and structure in other related projects in the region.

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- Documentation of all the DSN grants should be strengthened. The achievements, deliverables, and experiences of all DSN grantees can serve as rich sources of information that can be utilized by the Foundation for its other initiatives in the region. If disseminated and made readily available to a wider audience, this information could also help other development partners reduce duplicative efforts. In particular, the MBDS experience, with both its “successes” and its “weaknesses,” can provide valuable lessons for regional cooperation. These can serve as inputs in the development of protocols, guidelines, and standard operating procedures for regional cooperation.
- It is crucial to undertake initiatives to create greater awareness of—and to encourage and to promote the wider and regular utilization of—the tools developed through the DSN such as Pro/MBDS and GeoChat. This should be done not only at the national level, but also at the provincial level.

Priority Linkages and Synergies

- A stronger linkage should be developed with the Association of Southeast Asian Nations (ASEAN), which is the political organization in the region and which can provide the highest political support to the Rockefeller Foundation’s initiatives. ASEAN has a mandate for regional cooperation, and the Foundation should be seen both as a technical and development partner.
- The Foundation’s regional coordinator should have more visibility in ASEAN initiatives. The presence of the MBDS Coordinator (Secretariat) in some technical meetings of ASEAN may not be enough to raise the level of awareness about MBDS and to integrate MBDS activities into ASEAN’s plan of action related to pandemic preparedness.
- Lessons learned from the DSN Initiative should be shared with the stakeholders of other Rockefeller Foundation initiatives in the Mekong region. At the same time, the DSN stakeholders in the MBDS countries should also be made aware of these other Foundation efforts so that sectoral linkages can be made within the countries and resources can even be shared. At the moment, the level of awareness remains low.

Key Priorities for Funding and Partnerships

- The Foundation should continue to support efforts toward the institutionalization of the MBDS network and in the process, should ensure that ownership is maintained by the countries involved.
- The MBDS regional network should be supported in undertaking a knowledge management function.

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- ▶ Support for policy research should be continued and strengthened both at the country and regional levels. This strategy should include capacity building for policy research. The Foundation can collaborate with research and training institutions in this endeavor, preferably with those from the Mekong region that can deliver quality outputs.
- ▶ Involvement in One Health should continue. The leadership of affected countries should be engaged to further promote the transdisciplinary approach by organizing a Bellagio-like conference for the Mekong region. This conference should involve those who can influence policy and program directions.
- ▶ The Foundation should spearhead the joint human resource development for animal and human health staff utilizing the comprehensive training package developed through the DSN Initiative. At the same time, it should disseminate and promote the use of this package.
- ▶ The environmental sector of MBDS countries should be involved in the promotion of a transdisciplinary approach. In some countries in the Mekong region, environmental issues are not within the mandate of the MOH or Ministry of Agriculture (MOA), but are instead overseen by other ministries.
- ▶ The One Health activities should be linked with existing related initiatives in the countries and the region. Mapping of related activities can be supported by the Foundation to benefit all development organizations.

New Areas of Work for the Rockefeller Foundation

Key informants have identified new areas of work for the Foundation. The Foundation has always been associated with health. Thus, the other areas suggested below are still under health and health related fields:

- ▶ Climate Change;
- ▶ Neglected Tropical Diseases;
- ▶ Lifestyle Diseases;
- ▶ Poverty Reduction; and
- ▶ Capacity Building for Health Professionals.

1. Background

1.1 The Disease Surveillance Network (DSN) Initiative of the Rockefeller Foundation

The DSN Initiative was launched in 2007 under the new strategy of the Rockefeller Foundation. The initiative intends:

- ▶ To improve human resources for disease surveillance in developing countries, thus bolstering national capacity to monitor, report, and respond to outbreaks;
- ▶ To support regional networks to promote collaboration in disease surveillance and response across countries; and
- ▶ To build bridges between regional and global monitoring efforts.

The DSN Initiative has five outcome areas.

- [1] **Networks:** Transboundary disease surveillance networks in Southeast Asia and in Eastern and Southern Africa are formed, sustained, and evolved to enable disease surveillance practitioners to collaborate, share information, and learn how to more effectively address disease threats.
- [2] **Capacity:** Disease surveillance practitioners and their institutions strengthen, apply, and distribute technical and communication skills in disease surveillance to more effectively address disease threats.
- [3] **Tools:** Disease surveillance practitioners have increased access to and the use of improved tools and methods to effectively and efficiently monitor, share, and report information, and to respond to disease threats.
- [4] **Transdisciplinary Leadership in One Health:** Policymakers, human health, and veterinary practitioners take a transdisciplinary approach to policy and practice in animal and human health, emphasizing the One Health principles at the global, regional, and local levels.
- [5] **Organizational Excellence, Accountability, and Learning:** The DSN team operates effectively and efficiently, provides leadership in the Rockefeller Foundation, contributes to the Foundation's mission, is relevant and accountable to its stakeholders, and learns from its monitoring and evaluation.

The DSN is a five-year initiative started in 2007 and scheduled to end in 2011, including one year in development as approved by the Rockefeller Foundation's Board of Trustees. With a total budget of \$21.3 million, it's comprised of 41 grants categorized according to their coverage as (1) grants that are situated within the Foundation's global initiative, (2) regional grants for Asia, and (3) a basket of grants for the African region.

1.2 The Overall Global Evaluation of the DSN Initiative

In August 2009, the Foundation's Board of Trustees approved funding to undertake an independent external evaluation of the DSN Initiative in Asia, Africa, and globally. The evaluation is being conducted in three linked phases:

- ▶ a global level evaluation with key policy partners, funders, and practice leaders;
- ▶ an evaluation of the Foundation's investments in DSN in the Mekong region; and
- ▶ an evaluation of the Foundation's investments in DSN in Eastern and Southern Africa.

2. Evaluation

2.1 Purpose and Objectives

The purpose of the DSN evaluation in the Mekong region was twofold:

- ▶ To inform the work and strategy of the Foundation, its grantees, and the broader field of disease surveillance, based on the experience of DSN investments in the Mekong region. More specifically, the evaluation will inform future directions and strategies for current areas of DSN Initiative work, particularly in Asia, and will highlight potential new areas of work and strategy; and
- ▶ To provide accountability to the Rockefeller Foundation's board, staff, and stakeholders for the DSN funds spent in the Mekong region.

The main objectives of the evaluation were:

- ▶ To assess the relevance, effectiveness, efficiency, impact, influence, and sustainability of the Foundation's support to the DSN Initiative grantees in the Mekong region;
- ▶ To assess the underlying hypothesis of the DSN Initiative that robust transboundary, multi-sectoral, and cross-disciplinary collaborative networks lead to improved prediction and detection for disease surveillance and response. Specifically, improved surveillance and response will include assessment of the timeliness of response and the adherence of RRTs to the World Health Organization (WHO) guidelines on outbreak investigation. The evaluation will not undertake a formal disease surveillance system evaluation, but will use secondary data sources for such an assessment; and
- ▶ To make forward-looking recommendations to the lead evaluator and Foundation on:
 - ⇒ *Implications of achievements, challenges, and lessons from the DSN Initiative in the Mekong region for the strategy and investments of the Foundation at the regional level. This could include lessons for specific fields of work such as health, urbanization, and climate change.*
 - ⇒ *Priority linkages and synergies for DSN learning to benefit the work of other Foundation initiatives, the Foundation's regional office in Asia, and key partners in Asia.*
 - ⇒ *Key priorities for funding and partnerships to sustain the gains made by the Foundation in the field of disease surveillance networks in Asia.*
 - ⇒ *Other implications as identified.*

The evaluation also aims to contribute to the field of philanthropy by emphasizing the use of evaluation in grantmaking and by informing the field of development evaluation and assessment about methods and models to measure complex networks.

2.2 Audience for the Evaluation

The primary audiences for the evaluation are the managers of the DSN Initiative, the regional director and staff of the Foundation's regional office in Bangkok, the grantees funded under the initiative in the Mekong region, and other stakeholders engaged in the work either as partners, participants, or beneficiaries.

2.3 Scope of the Evaluation

The Mekong Evaluation includes:

- ▶ All DSN grantmaking activity of the Foundation to institutions in the Mekong region and aimed at achieving or advancing the broad objectives of the DSN Initiative in the context of the Mekong region;
- ▶ Work of the Foundation's regional office in Asia in leading and building relationships in the field of disease surveillance, promoting the One Health approach, and other non-grant work; and
- ▶ All grants to institutions that are outside the Mekong region, but which pertain to it and which fall under the categories of One Health, health diplomacy, and disease surveillance enhancement.

However, it should be emphasized that this evaluation is not an evaluation of the individual disease surveillance systems of the countries involved. Rather, it is an evaluation of the influence of the Foundation-supported grants in strengthening the disease surveillance systems of the regional network through information sharing, the implementation of the One Health concept, and the national response to a specific health problem or outbreak.

2.4 Key Performance Areas—Evaluation Questions

The evaluation considered six key performance areas, namely:

- [1] **Relevance:** In the context of this evaluation, relevance includes the rationale, niche, role, comparative advantage, and value added of the DSN Initiative in the Mekong region.
- [2] **Effectiveness:** Assessment of the results of the initiative in the Mekong region, including an analysis of the products and services planned and provided, the changes or outcomes that have occurred, and the impact the initiative has had on components of the health system related to disease surveillance and response in the Mekong region.

- [3] **Efficiency:** Assessment of the use of resources to obtain results. It includes the extent to which the Foundation has been using best management and governance practices and whether those practices are providing good value for money spent. Efficiency also refers to the “catalytic effect” of Foundation resources, the alignment of funds and time necessary to achieve outputs and outcomes, the development of and capacity to work with others, and process efficiency (timeliness, payments, etc.).
- [4] **Degree of Influence:** The degree of influence the DSN Initiative has had on policies (specifically at the different stages of the policy cycle), public discourse, and practices in the fields of public health, disease prevention, and development in the Mekong region.
- [5] **Impact:** Assessment of long-term effects the DSN Initiative has had on people and systems in the Mekong region. Ideally, provided that there is baseline and monitoring data, this will include an assessment of the extent to which the DSN Initiative has contributed to, or directly affected, improvements in the lives of poor and vulnerable people within the broader population served by the work of Mekong grantees. Since it is not possible to measure this within the time and resource constraints of this evaluation project, the assessment of impact will focus on the changes in the system and will be measured by:
 - ⇒ *focusing on the outcomes (Networks; Capacity; Tools; One Health; and Organizational Excellence, Accountability, and Learning); and*
 - ⇒ *linking outcomes to information processing and sharing, to the implementation of the One Health concept, and to strengthened capacities.*
- [6] **Sustainability:** The extent to which the initiative or grantees has developed both financial and/or institutional support to continue the work started by the DSN Initiative in Asia, particularly in the greater Mekong region.

The key performance areas and evaluation questions to be addressed in the Mekong Evaluation are outlined in detail in the Project Evaluation Matrix presented in Annex 1.

2.5 Logic of Change

The logic of change underlying the evaluation of the DSN Initiative in the Mekong region follows the basic evaluation framework defined by the input→output→outcome→impact results chain. DSN inputs led to the conduct of several activities and processes that resulted in planned outputs. Such outputs are expected to bring about immediate outcomes that eventually translate into long-term impact on people’s lives and on systems related to disease surveillance and response. This is shown in Annex 2.

The major inputs of the DSN Initiative are: funding, including fellowships for long- and short-term training such as the FETP; technical support for various areas such as training; information system development and information and communication technology (ICT); tools and technology such as the provision of disease surveillance software and designs or templates for data collection and reporting forms; and new approaches to emerging priorities. In the identification of major inputs, it was deemed important to recognize a fifth item, the Foundation's track record and influence in the regional health and development sector. Having an established reputation and being respected in the international arena are very important factors that facilitate the attainment of one of the major project outcomes: the establishment of formal linkages and working relationships between government ministries within a country, between borders, and among countries within the region, in the area of disease surveillance and response.

The second and third boxes in Annex 2 show generic and generalized statements on different deliverables of the various DSN grants under each of the first four DSN outcome areas. A more detailed description of these deliverables will be mentioned in the succeeding sections of this report in the process of presenting and discussing the evaluation results.

The outcome areas identified in the fourth box of Annex 2 are the same as those presented in Section 1.1 of this paper: strengthened human resources in the areas of disease surveillance and response; increased access to and use of tools and methods; sustainment of the MBDS network; and the adoption of the One health approach for policy and practice in animal and human health by countries in the Mekong region.

As mentioned earlier, the time and resource constraints of the evaluation did not permit the assessment of the DSN Initiative's impact on people's lives. Instead, the DSN Initiative will be measured in terms of its impact on the disease surveillance systems of the countries, as evidenced by their ability to effectively control, in a timely manner, the spread of emerging diseases, resulting in decreased threats to national security from diseases and their ability to mount a coordinated response to emerging diseases between the health and agriculture ministries within a country, between borders, and among countries within the region.

The relationships described in the input→output→outcome→impact results chain underlying the logic of change will hold the following assumptions:

- Staff sent for DSN-related training is selected based on established or future responsibilities related to disease surveillance and continued work in the same

area after training. If inappropriate staff is sent for training or transferred to other areas after the training, the expected establishment of a human resource pool trained in disease surveillance and response would never materialize.

- ▶ There is mutual concern and interest in the need to strengthen, exchange, and share information and services related to disease surveillance among the member countries of the network and between the agriculture and health ministries of the countries. This is crucial for the sustainability of the networks which have been established under the DSN Initiative, as well as for the effective and sustained implementation of the One Health approach in the prevention and control of zoonotic diseases.
- ▶ The long and established track record of the Foundation in the areas of health and development is an important and facilitating factor in eliciting cooperation at the international level and has reinforced the level of trust needed for DSN activities to be implemented, especially regarding information exchange among countries for the MBDS.

2.6 Evaluation Matrix

An evaluation matrix was developed for the Mekong assessment that considered key performance areas and the logic of change. This matrix was used as a guide for the different aspects of the Mekong Evaluation and includes the following components:

- ▶ Key Performance Area;
- ▶ Questions to Be Answered;
- ▶ Indicators;
- ▶ Data Sources; and
- ▶ Methods of Data Collection.

It was also used to guide the development of the different data collection instruments for the four components of the evaluation. The matrix was created in accordance with the results of discussions held with the DSN Global Evaluation Team and the Rockefeller Foundation and with the recommendations from the Evaluation Advisory Group (EAG). The evaluation matrix is presented in Annex 1.

3. Methodology

3.1 Evaluation Design

- ▶ A non-experimental evaluation design was used, with observations made only at one time point during the evaluation.
- ▶ The DSN evaluation design in the Mekong region had four components: Portfolio Review, the Two-Country Study, One Health, and the Organizational Network Analysis (ONA).

3.2 Evaluation Components

3.2.1 Portfolio Review

- ▶ The review involved a rapid assessment of all 21 Rockefeller Foundation DSN grants implemented in Asia since 2007, particularly in countries in the Mekong region. The grants include both Asian and non-Asian proponents which have the Asian Mekong countries as target beneficiaries.
- ▶ The review was designed to provide context and broad insights as to how the different Foundation DSN grants have affected disease surveillance in the Mekong region, specifically in Lao PDR and Vietnam. It aimed to determine the perceptions of Rockefeller Foundation DSN grantees in Asia in relation to the relevance, effectiveness, efficiency, impact, degree of influence, and sustainability of their grants. It also aimed to determine grantees' perception of the Foundation's role in disease surveillance in the Mekong region.
- ▶ Data was collected by conducting an email survey of all 21 DSN grantees in Asia using a self-administered questionnaire. The list of grants included in the Portfolio Review is shown in Annex 3.

3.2.2 Two-Country Study

- ▶ A Two-Country Study was included as a component of the Mekong Evaluation as it was not possible to include all countries in the Mekong region with DSN grants. Instead, the decision was made to do an in-depth study of two countries that best represent the range of the DSN Initiative in the region.
- ▶ Lao PDR and Vietnam were purposively selected for the Two-Country Study based on the following considerations:
 - ⇒ *Lao PDR and Vietnam are both direct recipients of a number of DSN grants. Both countries also participated directly and indirectly in the other DSN grants.*
 - ⇒ *Lao PDR is centrally located in the MBDS hub geographically. The country borders all other member countries of the sub-regional network. This is crucial since the core strategies of MBDS all converge at border crossings.*

⇒ *Lao PDR is the lead country in the first core MBDS strategy (i.e. “maintain and expand cross-border cooperation”), while Vietnam is the lead country for One Health in the Mekong region.*

3.2.3 The Case Study

- ▶ The objective of the case study was to assess the overall impact of the Foundation’s DSN grants on the disease surveillance systems of Lao PDR and Vietnam.
- ▶ The main assumption is that the cumulative lessons, experiences, and overall effects of all DSN-related interventions received by the country should be reflected in the way they respond to an actual disease outbreak or epidemic. The recent occurrence of the AH1N1, AI, and cholera outbreaks in Lao PDR and Vietnam provide good opportunities to demonstrate how the various DSN interventions were actually applied by these countries.
- ▶ The study was conducted through a series of in-depth personal interviews with different types and levels of staff involved in responding to the AH1N1 outbreak in Lao PDR and the AI and cholera outbreaks in Vietnam. Intensive review of records and documents was done, including the review of reports on epidemiologic investigations and statistics compiled and reported during the outbreaks in both countries.

3.2.4 One Health

- ▶ The main objective was to determine the extent to which the One Health concept has been implemented in the Mekong region, particularly as part of the MBDS initiative in Lao PDR and Vietnam.
- ▶ Key informant interviews (KIIs) were conducted among officials of the MOH and the MOA for both countries, and with the Ministry of Rural Development (MARD) for Vietnam and the Ministry of Agriculture and Forestry (MOAF) for Lao PDR. For the animal and human health ministries, staff at the national, provincial, and district levels involved in implementing the One Health concept in each of these countries was interviewed.

3.2.5 Organizational Network Analysis (ONA)

- ▶ ONA is one method to evaluate how well inter-organizational collaboration has worked to overcome resource deficiencies, decrease uncertainty, and gain influence, especially with regard to public goods or common pool resource management (Creech & Willard, 2001; Krueathep et al., 2010; Provan et al., 2007) such as public health (Huang and Provan, 2007; Luke & Harris, 2007; Provan & Milward, 2001).

- ▶ For the purpose of this evaluation, the network analysis approach was primarily qualitative, with some pictographic representations of network relationships in the field of disease surveillance in Southeast Asia.
- ▶ ONA was conducted in parallel to the other study components, using joint tools and collaborating in the field where possible. Several different data collection methods were used.
- ▶ When possible, information for ONA was collected through KIIs, both in person and by telephone, in collaboration with the SEAMEO Mekong Evaluation Team. One component of the study involved the network mapping of quantitative data on network exchanges, sources of information, collaborations, reporting etc., both through the document review and field visits. This analysis was complemented by qualitative data obtained from the KIIs.

3.3 Selection of Study Sites

- ▶ The Two-Country Study included study sites in two provinces per country and in one district per province. The sample of two provinces per country represented 28.6% of the seven MBDS provinces in Lao PDR and 40% of the five MBDS provinces in Vietnam. In the case of ONA, three provinces in Lao PDR were visited instead of only two.
- ▶ The selection of the two sample provinces included in the evaluation per country was based on the following criteria: (1) the province must have been established as a MBDS province no later than 2008 in order to ensure that an adequate number of implemented MBDS activities could be documented; and (2) the province must share a border with other countries in order to give the evaluation team a broad picture of the situation in cross-border sites in different countries.
- ▶ The district in which the international border gate is located was visited in each province of every country as immigration and quarantine procedures are conducted here for all border crossings to and from neighboring countries.

3.4 Modes of Data Collection

- ▶ Various modes of data collection were utilized for each component of the Mekong Evaluation, including desk audits or reviews of records and documents, KIIs, and FGDs. An email survey of Rockefeller Foundation DSN grantees in Asia was also conducted as part of the Portfolio Review.
- ▶ Telephone interviews were conducted when scheduling problems and rigid time constraints prevented the personal interviews of key informants.
- ▶ All interviews were taped with participant consent in order to ensure complete documentation.

- The Mekong Evaluation Team Leader participated in a number of activities conducted by grantees. This coincided with the data collection phase of the evaluation and enabled the collection of in-depth, first-hand information and for the observation of the dynamics of grantee interactions during network related activities.

3.5 Field Work and Data Collection

Data collection for the evaluation was conducted from March 2010 through the second week of August of the same year. Field work included visits not only to Lao PDR and Vietnam, but also to Beijing, China and to the WHO Western Pacific Regional Office in Manila, Philippines. In the case of ONA, interviews were also conducted with stakeholders in Phnom Penh, Cambodia and at a cross-border provincial office in Mukdahan, Thailand. Interviews with the MBDS Secretariat, with key informants from Kenan Asia and from the Asian Disaster Preparedness Center (ADPC), and with past and current Rockefeller Foundation staff involved with the MBDS were conducted in Bangkok, Thailand.

3.6 Respondents and Participants of Data Collection Activities

3.6.1 Type and Number of Respondents and Participants

- 79 key informants from Lao PDR, Vietnam and other Mekong region countries were interviewed. Key informant respondents included grant proponents from Vietnam and Lao PDR, members of the MBDS Executive Board, MBDS Country Coordinators and Cross-Border Managers, FETP trainees, Ministry of Health and Agriculture staff and officials involved in disease surveillance, development partners such as the Asian Development Bank (ADB) and WHO, the MBDS Secretariat, and current and former staff of the Rockefeller Foundation Office in Bangkok involved in the DSN Initiative.
- 6 FGDs with a total of 36 participants were carried out in both countries. Discussions were conducted with trainees of the two-month FETP course, with provincial health service (PHS) staff involved in disease surveillance in Lao PDR, and with district health staff involved in disease surveillance in both countries.

3.6.2 Response Rates

- The evaluation team was able to collect data from all respondents and participants identified at the outset, except from those in the Portfolio Review, KIIs, and FGDs conducted for the FETP trainees.

- ▶ The Portfolio Review had a response rate of 90.5%, while the graduates of the two-year FETP program had a much lower response rate of 33.3% and 40.0% for Lao PDR and Vietnam, respectively. More graduates of the two-month FETP course from both countries participated in the evaluation with response rates of 40% and 77.8% for Lao PDR and Vietnam, respectively.

3.7 Data Collection Tools

- ▶ 12 data collection tools were used in the KIIs and in the FGDs.
- ▶ The same guide questions were used in the majority of the KIIs and FGDs, including ONA. Some tools, however, did contain a few ONA specific questions.

The complete list of data collection tools developed for the evaluation is shown in Annex 4, while the actual tools are presented in annexes 4.1 to 4.12.

3.8 Data Processing and Management

- ▶ Data derived from the Portfolio Review were encoded, stored, and analyzed using Epi Info version 6 software.
- ▶ Qualitative data generated from the KIIs and FGDs, were first prepared as fair notes based on the transcribed interview proceedings. Fair note coding and encoding was completed with the ATLAS.ti software.
- ▶ To develop the pictographic representations of disease surveillance networks for ONA, the research team used the following source documents: (1) Rockefeller Foundation DSN grant deliverables for grants targeting the Mekong region and initiated between 2007 and 2009, and (2) field documents acquired during the field visits of the SEAMEO team. The source documents were categorized into five groups: proposal, interim narrative, final narrative, other deliverable, and field report. Annex 5 contains a list of all documents reviewed, while the list of acronyms used throughout the MBDS network documents is located in the front of this report.
- ▶ The network graphics were generated using NetDraw 2.097. Nodes are labelled with appropriate acronyms. Networks are displayed by document type and by type of interaction.

3.9 Data Analysis

- ▶ The analysis of qualitative data collected from the evaluation involved three major steps: data reduction, data display utilizing matrices and charts, and conclusion-drawing or verification.

- ▶ Quantitative analysis of the data involved only the application of descriptive statistics. This included the computation of frequency and percentage distributions as well as mean scores of question responses in the Likert scale.
- ▶ Data collected for ONA were analyzed based on content analysis using iterative techniques (Weber, 1990; Barbour et al., 2000; Baptiste, 2001).

3.10 Quality Control Mechanisms

To avoid or at least minimize bias in the conduct of the study, the following measures were implemented to ensure the quality of data collected:

- ▶ The evaluation was introduced to participants and respondents of the various data collection activities as an evaluation of the Rockefeller Foundation's DSN Initiative and NOT an evaluation of the countries in the disease surveillance system in order to prevent defensive responses and to encourage more candid and open interviews.
- ▶ The KIIs and FGDs were conducted in Lao PDR in the Lao language. In Vietnam, translators were hired in all provinces and districts.
- ▶ As several data sources were utilized, data triangulation was undertaken to validate and cross-check findings across data collection modes and data sources. For example, case-study information collected primarily from MOH disease control staff was counter-checked for consistency against the information shared during the KIIs and FGDs with those directly related to the grants. Case study information was further validated against information gathered from statistical reports, filed records, and published documents on disease outbreaks.

In addition to the above internal-quality control mechanisms, the Mekong Evaluation Team also ensured that guidelines set by the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee (DAC) on quality standards for evaluation were followed. The detailed listing of quality-control measures adopted by the Mekong Evaluation Team according to each DAC criteria on quality standards is presented in Annex 6.

3.11 Limitations of the Evaluation

- ▶ The evaluation design did not enable the assessment of how the lives of poor and vulnerable people improved as a result of the DSN Initiative. Evaluation measures only gauge system changes specifically in terms of the DSN contribution to a more resilient national and regional surveillance and response system and to the system's ability to detect and respond more quickly to disease outbreaks.

■ Methodology

- ▶ The selection of Lao PDR and Vietnam for the Two-Country Study, as well as the selection of provinces and districts visited within each of these countries, limits the extent to which the results of the evaluation can be generalized.
- ▶ Of the 21 grants included in the Mekong Evaluation, 14 were still in progress at the time of data collection for the evaluation, and it was therefore too early to assess their final outcomes and impact.
- ▶ Although the evaluation team was able to collect several useful documents from the countries for the purpose of the records review and desk audit, a number of documents were not complete or when derived from the countries themselves, not written in English. The need for translation, therefore, limited the extent to which the evaluation team could access some relevant material.
- ▶ In the process of comparing the intended deliverables with the actual outputs of the DSN grants in the Mekong region, the evaluation team relied heavily on grant proposals, as well as interim and final reports submitted by grantees to the Rockefeller Foundation. Since all grantees do not submit timely and detailed reports, some results presented in the evaluation are based on incomplete information.
- ▶ The case study could have benefited from a comparison between the response to the AH1N1 and avian flu outbreaks in MBDS and non-MBDS areas in Lao PDR and Vietnam. This would have facilitated a more valid measure of the effectiveness of the DSN Initiative. However, the rigid time constraints of the evaluation enabled only the collection of data in MBDS areas.

4. Results

The evaluation results are presented according to the five outcome areas of the DSN Initiative. The first four outcome areas (Networks, Tools, One Health, and Capacity) are evaluated in detail according to the key performance areas of relevance, effectiveness, and sustainability. Efficiency is discussed in relation to grant management and governance, which are in line with the fifth DSN outcome area of Organizational Excellence, Accountability, and Learning. The assessment of impact is presented in the form of case studies on the response of Lao PDR and Vietnam to the recent AH1N1 and avian flu outbreaks in these countries.

4.1 Outcome Area 1: Networks

In the assessment of networks as an outcome area of the DSN Initiative, focus was placed on the MBDS as the core of the DSN Initiative in the Mekong region. The analysis was performed at two levels: MBDS as a network and MBDS as a project. The following sections present the results of the ONA of the MBDS and are followed by a detailed assessment of the status of the various activities of MBDS as a network, including information sharing and joint capacity-building activities.

4.1.1 Organizational Network Analysis (ONA)

4.1.1.1 Relevance

Rationale/Logic

- Interviews identified the less tangible, but sometimes more meaningful emergence of an epistemic community with which network members can identify. This emergent epistemic community is a critical characteristic of networks that can sustain themselves by allowing individual members to feel like vital partners in the larger effort to create public goods, independent of long-standing political divisions. This should be noted as a somewhat remarkable achievement resulting from the Rockefeller Foundation investment in MBDS.

Some respondents saw the network's goal as an increase in capacity building in disease surveillance for the Mekong countries in order to improve surveillance for the region as a whole and as part of an overall development strategy. Some who have been part of MBDS from the beginning see the network's core values and rationale as based on an epidemiological model. This gives it a sound scientific basis and improves understanding of the Foundation's activities. Finally, the network is seen by some as a foundation for peace in the region. According to one respondent, "This is a hidden benefit...no scientific scale can express our trust or our relationship."

- ▶ There was little knowledge of other grants in the areas of disease surveillance or pandemic response which the Foundation supports in the region or of how these grants fit into an overall strategy.

Concept/User Needs

- ▶ When discussing this issue, most network members understood that providing support to the network was more important than providing direct support to countries. They understood that network funding is more efficient. Moreover, they concurred that individual countries could not do surveillance as effectively on their own.
- ▶ From the perspective of those who work in disease surveillance at the national level, the border sites are perceived as receiving a great deal of training and resources, not only from the Foundation, but also from other development partners, while the interior sites do not. A variety of stakeholders at the national level called for greater coordination of Foundation activities with the national surveillance system. In multiple countries, national level officials felt that MBDS does not coordinate well with the national surveillance system and that it has been a mistake not to integrate their activities.

Concept/Rationale

- ▶ The MBDS, through the structure and establishment of cross-border relationships, is seen as a major factor in the rapid response to recent emerging disease outbreaks, including severe acute respiratory syndrome (SARS) and AH1N1. The network has placed its members in a leadership role for disease surveillance regionally and globally. However, the large number of development partners focusing on emerging diseases and on border areas in recent years has made coordination of activities difficult.

Value Added

- ▶ The MBDS provides a systematic structure for disease surveillance by hosting regular cross-border meetings and by establishing an information sharing system, as well as mechanisms for regular communication.
- ▶ Respondents frequently mentioned an increase in trust through the strengthening of personal relationships as the key to more effective cross-border disease surveillance.
- ▶ Mechanisms for easing cross-border work include the MOU signed in 2001 by the MOH for all six countries. Providing political support for the work at the highest levels is cited as one of the most important achievements of the MBDS.

- Capacity building was seen as a key value of the network. According to provincial officials, district level health officials can now perform investigations independently. At the district level, officials reported that community level training greatly improved their ability to react quickly to a potential outbreak.
- Portfolio Review responses from leading grantees and grant stakeholders coincided with the general sentiments described above.

4.1.1.2 Effectiveness

Planning and Strategy

- From the beginning, MBDS invited a wide range of stakeholders to meetings, joint investigations, and tabletop exercises. Participating sectors included border police, quarantine officers, and high level provincial officials such as ministers and governors. This provided a multi-sectoral understanding that forms the foundation for MBDS success.

Outcomes

- In Annex 7, the overall impact of the Rockefeller Foundation's investment on network ties during the initial proposal of activities is compared to the resulting impact documented in the interim or mid-grant reports of the grantees. The central nodes represent those Foundation grantees responsible for organizing meetings, providing trainings, developing information exchange systems, or convening cross-border investigations. Comparison of the two pictographs shows that the grant proposals underestimated the extent and depth of network strengths and relationships that would be generated through their grant activity. The grant proposals, therefore, suggest a tone of tentativeness toward what might be possible as a result of Foundation funding, whereas the interim reports indicate significant extension and depth of grant relations and an obvious impact of Foundation funding on network growth and strength.
- In Annex 8, network relationships gleaned from documents collected during fieldwork indicate the extensive agreements MBDS has garnered with countries, regional stakeholders, and global actors. Most ties shown indicate singular types of exchanges, and for the most part, informational exchanges. There are fewer indications of agreements, trainings, funding, or collaborations.
- At the regional level, a number of development partners are now building on the success of the MBDS by adding capacity building and other activities to strengthen surveillance. Interviewed stakeholders did not regard these activities as duplicative, but rather complementary to MBDS activities. The coordination of the many initiatives is challenging and often managed at the local level.

- ▶ MBDS members credit the Rockefeller Foundation's governance structure for its promotion of autonomy and flexibility in planning and activities, enabling countries and cross-border sites to take initiative in the expansion of the network's reach as well as the scope of its work. Systems of exchange have developed in a number of ways. The inclusion of multiple sectors in meetings and trainings has greatly strengthened capacity in disease surveillance and rapid response and has increased opportunities for policy-makers to collaborate and exchange information in both formal and informal ways.
- ▶ Informal communication was cited by nearly all respondents as a critical component of the network's success. Local sites also operate with a great deal of autonomy and initiative and are able to perform investigations on their own.
- ▶ At the same time, respondents mentioned barriers to expanding their collaborative activities. Funding is always an issue for all types of activities. All expansion efforts are overshadowed by the fact that MBDS members are extremely busy. Nevertheless, the mechanisms are in place to enable joint activities and to expand these activities beyond the purview of MBDS.
- ▶ Turnover of trained staff is a problem for the network in many areas. This includes those who attend the FETP courses, site level staff trained in IT, and village health volunteers at the community level. Many local sites do not have sufficient funding for regular training. Other network sites said that the inability to hold trainings when they lose staff has affected them at many levels.

Policy Influence

- ▶ The two multilateral MOUs signed by the health ministers of six countries in 2001 and 2007 provide an overarching example of the Foundation's policy influence. The success of the network in the first five-year period led to an MOU without a time limit. The MOU allows border areas to respond quickly to an outbreak and to perform joint investigations by establishing informal communication prior to the confirmation of an outbreak.
- ▶ Some stakeholders also told us that the MBDS impacted border-control policies, immigration policies, quarantine policies, and regulations for port of entry. Others mentioned more recent collaborations with animal health departments, including formal agreements to work together. Tabletop exercises were conducted with representatives from all six countries.
- ▶ Other stakeholders did not feel that MBDS had an influence on policy. This was especially true at the district level, where it may be difficult to see the bigger picture.

Capacity

- Formal needs assessment is not widely practiced at the local level in the MBDS countries visited. Some MBDS members acknowledged the necessity for needs assessment and for greater coordination.
- Many stakeholders noted that capacity building is achieved through practice and not just through training, making it difficult to gauge the degree to which there are systematic needs assessment procedures. For example, local members learn a great deal from joint investigations.

Intended Users

- Some locations do not have computers or in some cases even telephones. Language ability is also a barrier to using technology, as communication across borders needs to be in English. While members are aware of innovations, such as the piloting of GeoChat or other training in SMS, many are not at the stage where they would be able to use it.
- There is a need for more regular basic trainings at the community level, which seems to be a weak point in several areas. There are a large number of communities to be covered and often a great deal of turnover in volunteers. Yet, as training is the ground level for surveillance, there is an urgent need to build capacity in monitoring both human and animal health.

Research Capacity

- While most respondents said they had not really been involved in research, some said that it would be a good idea to expand the analysis of collected data. Among the grant stakeholder respondents in the survey, a majority agreed that participation in the grant yielded new collaborative research efforts or planned research efforts.

Collaborative Relationships

- Communication is a key issue for the network, and the dynamics of communication, both positive and negative, are complex. Members at all levels felt that communication within countries is working well vertically. However, in some countries, information is not shared horizontally beyond routine reports and monthly meetings. There is general agreement at all levels that the monthly or quarterly meetings are most useful and that face-to-face communication is invaluable. Informal communication, as discussed elsewhere, is seen as the key to rapid response.

- Barriers to communication are created through language issues, the inability to provide timely information, and a lack of technical capability. Some new mechanisms were suggested such as direct communication between district hospitals on different sides of the border in response to a suspected case.

4.1.1.3 Efficiency

- Strong personal relationships and the ability to communicate informally have made information sharing quicker. MBDS network members are now more highly skilled at identifying outbreaks and obtaining epidemiological information. Data is more up-to-date and thus more useful for decision making. The MBDS Secretariat contributes to efficiency by performing its coordination role and by compiling all data centrally.
- Coordination and the bureaucratic issues that pose barriers to coordination are the most challenging aspects of running the network. Other potential inefficiencies exist in the system to a greater or lesser extent. The MBDS may create a two-tiered system where border sites have reporting responsibilities both to the national system and to MBDS. Centrally, the two systems sometimes coexist with little communication or coordination. At the local level, sites may be required to perform double reporting. More worrying is the issue raised by some respondents that in past national outbreaks, no coordination or support was given by MBDS to the national system. Support from WHO to the national system has not provided the needed link to the MBDS network and to the resources it could provide.
- The central data collection conducted by the MBDS Secretariat is a massive effort, requiring a great deal of time for follow-up to obtain delayed or missing data. Yet several respondents raised the question as to how the centrally collected data is used beyond regular reporting. The secretariat was also not sure how the data was being used.

4.1.1.4 Management and Governance

- Stakeholders greatly value and appreciate the governance structure of MBDS which gives each country an equal voice and their own strategy without imposing real “management” per se. The current structure of the MBDS with a secretariat, an executive board, country coordinators, and staff at surveillance sites at the provincial, district, and community levels is seen as working well.
- Decisions are made by country coordinators and executive boards based on discussions at regular meetings and by taking the practical situations of countries involved into account. Cooperation is made possible by the value and respect the parties have for each other and by the relationships of trust that have been developed. Notably, the MBDS governance framework helps to attract other donors who want to contribute to efforts in the region.

- ▶ The conceptualization of the MBDS Secretariat's role differed among stakeholders. Some maintained that the secretariat helps to provide continuity with the rotating chairmanship and helps advise the chairman. Technically, the secretariat is appreciated for assisting with MBDS reporting, such as helping local areas by designing an easy to use spreadsheet. The secretariat itself is determined to have a neutral role and to keep a low profile. The preference is to coordinate, facilitate communication, and to serve the needs of the executive board, rather than to take part in decision making. However, many stakeholders expressed the need for someone, or some entity, to manage the MBDS and to take responsibility for decision making.
- ▶ There seems to be tension between appreciation for the coordinative role of the MBDS Secretariat and a desire and need for a stronger role. Also, as mentioned elsewhere, several stakeholders expressed the desire to receive more information from the secretariat. In particular, members at all levels said that they would like the secretariat to perform more analysis and dissemination of the MBDS data for use in decision making.
- ▶ Current governance and management issues place the MBDS at a critical turning point in its evolution. The MBDS must be established as an independent legal entity for several reasons. Unless it does so, the MBDS will be prevented from receiving funding from several donors.

Monitoring, Learning, and Adaptation

- ▶ The situation analysis presented by the country coordinators at the semi-annual meetings is the main monitoring mechanism for MBDS. The country coordinators discuss issues, problems, and gaps for each country, including reasons for failing to meet indicator targets. The trust that has been built through the network allows for this exchange.
- ▶ Aside from this regular process, there are few mechanisms built into MBDS operations to monitor the activities or to adapt procedures for continuous improvement. Despite the lack of institutionalization of routine monitoring and evaluation mechanisms, all respondents were able to describe examples of learning and of strengthening disease surveillance based on this learning.

Sustainability

- ▶ Many of the respondents interviewed thought that the network's strong foundation and the strengths built in the past few years gave it good prospects for sustainability. The consensus is that the relationships that have been established are strong and will remain. Skills have been built through training and practice. Moreover, the Rockefeller Foundation's support has led to a culture of self-reliance and sites are enabled to make decisions on their own.

- ▶ As mentioned elsewhere, global concern about emerging diseases means that multiple donors have contributed to and/or expressed interest in the network. National and local governments in the region are also spending more on health.
- ▶ However, network members expressed a great deal of concern about losing the Rockefeller Foundation's funding for several reasons. Training must be on-going to replace those lost to turnover, to keep up with new technologies, and to fill gaps that continue to exist. Stakeholders are very worried about losing all they have built in the past several years. The consensus of several respondents was that while governments should fully commit to the cross-border activities by incorporating them in strategic plans, the prospects for completely meeting the needs through government funding, except perhaps in Thailand, are slim. Site resources are unequal and managing the reporting and information needs of multiple donors can be difficult and time consuming.

4.1.2 Mekong Basin Disease Surveillance (MBDS) as a Project

Through the DSN Initiative, the Rockefeller Foundation intends to build competencies in human resource capacity in the Mekong region in order to efficiently conduct disease surveillance and response and to improve trans-border collaboration capabilities across countries. In Asia, the Foundation's work in building disease surveillance networks has focused on the MBDS member countries. Six of the DSN Initiative grants in Asia directly provided support for the implementation of the MBDS project in these countries.

4.1.2.1 Relevance

- ▶ The grants built on what was achieved during the first two phases of the MBDS, which also received support from the Foundation.
- ▶ The focus on the border has been justified primarily by the geographic locations of the countries, epidemiologic landscape, active economic developments, and the movement of people which all contribute to making these borders conducive for disease transmission. This is validated by the following statements of development partners and country officials:
 - ⇒ *"The strategy behind MBDS is really good and different; there was a lot of thinking behind it; it is cross-sectoral and comprehensive."*
 - ⇒ *"MBDS is visionary and started long before the problems of new emerging diseases like SARS, H5N1 etc. came up."*
 - ⇒ *"RF was the one who primarily initiated the concept in 1999."*
- ▶ The MBDS project is perceived by key informants at the provincial level as an effective mechanism for border-information exchange contributing to disease surveillance in border areas.

4.1.2.2 Effectiveness

The major part of this section presents a discussion on the effectiveness of the first MBDS core strategy of cross-border cooperation. The second core strategy, namely to improve the animal-human health interface, is discussed under section 4.3. The third and fifth strategies, to strengthen capacity in epidemiology and in laboratory, are discussed in section 4.4, while the fourth strategy for ICT capacity is included under section 4.2 on tools. Short discussions on the sixth and seventh strategies, risk communication, and policy research are also included in section 4.2. Annex 9 shows the lead country for each of these core strategies, except for policy research as it does not have a lead country. Finally, annex 10 shows the interrelationship of the core strategies of MBDS.

4.1.2.2.1 At the Portfolio Level

- ▶ The majority of the grantees agree that the grants have:
 - ⇒ *responded to the regional issue of information sharing in disease surveillance.*
 - ⇒ *contributed to the improvement and strengthening of communication and information sharing in the region.*
 - ⇒ *contributed to the collaboration between MOH and other ministries and other disease surveillance efforts and initiatives in the region.*
 - ⇒ *contributed to building bridges between national and regional monitoring efforts in disease surveillance.*
 - ⇒ *brought forward technology development and adoption in the Mekong region related to disease surveillance.*
 - ⇒ *contributed to the strengthening of the MBDS as a regional network.*
 - ⇒ *contributed to improved national capacity on disease surveillance in terms of monitoring, reporting, and responding to disease outbreaks.*
- ▶ Quotations from key informants:
 - ⇒ *“MBDS started the concept and strategies of cross-border.”*
 - ⇒ *“The grant facilitated the implementation of IHR in the country.”*
 - ⇒ *“Initiative is very appropriate to the times.”*
 - ⇒ *“The seven core strategies...good, comprehensive multi-sectoral.”*
- ▶ 20 new sites were added to the original 4 for the period covered by the evaluation (Annex 11). Of the 24 cross-border sites, 7 are fully operational, 11 are ready in that they are equipped with a coordinator, a plan and a TOR, and 6 have only been identified, but have not started functioning as an MBDS cross-border site. Several of the 11 ready sites have begun unilateral activities such as training staff.

4.1.2.2.2 Information Exchange

- ▶ The countries have agreed on a mechanism of exchange to facilitate the timely, accurate, and appropriate information sharing needed for an effective surveillance system given the movement of people along borders.
- ▶ Official cross-border information exchange happens at the level of the province, a policy followed by all countries, although shared information is collected from the border districts.
- ▶ Informal information sharing occurs at the district level when the need arises in order to relay information in real-time. The trust and personal relationships established among those involved in the MBDS allow for this to happen.
- ▶ The information submitted at the provincial level for cross-border sharing is extracted from the overall information of the surveillance system at different levels of the country which ensures that border information shared is the same as data in the information system.
- ▶ The frequency of the cross-border information exchange varies even with the agreed mechanism. The percentage of weekly sharing in 2008-2010 ranged from 21.2% in Takeo, Cambodia to 98.1% in Savannakhet, Lao PDR.
- ▶ The information shared in these cross-border sites is relevant for purposes of early warning, prevention, and control, especially for diseases with epidemic or pandemic potential.
- ▶ The information sharing between the following can serve as models for information exchange because of their completeness and timely sharing: Savannakhet, Lao PDR and Mukdahan, Thailand; Champasak, Lao PDR and Stung Treng, Cambodia; and Bokaeo, Lao PDR and Chiang Rai, Thailand.
- ▶ The timely sharing of information related to AH1N1 that occurred at the border between Savannakhet, Lao PDR and Mukdahan, Thailand provided the stimulus for the Lao PDR team to investigate and to identify cases earlier in order to prevent further transmission of the disease to the large number of people who visit the casino daily and who could potentially be exposed.
- ▶ Another instance of timely cross-border information exchange is the dengue case that occurred in 2008. The information was passed on by telephone to the Savannakhet provincial focal person from the Mukdahan health office. This resulted in an early start to the investigation in the village where the case originated and to the institution of measures for containment.
- ▶ The culture of information exchange between borders also spilled over to different groups at border areas including districts and provinces on one side of the border (e.g. the Lao PDR side), animal and human quarantine officials at the border along the same side, and animal quarantine officials on both sides of the border.
- ▶ Indirectly, the information exchange had a positive influence on the work practices and ethics of officials responsible for disease surveillance at the provincial and district levels.

4.1.2.2.3 Cross-border Meetings

- ▶ Cross-border meetings were organized by the countries involved for several purposes including:
 - ⇒ *orientation on the objectives, mechanics and implementation of cross-border cooperation.*
 - ⇒ *planning of collaborative activities to be implemented by the two countries.*
 - ⇒ *sharing of experiences and updates on the disease surveillance situation of both sides.*
 - ⇒ *discussion of issues and concerns related to implementation of cross-border activities.*
 - ⇒ *advocacy for local officials.*
 - ⇒ *the creation of platforms for development partners to learn what is included in the MBDS activities to avoid overlap and to identify opportunities for complementary activities.*
 - ⇒ *discussion of a specific health issue that affects both sides (e.g. AH1N1).*
- ▶ Lao PDR's 12 cross-border sites have organized a total of 46 meetings for the period covering January 2008 to August 2010 with a range of two to eight meetings per site.
- ▶ Nine cross-border meetings were organized for three sites in Vietnam, two of which involved four countries (Cambodia, Lao PDR, Thailand, and Vietnam) and one which involved three cross-border sites from Vietnam and China.
- ▶ Vietnam organized five cross-border meetings between two teams of border animal quarantine officials.

4.1.2.2.4 Joint Training

- ▶ Most trainings are geared toward strengthening the capacity of the district and provincial staff on disease surveillance and response.
- ▶ Lao PDR has organized a total of 23 joint trainings in cross-border sites. The majority of these trainings have taken place in Thailand, but for one joint training which took place in Vietnam. The trainings focused on (1) field exercises on dengue outbreak investigation, (2) self-referral for human avian influenza (AI), (3) tabletop exercises on AI and pandemic influenza, and (4) tabletop exercises on self-referral for AI and AH1N1 and on GeoChat. The participants of the trainings included provincial and district RRTs and district and provincial health staff.
- ▶ During the same period, Vietnam was only able to organize two joint trainings: one with China on tuberculosis control and one with Lao PDR that featured tabletop exercises on self-referral on human H5N1. The training activities of Vietnam were mostly organized for the staff and commune members of the districts on the Vietnam side of the border. Joint

trainings organized by Vietnam were offered to several border provinces within the country.

- ▶ Challenges identified by informants in joint training included language, entering competencies of trainees, scheduling for common available time, and logistics.

4.1.2.2.5 Joint Outbreak Investigation

- ▶ Joint investigation as one of the cross-border cooperation activities plays a major role in strengthening the collaborative response to a health threat to the region. The joint investigation not only allows for a response to an outbreak, it allows for a collaborative response.
- ▶ A joint investigation was undertaken by Savannakhet, Lao PDR and Mukdahan, Thailand during a dengue outbreak in 2009 on both sides of the border. The same protocol was utilized, but response activities differed slightly according to the situation in their respective provinces. Resources such as insecticides and sprayers were also shared. Financial support came from the MBDS funds as well as from special funds allocated by each government for outbreaks.
- ▶ A Cambodian team visited the Vietnam side during the diarrhea outbreak in the first quarter of 2010, and the two teams shared information about the status of the outbreak including causes, risk factors, and measures undertaken for control.
- ▶ Joint investigations were undertaken by Vietnam's animal health sector to assess the epidemiological characteristics of the patients and the transmission source of those affected by AI in four provinces.

4.1.2.2.6 Joint Research

- ▶ Joint research was also conducted in certain cross-border sites although this is not part of the basic package of cross-border activities.
- ▶ A malaria survey along both sides of the borders of Quang Tri, Vietnam and Savannakhet, Lao PDR was undertaken in 2005. Another joint malaria survey is being planned for 2010 with a common protocol. Savannakhet, Lao PDR and Mukdahan, Thailand also undertook a joint dengue survey in 2005.

4.1.2.2.7 Strengthen Risk Communication

- ▶ No regional activities were implemented because of budgetary constraints.
- ▶ Most of the countries, except for Cambodia and Vietnam, undertook in-country activities.

4.1.2.2.8 Conduct and Apply Policy Research

- ▶ A paper on policy research strategy planning was presented by the Research and Development (RAND) Corporation in a meeting in Chiang Mai, Thailand in 2008.
- ▶ Lao PDR was not able to undertake any work on strategy between 2008 and 2010.
- ▶ Vietnam, on the other hand, has reported the following achievements:
 - ⇒ *a policy study on rabies completed in 2009.*
 - ⇒ *a dissemination workshop on rabies organized in November 2009.*
 - ⇒ *policy research on knowledge and practice related to AH1N1 conducted in 2010.*
 - ⇒ *a dissemination workshop organized on AH1N1.*

4.1.2.3 Sustainability

Sustainability for the MBDS core strategies was analyzed in light of what has happened and what is present in terms of health development thinking, the political situation, the epidemiological scenario, development activities, and information gathered from key informants interviewed for this evaluation.

- ▶ Cross-border information exchange among all activities under cross-border cooperation has the most potential for sustainability. Some of the facilitating factors of cross-border information exchange include:
 - ⇒ *an official MBDS MOU at the provincial, national, and regional levels that provides a legal basis and framework for information exchange.*
 - ⇒ *relationships developed among cross-border human and animal health officials, local officials, and other relevant sectors at the border provinces that favor informal and unofficial sharing.*
 - ⇒ *integration of information exchange in the work practice of border provinces' officials and staff.*
 - ⇒ *commitment of the countries to IHR implementation.*
 - ⇒ *inclusion of border activities in similar projects implemented in the region.*
 - ⇒ *access to and utilization of technology such as mobile phones and email for faster communication.*
 - ⇒ *a culture of information exchange advocated for by relevant organizations in the region such as ASEAN and Ayeyawady-ChaoPhraya-Mekong Economic Cooperation Strategy (ACMECS).*
 - ⇒ *positive experiences resulting from information exchange among the countries.*
 - ⇒ *a minimum-funding requirement for information exchange which fosters sustainability and which helps ensure that relevant events are communicated in real-time to the other side.*

For joint training, cross-border meetings, and joint investigation, funding may be an important consideration for sustainability in certain countries. For example, Lao PDR has allocated funds for outbreak investigation because of recent outbreak experiences and the recognition of the importance of this funding. This was the source of funds utilized by the province in the joint outbreak investigation undertaken with Thailand. However, the budgetary requirement for the activity was augmented by the funds coming from MBDS. To a certain extent, this kind of activity will still be dependent on donor and outside funding. At the moment, a number of development projects that include these types of activities are on-going and can be tapped for funding.

4.1.2.4 Discussion

4.1.2.4.1 Rockefeller Foundation's Support to the DSN

The DSN Initiative was not the Rockefeller Foundation's first involvement in disease surveillance networks in this region. The Foundation has a historical niche in the field of disease surveillance networks and cross-border surveillance in the Mekong region having worked with the MBDS since its inception in 1999. Together with WHO, the Foundation was a founding partner of MBDS. Several related initiatives were implemented by the Foundation in the Mekong region before the DSN. Countries in the Mekong region and development partners working inside and outside the region have acknowledged the thought and practice leadership of the Foundation in this area. This recognition was reflected throughout the evaluation.

The long history of the Foundation's work in the field of public health in general, its contribution to schools of public health and its work toward the elimination of certain diseases served as a solid foundation for its involvement in disease surveillance. In addition, this long legacy of work contributed to the Foundation's credibility among development partners. Cross-border surveillance in the region is synonymous with the Rockefeller Foundation. From the beginning, the MBDS network members together with the Foundation have always invited would-be partners to meetings and forums. This may have contributed to heightened interest from development partners, the private sector, and technology providers in this area of work. To date, the concept of cross-border surveillance and collaboration among the countries in the region has been integrated by several development partners and organizations into their own projects and programs in the region.

On the other hand, the visibility of the Rockefeller Foundation in the field has been greatly reduced by the provision of grants to international partners. Member countries identified these grants with implementers and grantees rather than with the Foundation. Thus, it can be concluded that the Foundation is

equated with cross-border surveillance and is perceived to be a thought leader in this area, but has less current visibility as a leader in the many of the grants within the portfolio of the DSN Initiative.

4.1.2.4.2 The DSN Initiative

The DSN Initiative has continued to build on previous gains and “successes” experienced by the MBDS countries in recent outbreaks. These experiences have identified the strengths of previous phases to be maintained and expanded. At the same time, areas relevant to disease surveillance in need of improvement have been identified. Expansion of the core strategies of the MBDS in the DSN Initiative enabled the network to cover the areas of work required to build an effective regional disease surveillance network.

The DSN Initiative is very timely in terms of the national, regional, and global epidemiological landscape. The threat of emerging infectious diseases with pandemic potential is no longer under debate. There is consensus that the possibility of a pandemic that will disproportionately affect the health and livelihoods of poor people in the near future is real. All conditions are present in the Mekong region to favor the spread of a disease to pandemic proportions.

The political atmosphere is also conducive to disease surveillance efforts and to regional cooperation. Country leaders in the region have agreed to strengthen collaboration in all aspects including trade, education, security, and health. These commitments are embodied in the resolutions and declarations of ASEAN, the political organization of Asian countries. The IHR, which took effect in 2007, also underscores information sharing and collaborative response. All countries in the Mekong region are committed to its principles. Specifically, the Ministers of Health of the MBDS countries renewed their commitment to the ideals and philosophy of MBDS when all six ministers signed a second MOU in 2007.

The initiative’s scope was comprehensive. Support was provided to both regional and national efforts to address the weaknesses identified in its situational analysis. The findings in general indicated that this two-pronged support to the network and to the country worked best in the Mekong region. This was concluded not just from the perceptions of stakeholders interviewed, but also from case studies undertaken in Lao PDR and Vietnam.

On the other hand, there were grants with outcomes maximized by the Mekong countries. For instance, the ProMED website has been found to be very useful by development partners and to a certain extent by national level stakeholders. However, its use has not been optimized at the level of the province, which is crucial for the purposes of information sharing and early detection.

4.1.2.4.3 DSN Support to the MBDS as Regional Network

The support to MBDS as a regional network resulted in a more enabling environment for a regional response. The countries claimed that the presence of the network helped their response to AH1N1 and H5N1 to a certain extent. The strong government ownership displayed in the network from the start was acknowledged by both member countries and development partners. This provided a positive input to the regional cooperation expected from the network. The relevance of the MBDS network as a mechanism and platform for regional cooperation is confirmed by the fact that other projects of development partners are now using the MBDS mechanism and structure as a vehicle for their own regional activities and efforts.

Member countries recognized the need for an independent legal entity and efforts are currently being exerted toward addressing this need. As mentioned elsewhere, the Foundation supported an outside consultant to work with the countries on this issue. Several options have been presented and discussed in regional forums and other meetings of MBDS. Work is currently being done to develop a solution to guarantee the inclusion of the shared values and principles that allowed the countries to work together in past years and that served as the backbone of the network. This “tortuous journey” toward institutionalization may be needed for member countries to renew their ownership of and dedication to the network’s ideals.

The DSN Initiative envisioned that by 2011, MBDS would be institutionalized as a legal entity. As of this writing, it cannot be concluded that the DSN Initiative was not able to achieve this objective. Intensive effort has been exerted toward the development of an approach acceptable to all parties.

There is also a need to clarify and prioritize the roles of the network given its evolution and the changing demands in the region. In addition to the existing roles and functions of the network, there is a strong suggestion for the network to take up a knowledge management function. It is not enough for the network to share its experiences. It must also be able to document its vast experiences and to suggest best practices for dissemination. The MBDS has developed protocols, MOUs, reporting forms, and monitoring systems for regional cooperation that can be documented and disseminated. The MBDS website can serve as a rich source of information related to several aspects of regional cooperation and collaboration.

4.1.2.4.4 Information Sharing as a Function of the Network

An effective regional collaboration always starts with sharing, be it of information, specimens, or resources. For MBDS, cross-border information sharing is the most important element in the development of a more efficient disease surveillance and response system along country borders. Borders between the Mekong countries have been recognized as entry points for diseases and as mentioned elsewhere, borders possess all the necessary prerequisites for effective disease transmission. Thus, cross-border information sharing has been a core strategy for the network since its inception in 1999. Information sharing along these borders will enable early detection of an outbreak, whether impending or actual, and will allow for an early response that can reduce morbidity and mortality due to disease.

In the DSN Initiative, the cross-border information sharing was expanded to cover new cross-border sites in the six countries. More sites are committed to sharing information relevant to disease surveillance and response. An increase in cross-border site-sharing information means an increase in the area with access to relevant information. This will trigger RRTs organized and trained to react in a timely and appropriate manner.

An agreed-upon mechanism and frequency of exchange is in place. The information exchange occurs at the provincial level through official lines of communication. The section on MBDS as a project describes the current status of information exchange. The number of functional cross-border sites that adhere to the agreed-upon mechanisms of exchange is higher than those that do not follow these mechanisms. A number of cross-border sites do not follow the mechanisms of exchange, while others implement information exchange in an irregular fashion by sharing information only during joint cross-border meetings. Reasons for lapses in information exchange can include communication-technology issues, inadequate human resources, and differing country policies, such as policies that could prevent a case from being shared. In some countries, a case is only defined as one after a confirmatory test—requiring that more time pass before the event/case can be shared. In other countries, a case is defined based on a syndrome or a symptom which makes it easier to share information earlier.

As mentioned, the official cross-border information exchange takes place at the level of the province and should be made by the provincial site coordinator. However, because of the trusting relationship that border officials have established, informal or unofficial exchange takes place earlier to ensure faster real-time sharing in a significant number of cross-border sites. Informal exchange mostly occurs in cases of diseases on high alert, such as H5N1 and

AH1N1. This demonstrates the trusting relationship that was generated by the MBDS network in affected countries.

It can be concluded that MBDS created the platform for cooperation between countries at a time when there was little trust. Strong government ownership provided the political will to engage in cross-border information sharing, which was perceived to be a sensitive area. The focus on cross-border areas was useful in improving surveillance and response. Information sharing has improved among the countries. There has been an improvement in terms of trust. Positive experiences from this information sharing have resulted in the perception of the MBDS network as a valid and functional regional structure. However, the operations of the MBDS are not yet ideal. Countries should continue to share information even during periods free of outbreak. Many improvements need to be made, especially at the technical level.

In addition, efforts should be exerted to ensure that the MBDS does not create another surveillance and response structure outside of or parallel to that of the country's national disease surveillance system. Although this is clear among national and local stakeholders of MBDS within affected countries, some officials still believe otherwise. The surveillance data shared should be the same as that which is reported by the national disease surveillance system. The existing practice of extracting the information to be shared from that which is submitted by the provincial offices to the national disease surveillance office reduces discrepancies between the two sets of information.

4.2 Outcome Area 2: Tools and Technical Assistance

- In the context of the DSN Initiative, tools and technical assistance delivered by different grants include various forms of ICT applications, the design of data collection, reporting and monitoring tools, forms and templates, and the development of a Center of Excellence on public health informatics. Two grants conducted a comprehensive needs assessment and situational analysis including a stakeholder analysis, resource characterization, scenario development, and gap analysis for Cambodia and Lao PDR (London School of Hygiene and Tropical Medicine, University of London: 2008 DSN 201). Various aspects related to the health-information system were also assessed, including the animal-information system, and the disease surveillance systems of the Mekong countries, in order to be used as inputs for the development of a strategic information technology and communication plan for the region (STG Cooperation Pte LTD: 2007 PAN 205).
- Of the 21 grants in the Mekong region, 16 have deliverables in the area of tools and technical assistance. Of these, six grants have beneficiaries that include Lao PDR and Vietnam, which were the focus of the Two-Country Study.

4.2.1 Relevance

Of the grantees participating in the Portfolio Review with deliverables in the area of tools and technical assistance, almost all agreed that their grant has contributed to meeting the mission of the Rockefeller Foundation and was in line with the Foundation's overall strategy. Practically all grantees (93.4%) believe that their grants have contributed to the Foundation being seen as a thought and practice leader in the area of disease surveillance networks. A very high proportion (80.0%) of respondents also agreed that their grants have responded to the regional issue of information sharing in the Mekong region.

- ▶ Two grants made to ProMED and the RAND Corporation, built on earlier activities of the Rockefeller Foundation and as a result, already had their needs assessment and addition inputs defined. Other projects either used secondary data to provide background information for planned project inputs or performed a rapid situational analysis as the preliminary activity under the grant.
- ▶ The Rockefeller Foundation awarded a grant in 2007 (STG Cooperation Pte LTD: 2007 PAN 205) with a primary objective to conduct an assessment and landscaping and road mapping of the public health and animal health information systems, technology infrastructure, human resources, cross-border and international information sharing mechanisms, and connectivity and IT capacity issues related to disease surveillance in the countries in the Mekong region. Since this project was conducted at the start of the DSN Initiative in 2007, the results of this grant can serve as the situational analysis and provide baseline data for other grants within the DSN Initiative in the area of tools and technical support. The approval of this grant shows that the Foundation was willing to invest for the provision of sound empirical evidence to be used as a basis to rationalize and justify other DSN initiatives especially in the area of ICT.
- ▶ Of the six grants reviewed, only one (London School of Hygiene and Tropical Medicine, University of London: 2008 DSN 201) explicitly mentioned stakeholder interaction in its report. It is not clear whether grants involved the opportunity to interact with stakeholders.

4.2.2 Effectiveness

- ▶ The effectiveness of the grants in the area of tools and technical assistance was assessed in terms of the extent to which the outputs of the grant have been achieved, are perceived to be of high quality, and are utilized.
- ▶ The extent to which the outputs of the grants have been achieved was determined by comparing grant deliverables as indicated in grant project proposals with the actual outputs delivered as documented in the most

recent project report submitted to the Foundation and made available to the evaluation team. Of the six grants with deliverables in tools and technical assistance in Lao PDR and Vietnam, all expected outputs in this area were delivered and with only a few delays. A detailed comparison of the deliverables and actual outputs of the six grants with deliverables in tools covering Lao PDR and Vietnam are presented in Annex 12.

- ▶ A number and variety of situational analyses and needs assessments have been finalized by two grants related to disease surveillance and response: (1) a general technology assessment, landscaping, and road mapping for the public health information, animal health information, and disease surveillance systems for five MBDS countries—Cambodia, Lao PDR, Thailand, Vietnam, and China (STG Cooperation Pte LTD: 2007 PAN 205); and (2) a grant to perform a health systems analysis focusing on the response to the threat of pandemic influenza in Cambodia and Lao PDR (London School of Hygiene and Tropical Medicine, University of London: 2008 DSN 201). The health system analysis included a rapid situational analysis, resource characterization, and scenario development. The stakeholder analysis and gap analysis have not yet been conducted. The effectiveness of the outputs of these grants are highly dependent on the extent to which the reports on results are disseminated and utilized as inputs for decision making related to disease surveillance and response. One effective way to accomplish this is through the publication of results. The submission of draft publications to peer reviewed journals is a deliverable of the health systems analysis grant which has already been completed.
- ▶ Three of the grants were in the area of ICT applications, the outputs of which include:
 - ⇒ *GeoChat, Mesh4X, Riff and RNA, prototypes for emergency response systems (InSTEDD: 2007 PAN 204).*
 - ⇒ *Pro/MBDS, an Internet based reporting system dedicated to the rapid global reporting of information on outbreaks of infectious diseases. Pro/MBDS is a special service of ProMED-mail for the countries covered by the MBDS (International Society for Infectious Diseases: 2007 PAN 206).*
 - ⇒ *models and modules for the use of a mobile technology system (i.e. smart cell phone) as a health communication tool to improve health outcomes and to increase early case detection, case investigation, drug compliance, and follow-up for malaria and enteric patients (Mahidol University: 2007 PAN 212).*
- ▶ Training and live testing on GeoChat, a field-based SMS tool that helps teams manage communication and information flow has been conducted. However, the extent to which it is actually being used is still to be determined. In the case of ProMED, results of the KIIs conducted by the evaluation team showed that development partners such as ADB and WHO are regular users of ProMED postings and feel ProMED is doing a good job.

However, among the MBDS and MOH staff interviewed for the Two-Country Study, the level of awareness and utilization of ProMED was quite low.

- ▶ The piloting of new projects on public health informatics focusing on health challenges in Southeast Asia was part of the deliverables of a grant to Mahidol University in the area of innovative tools (Mahidol University: 2007 PAN 212). They were able to implement three projects with co-funding from other organizations including Microsoft Research, the Bill & Melinda Gates Foundation, WHO, and the Thai Ministry of Public Health. All three projects are currently on-going and have expanded.
- ▶ Tools for the use of the MBDS monitoring and evaluation system, such as data presentation and reporting templates, were developed by the RAND Corporation (RAND Corporation: 2008 DSN 302) and were used by the MBDS countries for the first time during the 2009 Regional Forum. There are indicators that the reporting templates have been institutionalized internally by the countries and no longer require active RAND support for adoption. Another tool developed by the RAND Corporation is an online monitoring system that was pilot tested in Bangkok in January 2010. The refined version was presented and its use was demonstrated during the country coordinator meeting in Beijing in March 2010. At present, its use is still limited and countries may need further orientation and training before it becomes institutionalized.
- ▶ Of the 15 grantees with deliverables in tools that responded to the Portfolio Review, 80% believe that their outputs are perceived by professionals and users to be of high quality and are highly utilized by them. A slightly lower proportion (73.3%) feel that their grant brought forward technology development and adoption in the Mekong region related to disease surveillance and achieved the expected outcomes.

4.2.3 Sustainability

- ▶ Among the grant deliverables in the area of tools, the concept of sustainability was applicable only to ICT applications and to tools for monitoring and evaluation. Since all four grants with these types of deliverables were still on-going at the time of this evaluation, it is still too early to determine whether or not their outputs will actually be sustained and maintained after the Foundation's DSN Initiative grant support is completed. At most, we can only identify features of the current outputs which can be used as indicators of potential for sustainability.
- ▶ GeoChat has been introduced by Innovative Support to Emergencies Diseases and Disasters (InSTEDD) only in Cambodia and Lao PDR and still needs to be introduced in the other MBDS countries. In its 2008 summary grant report submitted to the Foundation, InSTEDD indicated that it had designed GeoChat to be effective "using even the most primitive of the mobile phones available in Cambodia." The report also mentioned

that “even people who had never seen a text message before were able to join GeoChat easily, and the largest challenge during the exercise was the carrier-related delays on joining the system.”

If GeoChat is indeed this easy to use and if it does work with even the most primitive of cell phones as described by InSTEDD in its report, then it will not be difficult to encourage people to use and institutionalize it within the system. Unfortunately, this was not validated during the evaluation. In addition, the extent to which the system is actually being used at present was not determined.

- ▶ PRO/MBDS is a special service of ProMED-mail established in 1994 and administered by the International Society for Infectious Diseases since 1999. It has 40,000 subscribers from at least 185 countries. As such, there is no doubt about the capacity of the grantee to maintain the reporting system even after the end of the DSN grant. However, increasing the awareness of the MBDS and MOH staff at different levels on the existence, importance, and use of ProMED and encouraging them to be both data providers and data users of the system, remain great challenges.
- ▶ The DSN grant awarded to Mahidol University was intended primarily for the establishment of a Center of Excellence for Biomedical and Public Health Informatics (BIOPHICS) which, among others, would be able to conduct projects on public health informatics focused on health challenges in Southeast Asia. The fact that within just a year after the grant was awarded, Mahidol University was already able to identify new funding partners to co-fund three projects is a very good indicator of their capacity to sustain this function of the center even after the Foundation’s DSN support has ended.
- ▶ Although there are indications that the countries have already institutionalized the use of the data presentation and reporting templates developed by the RAND Corporation, the online monitoring system developed for the use of the countries is still a work in progress and would need more inputs before countries can fully adopt its use.
- ▶ The results of the Portfolio Review show that while at least three-fourths of the grantees feel that their grant has contributed to the countries’ ability to draw more support from other development partners in disease surveillance and that their grant has contributed to the sustainability of the MBDS as a regional network, only a little over half of the grantees (53.4%) feel that it has influenced the budget increase from the national government in disease surveillance.

4.2.4 Discussion

It is commendable that the DSN Initiative invested in the collection of data which can be used as a basis for decision making, such as the rapid situational analysis, resource characterization, scenario development, and stakeholder analysis on various aspects related to disease surveillance and response in the Mekong region. Ensuring the availability of this information avoids the duplication of efforts and a waste of resources arising from repeated data collection activities on the same topics, which is the usual first step in the process of planning and developing an intervention. While the grantees have conducted various forms of data dissemination activities during and immediately after the completion of their grants, it is important for the results of these studies to be made readily available to a wide audience in order to maximize the utilization of their results.

The Pro/MBDS ProMED-mail Internet reporting system and GeoChat were among the tools developed under the DSN grants. Although these ICT applications have been introduced in the countries, the level of awareness of their existence, especially at the provincial level, is quite low, resulting in a low level of utilization among MOH and MBDS staff. In the case of ProMED, while it is known internationally, its use by the nationals in the MBDS countries for which the Pro/MBDS was specifically developed is still very limited. Even staff at the central MOH level simply access ProMED to read what is reported. Those interviewed during the evaluation have never uploaded or contributed information to the system. The essence of ProMED is to provide quick information on the incidence of infectious diseases as they occur in the field, and it would be of great benefit if MOH staff, especially those at the peripheral levels of the cross-border sites, can be encouraged to become active data providers and users of the system.

Another large set of tools developed under the DSN grants are those developed by RAND to monitor MBDS activities. Countries have been using these tools to develop standardized presentations during the annual MBDS Regional Forum. Online versions of these tools, such as the online monitoring system, are still works in progress and their use has not yet been institutionalized. The challenge is for the countries to explore and understand that there are broader uses for these tools and that their application can be expanded beyond country presentations at regional meetings. Real value for money can be achieved when countries are able to apply and integrate these tools into their own national surveillance and disease control systems.

4.3 Outcome Area 3: One Health

One Health is the fourth key outcome area of the DSN Initiative as identified in its results framework. Success in this outcome area is defined as:

“One Health principles, concepts, and practices would be increasingly adopted/used by a variety of regional, local, and global institutions (research, policy, and practice). Practitioners, academics, and policymakers would work to build bridges between animal and human health research, academic, and policy institutions. Regional and global monitoring efforts would be better coordinated to minimize fragmentation and maximize efficiencies.” (DSN Results Framework, 2009).

4.3.1 Relevance of the Inclusion of One Health in the DSN Initiative

The relevance of the inclusion of One Health in the DSN Initiative can be assessed from the perspectives of (1) global and regional developments, (2) the Foundation’s mission and overall strategy, (3) epidemiological landscape, and (4) a countries’ perception of their priority needs.

- At the global and regional level, several high level discussions and consultations have been organized, new partnerships have been formed, and agreements have been arrived at by international experts, UN agencies, development partners, and other stakeholders, resulting in the creation of the “Manhattan principles” which defined the concept of One Health and listed 12 recommendations directed at world leaders for a more holistic approach to preventing epidemic/epizootic disease and to maintaining ecosystem integrity for the benefit of humans and their domesticated animals. Other global developments related to One Health include:
 - ⇒ *The presentation and adoption by the ministers of more than 100 countries at a conference in Sharm el-Sheikh, Egypt in October 2008 of a consensus document on global measures needed to coordinate medical and veterinary health policies more effectively, taking into account new requirements to prevent and control zoonoses.*
 - ⇒ *The establishment by the Food and Agriculture Organization (FAO) of the Emergency Centre for Transboundary Animal Diseases (ECTAD) units with a regional presence in Bangkok and with national units in several countries in the Asia and Pacific regions. A Regional Strategy for Highly Pathogenic Avian Influenza and other Emerging Infectious Diseases of Animals in Asia and the Pacific was developed by FAO.*
 - ⇒ *Development by WHO’s South-East Asia Regional Office (SEARO) and the Regional Office for the Western Pacific (WPRO) of APSED, which provides the impetus and guidance for countries and areas to strengthen their*

capacities for effective preparedness and for the prevention, prompt detection, and rapid response to diseases necessary to protect national, regional, and global health security.

- ⇒ *The creation of the Joint Statement of the 10th ASEAN Health Ministers Meeting and the Joint Statement of the Fourth ASEAN+3 Health Ministers Meeting, which was held in Singapore on July 22 and 23, 2010, respectively, and which acknowledged the need for greater collaboration between the animal health and the public health sectors on zoonoses.*
- From the perspective of the Rockefeller Foundation's rationale for One Health involvement, the inclusion of One Health in the DSN Initiative is in accordance with the Foundation's mission "to expand opportunities for poor and vulnerable people and to help ensure that globalization's benefits are more widely shared."
 - ⇒ *The concept of One Health underscores one of the guiding principles stated in the Foundation's strategy document, "leveraging multidisciplinary, multi-sectoral approaches." One Health requires interdisciplinary and cross-sectoral approaches to disease prevention, surveillance, monitoring, control, and mitigation as well as to environmental conservation.*
 - ⇒ *The history of the Foundation gives it the credibility to engage and bring together professionals from various disciplines to bridge the professional and institutional divide and to address the issue of zoonotic and emerging infectious diseases with a coordinated approach.*
 - ⇒ *The credibility of the Rockefeller Foundation both as a philanthropic and a technical organization is high among member countries and development partners resulting in a high level of trust toward the objectives of the Foundation's involvement in One Health.*
 - ⇒ *All respondents of grants related to One Health agreed or strongly agreed that their grants contributed to the Foundation's reputation as a thought and practice leader in the field of disease surveillance, met the Foundation's mission, and were in line with the overall strategy of the Foundation.*
 - ⇒ *The nature of the specific grants under the One Health cluster of the DSN Initiative is aligned with the two stated areas of focus of the initiative: (1) the development of new veterinary public health educational models and (2) the creation of participatory approaches to improve animal and human health while protecting livelihoods in poor communities. This demonstrates the programmatic logic and coherence of this cluster of grants.*
- The epidemiological landscape justifying the adoption of One Health includes the emergence of HPAI H5N1 and the 2009 influenza pandemic caused by a novel influenza AH1N1 virus, both recent examples of the threat of viruses moving from animals to humans. In addition, the Nipah virus infection in Malaysia in 1998 and the Reston ebola virus infection in the Philippines in 2008, both originated in Asia and the Pacific. All respondents of the portfolio survey agreed that the situational analysis done for their grants supported the epidemiologic rationale for One Health initiatives.

- ▶ From the country/user's perspective, the MBDS Action Plan for 2008-2013 listed "improve human-animal sector interface and strengthen community surveillance" as one of its core strategies. Vietnam is the lead country of this core strategy. Other developments include:
 - ⇒ *In Lao PDR, there are several indicators of the importance accorded by the government to One Health including:*
 - ▶ Animal health is one component of the National Avian Influenza Control and Pandemic Preparedness Plan (2006-2010).
 - ▶ A MOU was signed between the MOH and MOAF (Annex 13) on July 25, 2008 and was specifically related to the exchange of information on the transmission of communicable diseases from animals to humans.
 - ▶ Finally, this MOU at the ministerial level was replicated by the signing of a joint memoranda between the two sectors at a number of provincial and district levels.
- ▶ In Vietnam, the Prime Minister directed the Minister of Health in 2007 to concentrate on efforts to implement projects and missions, including calling for help from international organizations and non-governmental organizations (NGOs) to prevent and control the H5N1 and future emerging diseases of animal origin. At present, activities are being implemented by the MOH and MARD for the development of a "Joint Circular on Information Exchange and Coordination to Prevent and Control Disease Transmission from Animals to Humans."

4.3.2 Effectiveness

4.3.2.1 At the Grant Specific Level

4.3.2.1.1 Grant 2007 PAN 209: Strengthening Capacities to Manage the Risks of Zoonotic Disease Emergencies (ADPC: 2007 PAN 209)

- ▶ The grantee was able to deliver the expected output according to the approved changes in the scope of the proposal. As of the writing of this report, a pilot tested draft of the training package is undergoing revisions by module authors.
- ▶ The quality of the product as well as its acceptability by potential users was assured by the grantee through the involvement of credible organizations as module authors.
- ▶ The process involved academic and training institutions, medical and animal health practitioners, Ministries of Health, livestock and agricultural institutions, NGOs involved in One Health, and United Nations bodies. This was done specifically during the pilot testing of the training package and it revealed that the training package was known by WHO and the World Organization for Animal Health (OIE). It also ensured that relevant topics and concerns for a comprehensive package will be included.

- Informal discussions with participants were deemed to be relevant, timely, comprehensive, and responsive to the needs of the region. One NGO currently involved in a border health project had initial discussions with the authors and grantee for utilization of the package in its training activities.

4.3.2.1.2 Grant 2008 DSN 314: Strengthening Veterinary Public Health Capability in Asia Pacific (Chiang Mai University: 2008 DSN 314)

- All components of the grant were implemented within the context of a veterinary public health (VPH) center in a VPH faculty in the region.
- The establishment and activities of this VPH center are mandated and supported by both OIE and FAO.
- The records review on the grant showed that: (1) four of the six planned major activities of the grant were implemented by the time this external evaluation was done, (2) the other two activities are to be implemented before the end of the grant period, and (3) the number of participants and duration of the course and workshop were all in accordance with the plan.
- Although the outputs of the grants are seen to be focused only on veterinary public health, strengthening the VPH capacities of countries in the Mekong region is the first step toward a meaningful collaboration with the human public health sector in the area of One Health.

4.3.2.1.3 Grant 2008 DSN 301: Applied Research on Socioeconomic Factors Affecting Avian Influenza Prevention and Control (Winrock International Institute for Agricultural Development: 2008 DSN 301)

- This grant supported applied research on the socioeconomic impact of AI on livelihoods of the rural poor in Cambodia and Lao PDR.
- The product of the project as planned is a study undertaken by a team composed of Cambodian and Lao PDR researchers in the two countries.
- The final outputs of the research were policy briefs for Cambodia and Lao PDR which were made available to the evaluation team at the time of data collection.
- To ensure that findings would reach policymakers and implementing agencies for AI prevention and control, policy briefs were developed and consultations, policy outreach strategy, and dissemination activities were undertaken by teams in both countries. This is validated by the following quotation:

“The most important contribution made in this project in my opinion is building the capacity of young Cambodian and Lao researchers and engaging them into the research at the community level, and bringing sound research findings for decision makers, research, and development stakeholders of Cambodia and Lao PDR in control of HPAI.”

- The institutional and policy findings of the research are not only relevant to the prevention and control of HPAI, but also to emerging infectious diseases.

4.3.2.1.4 Grant 2008 DSN 311: Preventing the Next Emerging Disease in the South Asia “Hot Spots” (Wildlife Trust: 2008 DSN 311)

- The relevance and alignment of the grant activities to previous and future work of the grant proponent as well as the dissemination and sharing of a number of outputs of the grant added value to actual deliverables.
- The report of accomplishments centered on the “development of a formal alliance linking the South Asian Association for Regional Cooperation (SAARC) countries around a One Health agenda,” which was not mentioned in the proposal.
- The specific deliverable/output “to identify and through an intervention curb the high risk behaviors including wildlife trade” was not perceived as having been achieved as a related description did not appear in the report.

4.3.2.2 Country Grants with a One Health Component

4.3.2.2.1 Lao PDR

- National level outputs include:
 - ⇒ *signed MOUs between the MOH and the MOAF that strengthened collaboration between the two ministries in July 2008 and which serve as indicators of the country grant’s policy influence with respect to One Health;*
 - ⇒ *establishment of a hotline at the National Avian and Human Influenza Coordinating Office (NAHICO), later renamed the National Emerging Infectious Disease Coordinating Office (NEIDCO), for information sharing between the two ministries; and*
 - ⇒ *regular meetings organized between the two sectors for information sharing.*
- Provincial and district level outputs adhere to plans to:
 - ⇒ *sign two MOUs between the provincial offices of agriculture and health;*
 - ⇒ *sign two MOUs between the district offices of agriculture and health;*
 - ⇒ *map chicken farms in two provinces;*
 - ⇒ *train animal and human health volunteers in community-based surveillance in all districts of the three MBDS provinces;*
 - ⇒ *organize workshops and meetings at the provincial and district levels for AI prevention and control between the two agencies;*
 - ⇒ *establish forums at the provincial and district levels related to H5N1 and AH1N1;*
 - ⇒ *conduct a knowledge, attitudes, and practices (KAP) survey on AI among adults in eight villages in one district and in the one municipality, and*
 - ⇒ *organize two tabletop exercises for the provincial offices of agriculture and health on AI.*

- ▶ The Rockefeller Foundation grant to the country has initiated joint activities planned and implemented by the two sectors primarily at the border provinces and districts involved in the MBDS activities contributing to the attainment of the objectives of the National Avian Influenza Control and Pandemic Preparedness Plan of Lao PDR.
- ▶ The MBDS site coordinator took extra efforts to engage the agricultural sector in training and workshops.
- ▶ Border animal quarantine officials have also established cross-border relationships with those on the other side.
- ▶ The situation related to animal health is monitored through information gathered from both sides, either through official letters or informal means such as telephone calls.
- ▶ The training for the animal and human health volunteers strengthened the implementation of community-based surveillance present in both sectors, especially in provinces and districts with limited health and veterinary professionals.
- ▶ A community-based surveillance is in place and is operational.

4.3.2.2.2 Vietnam

The outputs of the grant include:

- ▶ Drafting of an inter-ministerial circular between the MOH and MARD that includes a mechanism for collaboration and a list of priority diseases.
- ▶ A model plan of tabletop exercises for one province.
- ▶ Tabletop exercises organized for two sectors in two provinces.
- ▶ A joint investigation between agriculture and health undertaken in four provinces.
- ▶ Models and guidelines for community-based initiatives currently being developed.
- ▶ Training of village health workers and volunteers in community-based surveillance for the five MBDS provinces.
- ▶ Strengthening of cross-border relationships between the agriculture sectors of An Giang, Vietnam and Takeo, Cambodia through a number of agreements related to animal movement currently being followed.

4.3.2.3 At the Portfolio Level

- ▶ Almost all respondents to the Portfolio Review agreed or strongly agreed that the grants included in this section:
 - ⇒ *have achieved the expected outcome;*
 - ⇒ *have outputs that are perceived to be of high quality;*
 - ⇒ *contributed to research activities;*

- ⇒ contributed to improved collaboration between the Ministries of Health and Agriculture;
- ⇒ contributed to other disease surveillance initiatives in the region,
- ⇒ influenced the formulation of One Health policies; and
- ⇒ contributed to the implementation of these policies.

- The respondents were almost equally divided in their response on whether the grants influenced the monitoring of the implementation of One Health related policies in the countries.

4.3.3 Sustainability

- In Lao PDR, there are indications that the transdisciplinary approach is off to a good start for the following reasons:
 - ⇒ *The political structure of the country as a one party system reduces opposition once leadership has endorsed a concept.*
 - ⇒ *The involvement of the same group of people/officials in a number of related issues and projects will to a certain extent ensure complementary activities rather than the duplication of efforts.*
 - ⇒ *The establishment of the NEIDCO, which coordinates collaboration among ministries and other agencies in relation to emerging infectious diseases, is supported by decrees that provide political will.*
 - ⇒ *The MOU between the two ministries provide a legal framework that will enable collaborative activities to be undertaken.*
 - ⇒ *The MOU between the two sectors at the provincial and district levels in a number of MBDS sites can serve as a model for enhancement of the national MOUs, which could then be brought into operation in the functional units.*
 - ⇒ *Collaborative activities, such as joint investigations and trainings undertaken in the MBDS sites, can serve as best practices for the country to facilitate the concept of One Health.*
 - ⇒ *The existing informal relationship between the two sectors at international border sites can be utilized as a facilitating factor in collaborative efforts.*
 - ⇒ *The efforts of the country to fulfill the challenges of APSED and IHR are complementary to the transdisciplinary approach of One Health.*
 - ⇒ *Veterinarians are involved in the FETP courses of the MOH.*
 - ⇒ *Plans and current efforts of other development partners to support One Health initiatives in the country will provide a smooth transition in the event that the Foundation will no longer support MBDS related activities at the country level.*
- The primary factors that will influence sustainability of the One Health approach in Vietnam include:

- ⇒ *political support to the creation of a national decree or an inter-ministerial circular;*
- ⇒ *buy-in of the People's Committee that coordinates all multi-sectoral responses;*
- ⇒ *presence of the National Steering Committee on Avian Influenza and Pandemic Flu at the national level; and*
- ⇒ *previous working relationships between the MARD and MOH on MBDS related activities such as joint training and joint investigation.*
- Key informants from the agricultural sector mentioned a number of factors that can serve as barriers, including budgets and funding, differing concepts of epidemiology between animal and human health and varying ICT training needs and entering competencies during joint training.
- The majority of the Portfolio Review respondents agreed that the grants were able to draw more funding from other development partners and have contributed positively to the sustainability of the MBDS as a regional network.
- Less than half of the respondents perceived that the grant has influenced budget increases from the national government.

4.3.4 Discussion

One Health is a response to the recognition that the health sector alone cannot address emerging diseases with an animal source. This complex issue underscores the need for a broader sectoral response involving the animal, environmental, and health sectors. The relevance of including One Health in the DSN Initiative has been validated by the epidemiological landscape in the region, the regional and global efforts by professional and development organizations, and the perceptions of key informants.

In the Mekong region, the inclusion of One Health is perceived to be very relevant and timely. The Mekong countries have had health problems and experiences that necessitate working with other ministries, particularly in the animal sector. The H5N1 outbreak is like the “icing on the cake” that underscores the integration of animal and human health. Existing efforts are currently being implemented toward this goal. The inclusion of One Health in the overall DSN Initiative and in the MBDS core strategies complemented existing efforts in these countries.

The MOU signed in Lao PDR between the MOH and MOAF provided the legal framework for the mechanism of collaboration between these two sectors. The MOU was signed in July 2008, which is within the period covered by the DSN support to Lao PDR. It would be presumptuous to say that the DSN Initiative alone was responsible for the signing of this MOU. However,

looking at the organizational structure of the MOH of Lao PDR, the same group of officials was responsible for pushing this MOU through as was involved in the MBDS. The MBDS country stakeholders involved the animal sector officials in the MBDS activities implemented in the country. The participation of the animal sector officials can be said to have facilitated a collaborative spirit between the two sectors, which influenced the smooth development and implementation of the MOU.

In addition, the replication of the MOU between the animal and human health sectors at the MBDS provinces in Lao PDR is another indicator of the influence of MBDS/DSN on the promotion of the One Health concept at implementation and functional levels. Furthermore, a MOU was also signed between the animal sectors of two cross-border provinces of Lao PDR and Thailand which was possible because of the existing relationships within the MBDS network.

In Vietnam, a draft of an inter-ministerial circular between the MOH and MARD is now in place and slated to be signed once the details of the collaboration are finalized and approved. The involvement of the MBDS/DSN in this undertaking is obvious. The technical people responsible for the drafting were also involved in MBDS from both sectors. The workshops organized for the discussion of the mechanics were all supported by MBDS country grants. In addition, the provincial MBDS stakeholders from both sides were involved in the workshops. These efforts are not entirely a result of MBDS, but the integration of MBDS supported activities in the country's efforts toward the promotion and implementation of the One Health concept is worth mentioning.

Coordination between the two ministries is a continuing effort. Coordinated policies and strategies are needed for this relationship to work. Activities need to be planned and jointly implemented to keep momentum and to institutionalize the collaboration. In Vietnam, through MBDS support, joint investigations of AH5N1 have been undertaken by two sectors in several districts of a MBDS province. National teams from both sectors were also involved in these activities. These joint efforts served two purposes for Vietnam: (1) fostering relationships between the two sectors and (2) providing input on the development of the details of the joint circular.

The comprehensive zoonotic diseases training package developed through a DSN grant provides a useful and acceptable curriculum for the joint training of animal and human health staff. The joint training can serve as a “bridge” between the two sectors. Also supported by the DSN Initiative is the VPHC for Asia Pacific, which serves as a training institution for VPH and addresses

the need for a strengthened VPH capacity for a meaningful and effective collaboration with the health sector. It is common knowledge that in terms of human resource development, human health is more advanced. Thus, there is a need to fill the gap in the animal sector staff.

The Rockefeller Foundation's involvement in One Health is perceived to be strategic and appropriate by development partners. Its history of working with public health issues and its credibility as a philanthropic and technical organization make it an appropriate organization to push forward the concept of One Health. The Foundation can engage the leadership of the countries to further promote the transdisciplinary approach. There are definitely barriers that need to be addressed within the context of each country in the Mekong region. This will influence the progress and complexity of the adoption of the approach.

4.4 Outcome Area 4: Capacities

- Of the 21 DSN grants in the Mekong region, 18 have deliverables in the area of capacity development, of which 10 include Lao PDR and Vietnam as target beneficiaries.
- The deliverables include the assessment of human resource capacity in epidemiology and the development of a workforce plan in the MBDS countries, the conduct of short-term non-degree courses on a variety of areas related to disease surveillance and response including the use of tools, field epidemiology, and community-based surveillance, the development and offering of graduate-degree programs (M.A. and Ph.D. levels) on public health informatics, the development and pilot testing of modules on zoonotic diseases, and a host of support activities to develop capacity for policy research.

4.4.1 Relevance

- The best evidence of the need for capacity development from a regional perspective in the area of epidemiology, health information, and disease surveillance systems, and related topics is the result of the country assessments conducted by HMN on the health information systems of Cambodia, Lao PDR, and Vietnam in 2006. These results were comprehensive and in-depth assessments of countries that applied for HMN support for their health information systems.
- The assessment results for the HIS institutions of the three countries in the areas of human resources, financing, and infrastructure show that except for the HIS infrastructure of Vietnam, which had a low but satisfactory rating, all other aspects of the three countries had very low scores

ranging from 38% to 55%. These scores are interpreted as belonging to the “present but not adequate” category under the HMN scoring system. Since these assessments were conducted in 2006, shortly before the start of the DSN Initiative, these data show that indeed, the DSN grants on capacity development are highly relevant and respond to regional issues.

- ▶ The ADPC grant (ADPC: 2007 PAN 209) offers another example of the response of a DSN grantee to regional developments and issues. ADPC requested a change in its scope of work as described in the initial proposal in order to be more effective in addressing current developments such as the AH1N1 outbreaks. The original proposal to conduct a workshop that explores the risks posed by zoonotic diseases and to develop a capacity assessment tool was changed to the development and testing of a comprehensive zoonotic disease training package, in response to inputs from stakeholders (ADPC, Interim Progress Report, July 2010).
- ▶ Data on the extent to which the DSN grants on capacity development are aligned with the mission and strategies of the Rockefeller Foundation in the region were derived from grantee responses to the Portfolio Review. The results show that at least 8 out of every 10 grantees in the Mekong region with deliverables in capacity development felt that their grants have contributed to the Foundation’s reputation as a thought and practice leader in disease surveillance, that their grants meet the mission of the Foundation and are in line with its strategies, and that they respond to the regional issue of information sharing in disease surveillance.

4.4.2 Effectiveness

- ▶ The main indicators used to assess the effectiveness of the grants with deliverables in capacity development were the extent to which: (1) the grants met their objectives and intended purpose, and (2) changes have occurred at the individual and institutional levels as a result of capacity development activities.
- ▶ The extent to which grants met intended objectives was assessed through a comparison of grant deliverables as indicated in grant proposals with the grant outputs as documented in grant progress and final reports. A summary of this comparison for all 10 grants with deliverables in capacity development in Lao PDR and Vietnam show that in general, all deliverables have been provided, with some delays in implementation by a few grantees. The detailed comparison of deliverables and actual outputs for the 10 grants reviewed is presented in Annex 14.
- ▶ The various deliverable types for the 10 grants reviewed can be categorized into three main groups: (1) curriculum development for short courses on zoonotic diseases and long-term degree programs, (2) conduct of a large variety of training courses in areas related to disease surveillance and response, and (3) building research capacity.

- ▶ The curriculums developed for zoonotic diseases and public health informatics are not ready for implementation, although the modules for the zoonotics course have been test piloted. If there are no further delays in project implementation, the master's degree and doctoral level programs on public health informatics to be offered by Mahidol University should be accepting its first class of students in 2011.
- ▶ A high number of training courses in a variety of topics involving a large number of participants are being offered in the region. Annex 15.1 presents a list of training courses conducted under the MBDS by Lao PDR, while Annex 15.2 presents training courses in Vietnam and Annex 15.3 shows courses jointly conducted by two or more countries. The list presented in Annex 15 is not a complete list as it was derived from reports submitted by countries, some of which were not up-to-date. In addition, entries in the reports with a large amount of incomplete data were excluded. Annex 15 is presented merely to illustrate the large extent to which training has been conducted under the MBDS.
- ▶ The data collected on training activities show two very important findings.
 - ⇒ *The participants in the various training courses conducted are mainly from the provincial, district, and village levels. This is noteworthy as training is most needed at these levels. Central level staff is given the most opportunities for continuing education, while those in the provinces, especially the district and peripheral level staff, are typically left out. Therefore, the thrust of MBDS to primarily train lower level staff has filled a large gap in training needs.*
 - ⇒ *Both Lao PDR and Vietnam have developed their own short- and long-term FETP courses, making such an important and effective training program accessible to more MOH staff. FETP is the result of a Rockefeller Foundation initiative, but is offered only in certain countries with limited fellowships available outside of the country where the program resides. In the Mekong region, the program is only offered in Thailand, with two fellows at most being accepted from the other countries per year. With Lao PDR and Vietnam developing their own programs, it will be faster to build a core group of MOH staff trained in epidemiology. The fact that both countries sought funding to develop their own FETP programs is also a good indicator of the importance and need for such programs and of the countries' own high level of interest in conducting such programs and in fostering their sustainability.*
- ▶ Both Lao PDR and Vietnam reported the completion of their epidemiology needs assessment, as well as their work plan for epidemiology capacity building. The existence of a needs assessment and capacity building plan is one indicator for effectiveness included in the Mekong Evaluation Matrix. However, the evaluation team did not have an opportunity to review these documents and this data is therefore based solely on the MBDS reports submitted by the countries.

- ▶ In the area of research, there are two levels of deliverables: (1) dissemination of research findings to aid policymakers and other decision makers in making informed decisions on issues related to disease surveillance and response, and (2) an increased capacity for policy research.
- ▶ The two grants (London School of Hygiene and Tropical Medicine, University of London: 2008 DSN 201 and Winrock International Institute for Agricultural Development: 2008 DSN 301) which included the dissemination of research results as a deliverable both did a very good job of disseminating their findings using a variety of channels including round-table discussions among different types of stakeholders, presentations at local and international conferences, and publication of results in journals. However, the outputs were weakest in the development of research capacity, especially in terms of the number of people trained. While Winrock International implemented a high-quality and innovative research training strategy, research teams comprised of four members from Cambodia and three from Lao PDR were the only ones to benefit, which is very limited in scope. The RAND Corporation (Rand Corporation: 2008 DSN 302) also needs to provide policy research support to the MBDS countries among its TORs. However, no additional inputs were provided after a presentation on policy research during the 2008 MBDS Regional Forum at Phnom Penh. The acquisition of research skills takes time and requires a considerable amount of mentoring and in-service, hands-on training. While a few countries reported that they have conducted policy research as part of their MBDS activities, the quality of the methods used and the appropriateness of the data analysis and interpretation of results need to be verified.
- ▶ To measure the effect of training activities on trainees and on the disease surveillance system of the MOH, FETP graduates were asked which activities and aspects of their work they performed differently as a result of their FETP training, as well as the ways in which their FETP training affected them as people. The KII respondents indicated that they have become more organized and systematic in their surveillance work as a result of their FETP training. The teachers among the group were impressed by the very participative method of teaching in the FETP courses and intended to adopt this method in their own classes. Those from the MOH felt that the surveillance system of their country has improved in terms of the capacity of personnel as a result of sending staff for FETP training. A surveillance RRT has been organized and regular training for staff has been conducted. Moreover, RRT staff learned how to cooperate and work with people in the community. One respondent was promoted after attending the FETP training, becoming the head of the epidemiology unit of the local city health department.
- ▶ In terms of the effect of the FETP training on individuals, the KII respondents were almost unanimous in saying that they developed greater self-esteem and are now able to talk to people in high positions and to talk to

donors with greater confidence. The following are some responses of the FETP graduates to this question:

- ⇒ *“It’s very useful for me, although I work harder than before and have become very busy, but it’s good.”*
- ⇒ *“I got promoted, have become more credible and more accepted by the public. The staff at the district level have better cooperation than before.”*

- The other indicators of grant effectiveness refer to the quality and to the extent of the utilization of outputs. These questions were included in the Portfolio Review together with general questions on whether or not grants have contributed to research activities on disease surveillance at the national and regional levels and to the improvement of human resources and national capacity for disease surveillance. The results indicate that the grantees have very positive perceptions regarding the effectiveness of grants with deliverables in capacity development, with a very high proportion (88.2%) responding that their grants have contributed to the improvement of human resources for disease surveillance through capacity building and training.

4.4.3 Sustainability

- The first indicator of the sustainability of grants in the Mekong Evaluation Matrix is the extent to which skills derived from training activities have been transferred. The fact that a number of FETP graduates are now actively involved in the development and implementation of their own local FETP courses is a good measure that this indicator has been met. In the case of Lao PDR, the individual in charge of FET, the Lao version of FETP, is an FETP graduate of the Thai program, who pursued his studies under the MBDS. The other FETP graduates—based in Vientiane in Lao PDR, where the FET is conducted—are also actively involved in running the course. The same is true of Vietnam where some FETP graduates are actively involved in implementing the local FETP course.
- FETP also offers the best example of how countries were able to recruit new funding partners to support the program. The FETP in Lao PDR is supported by the U.S. Centers for Disease Control (USCDC), while that of Vietnam is supported by a host of funding agencies including WHO and the CDC. However, in terms of other training courses for provincial and lower level staff, a number of staff members from the PHS and the Provincial Preventive Medicine Centers (PPMC)s who were interviewed during the evaluation were fearful that they will not have adequate funding to continue with these training courses after MBDS.
- As in other key performance areas, questions on sustainability were included in the Portfolio Review. The results show that while a little over three-quarters of the grantees (76.5%) believe that their grants have contributed to

their country's ability to draw more support from other development partners in disease surveillance, less than half (47.1%) felt that their grant had influenced budget increases from the national government for disease surveillance. Almost two-thirds of the grantees (64.7%) feel that their grants have contributed to the sustainability of the MBDS as a regional network.

4.4.4 Discussion

The DSN Initiative made the greatest input in terms of coverage in the area of capacities through the provision of funds and technical support for short- and long-term training on epidemiology and topics related to disease surveillance and response. A large number of MOH staff, especially at the provincial levels and below, have been reached, a wide number of topics have been covered, and a variety of training activities and strategies, including tabletop exercises, have been used. In addition, the training activities not only served as venues for imparting knowledge, but also helped to facilitate the process of cross-border collaboration by providing opportunities for staff across human and animal health ministries and across provinces and countries to interact. However, while the “goods” have definitely been delivered as far as short-term training on epidemiology, the effectiveness of these trainings has not been well documented or assessed. Most of these trainings were not properly evaluated, not even with pre- and post-tests to measure the immediate change in knowledge as a result of the trainings. While the case studies conducted in Lao PDR and Vietnam seem to indicate that, in general, the staff in places visited during the evaluation knew what to do during the AH1N1 and H5N1 outbreaks, it is still important to systematically evaluate the effectiveness of these short-term training courses in order to inform similar training in new cross-border sites, especially on issues such as the topics to be covered and teaching strategies to be used.

Another issue that arose in relation to the conduct of short-term training in epidemiology for provincial and lower level staff is that these trainings were conducted only in provinces where there are MBDS cross-border sites, resulting in a possible imbalance in the distribution of staff with basic epidemiology skills within the country. The government and other development partners need to match trainings conducted under the MBDS with trainings in other border provinces which do not have MBDS cross-border sites. More training in the non-MBDS provinces is also needed in general to ensure that basic knowledge in epidemiology and disease surveillance—such as that taught in MBDS provinces—is also present in other areas.

The development and implementation of both the short- and long-term FETP courses in Lao PDR and Vietnam, completely independent of Rockefeller

Foundation support, is a testament to their recognition of the importance and effectiveness of the FETP for human resource development in the area of epidemiology. The two-year Thai FETP graduates from Lao PDR and Vietnam who were sent to school through the DSN grants were actively involved in the implementation of their own local FETP courses. This illustrates a sort of multiplier effect in the training of local epidemiologists. These FETP graduates have also taken up important positions and leadership roles in epidemiology at the MOH, another indicator that the desired changes resulting from DSN inputs on capacity development have been achieved.

Among the deliverables in capacities, the impact of DSN grants on the development of research capacity has been weakest. While the conduct of policy research is one of the seven core strategies of the MBDS, it cannot be concluded that this has been implemented satisfactorily, in terms of both quantity and quality of the products. Most research projects undertaken by the MOH and MBDS staff in Lao PDR and Vietnam, where the Two-Country Study was conducted, were done as part of FETP requirements. Vietnam reported conducting a few policy studies on its own. However, even the RAND Corporation, whose grant deliverables include the provision of technical support to MBDS in policy research, has expressed concern in its first and second interim grant narrative reports as to the rigor of the epidemiologic methods used for outbreak investigations, based on papers presented during the Regional Forum. Much more work needs to be done, more intensive mentoring needs to be provided, and more effective training strategies that would produce a greater number of trainees skilled in research need to be developed and implemented before this output can be adequately achieved.

A complicating factor in the development of research skills is that training alone is not sufficient, the time to conduct research, and more importantly, the funds and other resources to conduct research are also needed. The availability of both time and resources are in turn closely related to the existence of a research culture within the MOH which is still non-existent in most countries in the Mekong region. It is perhaps for this reason that so many other organizations and initiatives other than the DSN Initiative have actually tried various forms of intervention to promote research within the MOH of countries with little success.

4.5 Efficiency, Management, and Governance

This section looks at the efficiency, management, and governance of the overall DSN Initiative in the Mekong region from the perspective of the grantees and based on KIIs, a document review, and the Portfolio Review.

4.5.1 At the Portfolio Level

- ▶ The majority of grantees perceive that the grants used resources in the most cost-effective manner to achieve the intended outcomes.
- ▶ Duplication of efforts among development partners was avoided.
- ▶ The catalytic effect of the DSN grants in the countries is demonstrated in the support offered by other development partners to the training of additional trainees in courses organized through grant resources and also through the co-funding of schemes implemented for a number of cross-border activities.
- ▶ The joint outbreak investigation implemented by Lao PDR and Thailand is partially supported through government funds. The overall coordinator of MBDS was able to promote the project to stakeholders through participation in regional and international meetings.
- ▶ The enabling factors that facilitated implementation as identified by stakeholders were:
 - ⇒ *support from government, NGOs and development partners implementing similar projects in the region;*
 - ⇒ *supportive feedback, smooth information exchange between grantees and the Rockefeller Foundation and good coordination;*
 - ⇒ *flexibility of funding and a qualified team of experts; and*
 - ⇒ *regional exchange and sharing.*
- ▶ Differences in culture, language, legal frameworks, and economic status are the most cited inhibiting factors.
- ▶ Country coordinators of the MBDS grants exhibited a participatory type of planning that is fully appreciated by the cross-border site coordinators.

4.5.2 Management by the Rockefeller Foundation

- ▶ The majority of grantees perceive that the grants have been effectively managed and led by the Rockefeller Foundation.
- ▶ All stakeholders feel that the Foundation has exhibited both programmatic and financial flexibility in managing the grants:
 - ⇒ *“RF has a very good and strategic way of delivering their grants.”*
 - ⇒ *“RF exhibited flexibility in the way they manage the grants.”*
 - ⇒ *“Countries were provided opportunities to decide what to do.”*
 - ⇒ *“RF expertise in cross-border is important, including the experts provided by RF.”*
- ▶ At the highest level of governance in the MOH of MBDS countries, the Foundation is known to have initiated and to have led the concept of cross-border surveillance.
- ▶ Development partners also share the perception that the Foundation is a pioneer in cross-border surveillance. However, there are other perceptions shared by development partners with regard to the Foundation:

- ⇒ *“RF’s visibility in the field of surveillance in the region is not enough.”*
- ⇒ *“RF has a very long history, it should be a leader. They should not accept the role of a follower.”*
- ⇒ *“We don’t see RF as an investor. We see RF as building capacity in the region.”*
- ▶ The Foundation’s mechanism for monitoring grants, both programmatically and financially, through the submission of interim and final reports on scheduled dates as specified in the grant agreement, when not followed, weakens the documentation of the overall DSN Initiative.
- ▶ The overriding perception is that the MBDS Coordinator has the monitoring responsibility delegated to him by the Foundation in his terms of reference. This contributes to the low visibility of the Foundation for purposes of monitoring, as shown by the following quotations:
 - ⇒ *“RF Bangkok does not have monitoring responsibilities, only financial assistance. The coordinator should do the monitoring.”*
 - ⇒ *“RF (coordinator) should make regular visits, not just collect information. Sometimes requests from countries are not addressed.”*
 - ⇒ *“RF has delegated to MBDS Coordinator the management of MBDS. Anyway, it all depends on the secretariat.”*
 - ⇒ *“Secretariat should be strengthened, should have expertise.”*

4.6 Assessment of Impact

- ▶ In order to assess the impact of the DSN Initiative, a case study was done as part of the Two-Country Study to assess how Lao PDR and Vietnam responded to the recent AH1N1 and avian flu outbreaks in these countries. In the case of Vietnam, the response to a cholera outbreak in one of the provinces was also included to provide a broader picture of the country’s capacity for disease surveillance and response.
- ▶ It is assumed that a country’s response to disease outbreaks reflects the cumulative lessons, benefits, and overall effects of all inputs provided through the various grants, including networking, information exchange, tools, capacity development, and the introduction of innovative approaches like One Health. The recent disease outbreaks serve as a test for these countries of their ability to detect, to respond to, and to contain diseases, and the case studies aim to document the extent to which the various DSN inputs have actually been applied to address these problems.

4.6.1 Case Study: Lao PDR

- ▶ 72% of the 5.6 million people living in Lao PDR live in rural areas. Lao PDR is a landlocked country with an area of 236,800 square kilometers, three-quarters of which are comprised of mountains and plateaus. Lao PDR is also strategically located in the region as it shares borders with all

other MBDS member countries—China to the north, Myanmar to the northwest, Thailand to the west, Vietnam to the east, and Cambodia to the south. The Mekong River flows through the country from north to south, branching out into many tributaries along its course.

- ▶ The geographic location of Lao PDR makes it an important hub for the Mekong Basin's trade, business, and tourism traffic—a passageway for people, animals, goods, and produce that bring with them, among other things, communicable diseases and risky behavior that may lead to the transmission and proliferation of diseases with pandemic potential.
- ▶ In the evaluation of the Rockefeller Foundation's DSN Initiative in the Mekong Basin area, provinces bordering other countries take center stage as they serve as sentinel sites for the adoption of strategies, the implementation of activities, and the monitoring and evaluation of initiatives. In Lao PDR, 2 out of 17 provinces were selected for visits by the Mekong Evaluation Team: Savannakhet and Luang Namtha. The province of Savannakhet, one of the original provinces in the DSN Initiative was selected for its location in the thin mid-portion of the country that shares borders with both Mukdahan, Thailand and Quang Tri, Vietnam. Savannakhet, with 15 districts and 1,010 villages, had an estimated 902,006 residents in 2009 and is second to the Vientiane Capital as the most populated province in the country. The second province visited was Luang Namtha, which is located in the north and which borders China and Myanmar. It is much smaller than Savannakhet, with only 5 districts and a population of 142,773 in 2005.
- ▶ The MOH is responsible for the development, improvement, and management of the health system and health related concerns of the country. The health cabinet and six other departments are directly under the office of the Minister of Health. The departments closely related to the DSN Initiative are the Department of Hygiene and Disease Prevention which includes the National Center for Laboratory and Epidemiology (NCLE), the Department of Curative which manages public hospitals, and the Department of Personnel and Administration which oversees education and refresher staff training plus health personnel and organization.
- ▶ Since 2004, small outbreaks of H5N1 in poultry have been reported, but no human cases surfaced until early 2007 when two human cases were confirmed. This triggered the strengthening of the disease surveillance system and the outbreak investigation and reporting initiative in the country.
- ▶ In May 2009, WHO declared Pandemic Alertness Level Phase 5 due to an international AH1N1 ("swine flu") outbreak that started in Mexico in April 2009. Lao PDR was not spared, and several cases were found there. Details of the cases and the government's efforts to contain the outbreak are discussed later.

4.6.1.1 Disease Surveillance System

- ▶ Routine surveillance in Lao PDR covers 19 diseases. Of these diseases, only 8 warrant an investigation on the report of any incident case—dengue, AH1N1 (swine flu), H5N1 (avian flu), diarrhea, measles, fever with rashes, typhoid fever, and food poisoning. Reporting measures are in effect in all 17 provinces with all hospitals and private clinics participating in the surveillance.
- ▶ Disease surveillance can be active or passive. There are local surveillance officers responsible for both active and passive surveillance. For active surveillance, hospitals and health centers are visited daily to determine the occurrence of infectious diseases based on consultations and admissions. For passive surveillance, the province receives reports of disease occurrence from the districts, and in the case of border provinces such as Savannakhet, reports are received from two cross-border areas once a week. These reports are submitted to NCLE monthly. There is also a safeguard called the Lao PDR Early Warning System (EWARS) through which unusual events are reported to health authorities within 24 hours.
- ▶ Information on the occurrence of cases of infectious diseases with outbreak potential, such as AH1N1, emanates from health centers, village health workers (VHW), ports, and immigration checkpoints and flows upward to the District Health Office and then to the Capital City Provincial Department of Hygiene and Prevention, then to the NCLE, which in turn sends reports to the MOH's Department of Hygiene and Prevention. The latter two units have a two-way information exchange. Transmission of information through the different channels up to the central level may be by fax or phone. The declaration of an epidemic rests with the MOH upon confirmation of positive cases.
- ▶ Other sources of information include rumors, the media, the NAHICO hotline, NGOs, village governments, and individual citizens. All can report directly to any level of the health authorities mentioned above. District hospitals may give information to the district health office, while private clinics and central and provincial hospitals may report to the Capital City Provincial Department of Hygiene and Prevention.
- ▶ The surveillance network organized at the grassroots level is headed by village health volunteers (VHVs), who typically have early knowledge of sickness at the village level and who report such occurrences at designated times. The VHV submits a monthly report to the health center on the fifth of the month. If there are unusual events, reporting will be more frequent and will also be done at the district level. In the case of dengue or AH1N1, one unusual case warrants immediate reporting.
- ▶ Community members are also sources of information. An unusual number of sick or dying people or animals may alarm community members who

can report to any level of the health hierarchy, but who usually make their requests for help at the level of the local health center.

- ▶ The disease surveillance system at the border has only 10 diseases under watch, the incidence of which is also reported in the MBDS information system.
- ▶ During disease outbreaks an RRT is activated. The RRT is comprised of health workers typically from the district level or from the government health sector and is usually formed within 48 hours of receipt of a report on a disease outbreak. The team is tasked with (1) undertaking outbreak investigation including case investigation, case finding, and contact tracing; (2) identifying the cause of the outbreak through analysis of data and epidemiologic study; (3) controlling the outbreak by managing cases and implementing measures to contain the outbreak; and (4) writing a report on the outbreak investigation and control to be disseminated to appropriate persons and offices. The identification of team members is done at the appropriate health office level. The members of the team come from different units of the health department. Each unit has a list of personnel from which team members could be drawn. The minimum composition of the RRT, as detailed in the Outbreak Investigation and Response (OIR) Manual, includes an epidemiologist from the PHO, a surveillance staff member from the District Health Office, an epidemiologist from NCLE, a clinician/nurse, and a laboratory technician.

4.6.1.2 The AH1N1 Outbreak

4.6.1.2.1 The First Case of AH1N1 in Lao PDR

According to NCLE officials interviewed during the evaluation, the first case of AH1N1 in Lao PDR was a 27-year-old male expatriate who worked with an international NGO based in Lao PDR with 40 employees. On June 13, 2009, two days after returning from a vacation in his home country of Australia, he developed a fever of 38.2° Celsius, a mild dry cough, and a headache. Although his signs and symptoms were clearing up within 24 hours of onset, he consulted the embassy physician, who notified NCLE of his case.

Earlier, physicians from all embassies and consulates were met by NCLE officials to inform them of the surfacing of possible cases of AH1N1. This notification was part of the country's response to an alert from WHO of the existence of AH1N1 cases in neighboring countries. This meeting was part of the preparedness plan of Lao PDR for containing a possible AH1N1 outbreak.

After receiving the notification report, NCLE went to see the patient, took his medical history, performed a physical examination, and obtained nose and throat swabs. Aside from his travel history, his symptoms of cough and

fever made him a suspect case. He was confirmed positive for AH1N1 within 24 hours of the PCR testing of the nose and throat swabs. Management of this particular case involved imposed isolation by the embassy physician for at least seven days from the onset of signs and symptoms.

The definitions of a suspected and confirmed case of AH1N1 followed those proposed by WHO. A history of travel plus signs and symptoms such as cough and fever are criteria for a suspected case. A positive laboratory exam and PCR of throat and/or nose swabs confirms the suspected case. The individual was not vaccinated for seasonal influenza. When he fell ill, he self-medicated with an antipyretic brand, but did not take the drug of choice for AH1N1. He was also unaware whether he had been exposed to AH1N1.

The patient had been on vacation in Australia since early February 2009, then visited Africa and Kuala Lumpur before eventually returning to Vientiane, Lao PDR on June 11, 2009 via Bangkok on a Thai Airways flight.

4.6.1.2.2 Outbreak Investigation and Response (OIR)

Contact tracing to determine the existence of other cases was performed by the Vientiane Health Office, NCLE, and trainees in the FETP, with NCLE coordinating the activities and with guidance from WHO to ensure detection and proper management of all cases through triaging, specimen collection, treatment, and isolation. Within two to three weeks of this patient's case being reported, 52 contacts, half of them foreigners, were identified and traced. Those accessible were interviewed about their own medical history and history of travel. Those with flu-like signs and symptoms had nose and throat swabs performed. None of the contacts tested positive. Those who were not physically accessible were sent text messages advising them of self-quarantine for at least seven days.

The report of the occurrence of a confirmed AH1N1 case was sent from NCLE to the MOH, which prepared a press release on the report. The case investigation report was also furnished to WHO as a provision of the IHR.

Information was also provided to the MBDS Country Coordinator upon request. A press release was issued on June 17, 2009 jointly by NEIDCO and WHO, informing the public about the status of the AH1N1 outbreak, with special mention of the country's adherence to WHO recommendations and a note that there would be no restrictions regarding borders and travel. Health education was done, including the preparation of a fact sheet on influenza AH1N1.

After the press release, Tamiflu, a drug against influenza, was provided to the MOH to be used in the management of cases. Personal protective equipment (PPE) was distributed to Lao PDR hospitals. Health officials were to ensure that health facilities had sufficient supplies of PPE and Tamiflu.

Problems encountered in the investigation included pressure from the government and international organizations to facilitate investigation and “contain” the outbreak. During the tracing of the patient’s contacts, some contacts were not cooperative and were even defensive.

4.6.1.2.3 AH1N1 Cases from the Casino

From interviews conducted with key informants and RRT members during the evaluation, it was confirmed that a casino worker with fever for three days who had consulted a private clinic in Savannakhet was the first case of AH1N1 in Savannakhet. On the fourth day, the patient was admitted to a hospital in Mukdahan as a case of AH1N1. The patient was discharged as the fever subsided, but continued isolation at home for a few more days.

The RRT composed of an epidemiologist, laboratory technologist, and hospital specialist went to the casino to investigate other potential cases. Of 42 casino employees tested, another 16, all Lao PDR nationals, were found positive for AH1N1.

4.6.1.3 Assessment of the Disease Surveillance System of Lao PDR

4.6.1.3.1 Human Resources

One strategy to strengthen the disease surveillance system of the country is to develop the capacities of health personnel involved in surveillance on epidemiology and OIR. Health officials at the national level were sent to a two-year FETP in neighboring Thailand.

These FETP graduates, together with NCLE and provincial health officials, organize and implement in-country one-year versions of epidemiology and OIR training for provincial health personnel, especially targeting the non-medical people in the provincial epidemiology unit. A much shorter course is also given to district health personnel. These short-term courses ensure the establishment of a sizeable pool of trained “epidemiologists” to head RRTs on the front lines when investigating and responding to epidemics.

In some instances, funding may not come from MBDS, but from international partners and the country government, which have joined in the support of other initiatives without necessarily overlapping or duplicating

activities. The focus here is on expanding the extent and coverage of the initiative, which may not be feasible alone.

These trainings, aside from imparting new knowledge to the participants, teach them to understand the importance of their roles and responsibilities in communicable disease control, make them more conscientious in dispensing their duties properly, and encourage them to initiate activities rather than merely meet basic expectations. For example, when trainees from Lao PDR were required to perform an outbreak investigation, instead of completely foregoing the activity as no outbreak was present, they decided instead to perform a joint survey on malaria with personnel of the neighboring country.

Their learning also enhanced their credibility and self-confidence. This new-found confidence affects how the disease surveillance system is viewed as a whole. Health officials at the provincial and national levels both agree that the disease surveillance system became more systematic and organized after the DSN Initiative was put into place.

4.6.1.3.2 Protocols and Other Documents

Outbreak Investigation and Response (OIR) Manual: The manual, produced for health workers by WHO in collaboration with NCLE is the guiding manual for epidemiology and outlines the steps for OIR. The revision of the OIR manual for the publication of the 2008 edition has also been influenced by MBDS as some of those involved in the revision were trained with MBDS support.

Record and Report Forms, Questionnaires: The proper filing of interview questionnaires and the proper preparation of records and reports are taught in capacity building sessions. This results in a higher quality of information, and subsequently, a better basis for planning and evaluation.

The MOUs forged between the Ministries of Health and Agriculture and Forestry, as well as those between the MOH of bordering countries, specify areas of collaboration and mechanisms for collaboration in disease surveillance on zoonosis and cross-border activities, respectively.

4.6.1.3.3 Reporting System

The focus on cross-border sharing and activities with the goal of strengthening the surveillance system may at times seem to cause confusion as data from border areas may differ from data received by way of the vertical pathway from the village up to the central level. National health and MBDS officials realize the value of accurate reporting and agree that data from the borders should be integrated with the national information system and in

cases of differing statistics, the report of the focal person in the province should be given credence, as it is the source of data sent to NCLE.

To facilitate the process of data sharing, Savannakhet, Lao PDR and Mukdahan, Thailand have reached an agreement whereby Savannakhet is permitted to share information with Mukdahan without requesting permission from higher authorities, doing away with a layer of bureaucracy and enabling Savannakhet to feed the information it receives to the central level.

4.6.1.3.4 Use of “Fast” Methods of Data Sharing

Although the staple methods for “fast” data sharing and reporting are the fax and telephone, messaging by cell phone and Internet is quickly being adopted in the disease surveillance system. Contact tracing in the first AH1N1 case in the Vientiane capital was facilitated by text messaging. In the Lao PDR areas bordering China, the contact person uses a cell phone to transmit messages between the two countries. The use of the ProMED website could be considered part of the strengthening strategy, although there are some difficulties to using the site, including a lack of familiarity with the use and language of the technology.

4.6.1.3.5 Relationship with Units Related to Disease Surveillance

Improving the disease surveillance system by strengthening the capacity of health personnel will not be done without the cooperation of the NCLE, which serves as the training arm of the MOH for the epidemiology, OIR, and laboratory courses. NCLE personnel act as trainers, lecturers, and coordinators of courses.

The responsibility of guarding the nation’s health does not rest on the MOH alone. Newly emerging diseases with pandemic potential, such as AH1N1, were first identified in animals closely associated with human habitation. The surveillance and control of these diseases in animals rest with the MOAF, but the MOH is also alerted to and remains vigilant to the great possibility of the pathogen infecting humans and spurring human-to-human transmission of the disease. MOUs have been forged between the two ministries at the national level and between the departments at the provincial level. The MOUs stress cooperation in information sharing and in joint activities in the investigation and response to disease outbreaks.

The quarantine department is another unit within the MOH which is strongly related to disease surveillance, but which is in need of further strengthening. Quarantine department members recently participated in

training courses and are grateful for the new knowledge and skills, for the opportunity to join in cross-border surveillance, and for the official recognition of their participation. A MOU regarding joint activities has been signed by quarantine offices on both sides of the border with plans now in place to expand to other border provinces.

4.6.1.3.6 Containment of Outbreaks

Reports of actual cases and outbreak investigations as collected by the Mekong Evaluation Team may at times be partially incomplete as an official involved in the investigation may have been reassigned and might not be available for interview or he or she may no longer be connected with the department or agency. However, it is still possible to determine whether OIR protocol was followed. Results of field interviews and records reviewed during the evaluation in relation to the AH1N1 outbreak in Lao PDR show the following:

- ▶ Timely formation of the RRT;
- ▶ Case follow up and case findings were carried out until there was no evidence of new cases;
- ▶ Outbreak was contained within the original group affected; and
- ▶ Widespread transmission was averted.

Although the information collected by the Mekong Evaluation Team in relation to the AH1N1 outbreak in Lao PDR is limited, there are strong indications that the country has benefited from the inputs provided by the DSN and similar initiatives and that the country has responded appropriately to avert the widespread transmission of AH1N1.

4.6.2 Case Study: Vietnam

Vietnam, the other MBDS member country assessed in the Two-Country Study, is situated east of the Indochinese peninsula and has a total land area of 331,688 square kilometers. The S-shaped country shares borders with the People's Republic of China to the north, Lao PDR to the west, Cambodia to the south, and the South China Sea to the east.

- ▶ Quang Tri province in Vietnam, which shares borders with Savannakhet Province in Lao PDR, was one of the original border sites chosen at the MBDS network inception in 1999. Quang Tri has 9 districts and an estimated population of 640,266 in 2006. Trade and commerce that pass through Quang Tri are not confined to Vietnam and Lao PDR. People, animals, products, and produce from Thailand also reach Vietnam via this border site as they pass through Savannakhet in Lao PDR. Like Savannakhet,

Quang Tri represents a site through which communicable diseases that may have the potential for a pandemic spread can be transmitted from country to country. Yet Quang Tri can also serve as a sentinel site for early warning to halt the transnational spread of disease.

- ▶ The pattern of communicable disease occurrence in Vietnam has experienced a decreasing trend in past decades which is evident in lower total morbidity and mortality rates. Despite this, communicable diseases remain a top public health concern in the country. SARS was detected in 2003 and the response was early enough to keep morbidity and fatality rates low at 65 and 5 respectively. No cases have occurred in the succeeding years. This episode reinforced the infection control structures and activities of the country as a whole in its approach to communicable disease control.
- ▶ Outbreaks of AH1N1 became a global concern in mid-2009. By October of the same year, 10,189 cases, 9,914 hospital discharges, and 24 deaths had been confirmed in Vietnam.
- ▶ HPAI was first noted in 2003 and has since caused outbreaks annually, except in 2006 when no cases were reported. As of July 2010, there have been 119 cases of H5N1 resulting in 59 deaths. There were 7 cases in 2010, 2 of which resulted in fatality. Most cases occur in rural areas where domestic fowl, usually chickens, are free roaming in yards, backyards, and sometimes even in homes. Cases are found in all regions of Vietnam with the majority occurring south of Vietnam early in the year during the cold season when wild birds migrate from the north to the south to avoid the cold weather.
- ▶ The AI virus has primarily affected the bird population, but has caused the death of some humans exposed to fowl. The spread from person to person is still of concern, but is being averted through the vigilance of those involved in communicable disease surveillance, notification, and control.

4.6.2.1 Disease Surveillance System

- ▶ 26 diseases are under regular surveillance. By law, 57 diseases should be under surveillance, but many are seasonal. As of July 2010, surveillance was being done for only 26 diseases.
- ▶ Of the 26 diseases, 6 are reported on a weekly basis: cholera, typhoid, dengue, viral encephalitis, pertussis, and influenza. The incidence of other diseases considered to be of outbreak status at any point in time also need to be reported on a weekly basis. Reporting of the incidence is done on a monthly basis for all other diseases under surveillance.
- ▶ Information comes from the village health worker, the most peripheral source, who feeds the information to the Commune Health Center from which it flows up to the District Health Center (DHC), the Provincial Health Service and the Planning Bureau (PHS-PB) before reaching the Health Statistics Division in the Planning and Finance Department

(HSD-PFD) of the MOH at the central level. This is the upward vertical path for information transmission.

- ▶ The General Department of Preventive Medicine (GDPM) of the MOH is responsible for reporting to MOH leaders on a weekly and monthly basis on the national situation with a brief review of the international situation based on information collected from WHO notices, the Internet, and other information channels. The PPMCs are responsible for monitoring and collecting communicable disease data from the communes through preventive medicine teams, hospitals, regional and district polyclinics, and provincial hospitals that report to MOH-DPM and relevant Hygiene and Epidemiology and Pasteur Institutes (PI) every Wednesday for weekly reports and on the 3rd of each month for monthly reports.
- ▶ Following the decentralization of the MOH in 1997, the country was divided into four regions, with one institute assigned per region to serve as the technical arm and to provide laboratory support for the MOH in OIR— the National Institute for Hygiene and Epidemiology (NIHE) in the north, Tay Nguyen Institute of Hygiene and Epidemiology in the central highlands, Nha Trang PI in the central region, and Ho Chi Minh PI in the south.
- ▶ During disease outbreaks, RRTs are formed at different levels. For example, at the level of NIHE, the RRT is composed of one or two epidemiologist(s), one virologist, one team member in charge of chemicals and sanitation matters, and one driver. There is no information, education, and communication (IEC) expert in the NIHE RRT, but health education is taken over by the health education staff of the district or province to inform the community regarding the disease situation and the precautions to prevent illness. At the provincial level, the RRT members include an epidemiologist who is a medical doctor and head of the team and two staff members in charge of outbreak investigation: one assigned to obtain specimens to send to the laboratory and another for environmental sanitation. A fourth or fifth member of the team is the driver. There is also a response team in the provincial hospital with three to four members, including one medical doctor and two nurses. The RRTs at the same level of command support each other, while those at higher levels provide guidance and supervision over the lower level teams if and when this is necessary. If the lower level teams have deficiencies, the higher level teams supplement their work.

4.6.2.2 Accounts of Disease Outbreaks in Vietnam

4.6.2.2.1 Cases of Avian Flu (H5N1)

Based on accounts of NIHE officials during the KIIs conducted for the evaluation, the first case of H5N1 in Vietnam was detected in 2003. The very first case of H5N1 was in the south of Vietnam and involved a 12-year-old

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child who developed symptoms on December 26, 2003. She was admitted to the hospital on the 28 and died on December 30, 2003.

From this point in 2003 until July 2010, except in 2006 when no cases were found, 119 human cases of H5N1 have been identified. 59 of these patients died, resulting in a fatality rate of 49.6%.

Reports of cases typically come from DHC or district hospitals where patients first seek consultation and may eventually be admitted.

As stated in the manual for the prevention and control of H5N1, the case definition of H5N1 is defined as any person who shows signs and symptoms of respiratory problems, such as a fever, cold, cough, or runny nose. Without laboratory confirmation, the patient is a suspected case. With positive laboratory tests, he or she becomes a confirmed case. Patients with breathing difficulty as proven through the use of a breathing machine—and with multiple organ failure—are deemed serious cases.

The district hospital collects specimens from suspected cases and sends them to the regional institutes in charge of that particular geographic area for laboratory tests. If the tests are positive, this is confirmed at the national level. Only the regional institute or the national level institute can confirm the existence of an outbreak.

From the district level up, response teams can be formed in advance to undertake further epidemiologic activities in order to contain possible epidemics. Higher level response teams are available upon request to provide assistance at lower levels. The national response team is always available to give guidance and to be physically present at the site of the outbreak to provide support to the lower level response teams.

Response activities consist of a visit to the patient's residence, a case investigation conducted through interviews and a physical examination, the obtaining of appropriate laboratory specimens, and the provision of advice on treatment and management.

The response team performs contact tracing by creating a list of people who have come into contact with the patient. The team also notes any contact with sick or dead chickens or other poultry and with humans who may have been infected. Team members monitor patients for symptoms such as high fever, cough, chest pains, and respiratory problems. This monitoring is done every day for a set period: 14 days for adults and 21 days for children under 15-years of age.

For further case finding, the response team conducts house-to-house visits accompanied by local staff, to interview and examine others in the community. Those with a history of fever, cough, chest pains, respiratory problems, headaches, muscle pains or diarrhea are considered suspected cases of H5N1.

Appropriate specimen samples, which in the case of H5N1 are nose and throat swabs and in some cases phlegm, are taken from the primary and suspect cases and contacts for laboratory confirmation. A PCR test is conducted at the provincial and/or national level, and a positive test confirms the case.

In the case of H5N1, the RRT also inspects the status of the poultry in the immediate vicinity of the case(s).

Animal health personnel are not contacted until after the laboratory confirms a positive human case. At this point, the team visits the site to collect samples from chickens, ducks, and other fowl and to perform their investigation on the animal population.

As of July 2010, there was no epidemic situation. The last H5N1 case reported in Vietnam was on April 4, 2010. A “no epidemic” situation is announced in the country 21 days after the last human or animal case is found.

To date, there have been no cases of transmission that cannot be related to animal exposure, no human-to-human transmission, and no “imported” cases. Another seven unrelated H5N1 cases have occurred in different provinces of Vietnam after the case described above occurred.

4.6.2.2.2 Cholera Cases in An Giang Province

The cholera outbreak in An Giang offers another example of the response of the MBDS provinces to potential cross-border disease outbreaks.

Interviews conducted with PPMC officials in An Giang indicated that the first case of cholera in the province in 2010 was a nine-year-old female from the Angkoray district of Cambodia, who experienced vomiting and diarrhea on January 14, 2010. She had a history of collecting shells from the river, drying the shells, and consuming them raw. She came to Han Fu, Vietnam on January 15 around noon by crossing the river at the border between Vietnam and Cambodia. She was admitted to the Han Fu District Hospital (HFDH) intensive care unit and treated as a suspected cholera case.

Following standard operating procedure, hospital personnel reported this case to the DHC authorities and to the PPMC.

On January 16, the DHC sent a four-person team to HFDH to confirm the case and to conduct a possible outbreak investigation. The team was composed of an epidemiologist to verify case information including food intake, drinking water, recent human contacts, and the epidemiology of cholera in the district. The second team member took care of specimen collection and transport to the laboratory. The third member checked the water source, and the fourth member handled the IEC aspects.

The DHC also provided guidance to the hospital staff as to the treatment and management of the case and disinfected the boat used by the patient for transport from Cambodia to Vietnam.

Laboratory specimens taken were (1) a water sample from the river border used by the patient to cross the river and to collect shellfish prior to becoming sick and (2) a fecal specimen from the patient. A food sample was not taken. The collected specimens were initially tested at the HFDH laboratory. However, as the lab's capacity was deemed limited, the specimens were therefore also sent to the PPMC.

On January 17, the results of the laboratory tests were known and the fecal specimen tested positive for cholera. The water sample was positive for *E. coli* which was an indicator of fecal contamination of the water. The PI confirmed the case on January 19. It was then reconfirmed by the GDPM and reported to the MOH.

Six days after laboratory confirmation, the MOH declared the existence of an outbreak on the Internet in the electronic journal of Vietnam. After receiving confirmation of a positive case, the PPMC sent a four to five member team to the district for epidemiologic investigation and epidemic containment and to provide support to the DHC. Other measures taken were:

- ▶ treatment and management of the existing case;
- ▶ the investigation of hospital and border gate admissions as a case-finding strategy;
- ▶ water specimen collection from the side of the river near the patient's residence;
- ▶ distribution of chloramin-B for water disinfection;
- ▶ conduct of IEC sessions such as how to handle wet disposal; and
- ▶ continued surveillance for seven days after the last case.

The Vietnamese authorities did not notify Cambodia of the cholera outbreak at this phase.

According to PPMC officials interviewed, an additional six cases of cholera were confirmed in An Giang province at the time of the evaluation team's visit. One of these cases, a 35-year-old male farmer in Cambodia, shared the same water source as the first Cambodian patient and tested positive three days after the onset of illness. The other five cases were found from February to March of 2010 in three communes. All six cases were admitted to the HFDH for management.

As part of the response, active case finding was initiated in the three communes. Health workers detected 270 acute diarrhea cases: 243 were Vietnamese patients and 27 were Cambodian. Of these diarrhea cases, 5 Vietnamese and 12 Cambodians were confirmed by laboratory tests to have cholera.

The PPMC team paid close attention to the cause of the cholera outbreak. At the time of the outbreak, an outbreak was already confirmed in Cambodia, and patients in Vietnam who developed cholera had a history of travel to Cambodia at about the same time as developing the disease, leading the PPMC team to conclude that the illnesses likely originated in Cambodia. No deaths were recorded. A team from Cambodia visited Vietnam in February of 2010 to work with the Vietnamese team, but they did not run laboratory tests. The analysis of data was performed by the epidemiologist in charge, who drew up statistics, tables, graphs, and figures. Reports were sent daily to the MOH and to the district. As of July 2010, a final report on the outbreak was not yet available as the work was on-going. The team has reported on its trip to Cambodia, but has not reported on its final investigation. As a gesture of joint cooperation and response, Vietnam sent staff to Cambodia, provided chloramin for disinfection, and performed IEC (one Vietnamese staff member knows the Khmer language).

4.6.2.3 Assessment of the Disease Surveillance System of Vietnam

4.6.2.3.1 Protocols, Questionnaires, Report Forms

Guidelines and standard operating procedures for the surveillance, prevention, and control of diseases are published by the government in manuals or small booklets. A manual defining the steps to undertake in responding to epidemics in general has also been produced. The importance of being prepared to respond effectively is emphasized, as is the selection and implementation of control measures that may include individual case management, environmental/water sanitation, vector control, waste disposal, and IEC measures.

Booklets are dedicated to the discussion of one specific disease or a group of diseases such as the "Prevention of Influenza H5N1 Infection in Humans" published by the Vietnam Administration of Preventive Medicine of the

MOH with technical inputs from NIHE. The nine-part contents of this manual include information on:

- ▶ influenza and some epidemiological characteristics;
- ▶ AI and the risk of pandemic;
- ▶ instructions on sample collection, preservation, and transportation plus notification of laboratory test results for influenza H5N1 virus;
- ▶ response procedures to influenza H5N1 foci;
- ▶ influenza vaccines;
- ▶ surveillance and control of influenza H5N1 in humans during vaccination for poultry;
- ▶ instructions on diagnosis, response, and prevention of viral pneumonia infection;
- ▶ official documents on the prevention and control of AI; and
- ▶ frequently asked questions.

A manual on the prevention and control of cholera defines the characteristics of the disease, its agents, epidemiological characteristics, reservoir, transmission, incubation and transmission periods, receptivity and resistance, and personal and environmental control methods.

These protocols, written in Vietnamese, are utilized from the district level upwards by the personnel involved in disease surveillance, outbreak investigation, and response. These protocols serve as guidelines even for those with minimal training in epidemiology, disease occurrence, and control.

Questionnaires are also produced for case investigations and used in surveillance or outbreak investigations. The questionnaires contain a minimum of necessary items for a particular disease. A copy of the epidemiologic case investigation form for cholera and cholera-like diseases used in the An Giang International Health Quarantine Center is shown in Annex 16.

Different report forms are submitted to appropriate information channels on designated dates or according to specific timeframes for submission (e.g., daily, weekly, monthly, etc.). The usage of these questionnaires and report forms is taught in the short course in the county field epidemiology training for districts and to provincial personnel in order to obtain a better quality of data.

Having standard epidemiological investigation and report forms available for each disease under surveillance helps health workers obtain a minimum set of relevant data that can be used in the further planning of appropriate control measures.

4.6.2.3.2 Flow of Information, Reporting, and Feedback

The manual on responding to epidemics also diagrams the information channels from the peripheral sources up to the central level. This is important, as it clearly illustrates who or what office should be contacted for information, assistance, and reporting. The manual may also indicate at which points the transfer of information could be slowed down, preventing a prompt response to the disease situation.

4.6.2.3.3 Organization of Response Teams

The capability of health personnel to respond to disease, the essence of surveillance and outbreak response, is demonstrated by the immediacy with which response teams are organized and sent to the community. The formation of an investigation team that can be initially organized at the district health level is a first step toward response. The prescribed minimum team composition is adhered to as much as possible.

4.6.2.3.4 Laboratory Capability

Ensuring the capability of laboratories to perform the minimum of necessary laboratory tests is essential to an adequate response mechanism. Provincial and hospital laboratories are equipped to augment this service at the community level, especially in times of epidemics. Quarantine laboratories are included in these capability development efforts.

4.6.2.3.5 Involvement of the Community

In the manuals for specific diseases, community engagement is recommended to reduce the risk of disease outbreak. Community engagement can take various forms, such as the submission to vaccinations and the participation in environmental sanitation activities in vector-, food-, and water-borne infections.

4.6.2.3.6 Overall Assessment

As a whole, the processes undertaken for surveillance and OIR conform to the manuals published by the MOH, which in turn reflects the recommendations of WHO and APSED. However, there are a few points that require stronger emphasis.

According to Vietnam's manual on response to epidemics, epidemic steering committees should be established at the province and district levels and charged with the function of preparing and implementing epidemic control

plans. In discussions with different MOH units, the epidemic steering committee was not mentioned. In some discussions, a task force for particular diseases is mentioned, but this is only for some diseases and is not included in the regular surveillance system.

Minimal importance is given to IEC efforts. This precludes effective risk communication, which is part of the strategy to control diseases and one of the seven core strategies under the MBDS.

Deviations from the manuals may be dictated by actual discoveries or by realities in the field. For example, a lack of resources—human, financial, or equipment-related—forces health personnel to do the best they can with what is available.

The alert given for the blue-ear disease that has affected pig herds in some Red River Delta provinces in Vietnam serves as one example that the surveillance system is working. At the same time, the National Hospital for Tropical Diseases also detected four human cases of *Streptococcus suis* related to eating dead pigs. Based on these occurrences and the possibility of contamination spreading to Tinh Bien district, a key district in the MBDS project in An Giang Province, officials organized collaboration between the An Giang animal and human health sectors, which conducted an epidemic investigation in the Tinh Bien District. This demonstrates an ability to be prepared, to be proactive, and to anticipate problems based on information shared regarding cases of diseases in humans and animals along borders.

One strength of the disease surveillance system in Vietnam is the four regional institutes that provide technical and laboratory support to the MOH and act as “one-stop shops” where activities in epidemiology, surveillance, OIR, laboratory facilities, research, and training are everyday concerns. Thus, these institutes can act as consolidators and clearinghouses for information.

It should also be mentioned that based on OIR and on the successful containment of cases within the initial group or area of occurrence, it seems that processes and responses proved adequate to halt further transmission of the pathogen and to avert expansion to full-blown epidemics.

5. Recommendations

Based on the results of the evaluation, the recommendations provided by the Mekong Evaluation Team are presented in the sections that follow and are categorized according to the aspects indicated in the purposes and objectives of the evaluation.

5.1 Implications of the Achievements, Challenges, and Lessons Learned from the DSN Initiative in the Mekong Region

- ▶ The components or outcome areas of the DSN Initiative (Network, Capacities, Technical Assistance and Tools), when appropriate, should be included in other Rockefeller Foundation initiatives in the region as they have proven to be comprehensive and were able to supplement and complement each area in meeting the goals and objectives of the initiative. Support to the network should not be limited to regional entities, but should include the strengthening of national networks.
- ▶ The involvement of other development partners, even for information only, should be undertaken from the start of any Rockefeller Foundation initiative. This policy, practiced by the Foundation since the start of its support to MBDS, generated much interest from project partners. The continuation of this practice influenced the integration of the MBDS mechanism and structure in other related projects in the region.
- ▶ In the event that the DSN Initiative terminates, support to the MBDS as a regional network should be continued, even if the country support ends.
- ▶ In addition to the bilateral efforts implemented at cross-border sites, support should focus on strengthening the network in order to enhance the regional implementation of functions and activities. For example, the management of data collected from the countries should be transformed into meaningful information that can be fed back to the countries.
- ▶ Documentation of all DSN grants should be strengthened. The achievements, deliverables, and experiences of all DSN grantees, if properly documented, can serve as rich sources of information that can be utilized by the Foundation for its other initiatives in the region. If disseminated and made readily available to a wider audience, this information could also help other development partners reduce duplicative efforts. In particular, the MBDS experience, its “successes” and “weaknesses,” can provide valuable lessons for regional cooperation and can serve as inputs in the development of protocols, guidelines, and standard operating procedures for regional cooperation.
- ▶ Initiatives should be undertaken to create a greater awareness and to encourage and promote wider and regular utilization of the tools developed through the DSN, such as the Pro/MBDS and GeoChat. This should be done not only at the national level, but also at provincial levels.

■ Recommendations

5.2 Priority Linkages and Synergies

- ▶ A stronger linkage should be developed with ASEAN, the political organization in the region which can provide the highest political support for the Rockefeller Foundation's initiatives. ASEAN has a mandate for regional cooperation, and the Foundation should be seen both as its technical and development partner. The signing of MOUs by the Ministers of Health for MBDS is a milestone for regional cooperation. However, this can be strengthened through resolutions passed by ASEAN leaders. The presence of the MBDS Coordinator (Secretariat) in some of the technical meetings of ASEAN may not be enough to raise the level of awareness about MBDS and may be insufficient to integrate MBDS activities into ASEAN's plan of action for pandemic preparedness.
- ▶ Lessons learned from the DSN Initiative should be shared with DSN stakeholders and with stakeholders of other Foundation initiatives in the Mekong region in order to form sectoral linkages and even share resources. At the moment, the level of awareness remains low.

5.3 Key Priorities for Funding and Partnerships

- ▶ The Foundation should continue to support efforts toward the institutionalization of the MBDS network and in the process, should ensure that ownership is maintained by the countries.
- ▶ The MBDS network should be supported so it is able to undertake a knowledge management function.
- ▶ Support for policy research should be continued and strengthened at both the country and regional levels. The strategy should include capacity building for policy research. The Foundation can collaborate with research and training institutions in this endeavor, preferably with those from the Mekong region that can deliver quality outputs.
- ▶ The Foundation should continue involvement in the One Health initiative. The leadership of the countries should be engaged to further promote the transdisciplinary approach by organizing a Bellagio-like conference for the Mekong region.
- ▶ The Foundation should spearhead the joint human resource development for animal and human health staff, utilizing the comprehensive training package developed through the DSN Initiative. At the same time, the Foundation should disseminate and promote the use of this package.
- ▶ The environmental sector of the countries should be involved in the promotion of a transdisciplinary approach.
- ▶ The community-based surveillance model to be developed by Vietnam should be documented and disseminated.

■ Recommendations

- ▶ The One Health initiative should be linked with related initiatives in the region and in the countries. Mapping of related activities can be supported by the Foundation to benefit all development organizations.

5.4 New Areas of Work for the Rockefeller Foundation

Key informants have identified new areas of work for the Foundation, which has always been associated with health. Thus, the other areas suggested below are still under health and health related fields:

- ▶ Climate Change;
- ▶ Neglected Tropical Diseases;
- ▶ Lifestyle Diseases;
- ▶ Poverty Reduction; and
- ▶ Capacity Building for Health Professionals.

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Annex A: Terms of Reference

Introduction

This document provides an overview of the Scope of Work and the Terms of Reference of the External Evaluation of the Rockefeller Foundation's Disease Surveillance Networks (DSN) Initiative in Asia to be undertaken during the period of October 1, 2009 through July 31, 2010.

Background

In 2008, the Board of Trustees of the Rockefeller Foundation approved \$21.3 million in support for the Disease Surveillance Networks (DSN) Initiative with the aim of achieving the following objectives:

- [1] Improve human resources for disease surveillance in developing countries, thus bolstering national capacity to monitor, report and respond to outbreaks;
- [2] Support regional networks to promote collaboration in disease surveillance and response across countries; and
- [3] Build bridges between regional and global monitoring efforts.

The intended outcomes of the Initiative are:

- ▶ Improved competencies (skills, capacities) in the Greater Mekong Sub-region and East and Southern Africa to conduct disease surveillance and response efficiently and improve capabilities in trans-border collaboration across countries;
- ▶ Global collaboration and learning among regional disease surveillance networks worldwide; and
- ▶ Collaboration between regional disease surveillance networks and international agencies to increase the efficiency of global systems for disease surveillance and response.

Total DSN grant making to date:

Of the total \$21.3 million approved for the DSN Initiative, \$16 million has been awarded in 43 grants as of December 31, 2009. The remaining funds will be awarded in grants in 2010 and 2011.

- ▶ **Africa:** Of the \$16 million awarded to date, a total of \$4.5 million has been awarded for DSN work in Africa;
- ▶ **Global:** Grants totaling \$2.5 million have been awarded to institutions in the U.S., Canada and Europe for related work that is global in scope.
- ▶ **Asia:** Grants totaling \$9 million have been awarded to institutions in Asia including some to northern institutions working on DSN-related issues in Asia.

Purpose and Objectives of the Evaluation

The purposes of the evaluation are learning and accountability:

- [1] Learning from the experience of DSN investments in the Mekong region to inform the work and strategy of the Foundation, its grantees and the broader field of disease surveillance. More specifically the Evaluation will inform future directions and strategies for current areas of Foundation Initiative work, particularly in Asia, as well as highlight potential new areas of work and strategy; and
- [2] Accountability to the Board of Trustees, staff and Foundation stakeholders for the DSN funds invested in the DSN Initiative in the Mekong region.

The main objectives of the evaluation are:

- [1] To assess the relevance, effectiveness, efficiency, influence and sustainability of the Rockefeller Foundation's support to the Disease Surveillance Networks Initiative grantees in the Mekong region.
- [2] To assess the underlying hypothesis of the Initiative that robust trans-boundary, multi-sectoral and cross-disciplinary collaborative networks lead to improved prediction and detection disease surveillance and response. Specifically, improved surveillance and response will include assessment of accuracy of information (in person, place, time) as documented by surveillance assessments, or outbreak investigations during the term of the Initiative. The evaluation will not undertake formal disease surveillance system evaluation, but will exploit secondary data sources for such assessment.
- [3] Make forward looking recommendations to the Lead Evaluator and to the Foundation on:
 - a. The implications of the achievements, challenges and lessons from the DSN Initiative in the Mekong region for the strategy and work of the Rockefeller Foundation in Asia. This could include lessons for specific fields of work (health, urban, climate, etc), as well as lessons for Initiatives and grantees that aspire to build and sustain networks, build capacity, and influence policy in Asia;
 - b. Priority linkages and synergies for DSN learning to benefit the RF Regional Office for Asia, the work of other RF Initiatives in Asia, and key partners in Asia.
 - c. Key priorities for funding and partnerships to sustain the gains made by the Foundation in the field of disease surveillance networks in Asia.
 - d. Other implications as identified.

The evaluation also aims to contribute to the field of philanthropy by demonstrating the use of evaluations in grantmaking, learning and knowledge management, and by informing the field of development evaluation and assessment about methods for assessing complex networks.

Annex A: Terms of Reference

Components of the Evaluation

The Mekong region DSN Evaluation is a one component of the overall Global External Evaluation of the DSN Initiative. The components are:

- [1] A summative and prospective evaluation of DSN Initiative work in the Mekong region (being conducted by SEAMEO-TropMed from October 2009 through July 2010).
- [2] A summative and prospective evaluation of DSN Initiative work in East and Southern Africa to be conducted from June through December 2010 (grantee to be identified).
- [3] A summative and prospective global level strategic evaluation of the influence of DSN Initiative globally with key policy partners, funders, practice leaders, and Rockefeller Foundation-New York (being conducted by the University of Washington, School of Public Health from August 2009 through December 2011).

The Africa and Asia DSN External Evaluations will be both stand-alone products and will contribute to the overall global findings of the Global Evaluation. The Lead Global Evaluation grantee is expected to synthesize the results of the Asia, Africa and Global Evaluation components into a final Evaluation

Audiences for the Evaluation

The Global DSN External Evaluation is commissioned by the President and Executive Team of the Rockefeller Foundation and managed by the Foundation's Evaluation Office. The Africa and Asia components of the Evaluation are commissioned by the Foundation and managed by the Global Evaluation grantee in cooperation with the Foundation's Evaluation Office and the RF regional offices for Asia (Bangkok) and Africa (Nairobi).

The primary audiences for all components of the evaluation are the President, the Board of Trustees of the Foundation, the Executive Management Team of the Foundation, and the Managers of the DSN Initiative. Secondary audiences are the DSN grantees, partners and other funders in the field of disease surveillance.

Scope of the Evaluation

For the purpose of the evaluation, the Mekong is understood to comprise the following countries: Cambodia, Lao PDR, Myanmar, Thailand, Vietnam and Yunnan and Guangxi Provinces in South China. However, grants made to institutions outside of the region aimed at achieving or advancing the broad objectives of the DSN Initiative in Asia, including grants pertaining to One Health, Health Diplomacy, and disease surveillance enhancement will also be included in the portfolio review.

The evaluation includes:

- ▶ All DSN grantmaking activity of the Rockefeller Foundation to institutions in the Mekong region, aimed at achieving or advancing the broad objectives of the DSN Initiative in the context of the Mekong region;
- ▶ The work of the DSN Team and Regional Office in leading and building relationships in the field of disease surveillance, promoting the One Health Approach, convening Bellagio forums, and other non-grant work;
- ▶ All grants to institutions outside of the Mekong, but which pertain to the Mekong, that fall under the categories of One Health, Health Diplomacy, and disease surveillance enhancement. (See attached list of grants—Annex 2).

Context for the Evaluation

The emergence of infectious diseases such as HIV/AIDS, Ebola, SARS, highly pathogenic avian influenza and swine flu is driven by several factors. Increased viral adaptation, population density, cross-border mobility and connectivity within the ecosystem, close proximity with animals, changing animal consumption and production patterns, and ecological shifts because of climate change allow the rapid spread of disease among and between animals and humans, creating particular risks for the health and livelihoods of poor people and raising concerns about national security, safety of the food chain, and overall global public health.

In the Mekong region, the countries share common borders with each other. The phenomenal growth of international travel and trade has vastly increased the speed and ease with which communicable diseases can cross and cause outbreaks and epidemics. The avian flu epidemic, historically unprecedented in its scale, geographical spread, and economic consequences for the agricultural sector, affected six countries in Southeast Asia (Cambodia, Lao PDR, Malaysia, Indonesia, Thailand and Vietnam), and is a proof of the ease with which epidemics spread in the region.

Several outbreaks of vector-borne infectious diseases linked to climate change have been reported to have increased in Southeast Asia. Specifically, Thailand has reported an increasing trend in dengue cases since 2000. The outbreaks of Dengue fever in the plains and central coast of Vietnam has been reported to an annual epidemic. These outbreaks are closely associated with the El Nino index (ADB, 2009).

Early detection and containment by effective disease surveillance networks is critical to arresting pandemics in their early stages. Disease surveillance in most developing countries today is highly inadequate. In the Mekong region, the quality of the disease surveillance system varies. Surveillance systems in most of these countries may be deficient due to lack of resources, training, policies, or inadequate data collection methodologies. This prevents effective responses to outbreaks and pandemics and undermines efforts to build resilience to threats to the health and livelihoods of poor or vulnerable people.

Annex A: Terms of Reference

The relevance and advantages of collaborative efforts with special emphasis on cross border issues have been recognized by officials and technical experts in the GMS. Initiatives have been undertaken to work collaboratively and in partnership to maximize resources and to increase efficiency of activities/interventions. One such initiative is the Mekong Basin Disease Surveillance project (MBDS) supported by the Rockefeller Foundation. This is a cross border collaboration to prevent and control communicable diseases. Two Memoranda of Understanding were signed by the Ministers of Health of the Kingdom of Cambodia, People's Republic of China, Lao PDR, Union of Myanmar, Kingdom of Thailand and Socialist Republic of Vietnam related to the MBDS. The MBDS aims to strengthen national and sub-regional capabilities in disease surveillance so priority diseases can be rapidly and effectively controlled. The scope of the cooperation includes system development, institutional strengthening, human resource development, information exchange, joint outbreak responses and other joint activities.

The revised International Health Regulations 2005 (IHR 2005) encourages governments to participate in international /regional surveillance networks such as MBDS. The regulations also provide a binding legal structure to regional networks for solving practical issues near, and within, national borders.

Disease surveillance networks are mechanisms that encompass human resources deployment, rapid communication and transparent collaboration for early detection and response to emerging diseases and pandemics. The Disease Surveillance Networks Initiative aims to:

- [1] Improve human resources for disease surveillance in developing countries, thus bolstering national capacity to monitor, report and respond to outbreaks;
- [2] Support regional networks to promote collaboration in disease surveillance and response across countries; and
- [3] Build bridges between regional and global monitoring efforts.

The Initiative also:

- [1] Supports the building of strong communications infrastructure, connectivity and capacity for data analysis and prediction to improve ability to rapidly detect, predict and respond to outbreaks;
- [2] Explores the bridging of interdisciplinary divides between animal, human and ecosystem health to protect health and livelihoods; and
- [3] Supports the building of laboratory infrastructure and capacity for more rapid and coordinated surveillance and response.

Over four years from 2007-2011 the Rockefeller Foundation, in partnership with others, intends to help equip developing countries with the tools and human and institutional capacities to improve disease surveillance and response.

Annex A: Terms of Reference

Within key developing countries in South-East Asia and Eastern and Southern Africa, the Foundation support work to address:

- [1] Weak capacity in the field for early detection of outbreaks, reporting and response by building human resources, information technology capabilities, and trans-disciplinary collaboration; and
- [2] Inadequate regional response structures by improving capabilities in trans-border collaboration across countries.

Across regions and globally, the Foundation support work to address inefficient global response coordination by:

- [1] Fostering learning and best practices across regional disease surveillance networks; and
- [2] Building bridges between these disease surveillance networks and international agencies to increase the efficiency of global systems for disease surveillance and response.

Performance Areas and Key Evaluation Questions

The main performance areas and key evaluation questions to be covered in the overall evaluation and the component studies are outlined in detail in the accompanying Evaluation Matrix, Annex 3. The main evaluation questions to be covered are:

- [1] **Relevance**—includes rationale, niche, role, comparative advantage and value added of the Initiative in the Mekong Region.
 - a. The extent to which the Initiative is relevant to:
 - ▶ state of the art/leading-edge thinking and trends in disease surveillance and response in the Mekong Region
 - ▶ the Program of the Foundation globally and in Asia
 - ▶ the Stakeholders of the Mekong region.
 - b. The extent to which the Rockefeller Foundation Initiative occupies a niche and plays a leadership role in the field of health in Asia.
 - c. The value added of the Initiative to regional collaboration in disease surveillance in Asia, and to the work of other Foundation Initiatives in Asia.
 - d. The comparative advantage of the Foundation in the field of disease surveillance in Asia.
- [2] **Effectiveness**—an assessment of the results of the Initiative in the Mekong Region. This includes an analysis of the products and services planned and provided, the changes or outcomes that have occurred, as well as the impact the Initiative has had on people and systems in the Mekong Region. More specifically the evaluation will explore:
 - a. The quality and quantity of planned products and/or outputs associated with the grants provided by the Foundation in the Mekong Region.

Annex A: Terms of Reference

- b. The extent to which the outputs or products are used by target users in the Mekong Region.
- c. The achievement of objectives and outcomes specifically as they relate to:
 - ▶ Improved human resources for disease surveillance in developing countries, thus bolstering national capacity to monitor, report and respond to outbreaks;
 - ▶ Support regional networks to promote collaboration in disease surveillance and response across countries; and
 - ▶ Build bridges between regional and global monitoring efforts.
- d. The extent to which early detection and containment of outbreaks with pandemic potential resulted from the work of the Initiative in the Mekong.
 - ▶ The extent to which SE Asia network partners detect, report and respond to health and human security threats (primarily disease outbreaks) more broadly and efficiently?
 - ▶ The extent to which there is an increase in the number and geographic coverage of outbreaks reported within the region?
 - ▶ Has the time to report outbreaks shortened in the Mekong? Have the responses been adequate among the DSN partners?
- e. The extent to which the Initiative built capacity at the individual, institutional and network level in the Mekong including an analysis of the extent to which the strategy of the Initiative contributed to better detection and management of disease outbreaks in the Mekong region. This includes the capacity to detect and control outbreaks through:
 - ▶ Optimal use of human resources
 - ⇒ *Are resources analyzed and deployed more efficiently to correspond to patterns of outbreaks and disease spread, and to avert future outbreaks?*
 - ⇒ *Are public health staff and communities skilled at adequate levels to detect and report?*
 - ▶ New communication tools and analytics
 - ⇒ *Does information technology support efficient reporting horizontally and vertically?*
 - ⇒ *Were new technologies developed/adapted to meet user needs at all levels?*
 - ⇒ *Are new technologies more widely accessible?*
 - ▶ New collaborative approaches to emerging priorities
 - ⇒ *Have new models of trans-national and trans-disciplinary collaboration, new competencies, and new ways of working emerged or evolved?*
 - ▶ Regional surveillance networks
 - ⇒ *Were sub-national and national human resource and adaptive capacity strengthened?*
 - ⇒ *Were new normative practices and expectations established to comply with the International Health Regulations in reporting diseases of international concern and collaborating in the response?*
 - ⇒ *How have lessons learned been applied or translated to other regions (across MBDS, EAIDSNET, SACIDS, others)?*
 - ▶ Regional and Global collaboration
 - ⇒ *Leveraging other donors—How has DSN helped to reduce fragmentation among donors in the Mekong and globally? What additional resources have contributed to common goals in the Mekong?*

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⇒ *Health diplomacy—How have DSN processes contributed to building trust and collaboration across boundaries?*

- f. The degree of policy influence that the Initiative has had on policies, public discourse, and practices in the fields of public health, disease prevention and development in Asia, specifically the Mekong region? The specific issues to be addressed are:
- ▶ To what extent has the Initiative created policy frameworks that have reduced fragmentation of the Mekong region?
 - ▶ To what extent are there new specific plans -- as a result of the Initiative's work to influence policy -- in the member states in the Mekong region?
 - ▶ Are there examples that demonstrate how the policies influenced by the Initiative affected practice in member countries in the Mekong region?
 - ▶ To what extent has the Initiative expanded the policy capacity of network participants in the Mekong? Broadened policy horizons of network participants in the Mekong region?
- [3] **Efficiency**—is an assessment of the use of resources to obtain results. To what extent is the Rockefeller Foundation using best management and governance practices, and are those practices providing good value for money? The specific issues to be addressed are:
- a. To what extent was the Mekong component of the DSN Initiative effectively and efficiently planned both strategically and operationally?
 - b. To what extent did the Initiative provide effective management and leadership of the Initiative in Asia internally and externally with grantees and partner organizations (vision, management, leadership, mentoring, etc.)?
 - c. To what extent was the DSN Asia grant portfolio efficiently managed in order to deliver the work of the Initiative—picking the right grantees, assessing capacity, developing and supporting the delivery of results?
 - d. Were the resources of the Initiative in Asia adequate for the goals and used in the most cost effective manner to achieve the intended outcomes?
 - e. Did managers adequately search for the most effective and efficient delivery mechanisms in Asia?
 - f. Were sound M&E practices used in Asia?
 - g. Were learning systems planned and implemented to ensure useful public goods in Asia?
- [4] **Impact**—refers to an assessment of the impact that the Initiative has had on people and systems in the Mekong region. Ideally (provided there is monitoring and baseline data) this will include an assessment of the extent to which DSN has contributed to (or directly affected) improvements in the lives of poor and vulnerable people within the broader population served by the work of grantees in the Mekong. In addition, if data is available, this will also include an assessment of the impact on the systems within which poor and vulnerable people depend (environmental, social, economic, cultural, political, etc).
- [5] **Sustainability**—refers to the extent to which the Initiative can develop both financial and/or institutional supports to continue the work started by the Initiative in Asia, particularly in the Mekong. Specifically, the extent to which:

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- a. The efforts (outputs and outcomes) of the Initiative are embedded in ongoing practices of people, institutions and communities in the Mekong.
- b. The strategies adopted by the Initiative, including an exit strategy, create a high probability of the main outcomes of the Initiative continuing beyond Rockefeller Foundation funding in the Mekong region.
- c. Expanded partnerships exist for scaling up the work in Asia (or Mekong region), and sustaining the Initiative beyond the Rockefeller Foundation's support.

Methodology

The methodology for the Mekong region DSN Evaluation will mirror and be aligned with the methodology for the Global Evaluation and the DSN Africa Evaluation so that these components may complement each other and be synthesized together. As with the Global and Africa Evaluations, mixed methods will be used to conduct the evaluation, including grant portfolio reviews, interviews, field visits, surveys, desk studies, and focus groups.

The Mekong region evaluation will consist of:

- [1] **An analytical review of the Portfolio** of the grants funded under the DSN Initiative in the Mekong region. (Sampling strategy to be finalized in the planning phase of the Evaluation.)
- [2] **Field visits** to a purposeful sample of the DSN funded work of grantees in the Mekong region. The field visits will enable the evaluation team to observe work practices in the sites, utilization of tools, gather pertinent documents for the desk study/literature review and for the conduct of interviews of partners/grantees and focus group discussions with different groups of stakeholders. The evaluation team will organize small teams to undertake field visits to different sites, at the same time making sure that relevant expertise needed for the field visits is present among the smaller teams.
- [3] **Stakeholder interviews** with:
 - ▶ disease surveillance leaders, policy makers and practitioners in the Mekong Region
 - ▶ partner organizations and other funders in Asia; and
 - ▶ RF managers in Asia.
- [4] **Deskstudy** of relevant documents including:
 - ▶ *Country level documents*—country health/animal strategic plans, policy statements, training documents, health indicators, archived disease surveillance assessments, disease outbreak reports, HRD plans, scientific papers;
 - ▶ *Regional level*—MBDS work plans and reports, meeting proceedings, mapping exercises, table top exercises;
 - ▶ *Grant documents*—grant proposals/plans, progress reports, summative/final reports, grant letters, etc.;
 - ▶ *Other regional organization (ASEAN, ACMECS, APEC, WPRO, SEARO) documents* relevant to disease surveillance and key questions of the evaluation;

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- ▶ *RF documents*—regional trip reports, workplans, conference reports, financial reporting, budgets, monitoring reports, etc.; and
 - ▶ *Journal articles/scientific papers*.
- [5] **Focus Groups** with participants of training courses, users of tools, implementers of activities relevant to key evaluation questions in the different sites. For key informant interviews and focus groups, guides will be developed by the evaluation team based on the evaluation matrix. These two activities will be conducted by members of the evaluation team with the necessary expertise. However, the exact number of interviews and focus groups to be conducted per site will be determined during the planning phase of the evaluation.
- [6] **Case study(s)** may be undertaken to illustrate specific aspects of DSN learning.
- [7] **Other methods** to be determined.

The sampling strategy for in-depth review of grants, desk review, and field visits will be determined in the planning phase of the evaluation with the Lead Evaluator. However, in general, sampling will be purposeful, focusing on a selection of grants that explicitly state that they expect to contribute to the objectives and outcomes of the Initiative.

In addition to primary data collected from the portfolio review, interviews, questionnaires and focus groups, data from other sources such as country health indices (e.g. country specific mortality rates), archived disease surveillance assessment and disease outbreak reports, and monitoring and evaluation of related programmatic elements will be identified and brought into this evaluation effort as appropriate to address the key evaluation questions.

An Evaluation Matrix has been developed by the Lead Evaluator, the Evaluation Office of the Foundation, the DSN Team and the Mekong Evaluation grantee. This matrix provides the framework for the Mekong evaluation, including the key questions, sub-questions, indicators, and data sources (see Annex 3).

Evaluation Team

The Asia DSN Evaluation Grantee will be responsible for assembling and managing an evaluation team with extensive experience in the areas of:

- ▶ Evaluation in the Mekong region countries (Cambodia, Thailand, Lao PDR, Vietnam, Myanmar, and Yunnan and Guangxi Provinces of South China)
- ▶ The use of qualitative and quantitative methods, survey techniques, inventory, observation and desk review
- ▶ Complex program evaluation in Asia
- ▶ Network evaluation in Asia
- ▶ Disease Surveillance knowledge and experience in Asia
- ▶ Evaluation of One Health approach in Asia

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- ▶ Evaluation of health policy, health diplomacy in Asia
- ▶ Knowledge of and evaluation experience in development globally and in Asia
- ▶ Management of complex evaluations
- ▶ Communication, interviewing and facilitation skills
- ▶ Technical discipline backgrounds for team members should include, but not be limited to—
 - ⇒ *Program Evaluation*
 - ⇒ *Epidemiology and public health*
 - ⇒ *International development and public policy*
 - ⇒ *Social sciences*
 - ⇒ *Biostatistics*
 - ⇒ *Veterinary public health*
 - ⇒ *Information technology*
 - ⇒ *Other areas as identified.*
- ▶ Ability to conduct evaluations in English and write reports in English.

In general the team will have extensive experience in conducting large program evaluations in Asia, and in the operational aspects of disease surveillance in the countries of the Mekong region.

The majority of team members, including the Team Leader will be based in Asia. The manager of the Evaluation Team will have extensive experience in managing large program evaluations, and will devote a significant portion of time to managing a dispersed evaluation team.

Management of the Evaluation

The Asia DSN Evaluation Grantee will be responsible for the management of the Mekong evaluation and will be accountable for the timely delivery of high quality evaluation products within budget to the Rockefeller Foundation and to the Lead Evaluation Grantee, the University of Washington. The Manager of the Mekong Evaluation will report to and work in close collaboration with the Lead Evaluator for the Global DSN Evaluation.

The Team Leader for Mekong region DSN Evaluation will be responsible for conducting the Evaluation in coordination with, and under the guidance of the Lead Evaluation grantee who holds responsibilities for the synthesis of all the evaluation components. The Asia DSN Evaluation Grantee will be responsible for maintaining close coordination and communicating and updating the Lead Evaluator, the DSN Team and the Foundation's Evaluation and Asia Offices on progress of the evaluation.

The attached Scope of Work and TOR for the Global Evaluation sets out in detail the roles of the Lead Evaluator, the Regional Grantees, the RF Evaluation Office and the RF Regional Offices.

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Milestones and Deliverables

Based on the Scope of Work in this document, the Asia DSN Evaluation Grantee is required to:

- [1] Manage the Mekong region evaluation of the Rockefeller Foundation's support to the Disease Surveillance Networks (DSN) during the period, October 1, 2009–July 31, 2010, as described in this document.
- [2] Conduct a summative and prospective evaluation focused on the relevance of the Initiative to the Foundation, the effectiveness/impact of the Initiative, the quality of Foundation management (value for money) and the sustainability of the main results of the Initiative.
- [3] Make recommendations to the Foundation on:
 - ▶ the implications of the achievements, challenges and lessons from the DSN initiative for the strategy and investments of the Rockefeller Foundation at a global and region level;
 - ▶ priority linkages and synergies for DSN learning to benefit the work of other Initiatives, regional offices, and key partners; and
 - ▶ key priorities for funding and partnerships to sustain the gains made by the Foundation in the field of disease surveillance networks.

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Timeframe

The Mekong region DSN Evaluation will be conducted during the period October 2010 through July 2010. An indicative schedule for the evaluation is as follows.

Date	Deliverables and Milestones
October 2009	<i>Grant awarded and Evaluation team assembled</i> ► CVs of the Evaluation Team
November–December 2009	<i>Design Phase</i> ► Detailed Evaluation Matrix, Workplan and Methodology (data collection strategy, interview protocols, criteria for Portfolio Review, criteria for selection of grantee field sites) ► Data collection instruments ► Detailed budget and level of effort for team members
January 2010	<i>Portfolio Review/Rapid Assessment of All Grants</i> ► Data collection, analysis, write-up
February–March 2010	► Field Visits
February–May 2010	► Data Analysis
Early June 2010	► Presentation—Preliminary Findings to Lead Evaluator and RF Evaluation Officer
Early June 2010	► Meeting with RF managers, DSN Team, Lead Evaluator)
Mid-July 2010	► Draft Report to Lead Evaluator and RF Evaluation Office
End of July 2010	► Final Report, including an Executive Summary and PowerPoint summary of the key findings and messages suitable for presentation to the management team of the Foundation
Within 2 months after September 30, 2010	► Final narrative and financial reports submitted to the Rockefeller Foundation (if not submitted earlier), as per the terms of the Grant Agreement

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Evaluation Workplan Outline

Section	Content/Comments
Introduction	<ul style="list-style-type: none"> ▶ Background, audiences and purpose of the evaluation (developed from TOR rationale, scope, focus)
Methodology	<ul style="list-style-type: none"> ▶ Overall approach ▶ Evaluation matrix ▶ Data sources (e.g. documents, people, observations) ▶ Methods of data collection ▶ Methods of information collection and analysis ▶ Indicators ▶ Risks and/or Limitations
Evaluation Management	<ul style="list-style-type: none"> ▶ Team management ▶ Responsibilities and accountabilities ▶ Work schedule ▶ Effort analysis
Reporting Requirements and Scheduled Dates	<ul style="list-style-type: none"> ▶ Workplan ▶ Expected dates for monthly updates, key reporting dates ▶ Draft report(s) ▶ Final Report(s)
Appendices	<ul style="list-style-type: none"> ▶ Terms of Reference ▶ Bios for Evaluation Team members



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