

The Second Phase Of ECOMORE In Myanmar

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ECOMORE ₂



The second stage of the project ECOMORE will have to take into account strong concerns at international and regional level particularly raised by the COP21 which had a leading role in the thinking and action to be taken to limit the effects of climate change.

In this context, the most significant risks are then represented by waterborne diseases and vector-borne diseases: contamination of waters that are submerged by water contaminated by human and animal, wildlife encroachment wild on human which increases the risk of zoonotic diseases, environmental pathogens spread by runoff water, role of stagnant water after the water recedes for mosquito breeding... Now there is a cascade of interactions as urbanization, deforestation and agricultural intensification, resulting from economic development, amplify the impact of climate deregulations

ECOMORE II Concept



Flooding accounts for 40% of all natural disasters worldwide and eight of the 10 large countries most at risk are in Asia

ECOMORE II - Key Words

- **5 partner countries:** the Philippines will join Cambodia, Lao PDR, Myanmar and Vietnam to implement ECOMORE II project
- **Public Health oriented:** all partners have identified a priority public health concern in line with the country health strategy before designing the study
- **Regional and transversal:** all partners will work on correlated topics to stimulate a regional close collaboration
- **Knowledge Translation and sustainability:** the KT initiated at the design stage of the project will be developed along project implementation to ensure integrating recommendations in Health Policies
- **Networking and scientific collaborations:** to develop experience and knowledge sharing with other similar projects implemented in the region and to gain visibility and interest from policy makers
- **Common topic:** water-borne and vector borne diseases related to change in land use and with extreme climatic events
- **Climate change:** this transversal study will be implemented in the 5 partner countries to provide technical assistance for the formulation of risk and possible adaptation measures.

ECOMORE II in Cambodia

Can the integrated vector control in schools mitigate the epidemic peaks and absenteeism and help to reduce overcrowding in hospitals during the epidemic season of dengue?

Schools, especially those in peri-urban areas with high density of population are certainly hot spots for transmission of dengue among children, knowing that these children contaminated at school will be a source of horizontal transmission of the virus at home and for the neighborhood. Targeting preferential areas for transmission, to organize an integrated vector control during the dengue season should be more cost effective in comparison of dispersal interventions in area after confirmation of dengue cases.

The ECOMORE II project aims at measuring whether the implementation of an integrated vector control strategy focusing schools and combined with an educational program can:

- mitigate peak of dengue, dengue-like syndromes (leptospirosis, chikungunya, zika) or other vector-borne diseases
- have a positive impact on the activities of health centers which are generally overcrowded during these transmission peaks.

ECOMORE II in Lao PDR

Can an innovative program for the control of vectors borne diseases to reduce the risk of dengue, Chikungunya and Zika in urban and peri-urban areas?

The urbanization rate observed in Laos (16.85% in 1994 to 37.55% in 2014_WB data) is one of the highest in the ASEAN countries. The development of peri-urban areas, where high population density is combined with traditional rural activities, offers ideal ecosystem for the proliferation of Aedes, vectors of dengue virus, chikungunya and zika. Movement of populations from rural to urban areas observed in recent years and the increasing number of immigrants are factors that facilitate the circulation of dengue virus between the Laotian provinces but also between the countries of the sub-region

It is demonstrated that the identification of the most likely sites of contamination can be improved by analyzing the dynamic mapping data of confirmed outbreaks, combined with the study of genomic similarity of viruses and a study of population movements. The goal of ECOMORE II project is to provide a dynamic mapping model to confirm or reverse that the contamination occurs outside or within the community and, so to identify "hotspots" of potential contamination to allow better targeting the vector control strategy

ECOMORE in Philippines

Can an innovative program for the control of vectors borne diseases to reduce the risk of dengue, Chikungunya and Zika in urban and peri-urban areas?

- Over 1 million nine-year old children enrolled in public schools would be the first to be vaccinated against Dengue.
- This is the world's first public dengue immunization program me.

ECOMORE II in Vietnam

Can an innovative program for the control of vectors borne diseases to reduce the risk of dengue, Chikungunya and Zika in urban and peri-urban areas?

The ECOMORE study in Vietnam showed an unexpected stream of leptospirosis and hepatitis E among rural people caring for livestock or agriculture.



ECOMORE II in Myanmar

Can laboratory and hospital capacity building improve post-disaster management of emerging diseases?

Floods and extreme rainfall are regularly associated with leptospirosis outbreaks. It is critical to examine mechanisms by which climate change can affect ecosystems that are likely to drive an increase in the overall incidence of leptospirosis

Today leptospirosis is well identified as a re-emerging worldwide disease by WHO.

Epidemics of infectious or parasitic diseases which can occur after natural disasters pose challenges in terms diagnosis in emergency situation and in the medium term. However, early diagnosis, clinical and / or laboratory-confirmed can minimize the number of severe cases because early treatment of some of these infections (e.g. leptospirosis) is crucial to decrease morbidity and mortality (20%).

While the extreme weather events are a priority increasingly frequent in Myanmar, yet little is known about their health impacts and little research has been done to examine short-term and deferred health implications.

ECOMORE₂ and Climate Change

Retrospective study of variation of meteorological data correlated with a retrospective study of dengue data

Design of models that simulate climate and its changes to make a local scale assessment of climate change impacts and allow to produce scenarios to visualize risk for leptospirosis and dengue

Delivery of a web-based platform open to Health Authorities to simulate meteorological possible variations and to foresee at the national level current and future dengue and leptospirosis high risk areas



ECOMORE II in MYANMAR

- *Lab and hospital capacity building can improve post-disaster management of emerging diseases*



Public Health concern

- Added to hospital swamping, epidemics of infectious diseases following natural disasters lead to diagnostic challenges, particularly misdiagnosis or delayed diagnosis and also have significant clinical implications because early treatment of some of these infections (e.g. leptospirosis) is crucial to minimize morbidity and mortality.
- Yet little is known about the health impacts of extreme weather events and little research has been done to examine short-term and deferred health implications.
- Flooding and heavy rainfall have been regularly associated with numerous outbreaks of leptospirosis, as well as mosquito-borne arboviral diseases and soil-transmitted pathogens (tetanus). It is critical to examine mechanisms by which climate change can affect ecosystems that are likely to drive an increase in the overall incidence of leptospirosis.
- Considered as a neglected disease at the world scale, it is of utmost importance for the WHO and most tropical countries. Its main differential diagnosis are dengue and malaria, which each require specific management, different from leptospirosis.



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Study area

- Myanmar is prone to extreme weather events, especially very heavy rains floods and cyclones, , all of which are predicted to increase because of climate change
- Flooding has always been one of the major hazards in Myanmar
- In Myanmar, leptospirosis remains under-diagnosed. Laboratory diagnostic capacity should be strengthened especially in district and township-level hospitals. Animal sector should also be strengthened for surveillance of leptospirosis.
- Curative treatment in diagnosed cases and antibiotic prophylaxis in areas of exposure rely on antibiotics commonly available in Myanmar (IV benzylpenicillin and oral doxycycline, respectively).



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Primary objective of the Study

- To enhance the response capacity of Health authorities and Health community to reduce morbidity and mortality predominantly due to Leptospirosis and dengue and so to improve health of populations affected by flood and heavy rainfall in urban and peri-urban environment



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Secondary objectives

- To improve the capacity of the NHL to diagnose the main water borne diseases, especially Leptospirosis (Bacteriology Unit) but also Hepatitis A and E (Virology Unit) and Schistosomiasis (Parasitology Unit)) and to enhance differential diagnosis with Dengue
- To improve and hasten clinical management of Leptospirosis cases at hospital level
- To design a survey of Leptospirosis in a One Health approach to link human cases with the contact with diseased animals (serological survey on dogs and cattle belonging to the households) and presence of the pathogen in the environment
- To involve private veterinarian in surveillance of leptospirosis through surveillance and diagnosis of the disease in dogs
- To include a nested case-control study of leptospirosis, hospitalized patients with leptospirosis (positive cases) and lepto-negative hospitalized patients (controls), to investigate risk factors.
- To develop collaboration with Ministry of Agriculture Livestock and Irrigation to investigate and sample animals and to share results of analysis of specimens and data



Method

- The project will be implemented in selected hospitals of Yangon Region (9 Hospitals)
- Strengthening capacities at the hospital and laboratory levels
- Involve animal health in the surveillance
- Collection of data
- Analysis of data
- Knowledge Transfer / Knowledge Translation



Expected outputs

- Awareness of the clinicians on the prevalence of Leptospirosis
- Better diagnosis of Leptospirosis
- Decrease mortality/morbidity due to Leptospirosis
- This research would be important in order to learn how to organize long term care of populations affected by natural disaster like flood, cyclones or heavy rainfall; this step will be done in close collaboration with hospitals, public health personnel and veterinary services.



THANK YOU

