



UNEP-DHI PARTNERSHIP  
Centre on Water and Environment



## CTCN City Climate Vulnerability Assessment and Identification of Ecosystem-based Adaptation Interventions, Lao PDR, December 19<sup>th</sup> 2017

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# 1 Introduction

In the spring of 2016 Lao PDR requested CTCN to initiate a Rapid Response plan that could pave the way for an application for the Green Climate Fund, GCF. The focus for the GCF was to assess the possibilities to identify ecosystem-based services in the urban and peri-urban areas that could help in reducing or mitigating floods in these areas. In addition, the GCF is interested in whether ecosystem-based flood control measures can yield co-benefits by contributing to other ecosystem services (for example, using flood flows for irrigation, or natural flood storage for farming or recreation). The assessment should also look into whether the existing ecosystem services would be available under changed climate conditions. This work was initiated in August 2016, where DHI on behalf of CTCN visited Laos and facilitated 3 workshops with involvement from the 6 designated cities to get a better understanding of the present conditions under flooding and where ecosystem services could be of help in the future. A part of the visit in August was also to establish liason with the National Designated Entity, NDE, which is under the Ministry of Natural Resources and Environment, Department of Disaster Management and Climate Change. Relevant ministries and departments both under national and provincial level were visited. The outcome is referred in the Mission Report from August 2016.

The outcome of the mission in August 2016 has provided the basis for the Response Plan, which will be carried out between January and June 2017, and the plan was initiated with an interim consultation and workshop during 9<sup>th</sup>-19<sup>th</sup> January 2017, followed by a workshop in September 2017 in Pakse and this final workshop on 19<sup>th</sup> December 2017.

## 2 Overall travel and visiting Agenda

The team from DHI visited Laos PDR between 18-19 December 2017 and was lead by Mr, Jesper Goodley Dannisøe. Due to illness, Mr. Henrik Garsdal was replaced by Mr. Henrik Larsen, who has been working in the Mekong River Secretariat from 2011-2015 and therefore with a huge experience in conditions in Laos.

### 2.1 Meetings with ministry

#### **December 18<sup>th</sup>**

Meetings with Ministry of Natural Resources and Environment, Department of Disaster management and Climate Change (DDMCC), responsible department for the NDE. Met with the NDE in the afternoon. Mr. Vannavong Manivong and Mr. Amphayvanh Oudomdeth, Vicedirector for the DDMCC and his team. Focus was to ensure alignment of working programme and schedule for the workshop on 19<sup>th</sup> December.

### 3 Final workshop

The final workshop had its focus on wrapping the project up and finding the course for the GCF project, which is expected to follow up on the actions proposed by the present project. The outlines of the workshop agenda is shown below. A few changes took place during the day. It was envisaged that the cities would reflect on new information for the chosen sites, based on the work done by DHI for the hazard- land cover- and vulnerability mapping, but none of the cities had anything to add to the site descriptions and the proposed interventions.

Time	Theme	Speaker
8:00-8:45	Registration	All participants
8:45-9:00	Welcome and Opening of the workshop (Presentation provided in Annex 2)	Mr. Sangkhan Thiangthammavong, Director General, Department of climate change, MONRE
9:00-9:30	“Introduction to Feasibility Study and Next Steps”	Mr. Syamphone Sengchandala Deputy Director General, Department of climate change, MONRE
9:30-10:30	<p><u>Outlines of the agenda</u></p> <ul style="list-style-type: none"> <li>• Climate changes</li> <li>• Ecosystem services</li> <li>• Flooding (HAND-system)</li> <li>• Land - use</li> <li>• Sensitivity analyses</li> <li>• Vulnerability analyses</li> <li>• Assessment of project sites</li> <li>• Potential ecosystem-based adaptations</li> </ul>	<ol style="list-style-type: none"> <li>1. Jesper Goodley Dannisoee, DHI</li> <li>2. Henrik Larsen DHI</li> </ol>
10:30-10:50	Coffee break	All participants
10:50-12:00	Validation of the site information	City groups
12:00-13:30	Lunch	All participants
13:30-13:50	Potential Ecosystem-based Adaptation interventions (elaborated)	Jesper Goodley Dannisoee, DHI
13:50-15:10	The way forward towards the Green Climate Fund	Jesper Dannisoee, DHI Henrik Larsen, DHI
15:10-15:30	Coffee break	All participants
15:00-15:30	Closing the workshop and wrap up	<ol style="list-style-type: none"> <li>1. Chairman of the meeting</li> <li>2. Jesper Goodley Dannisoee, DHI</li> </ol>

During lunch it was decided to add a session on the application of the proposed ecosystem-based adaptation interventions to assist the participants to understand how and where the interventions could be used. The table below shows those EBA's that were identified during the project and a group exercise during the workshop looked at where the proposed EBA's would be most obvious to use. The discussion was focused on whether a specific EBA would mainly apply to the actual project site or it would be

applicable to areas in the catchment to reduce impacts on the project sites. The outcome from the discussions are also reflected in the table below.

Table 1 Overview of EBA's identified during the project and where they could be applicable.

EBA's	Highland	Lowland	Other
Riparian buffers	X	X	
Wetland restoration or conservation	X	X	
Re/afforestation and forest conservation	X	X	
Constructing wetlands		X	
Reconnecting rivers to floodplains		X	
Establishing flood bypasses	(X)	X	
Water harvesting	X	X	
Green roofs	X	X	
Green spaces	X	X	Favoured by flat terrain
Permeable pavements	X	X	Do
Connecting existing green spaces	X	X	Do
Mixed solutions - combining green and built infrastructure to maximize flood protection (subject to the specific 'grey' infrastructure elements present in the specific site).			

As a part of the workshop, DHI transferred specific province-based GIS packages containing hazard- landcover- and vulnerability maps to all 6 provinces. The GIS packages have been optimised for each province to be used with the free GIS software, QGIS, which a few provinces had downloaded already.

## 4 Key observations

During the presentation from Mr. Syamphone, the participants were informed that all 6 provinces had already provided their support to the next phase in the GCF project by accepting to provide access to land for the interventions. The letters from the 6 provinces were shown during the presentation and is presented in Annex 2.

Since the workshop was mostly focussed on recapping the actions taken during the project, there were no key observations that could be taken further. However, since this project has been an intermediate between a first proposal for a GCF project and a new proposal to be launched in 2018, a few observations should be kept in mind.

It is obvious that the provincial staff was not been exposed to the principles of working with ecosystem services and the whole concept of how ecosystem services can be used to create resilience and reduce impacts from flooding, which is the most critical impact caused by present and future climate changes. Although the DHI staff has developed a wide range of material, which has been used to help create a new understanding of the green concepts, there is still a need to develop the capacity during the GCF project.

It was briefly discussed during the workshop that the needs for capacity-building could cover training for specific groups and topics like:

- Land surveyers
- Staff working with digital elevation models
- Staff working with GIS in general
- Staff supposed to work with EBA's
- Satellite images
- Drone technology (LIDAR)

In addition it was discussed to try to keep the staff, which have been part of the project, together in a knowledge-sharing group, which will benefit the work in the up-coming GCF project.

Finally, it is important to note that access to proper internet and technology is not widely spread in the provinces, which puts a barrier to access to information and tools. Distribution of e.g. GIS layers is still done by shipping physical elements like USB-sticks and hard disks among the participating entities.

**ANNEX 1: List of participants**

**Ministerial level, organisations and universities.**

No	Name and Surname	Designation/Position	Department/Organization	Ministry
1	Mr. Sangkhane THIANGTHAMMAVONG	Director General	Department of Climate Change	Ministry of Natural Resources and Environment
2	Mr. Syamphone SENGCHANDALA	Deputy Director General	Department of Climate Change	Ministry of Natural Resources and Environment
3	Ms. Teuanchit ALOUNLASY	Director of Division	Department of Climate Change	Ministry of Natural Resources and Environment
4	Ms. SonePhet PHOSALTH	Director of Division	Department of Climate Change	Ministry of Natural Resources and Environment
5	Mr. Immala INTHABUALY	Director of Division	Department of Climate Change	Ministry of Natural Resources and Environment
6	Mr. Vilakone MANIPHOUSAY	Deputy Director of Division	Department of Climate Change	Ministry of Natural Resources and Environment
7	Ms. Daovin SOUPHONPHAKDY	Deputy Director of Division	Department of Climate Change	Ministry of Natural Resources and Environment
8	Mr. Vannavong MANIVONG	Technical officer	Department of Climate Change	Ministry of Natural Resources and Environment
9	Ms. Thounheuang BUIHAVONG	Technical officer	Department of Climate Change	Ministry of Natural Resources and Environment
10	Mr. Khampasong KHAMVENE	Technical officer	Department of Climate Change	Ministry of Natural Resources and Environment
11	Mr. Ammone SYTAPHONE	Technical officer	Department of Climate Change	Ministry of Natural Resources and Environment
12	Ms. Aliyavanh LARVONGTHEUNG	Technical officer	Department of Climate Change	Ministry of Natural Resources and Environment
13	Ms. Dalaphone KHOUNPHOUMY	Technical officer	Department of Climate Change	Ministry of Natural Resources and Environment
14	Ms. Sengduangdeuan	Deputy Director of Division	Department of Meteorology and Hydrology	Ministry of Natural Resources and Environment
15	Ms. Sysavanh DETHVONGSONE	Director of Division	Lao Women Union	Lao Women Union
16	Mr. Somsanouk VONGSOMBOUN	Deputy Director of Division	Public Works and Transports Research Institute	Ministry of Public Works and Transports
17	Ms. Oulsvanh SINGSAMPHAN	Teacher	Faculty of Environment	National University of Laos
18	Mr. Souneth SOULIYADETH	Technical officer	Department of Natural Resources and Environment Policy	Ministry of Natural Resources and Environment
19	Ms. Somphone PHAENGPOMMY	Technical officer	Department of Hygiene and Health Promotion	Ministry of Health
20	Ms. Lammone SAYAVONG	Technical officer	Department of Water Resources	Ministry of Natural Resources and Environment
21	Mr. Bounthong KEOHANAM	Director of Division	Department of Urban Planning	Ministry of Public Works and Transports
22	Ms. Khamphamy KHOTNYOTHA	Head of Division	Agriculture and Forestry Research Institute	Ministry of Agriculture and Forestry
23	Mr. Phout BOUNTHONGPHET	Technical officer	Department of Agriculture and Land Management	Ministry of Agriculture and Forestry
24	Ms. Amphaylin SENGSOULIN	Technical officer	Ministry of Energy and Mines	Ministry of Energy and Mines
25	Mr. Soukphavanh SAHATVONG	Technical officer	Department of Forestry	Ministry of Agriculture and Forestry
26	Mr. Somvilay CHANTHALOUNNAVONG	Deputy Director of Division	Faculty of Forestry	National University of Laos
27	Mr. Thongdam KHOUN OUDOM	Director of Division	Department of Industry and Handicraft	Ministry of Industry and Commerce
28	Mr. Bounmixay SOMMAVANH	Deputy Director of Division	Ministry of education and Sports	Ministry of education and Sports

<b>No</b>	<b>Name and Surname</b>	<b>Designation/Position</b>	<b>Department/Organization</b>	<b>Ministry</b>
29	Mr. Thinnakone PHIMMAVONG	Technical officer	Ministry of Public Works and Transports	Ministry of Public Works and Transports
30	Mr. Bounthanorm	Deputy Head of Sector	Ministry of Agriculture and Forestry	Ministry of Agriculture and Forestry
31	Ms. Phonephanh BOUNTHAITHAVONG	Director of Division	Lao Women Union	Lao Women Union

No	Name and Surname	Designation/Position	Department/Organization	Province
1	Mr. Soulideth NORASING	Technical officer	Provincial Agriculture and Forestry Department	Luangphabang
2	Mr. Somephone KEONAKHAM	Head of Sector	Provincial Natural Resources and Environment Department	Luangphabang
3	MS. Chanpheng PHETDALA	Technical officer	Provincial Natural Resources and Environment Department	Luangphabang
4	Ms. Bouaphanh NYOTSAVATH	Technical officer	Provincial Lao Women Union	Luangphabang
5	Mr. Duangsavath PHONNACHAK	Head of Sector	Provincial Natural Resources and Environment Department	Luangphabang
6	Mr. Soulapanh PHILAKOUN	Head of Sector	Provincial Public Works and Transports	Luangphabang
7	Ms. Toun SOUMMITHONG	Head of Sector	Provincial Natural Resources and Environment Department	Vientiane Capital
8	Ms. Soulinthone	Technical officer	Provincial Agriculture and Forestry Department	Vientiane Capital
9	Ms. Chansouk BOUALAVONG	Deputy Head of Sector	Provincial Natural Resources and Environment Department	Vientiane Capital
10	Mr. Nouanta HOMPATHOUM	Technical officer	Provincial Administration	Vientiane Capital
11	Mr. Thongkhanh VONGSIMMA	Head of Sector	Provincial Administration	Vientiane Capital
12	Mr. Viengkeo SAIPHAKDY	Head of Sector	Provincial Natural Resources and Environment Department	Bolikhambxay
13	Mr. Khamla LUANGSENGPHET	Deputy Head of Sector	Provincial Administration	Bolikhambxay
14	Mr. Phonesavanh	Deputy Head of Sector	Provincial Natural Resources and Environment Department	Bolikhambxay
15	Ms. Vilayphone PHOMMAVONGSA	Head of Sector	Provincial Lao Women Union	Bolikhambxay
16	Ms. Phimphone KEOVILAY	Technical officer	Provincial Natural Resources and Environment Department	Bolikhambxay
17	Mr. Annanh PHIMMASONE	Deputy Director of Department	Provincial Administration	Bolikhambxay
18	Ms. Dalounny SAYABOUTH	Deputy Director of Department	Provincial Agriculture and Forestry Department	Khammouan
19	Mr. Khamphai PHENGPHAENGMEUANG	Deputy Director of Department	Provincial Administration	Khammouan
20	Mr. Khonevisith KHOUNBOULOM	Head of Sector	Provincial Natural Resources and Environment Department	Khammouan
21	Mr. Vongvilay SAYASENG	Deputy Director of Department	Provincial Administration	Khammouan
22	Ms. Moneta SOUVANDY	Technical officer	Provincial Lao Women Union	Khammouan
23	Mr. Dathdavong MIENMANY	Deputy Director of Department	Provincial Agriculture and Forestry Department	Khammouan
24	Mr. Souvanh VORASOUKHA	Head of Sector	Provincial Natural Resources and Environment Department	Savannakhet
25	Mr. Keo oudone SOULIYA	Deputy Director of Department	Provincial Agriculture and Forestry Department	Savannakhet
26	Ms. Thinnapha BORIBOUN	Deputy Head of Sector	Provincial Administration	Savannakhet
27	Mr. Phoungern CHANTHASONE	Deputy Director of Department	Provincial Administration	Savannakhet
28	Ms. Souksavath KEO AMPHONE	Technical officer	Provincial Lao Women Union	Savannakhet
29	Mr. Duangpaseth PHAYSITH	Head of Unit	Provincial Public Works and Transports	Savannakhet
30	Mr. Bouakham XAYACHAK	Head of Sector	Provincial Agriculture and Forestry Department	Champasak

No	Name and Surname	Designation/Position	Department/Organization	Province
31	Mr. Bounpanh SOULIVONG	Deputy Director of Department	Provincial Administration	Champasak
32	Mr. Phetdavanh SOUVANNAPHA	Technical officer	Provincial Water Supply Sector	Champasak
33	Mr. Saisasith VILAPHIT	Head of Sector	Provincial Natural Resources and Environment Department	Champasak
34	Ms. Sisouphanh SENGSOULICHANH	Deputy Head of Sector	Provincial Agriculture and Forestry Department	Champasak
35	Mr. Somvang SIPASEUTH	Deputy Head of Sector	Provincial Administration	Champasak

**ANNEX 2: Presentation by Mr. Syamphone Sengchandala  
Deputy Director General, Department of climate change, MONRE**



**CTCN**  
CLIMATE TECHNOLOGY  
CENTRE & NETWORK

**Final Workshop on City Climate Change Vulnerability Assessment and  
Ecosystem Based Adaptation Interventions  
19 December 2017, at Donchan Palace, Vientiane.**

**Presented by: Syamphone Sengchandala  
Deputy Director General, Department of Climate Change, MONRE**

1

## **content**

- 1. Background and Progress;**
- 2. Main objectives of study;**
- 3. Next step.**

2

## **Background and Progress (1/5)**

- To implement the National Strategy and Action Plan on Climate Change Adaptation (2010);
- To implement the Intended Nationally Determined Contribution of the Lao PDR (INDC-2015);
- In 2015 MONRE closely cooperated with UNEP in drafting Proposal of "Building Resilience of Urban Populations with Ecosystem Based Solutions in Lao PDR" to Green Climate Fund, GCF;
- The Proposal has been submitted to GCF for consideration on 8 December 2015.

## Background and Progress (2/5)

- In March 2016, received some comment from GCF partially:
  1. Need more study on the impacts of climate change to vulnerabilities and ecosystem services in target areas (6 cities);
  2. Identify adapt option to the Climate Change based on Ecosystem.
- To address comments from GCF, MONRE got supports from CTCN to launch this assessment.

## Background and Progress(3/5)

- Conducted a brainstorming workshop to identify scope and methodology of the study on 1-5 August 2016;
- Organized a field study along with stakeholders and data collection in target areas (6 cities) on 10-19 January 2017;



## Background and Progress (4/5)

- Illustrated the assessment's result at the workshop's on City Climate Change Vulnerability Assessment and Ecosystem Based Adaptation Interventions at Pakse, Champasak on 13-15 September 2017;



- Organized a workshop on 19 December 2017.

### Approval letters for the project areas of 6 cities (5/5)



### Main objectives

1. To analyze the impacts of climate change to urban population and ecosystem services in target areas;
2. To identify measures of the provision and use of ecosystem services to climate change adaptation;
3. Submitted findings and results of the assessment to UNEP and further complied to the project proposal to GCF.

### Future plans and actions

- MONRE and DHI will continue to work on finalized the report and submit to UNEP by the end of December 2017;
- MONRE will continuing to closely work with UNEP to finalize the Proposal and submit to GCF for the consideration at Board Meeting in June/July 2018;
- Provincial and District authorities are requested to future on preparing to implement this project;
- Provincial and District authorities should mainstream the assessment 's result to the district development plan, particularly flood management and land use plans.

