UN environment programme

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UN Climate Technology Centre & Network

Report of the Final Stakeholder Workshop (D4.4/D4.6/D4.7)

***May** 2023*

Prepared for: **UN-CTCN and MOE**

Prepared by: **ICEM**

CLIMATE RISK ASSESSMENT FOR SUBNATIONAL ADAPTATION AND ESTABLISHMENT OF A LOCAL CLIMATE INFORMATION SYSTEM FOR CLIMATE CHANGE ADAPTATION (LISA)

icem

DISCLAIMER

This document was prepared for the United Nations Climate Technology Centre and Network (UN-CTCN) by an ICEM consultant team engaged to undertake the *Technical Assistance – Climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA) in Cambodia.* The views, conclusions and recommendations in the document are not to be taken to represent the views of the UN-CTCN.

Prepared by	ICEM Asia
Prepared for	UN-CTCN and MOE
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ABBREVIATIONS

ICEM	International Centre for Environmental Management
LISA	Local Climate Information System for Climate Change Adaptation
MoE	Ministry of Environment
MoWA	Ministry of Women's Affairs
MoPTC	Ministry of Post and Telecommunications
NCDM	National Committee for Disaster Management
NCDDS	National Committee for Subnational Democratic Development Secretariat
PCDM	Provincial Committee for Disaster Management
PDoWRAM	Provincial Department of Water Resources and Meteorology
PDoE	Provincial Department of Environment
PDLMUPCC	Provincial Department of Land Management, Urban Planning, Construction and Cadastral Affairs
PDoPTC	Provincial Department of Post and Telecommunication
PDoPWT	Provincial Department of Public Works and Transportation
PDoWA	Provincial Department of Women's Affairs
PDRD	Provincial Department of Rural Development
TA	Technical Assistance
UN-CTCN	United Nations Climate Technology Centre and Network

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EXECUTIVE SUMMARY

The United Nations Climate Technology Centre and Network (UN-CTCN) is funding the technical assistance – *Climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA).* This workshop represents **Activity 4.6** in the project's terms of reference (*Organisation of a 1-day stakeholder workshop for government bodies and stakeholders*), and **deliverables 4.6** (*Materials for the workshop e.g., presentations, satisfaction survey template, etc.)*, and **4.7** (*Report on the 1-day stakeholder workshop for government bodies and stakeholders*) is linked to this activity (this document). Additionally, **deliverable 4.4** (*Report on the capacity building program for effective use of LISA*) which was a key discussion item in the workshop is included as an appendix.

The purpose of this workshop is to present the final version of the LISA platform, the approach adopted for management of the platform and the proposed future training programme. This workshop included members of the stakeholder working group from national and subnational key agencies and the project team. The workshop was conducted as a hybrid event with participants either joining in-person in Battambang or virtually via the Zoom platform. A total of 31 participants (22 in-person and 9 online) from national and subnational agencies, and the consultant team (ICEM) joined the event. National representatives included the DCC/MoE, NCDM, MoWA, MoPTC, NCDDS; and subnational representatives from Battambang included those from the PCDM, PDoPWT, PDoE, PDoWA, PDoWRAM, and Battambang DLMUPCC, Provincial Committee, and Municipality.

The workshop was divided into two parts: Part 1 started with a presentation of the key final project outputs, followed by a presentation the use of the LISA platform for risk assessment and adaptation planning. A subsequent interactive LISA quiz then gave participants opportunity to explore the LISA application in more detail. During the plenary discussion, participants were asked for their feedback on LISA and to complete individual user satisfaction survey forms. In Part 2, Dr Cooper described the LISA data and platform management, and the proposed future training programme. A plenary discussion followed to seek comments and questions from Battambang and national stakeholders.

The workshop provided stakeholders with an opportunity to explore, review and provide final feedback on the LISA platform and future training programme. Steps to use LISA for climate change adaptation planning were presented in detail. Battambang Provincial Government will be the future host for the LISA platform, and the future training programme will need to address their hardware and capacity building needs for hosting and management, as well as training in conducting and interpreting outputs of climate risk assessments. Valuable feedback was received during workshop discussions for further refining the utility of the LISA application.

1. INTRODUCTION

1.1 Project overview

The United Nations Climate Technology Centre and Network (UN-CTCN) is funding the technical assistance – *Climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA)*. The project involves the creation of an intuitive and user-friendly web-based data visualization platform (called LISA) that enables users to explore future climate scenarios and potential impacts and adaptation options for future climate-resilient planning in Battambang municipality. The project is managed by the Department of Climate Change of the Ministry of Environment and is being implemented by a team of consultants led by the International Centre for Environmental Management (ICEM).

1.2 Workshop purpose

The purpose of the workshop is to present the final version of the LISA platform, the approach adopted for management of the platform and the proposed future training programme. This workshop included members of the stakeholder working group from national and subnational key agencies and the project team. The list of participants is given in Appendix II.

The specific objectives of the workshop included the following:

(i) Present the final version of the LISA platform and a demonstration of its use for climate change adaptation planning.
(ii) Introduce the adopted approach for data and LISA platform management, and the proposed training programme.
(iii) Ensure gender is addressed in all project activities.

This workshop represents **Activity 4.6** in the project's terms of reference (*Organisation of a 1-day stakeholder workshop for government bodies and stakeholders*), and **deliverables 4.6** (*Materials for the workshop e.g., presentations, satisfaction survey template, etc.)*, **4.7** (*Report on the 1-day stakeholder workshop for government bodies and stakeholders*) is linked to this activity (this document). Additionally, **deliverable 4.4** (*Report on the capacity building program for effective use of LISA*) which was a key discussion item in the workshop is included in Appendix 6.

2. WORKSHOP PROCEEDINGS

2.1 Introduction

The workshop was conducted as a hybrid event with participants either joining in-person in Battambang or virtually via the Zoom platform (Figure 1 andFigure 2). The workshop agenda is included in Appendix I. There were a total of 31 participants (22 in-person and 9 online) from national and subnational agencies, and the consultant team (ICEM). National representatives included the Department of Climate Change (DCC) of the Ministry of Environment (MoE), National Committee for Disaster Management (NCDM), Ministry of Women's Affairs (MoWA), Ministry of Post and Telecommunications (MoPTC), and National Committee for Subnational Democratic Development Secretariat (NCDDS). Subnational representatives from Battambang included those from the Provincial Committee for Disaster Management (PCDM), Provincial Department of Public Works and Transportation (PDoPWT), Provincial Department of Environment (PDoE), Provincial Department of Women's Affairs (PDoWA), Provincial Department of Water Resources and Meteorology (PDoWRAM), Battambang Department of Land Management, Urban Planning, Construction and Cadastral Affairs (DLMUPCC), Battambang Provincial Committee, and Battambang Municipality. Participants are listed in Appendix II.

Figure 1. Participants at the event in Battambang

His Excellency Ou Dary, Deputy Governor of Battambang Provincial Committee delivered the opening address. H.E. Ou Dary's statement covered various key points, as follows.

Climate change has become a key concern of the world, as well as the Royal Government of Cambodia. The Government has strengthened strategies to respond to climate change impacts and improve adaptive capacity. Battambang city is especially vulnerable to climate change. Climate hazards such as flash floods from the Sangke River, pluvial floods, river bank erosion, storms, droughts, and heat waves are all occurring more frequently and with greater intensity with potential to cause bigger impacts to city infrastructure, public services, housing, city assets, crops, livelihoods, and especially to vulnerable groups of city residents.

Riverbank communities are at risk from erosion and bank collapse at times of high river flow due to intense rainfall.

In response to growing climate impacts, the provincial government and local authorities have been strengthening riverbanks, improving drainage and roads in the city, and building an early warning system. Thanks to the LISA project, we expect that Battambang city will have greater scope to enhance its adaptive capacity to respond to climate change by significantly improving decision making and adaptation planning.

H.E Ou Dary informed the meeting that the LISA project is under management of Department of Climate Change (DCC) of the Ministry of Environment (MoE), funded by the UN-CTCN, and implemented by the International Center for Environmental Management (ICEM). Today, the LISA project's Stakeholder Working Group, represented by participants from national, provincial and municipality adminstrations, meet at this workshop to review and discuss the progress of the LISA project, including development of the LISA platform designed for Battambang Municipality. The LISA platform will be an effective online platform to provide climate change information for the Battambang city. LISA shares climate change data, maps, and adaption measures that can assist city authorities in adaptation planning.

On behalf of His Excellency, the Provincial Governor, I would like to express sincere thanks to national institutions including MoE, MoWA, MoPTC, NCDDS, and NCDM, for supporting the LISA project and selecting Battambang as the first city to develop LISA. Today, the ICEM consultant team who are implementing the LISA project, will present and discuss ongoing progress including the LISA platform and further explore the need for training (capacity building) for the management, operation, and use of the LISA platform. H.E Ou Dary encourages participants to actively participate and provide comments and suggestions for the ICEM team to improve and finalise project outputs.

Figure 2. Participants joining by Zoom

The workshop was divided into two parts:

- **Part 1** started with a presentation by Dr Richard Cooper, DSS Specialist, on the final project outputs – the LISA platform and key deliverables. Mr Miguel Coulier, Climate Change Risk Assessment Expert, followed by presenting the use of the LISA platform for risk assessment and adaptation planning. After the morning break, Dr Richard Cooper introduced the interactive LISA quiz, which asked participants various questions designed to give them opportunity to explore the LISA application in more detail. During the plenary discussion, participants were asked for their feedback on LISA and to complete individual user satisfaction survey forms.

- **In Part 2** Dr Cooper described the LISA data and platform management, and the proposed future training programme. A plenary discussion followed to seek comments and questions from Battambang and national stakeholders.

The workshop ended with closing remarks from H.E Ou Dary, Deputy Governor of Battambang Provincial Committee.

2.2 Workshop materials

The presentation slides in English and Khmer can be found at the following link or via the QR code:

https://drive.google.com/drive/folders/1v-pDwFoc2nEsvI8TUsrS3MeNxDhiDRiQ?usp=share_link

Figure 3. QR Code for workshop materials for Stakeholder workshop on 26th May 2023

2.3 Presentations

An overview of the presentation is given in this section, with copies of the full presentations in Appendix 3.

2.3.1 *Presentation 1: Project key outputs*

Dr Cooper described the key project deliverables of the LISA project:

- Development of web-based LISA platform
- Climate risk assessment report that is central to the data outputs displayed on the LISA platform
- Formation of the LISA stakeholder working group which is critical for future management, hosting and updating of the LISA system
- Introductory LISA manual for users and administrators (in progress)(deliverables 4.2 and 4.3).

The final version of the LISA platform was presented which is currently accessible at https://icem.com.au/lisa/.

The LISA platform comprises six main components:

- Home page
- Map viewer
- Map gallery
- Matrix of adaptation measures linked to technical documentation on each measure
- Methodology of the climate risk assessment
- About page

On first visiting the site, users are taken to the home page (Figure 4). The map viewer integrates various datasets (base maps, socioeconomics, hazards and climate, impacts and vulnerabilities) for Battambang municipality (Figure 5). Maps can also be downloaded from the Map Gallery (Figure 6).

Figure 4. Home page

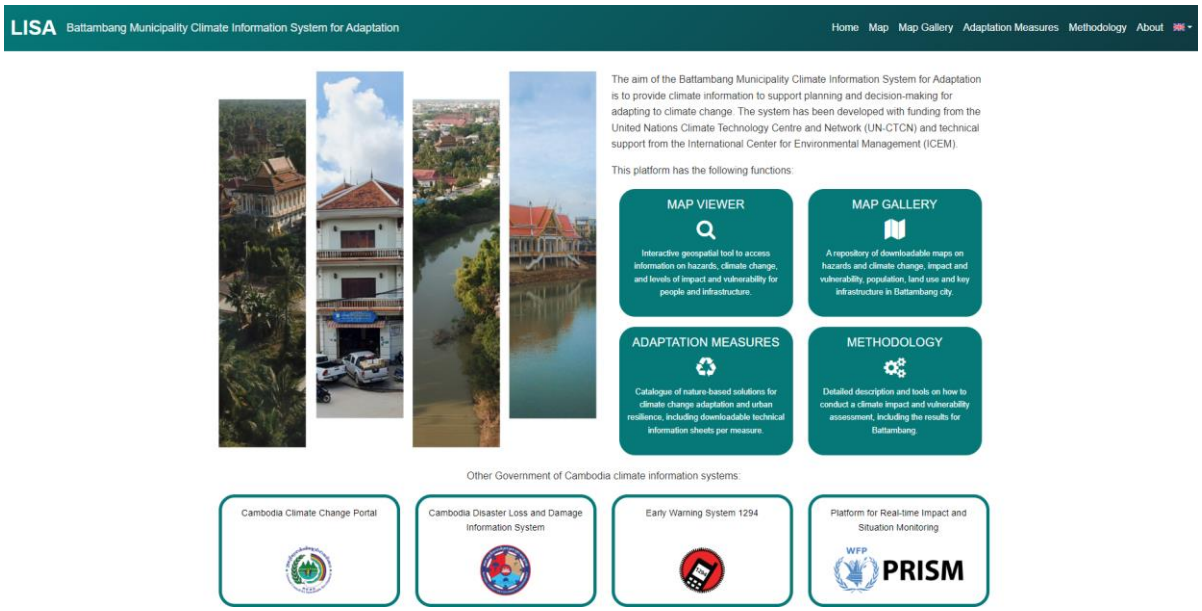


Figure 5. Map viewer

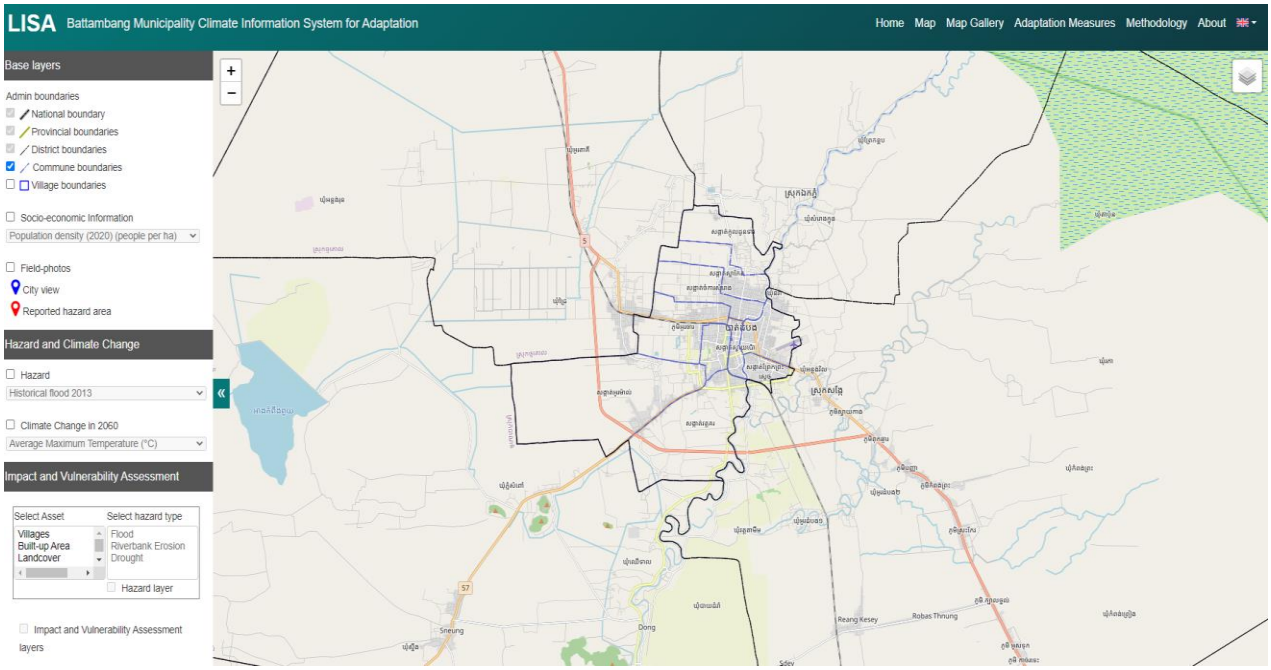
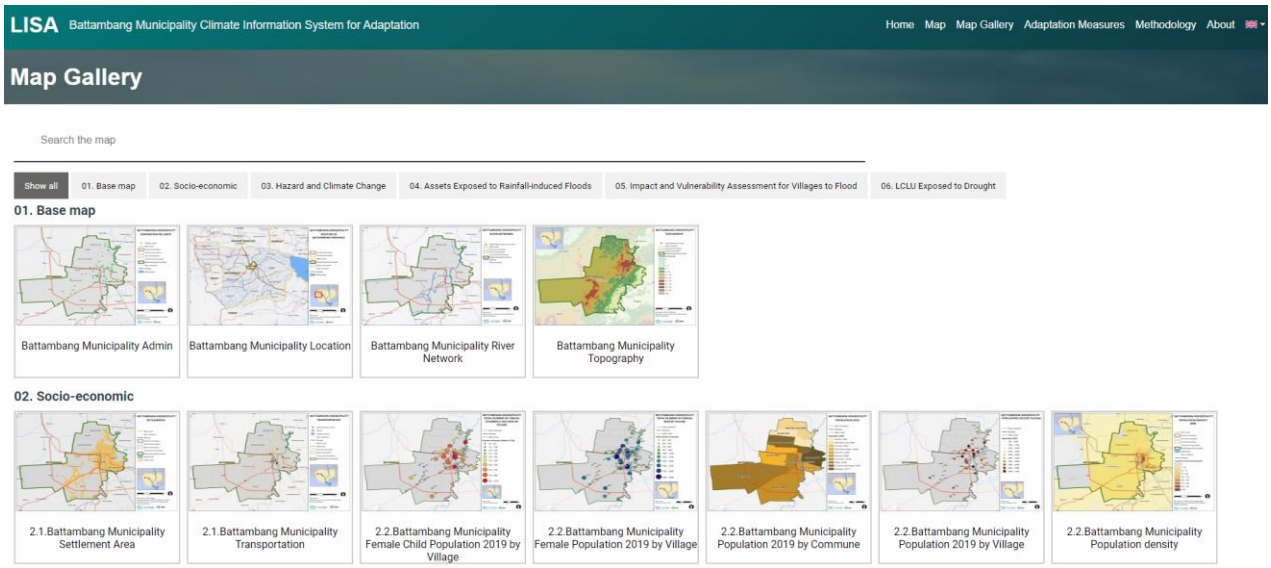
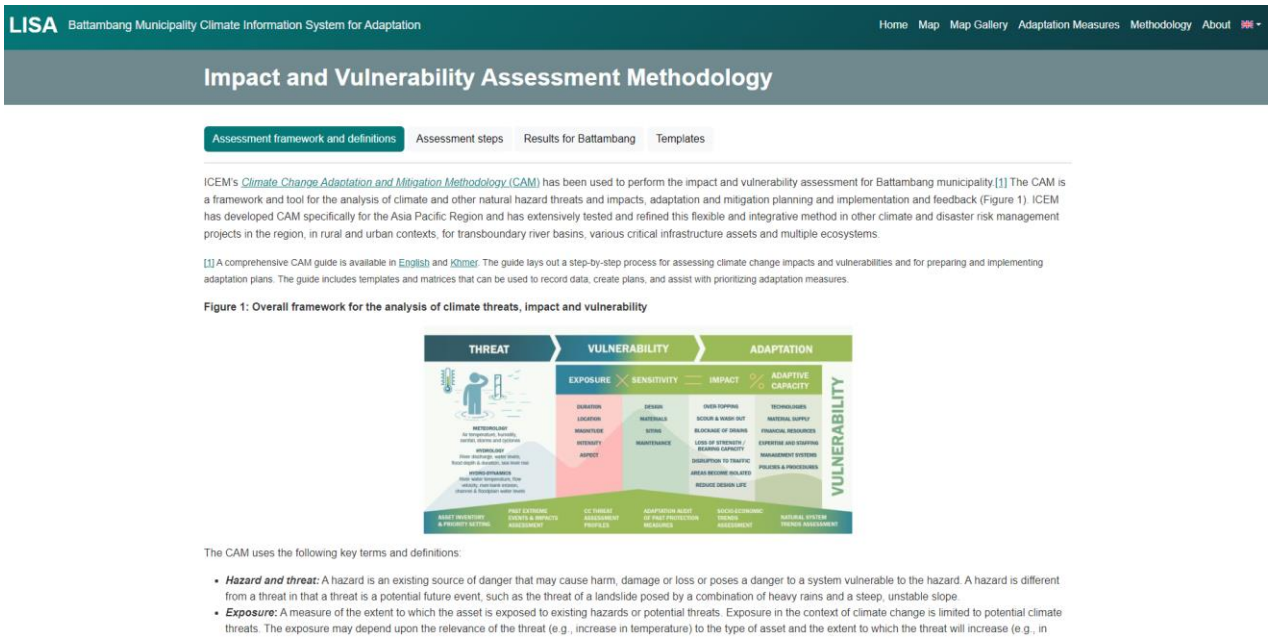


Figure 6. Map gallery



One key output of the project is the *Climate Risk Assessment Report* which can be downloaded from the *Methodology* page (Figure 7).

Figure 7. Methodology page



Dr Cooper demonstrated the key features of the LISA application, highlighting the features and functionalities of the map viewer, which provide access to climate change and hazard data and enable the overlaying of these with various assets (e.g., villages, land cover, roads, rail, schools and hospitals). The LISA site is bilingual in English and Khmer.

2.3.2 *Presentation 2: Use of the LISA platform for climate risk assessment and adaptation planning*

The LISA platform aims to support governments *in* adaptation planning. Mr. Miguel Coulier explained how to use the available information to better understand risks and climate change in Battambang municipality, to prioritize resources, locations, and identify appropriate solutions for climate change adaptation.

Mr Coulier explained each step of the adaptation planning process (Figure 98 - Figure 12).

Figure 8. The adaptation planning process

Figure 9. Step 2: Baseline assessment

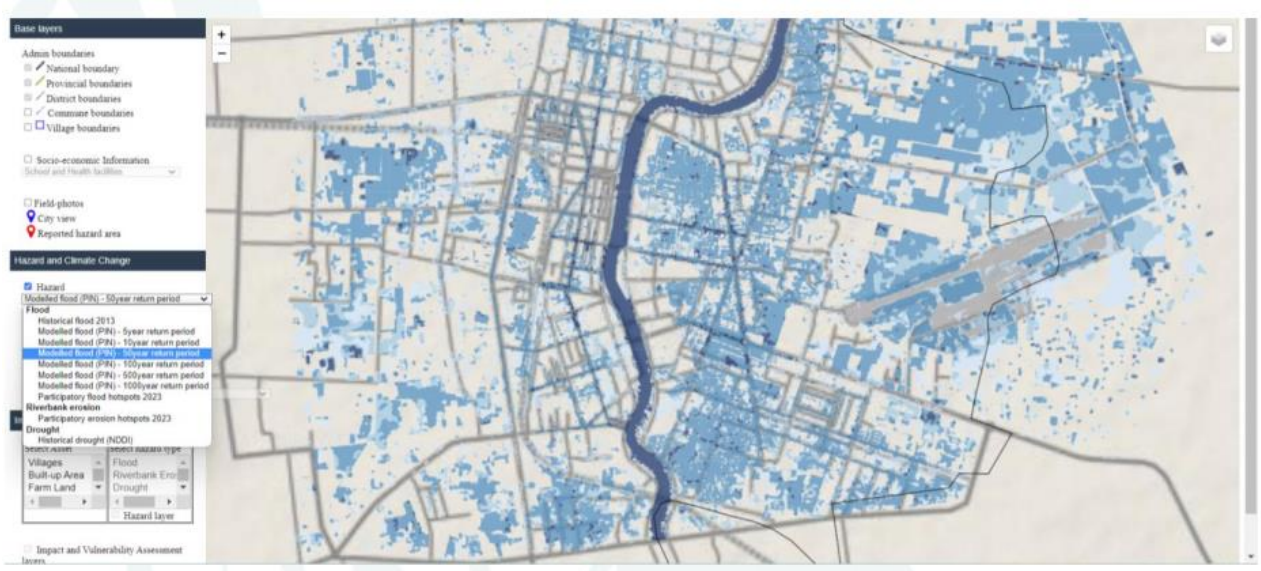


Figure 10. Step 3. Assessment of impacts

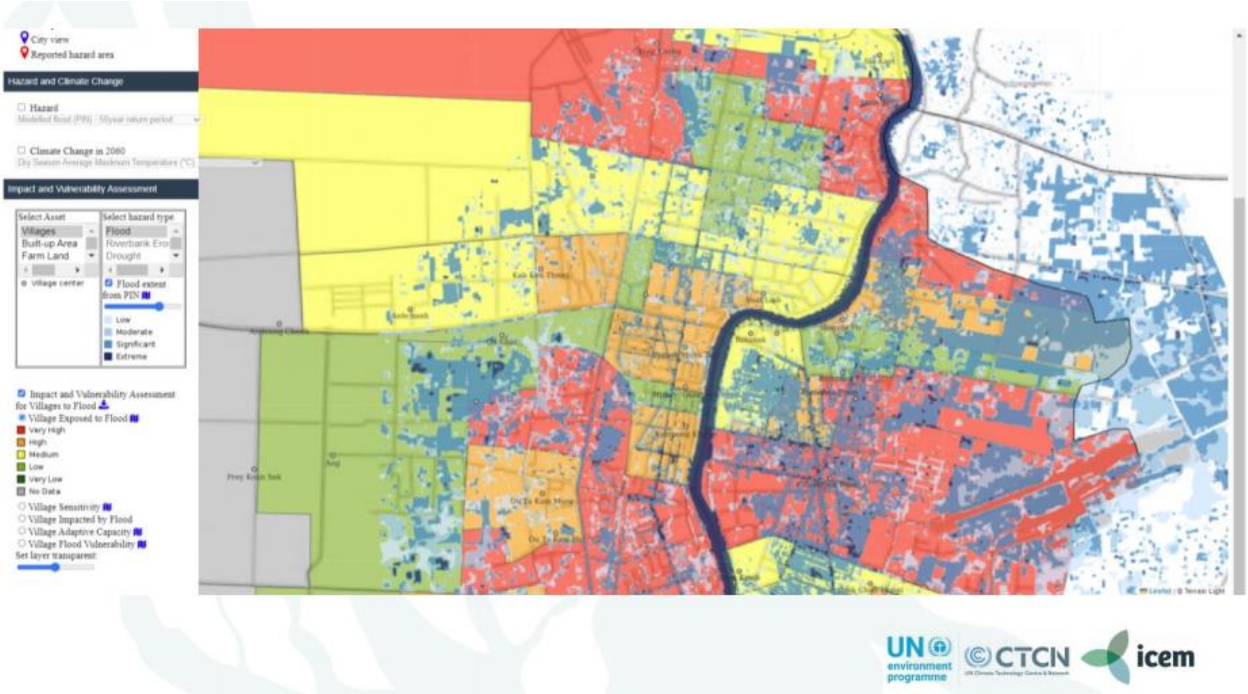


Figure 11. Steps 4 and 5: Assessment of adaptive capacity and vulnerability

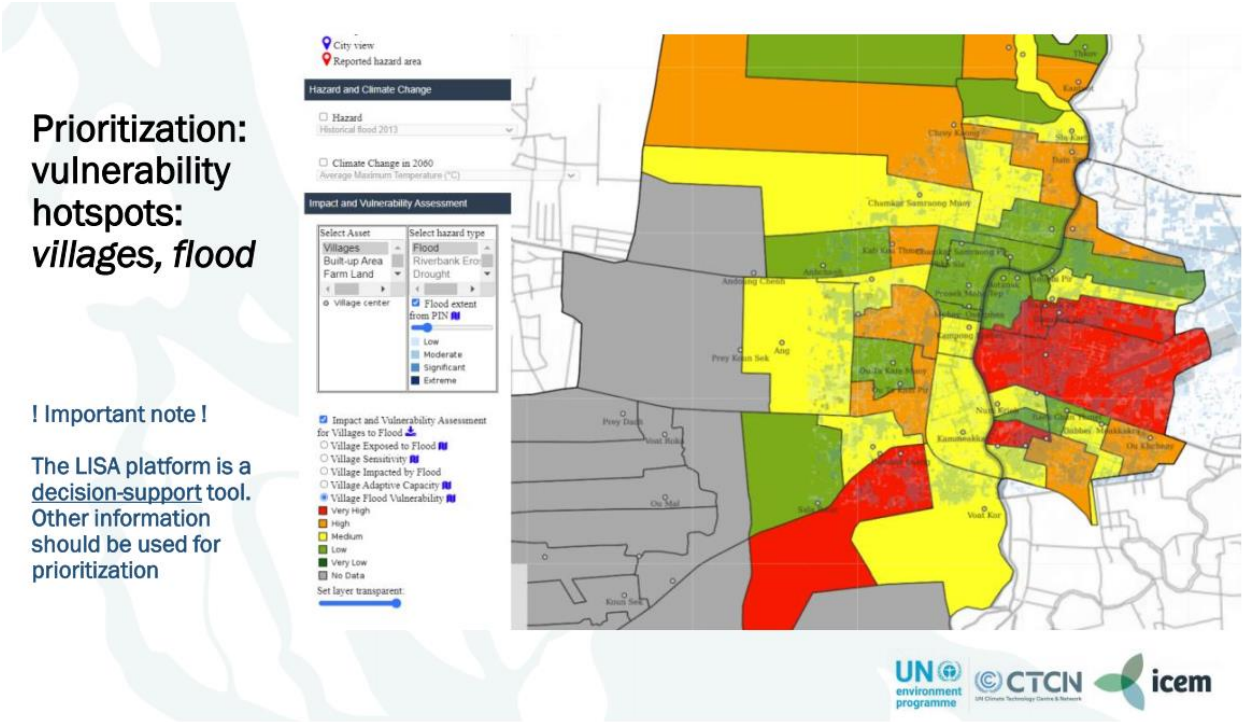
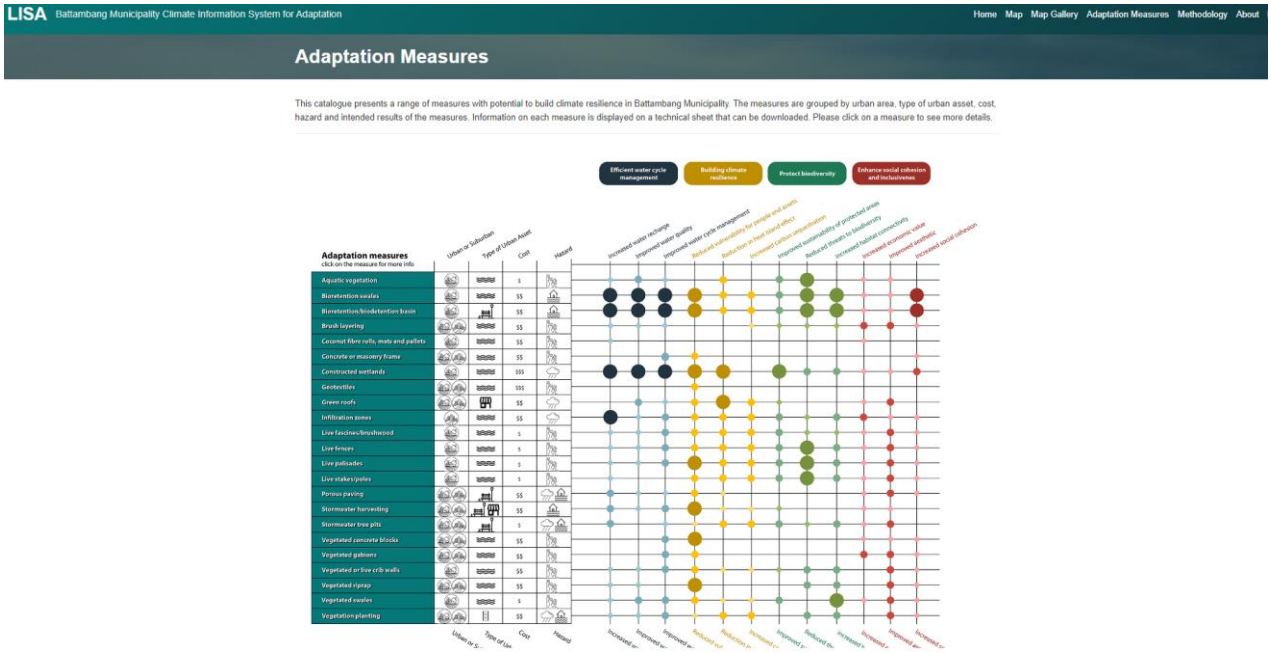


Figure 12. Step 6. Identify potential adaptation measures



For each adaptation measure, a detailed technical sheet can be downloaded.

2.3.3 *Presentation 3: Data and platform management and future training programme*

Dr Cooper presented the third presentation which focused on platform management and hosting of the LISA platform. Following earlier discussions in the project, ICEM again proposed that Battambang municipality host this platform. The ICEM team had previously discussed the deployment and management of the platform with the National Committee for Disaster Management (NCDM) and Provincial Committee for Disaster Management (PCDM) in Battambang, but limited staff capacity was highlighted as the key concern for hosting. In addition to hardware needs, maintenance of the system would require two or more IT staff with IT administration and web GIS expertise.

ICEM is preparing a future training programme to address capacity needs of the municipality (see Appendix 6). Dr Cooper proposed a Phase II of the project to provide relevant training as well as to upgrade the LISA platform with new findings from supplementary climate risk assessments: given the data availability, a full climate risk assessments was only conducted for villages and flood, and only exposure assessments were conducted on the other assets (road, railway, land cover, schools and hospitals). Impact and exposure of land cover to drought were also analysed.

2.4 Discussions

In the morning session, participants were divided into groups and asked to work together on the 'LISA quiz', where 10 questions were asked by Dr Cooper and participants asked to explore the LISA site for answers. Participants were given good opportunity to navigate the application and answer the questions. Based on participant feedback, the LISA will be refined slightly to improve and simplify the display of some datasets; these are minor changes that will be modified in the final release of the application.

Figure 13. Group working: Participants navigate LISA platform

In the afternoon session, the use, management and development of the LISA platform were discussed. Battambang officials from Battambang municipality raised a few queries: It was clarified that the Department of Information is under the Provincial Administration, not the municipality. Currently there is no Office of Information at Battambang City Hall, and they have only one IT staff, Mr Un Bunroth. The. municipality has a local website but this website has not been updated for a while due to limited IT staff time.

Mr. Sarath from MoPTC highlighted that Battambang city is a candidate of the SMART city project, a Japanese-funded initiative. Thus, the city should have better capacity for information technology and the municipality of Battambang should create an information office and build a strong IT team (the IT unit should be a team of three to four IT staff) to address the sharing of information and integrate with the SMART city outputs. There are number of components in the SMART City project including climate change. Battambang is one of three smart cities of this project in Cambodia.

H.E Kim Kolmony, NCDM, mentioned he has been involved with the LISA project since its commencement. He noted that the project is very helpful. The platform identifies hazards, risks and vulnerable areas, and adaptation measures, so that municipality can better prepare planning in response disaster and climate change. While the current LISA product is completed, remining steps include its implementation and use by the municipality, and a Phase II could focus on capacity building. As a candidate of the SMART City programme, Battambang municipality should prepare themselves to use this digital climate information system, as it is an excellent source of information on climate change and hazards.

The need for training in using and maintaining the LISA platform was also raised by **Ms Clara Landeiro** from UN-CTCN. She asked the ICEM team to present the protocols that will be used in for the operation and management, and the monitoring and evaluation of LISA. To use the LISA platform, including updating data at the provincial level, a responsible institution needs to be selected and then the staff should receive training. Roles and responsibilities for the management of LISA, what needs to be hosted, and managing the application should be discussed with the municipality.

Dr Cooper responded that the ICEM team discussed the hosting and management of LISA with NCDM, PCDM and Battambang municipality, and given their limited resources it was proposed to host at

Battambang municipality. Battambang expressed interest in hosting the platform. As with NCDM there are limited hardware and staff resources at Battambang, which a next phase of the project will need to address.

H.E Ou Dary highlighted that the LISA platform provides a modern climate change information system for the municipality. Thus, under this LISA project, the municipality should build an IT and information working group and then establish an IT and information office of the municipality. He told the municipality not to worry so much about IT capacity, because the project will cover a series of trainings to improve capacity to operate and use the LISA platform. A Phase II of the LISA project will focus on capacity building, training, and build a stable system at the municipality that can be handed over at the end of Phase II. For training of IT staff, it would be good to train IT staff from across the province to encourage the use of LISA.

H.E. Ou Dary expressed interest in Battambang Provincial Government in hosting LISA. He mentioned the challenges due to limited hardware and staff capacity. Battambang Provincial Government is willing to host the LISA platform, and the future training programme will need to address a number of issues:

- Hardware and capacity building for hosting and management of the LISA platform
- Training of users (urban planners, engineers of LISA) of LISA, including in the climate risk assessment methodology and interpretation of findings.
- Upgrading of the LISA app to address all key assets (roads, rail, schools, hospitals) and hazards (flood, riverbank erosion, heat wave).

Figure 14. Plenary discussion

It was asked if there is potential to develop similar LISA platforms for other cities? For example, such systems could also be developed for Phnom Penh and Siem Reap, the two other SMART cities in Cambodia.

3. CLOSING REMARKS

His Excellency Ou Dary, Deputy Governor of Battambang Provincial Committee, expressed on behalf of Provincial Hall and Battambang municipality, that he would like to acknowledge thanks for the key findings of the risk assessment and development of the LISA platform. He added that Battambang Provincial

Government is willing to host the LISA platform**. Future training in using, hosting, managing and maintaining the LISA platform will address challenges in IT capacity for Battambang municipality**.

H.E Ou Dary provided a summary of workshop activities conducted throughout the day. In the morning, the ICEM team described the final project outputs, including the LISA platform; the use of the LISA platform for risk assessment and adaptation planning; and group work in the 'LISA quiz'. Dr. Cooper and Mr. Coulier highlighted key features of the LISA platform and its use for risk assessment and adaptation planning. Through hands-on practice by participants during the workshop, the ICEM team were able to collect further feedback on the usability of the platform. Another presentation by Dr. Cooper focused on the operation, management, maintenance, and updating of the LISA platform. Dr. Cooper also stressed the need to discuss training needs for future operation of the LISA platform.

The discussion during the workshop mainly focused on hosting of the platform. The LISA platform needs to be hosted on a government server. For the time-being the LISA platform will be hosted on the ICEM company's server. In a Phase II of the project, when the municipality is ready, the LISA platform will be handed over by ICEM to the government.

H.E. Ou Dary expressed his happiness in having this very useful climate information tool for Battambang province and municipality. He believes that the platform will be an effective tool for the administration to manage and respond to climate change. He would like to ask if UN-CTCN could consider supporting a Phase II project and make Battambang city a good pilot example for other cities and districts to learn about and apply LISA.

At this end of the workshop proceedings and on behalf of the Provincial Governor, H.E Ou Dary expressed thanks to all participants, whether joining in-person or virtually. He thanked representatives from the national level, MOWA, MoPTC, NCDM, and NCDDS, and Battambang, and wished everyone the best, a safe journey home, and hopes to see participants again soon in a future LISA II project.

4. CONCLUSIONS AND NEXT STEPS

4.1 Conclusions

The workshop provided stakeholders with an opportunity to explore, review and provide final feedback on the LISA platform and future training programme. Steps to use LISA for climate change adaptation planning were presented in detail. **Battambang Provincial Government will be the future host for the LISA platform**, and the future training programme will need to address their hardware and capacity building needs for hosting and management, as well as training in conducting and interpreting outputs of climate risk assessments. Valuable feedback was received during workshop discussions for further refining the utility of the LISA application.

4.2 Next steps

Immediate next steps for the project include finalising the LISA application, developing the user and system administrator manuals, and finalising the content of the future training programme (LISA Phase II).

Remaining deliverables to be submitted by the consultant team to the Department if Climate Change include this report (deliverables 4.4/4.6/4.7) and remaining deliverables from Output 4 (deliverables 4.1-4.3). The team will explore future funding opportunities for second phase of LISA project with the Department of Climate Change.

APPENDIX 1: WORKSHOP AGENDA

Time	Activity	Presenter/Facilitator
09:00 - 09:15	Welcome and opening remarks	H.E. Ou Dary, Battambang Provincial Vice Governor
09:15 – 09:30	• Introduction to workshop agenda • Photograph of participants	Lay Chanthy, Climate Change and Local Coordination Expert, ICEM
09:30 - 09:50	Presentation of the final project outputs, including the LISA platform	Richard Cooper, DSS specialist, Team leader, ICEM
09:50 – 10:10	Presentation on the use of the LISA platform for risk assessment and adaptation planning	Miguel Coulier, Climate Change Risk Assessment Expert, ICEM
10:10 – 10:30	Introduction of group work on exploring LISA: 'LISA quiz'	Richard Cooper, DSS specialist, Team leader, ICEM
10:30 – 10:45	*Coffee/tea break*	*All participants*
10:45 – 11:30	Group work on exploring LISA: 'LISA quiz'	Richard Cooper, DSS specialist, Team leader, ICEM Miguel Coulier, Climate Change Risk Assessment Expert, ICEM
11:30 – 12:00	User's plenary feedback and LISA platform individual user satisfaction survey part 1	Lay Chanthy, Climate Change and Local Coordination Expert, ICEM
12:00 – 13:00	*Lunch*	*All participants*
13:00 - 13:30	Presentation on data and platform management and the proposed future training programme: • Deployment of LISA platform/ system maintenance • Future updating/development • Climate risk assessment • Gender and climate change	Richard Cooper, DSS specialist, Team leader, ICEM Chanthy Lay, Climate Change and Local Coordination Expert, ICEM Miguel Coulier, Climate Change Risk Assessment Expert, ICEM
13:30 - 14:30	LISA Phase II: plenary discussion on LISA's future development and training programme	Chanthy Lay, Climate Change and Local Coordination Expert, ICEM)
14:30 – 14:45	*Coffee/tea break*	*All participants*
14:45 – 15:15	Individual user satisfaction survey part 2	Chanthy Lay, Climate Change and Local Coordination Expert, ICEM
15:15 – 15:30	Wrap-up and closing	H.E. Ou Dary, Battambang Provincial Vice Governor

APPENDIX 2: PARTICIPANT LIST

No.	Name	Title	Organization	Gender
A	**Government Agencies from Phnom Penh**			
1	H.E. Chum Socheat	Deputy Director	National Committee for Sub-national Democratic Development Secretariat (NCDD)	M
2	Meas Chiwut	MoWA Officer	Ministry of Women's Affairs (MoWA)	M
3	Chhay Sarath	Officer	Rural ICT, General Directorate ICT, Ministry of Post and Telecommunications (MPTC)	M
4	H.E. Kim Kolmony	Director	National Committee for Disaster Management (NCDM)	M
B	**Battambang Provincial Government Agencies**			
5	H.E. Ou Dary	Deputy Governor	Battambang Provincial Committee	M
6	H.E. Seak Chantra	Deputy Governor	Battambang City Hall	M
7	San Titvirak	Director of Intersectoral Planning	Battambang Provincial Hall	M
8	Kem Sokuntheary	Deputy Director	Battambang Provincial Department of Public Work and Transport (PDoPWT)	F
9	Thok Ratha	Deputy Chief of Office	Battambang Department of Planning	M
10	Tuot Chanratana	Deputy Chief of Office	Battambang Provincial Hall	M
11	Mok Sophannara	Officer	Battambang Department of Land Management, Urban. Planning and Construction (DLMUPCC)	M
12	Song Soeung	Chief of Office	Battambang Provincial Department of Public Work and Transport (PDoPWT)	M
13	Un Bunroth	Officer	Battambang City Hall	M
14	Visontha Ratha	Deputy Director	Battambang Provincial department of Women affairs (PDWA)	F
15	Kham Samroeb	Officer	Battambang Provincial Committee for Disaster Management (PCDM)	M
16	Ear Kim Chheng	Deputy Director	Battambang Provincial Department of Environment (PDoE)	M
17	Mao Soksan	Deputy Chief of Office	Battambang Provincial Department of Water resources and Meteorology (PDoWRAM)	M
C	**ICEM team**			
18	Richard Copper	DSS Specialist, Project Manager/Team Leader	ICEM	M
19	Miguel Coulier	Climate Change Risk Assessment Expert	ICEM	M

No.	Name	Title	Organization	Gender
20	Pham Tran Minh	Data Management and Design Expert	ICEM	M
21	Lay Chanthy	Climate Change and National Coordination Expert	ICEM	M
22	Eng Senghak	National Coordinator and Administrative Officer	ICEM	M
D	**Online participants**			
23	Clara Landeiro	Regional Manager, Asia-Pacific	Climate Technology Centre & Network (CTCN)	F
24	Sum Cheat	Deputy Director	Department of Climate Change, MoE	M
25	Chhorn Sambat Rathana	Officer	Rural ICT, General Directorate ICT, Ministry of Post and Telecommunications (MPTC)	M
26	Khim Rattana	Officer	Rural ICT, General Directorate ICT, Ministry of Post and Telecommunications (MPTC)	M
27	Leng Heng An	Chief of Office	National Committee for Disaster Management (NCDM)	M
28	Symeat Sun	Officer	National Committee for Sub-national Democratic Development Secretariat (NCDD)	M
29	Truong Tung Hoa	Project Coordinator	ICEM	F
30	Tous Sophorn	Gender expert	ICEM	F
31	Joe Ogden	Web Design and Development Expert	ICEM	M

APPENDIX 3: PRESENTATIONS

Appendix 3.1: Presentation on Project overview and key deliverables

Climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA) in Cambodia

UN-CTCN LISA Final Project Meeting

Richard Cooper, DSS Specialist, ICEM
26 May 2023

UN environment programme | CTCN | icem

Agenda (morning)

Time	Activity	Presenter/Facilitator
09:00 - 09:15	Welcome and opening remarks	H.E. Ou Dary, Battambang Provincial Vice Governor
09:15 – 09:30	• Introduction to workshop agenda • Photograph of participants	Lay Chanthy, Climate Change and Local Coordination Expert, ICEM
09:30 - 09:50	Presentation of the final project outputs, including the LISA platform	Richard Cooper, DSS specialist, Team leader, ICEM
09:50 – 10:10	Presentation on the use of the LISA platform for risk assessment and adaptation planning	Miguel Coulier, Climate Change Risk Assessment Expert, ICEM
10:10 – 10:30	Introduction of group work on exploring LISA: 'LISA quiz'	Richard Cooper, DSS specialist, Team leader, ICEM
10:30 – 10:45	*Coffee/tea break*	*All participants*
10:45 – 11:30	Group work on exploring LISA: 'LISA quiz'	Richard Cooper, DSS specialist, Team leader, ICEM Miguel Coulier, Climate Change Risk Assessment Expert, ICEM
11:30 – 12:00	User's plenary feedback and LISA platform individual user satisfaction survey part 1	Lay Chanthy, Climate Change and Local Coordination Expert, ICEM
12:00 – 13:00	*Lunch*	*All participants*

Agenda (afternoon)

12:00 – 13:00	*Lunch*	*All participants*
13:00 - 13:30	Presentation on data and platform management and the proposed future training programme: • Deployment of LISA platform/ system maintenance • Future updating/development • Climate risk assessment • Gender and climate change	Richard Cooper, DSS specialist, Team leader, ICEM Chanthy Lay, Climate Change and Local Coordination Expert, ICEM Miguel Coulier, Climate Change Risk Assessment Expert, ICEM
13:30 - 14:30	LISA Phase II: plenary discussion on LISA's future development and training programme	Chanthy Lay, Climate Change and Local Coordination Expert, ICEM)
14:30 – 14:45	*Coffee/tea break*	*All participants*
14:45 – 15:15	Individual user satisfaction survey part 2	Chanthy Lay, Climate Change and Local Coordination Expert, ICEM
15:15 – 15:30	Wrap-up and closing	H.E. Ou Dary, Battambang Provincial Vice Governor

Project overview and key deliverables

PROJECT OVERVIEW AND KEY DELIVERABLES

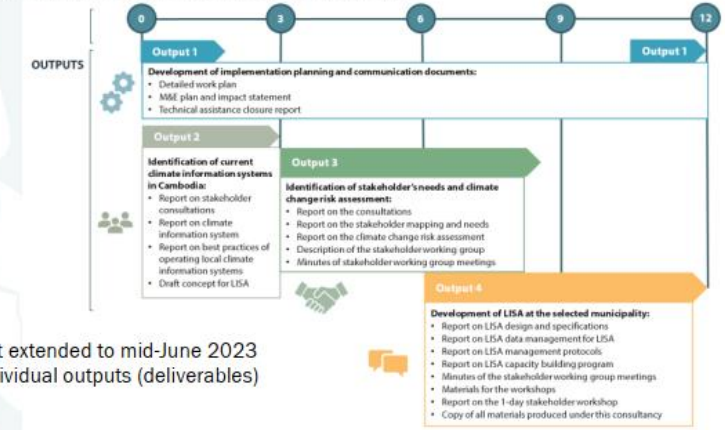
Aim of the project

- provision of technical services to design a web-based local climate information system and establish associated baseline (including related management protocols), which can support adaptation decision-making processes, and provide services for climate information delivery at the sub-national (local) level.

Key outputs

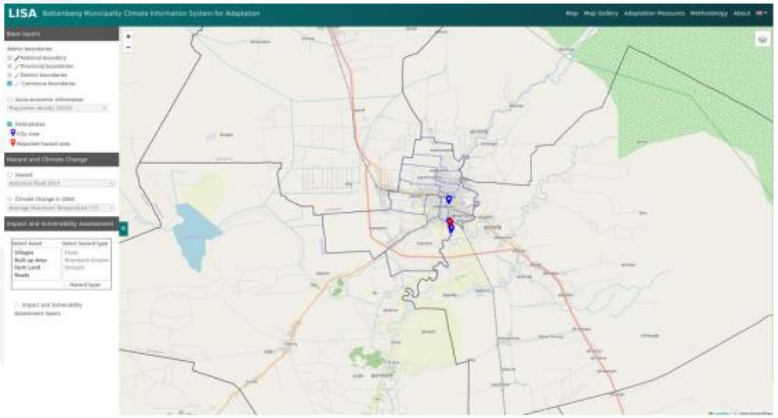
Development of LISA platform
https://icem.com.au/lisa

PROJECT OVERVIEW AND KEY DELIVERABLES

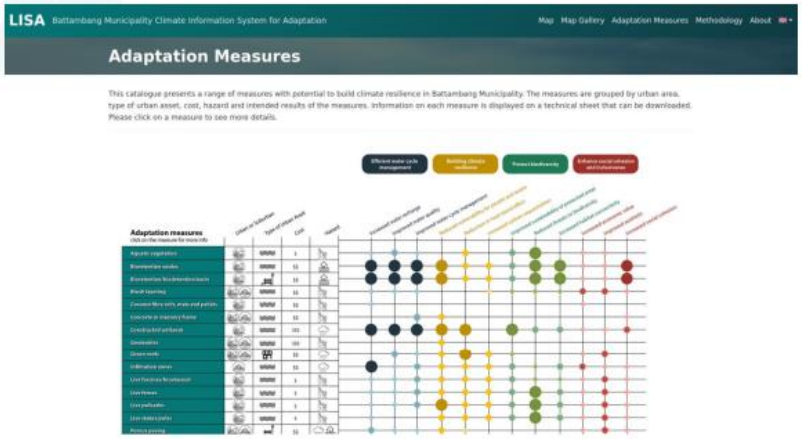


- Project extended to mid-June 2023
- 20 individual outputs (deliverables)

Map viewer

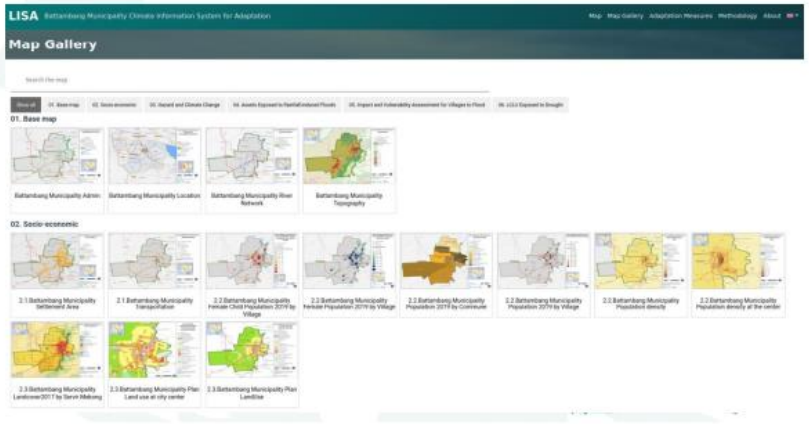


Adaptation measures

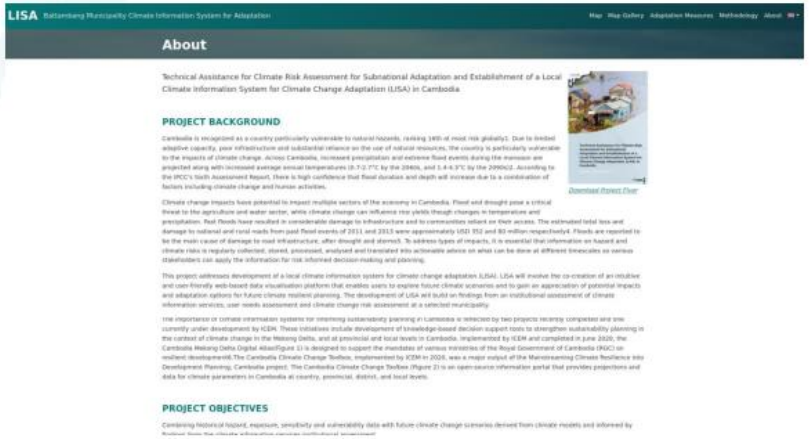


Methodology

Map gallery

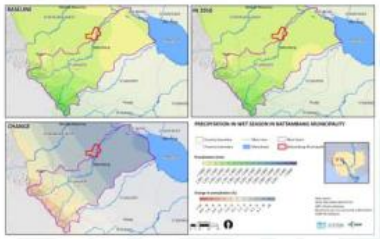


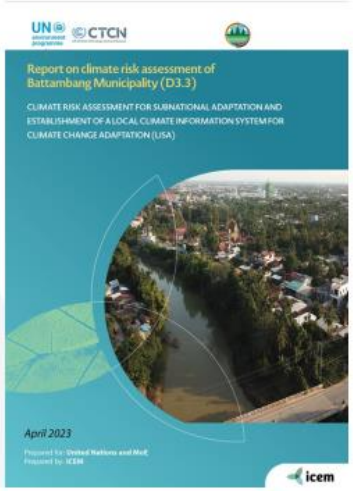
About the project



Key outputs

- Climate risk assessment report
- Central to the outputs displayed in LISA



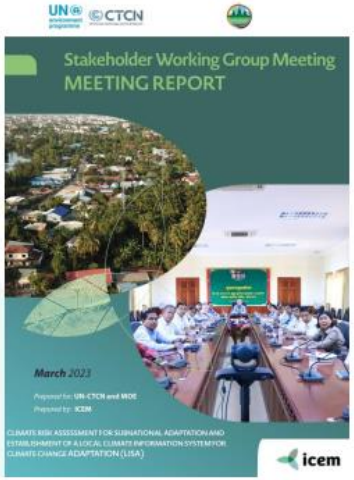


Key outputs

- LISA manual for users and administrators
- Being finalized at present

Key outputs

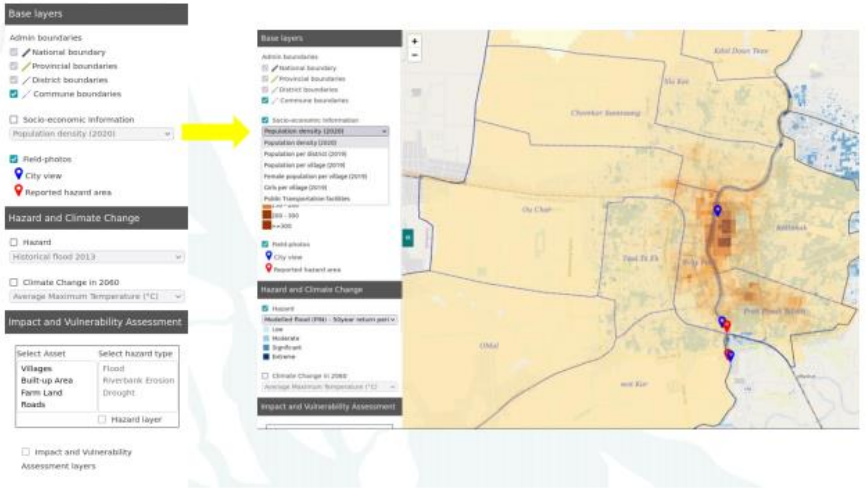
- Formation of LISA stakeholder group
- Critical for the future management and updating of the system



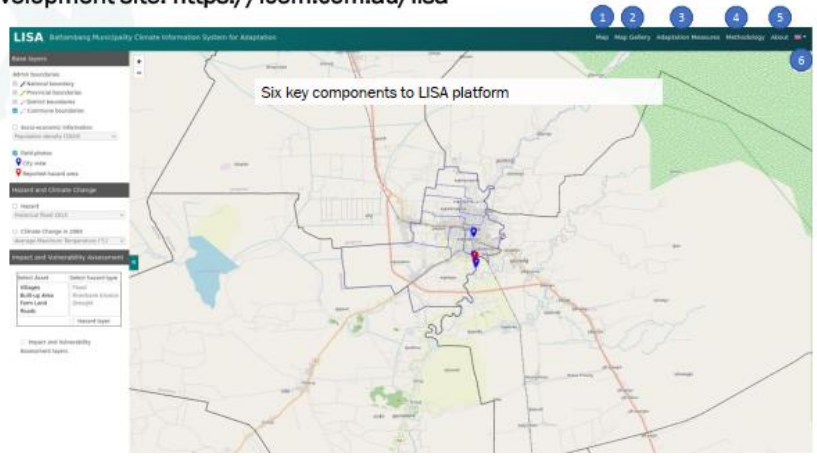
Key outputs

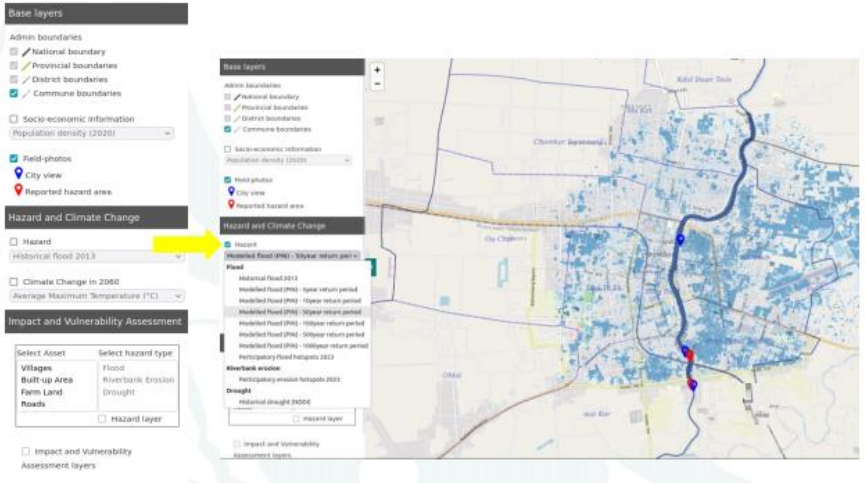
- LISA manual for users and administrators
- Being finalized at present

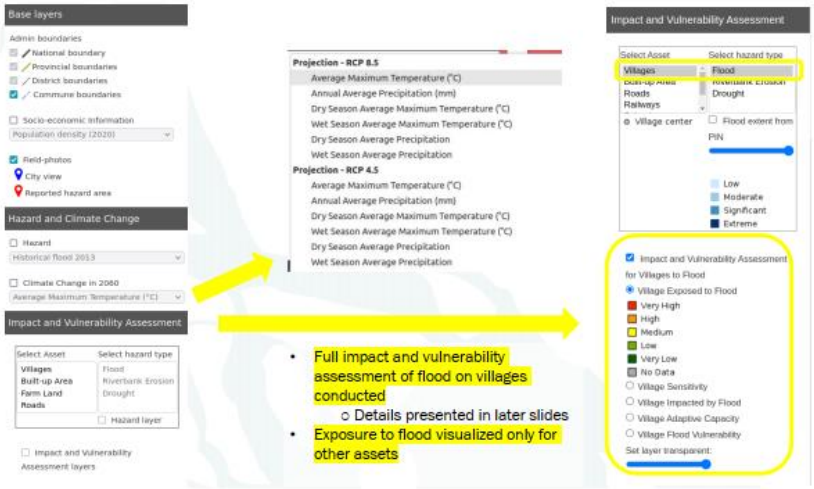
The LISA platform: key features

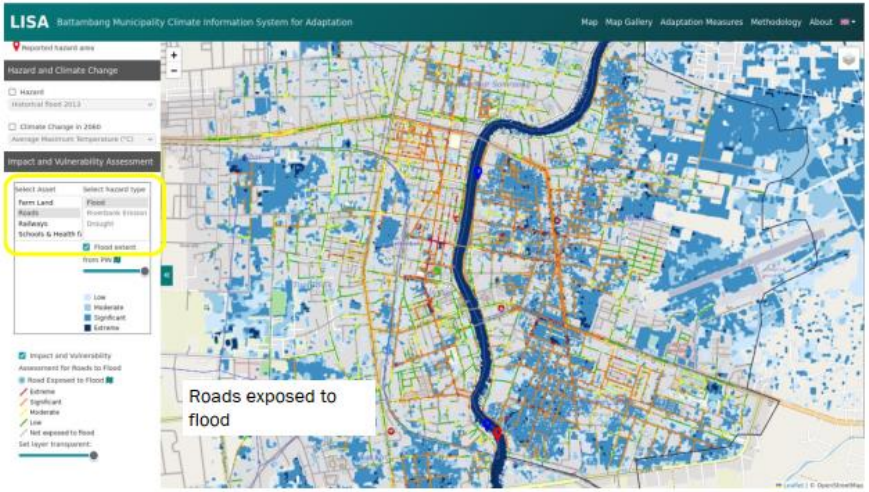


Development site: https://icem.com.au/lisa







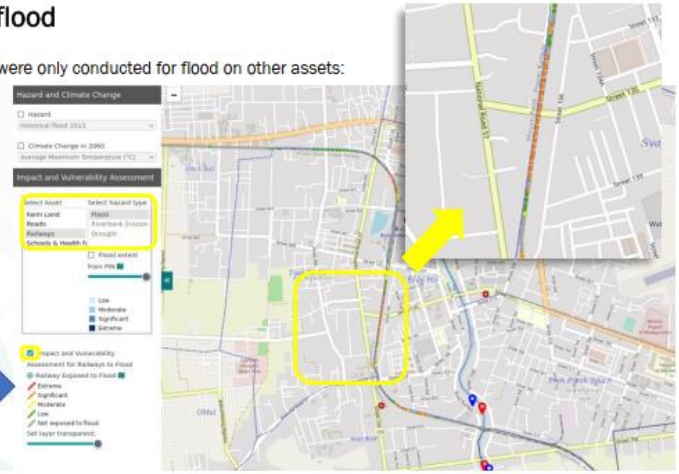


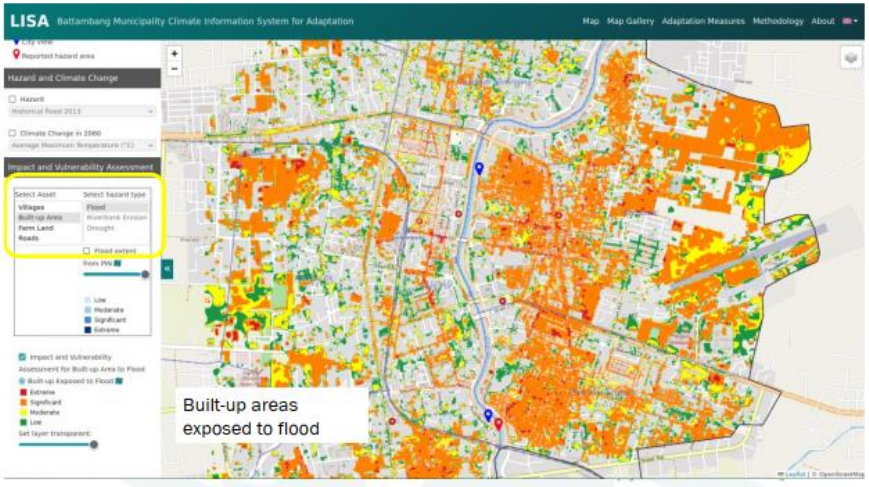
Exposure to flood

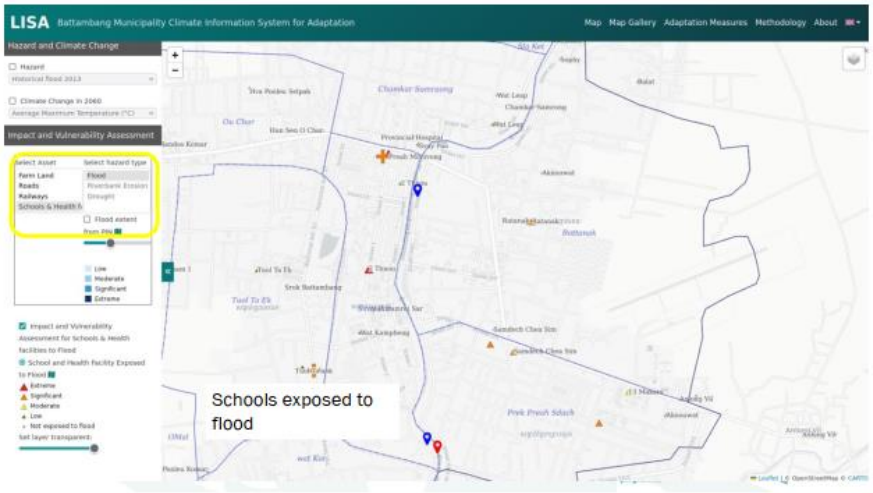
Exposure analyses were only conducted for flood on other assets:

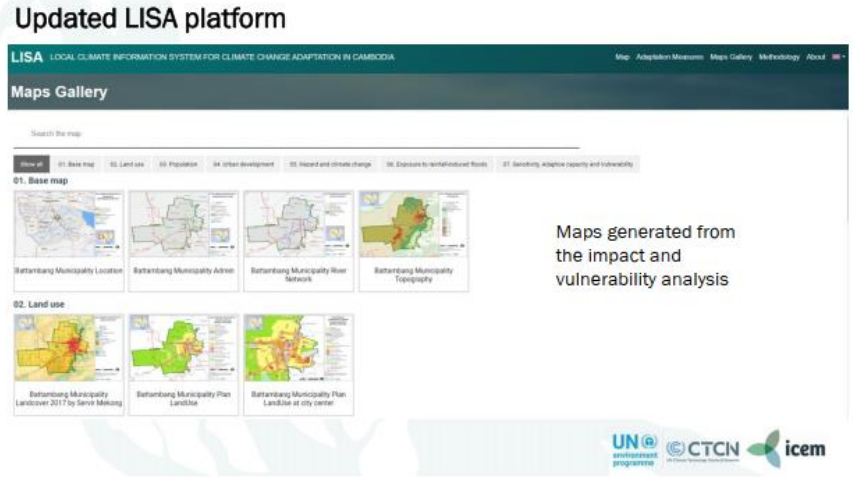
- Built-up areas
- Roads
- Railway
- Farm land
- Schools
- Health facilities

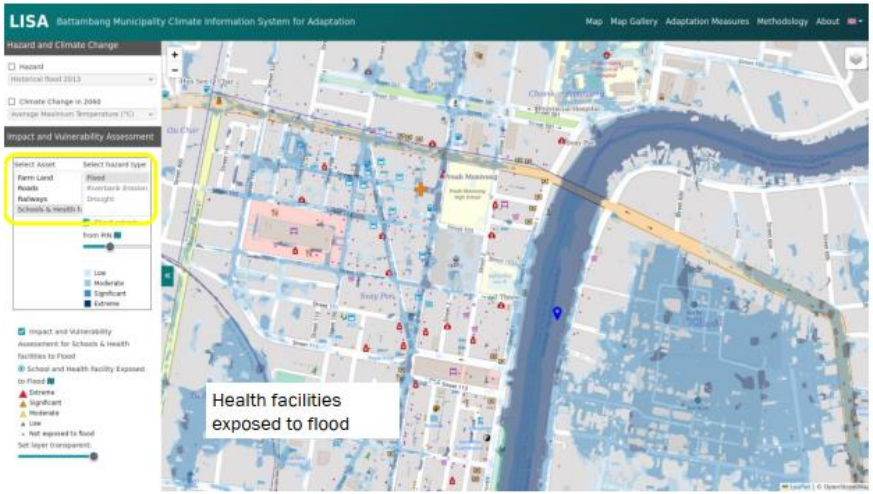
Railway exposed to flood

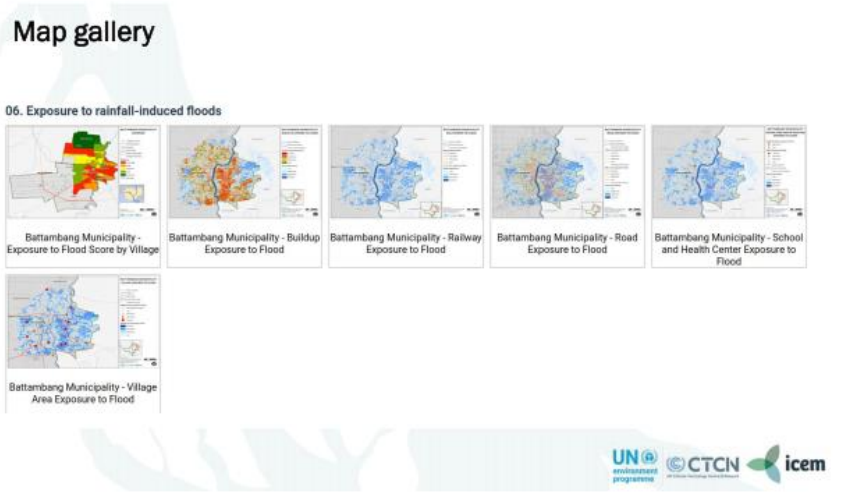




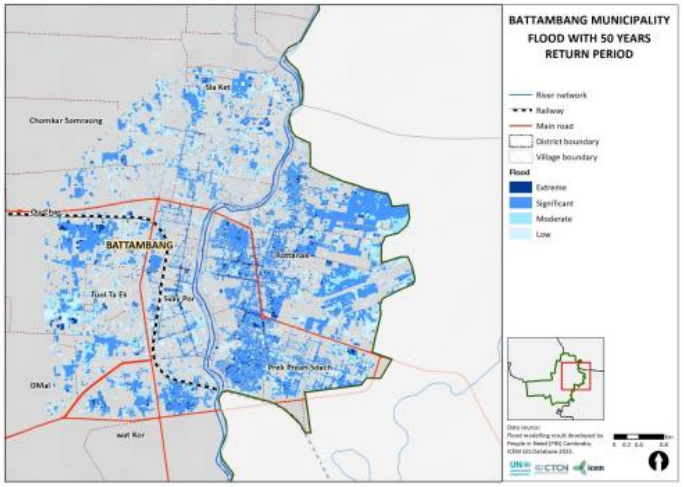

LISA Battambang Municipality Climate Information System for Adaptation
Map Map Gallery Adaptation Measures Methodology About
Schools exposed to flood


Updated LISA platform
LISA LOCAL CLIMATE INFORMATION SYSTEM FOR CLIMATE CHANGE ADAPTATION IN CAMBODIA
Maps Gallery
01. Base map
02. Land use
Maps generated from the impact and vulnerability analysis

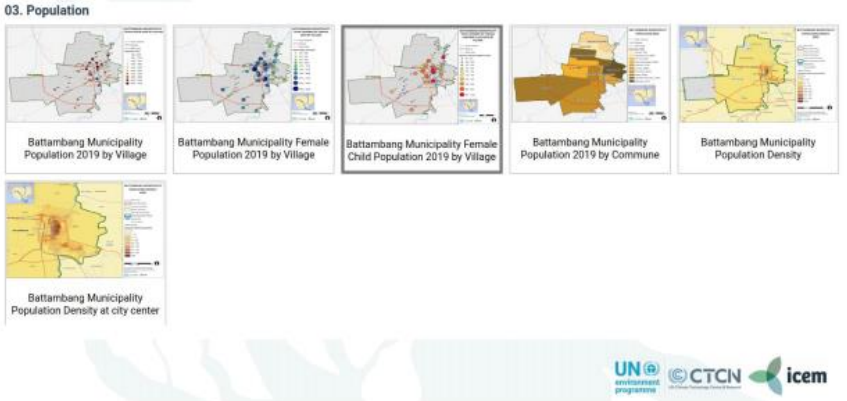

LISA Battambang Municipality Climate Information System for Adaptation
Map Map Gallery Adaptation Measures Methodology About
Health facilities exposed to flood


Map gallery
06. Exposure to rainfall-induced floods
Battambang Municipality - Exposure to Flood Score by Village
Battambang Municipality - Buildup Exposure to Flood
Battambang Municipality - Railway Exposure to Flood
Battambang Municipality - Road Exposure to Flood
Battambang Municipality - School and Health Center Exposure to Flood
Battambang Municipality - Village Area Exposure to Flood

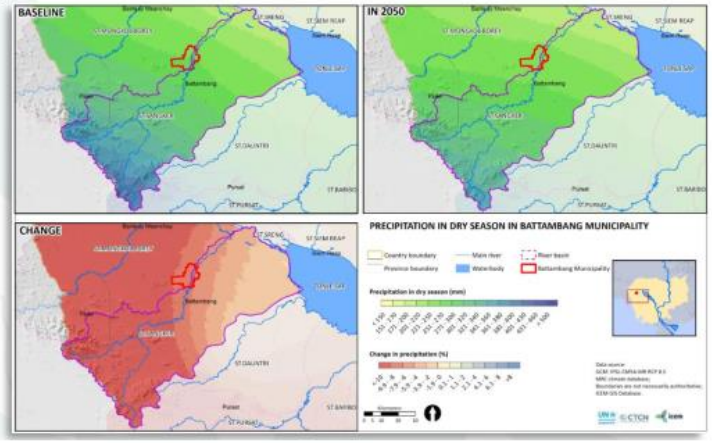
Map gallery



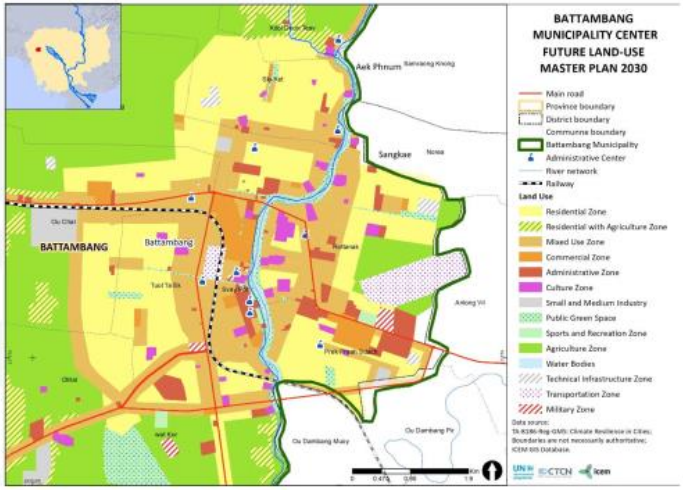
Map gallery



Map gallery



Map gallery




LISA
LISA platform framework translated into Khmer

Appendix 3.2: Presentation on Use of the LISA platform for risk assessment and adaptation planning

Climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA) in Cambodia

UN-CTCN LISA
Final Stakeholder Workshop

Use of the LISA platform for risk assessment and adaptation planning

Miguel Coulier, Risk Assessment Specialist, ICEM

26 May 2023

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Adaptation planning: *the process*

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Adaptation planning: *definition*

Adaptation is the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities.

Adaptation options refers to the array of strategies and measures that are available and appropriate for addressing adaptation. They include a wide range of actions that can be categorized as structural, institutional, ecological, or behavioral.

(IPCC, 2021)

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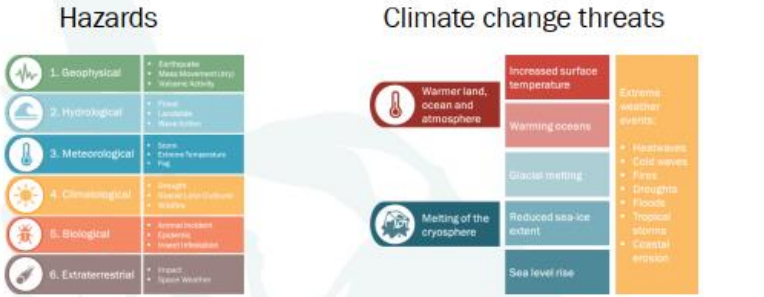
Impact and vulnerability assessment: *adapting to what?*



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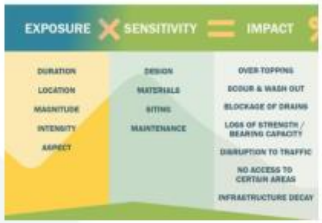
Impact and vulnerability assessment: *how to measure the IMPACTS of hazards and climate change to people and infrastructure?*

By looking at the combination of:

- **Exposure:** The extent to which the asset is exposed to hazards or potential threats. The exposure may depend upon the relevance of the threat (e.g., increase in temperature) to the type of asset and the extent to which the threat will increase (e.g., in intensity and frequency).
- **Sensitivity:** The degree to which a system is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g., damage caused by more frequent flooding due to increased water flows and volumes in rivers during extreme flood events).



Impact and vulnerability assessment: *framework and process*

Impact and vulnerability assessment: *how to measure the VULNERABILITY of people and infrastructure to hazards and climate change?*

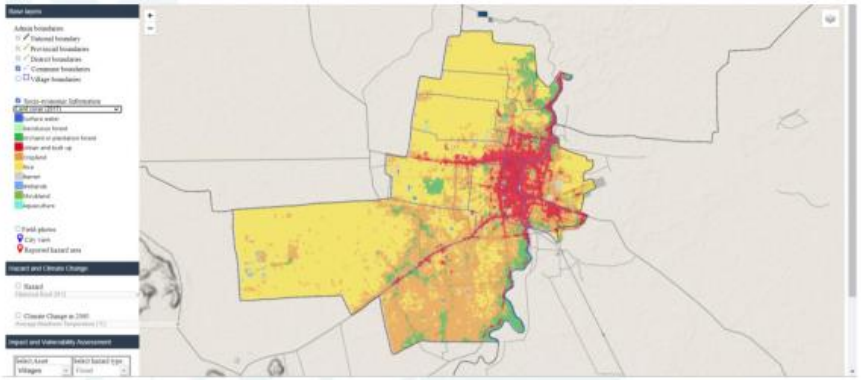
By looking at the combination of:

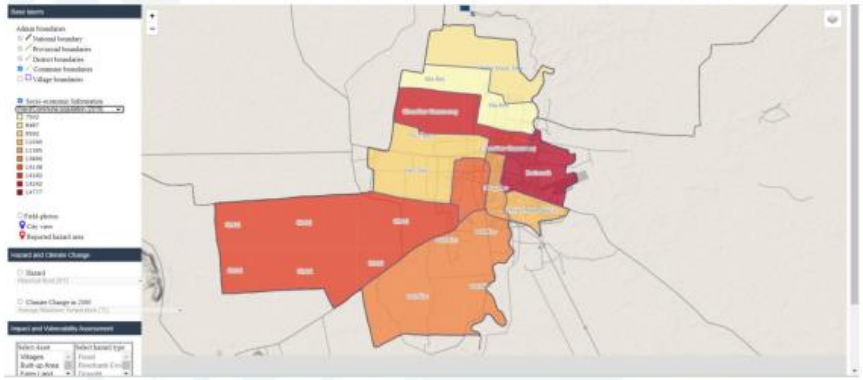
- **Impact:** The effects of hazards and climate change on natural and human systems or assets.
- **Adaptive capacity:** The ability to adjust to hazards and climate change (including climate variability and extremes), to moderate potential damage, to take advantage of opportunities or to cope with the consequences.

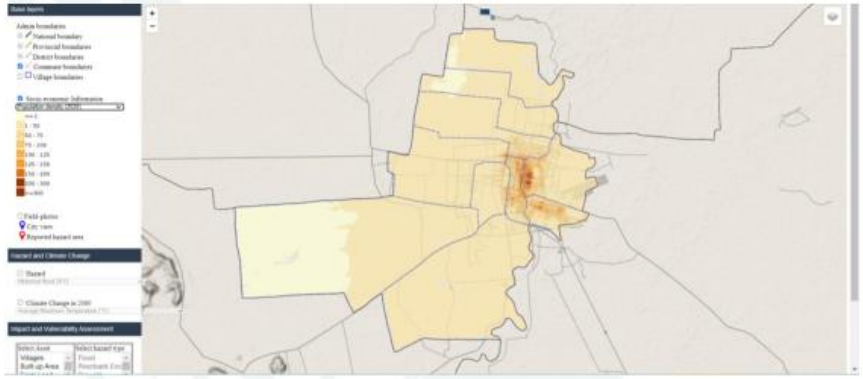
Application in the LISA platform: *Step 1 - Scoping*

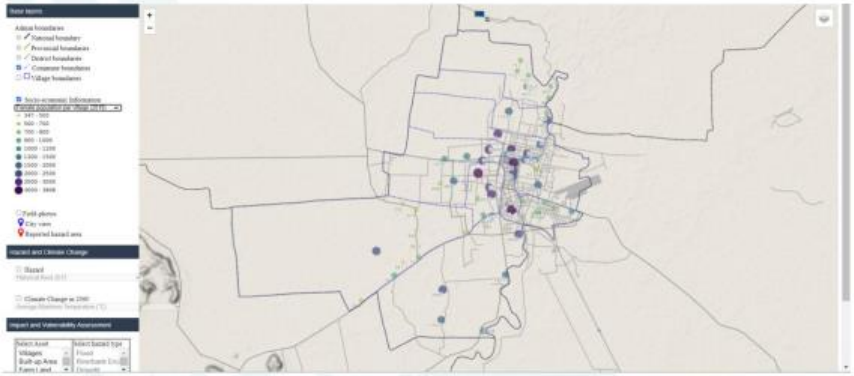
Data layers on:

- Administrative boundaries
- Land cover
- Population: numbers, density, sex-disaggregation
- Assets: transportation, schools and health facilities





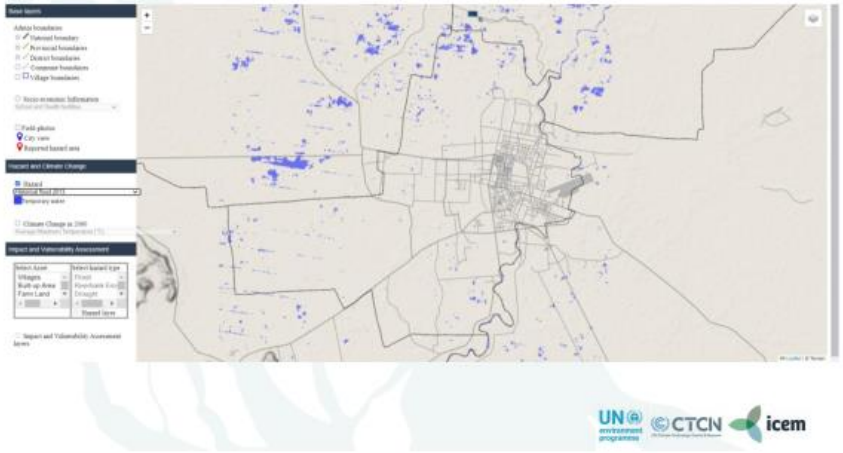


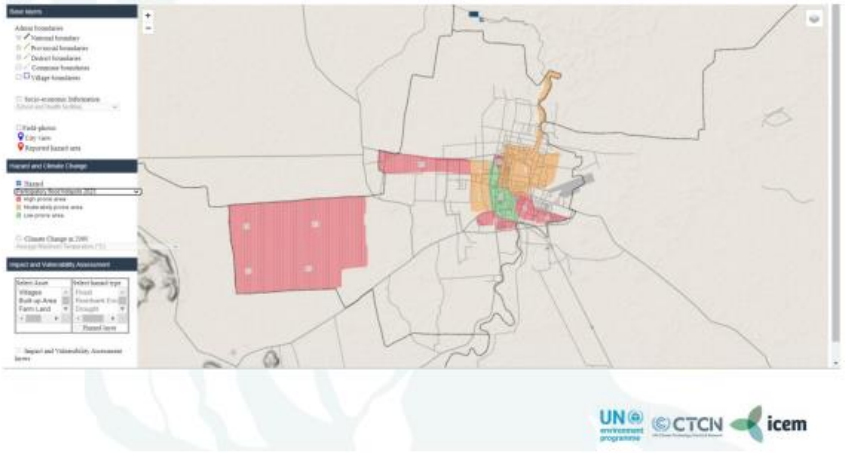


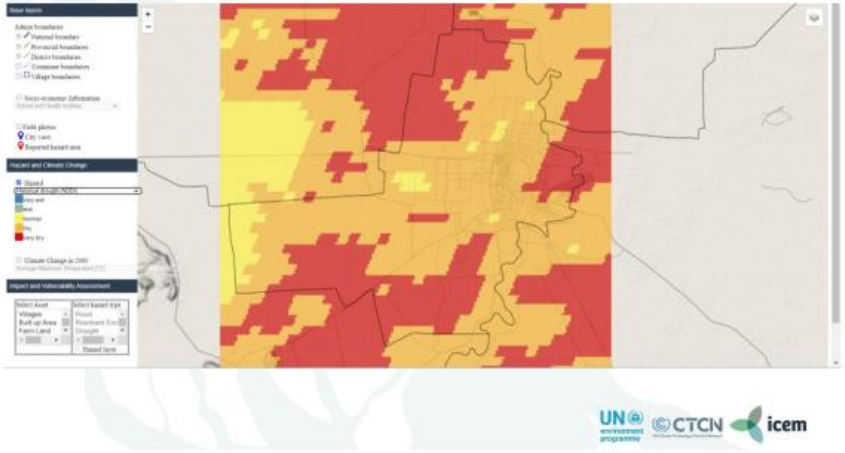
Application in the LISA platform: *Step 2 – Baseline assessment*

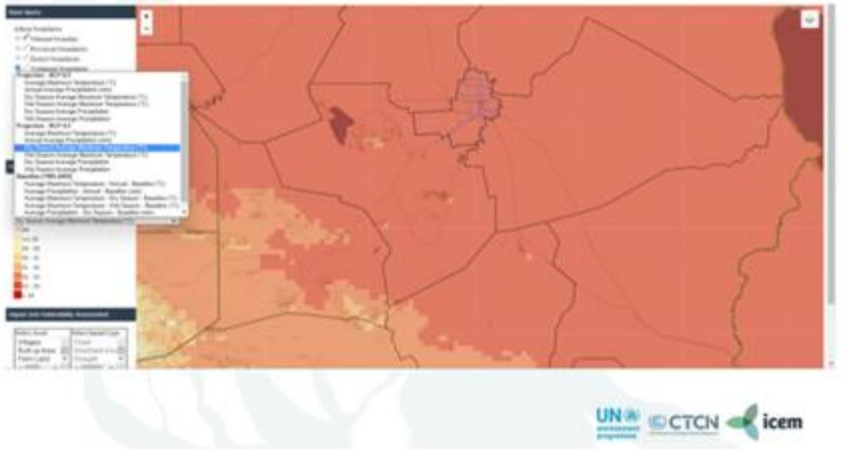
Data layers on:

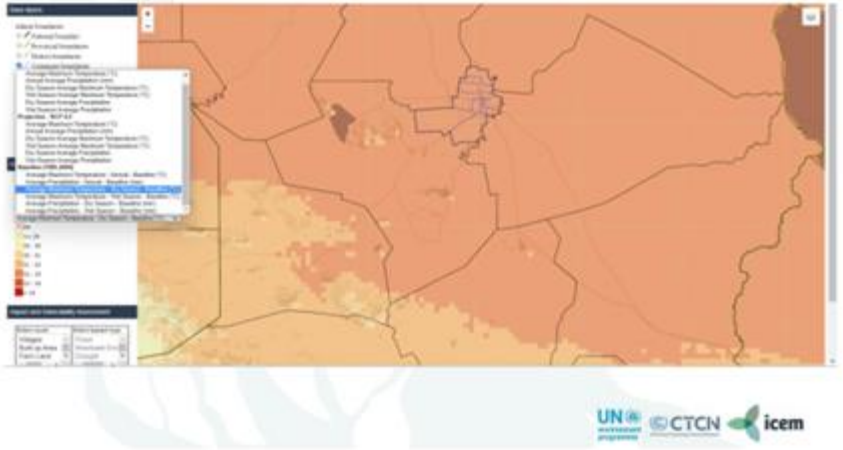
- Hazards: flood, riverbank erosion, and drought
- Climate change: baseline and projections (RCP4.5 and RCP 8.5) for 2060, for precipitation and temperature (annual, dry, wet) – *but limited downscaling*

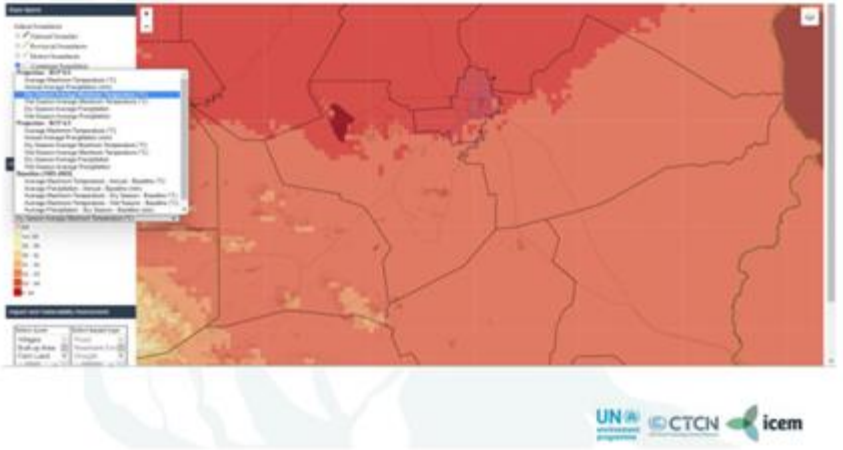










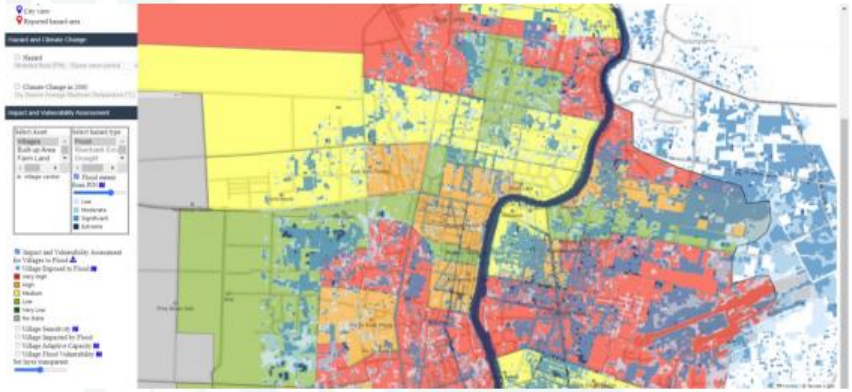


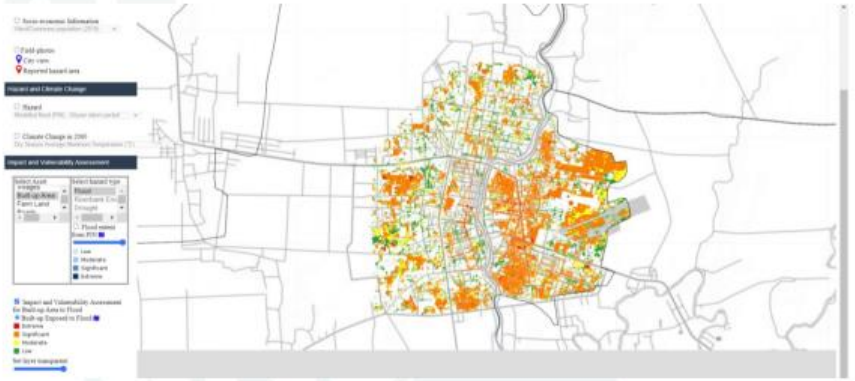
Application in the LISA platform: *Step 3 – Assess impacts*

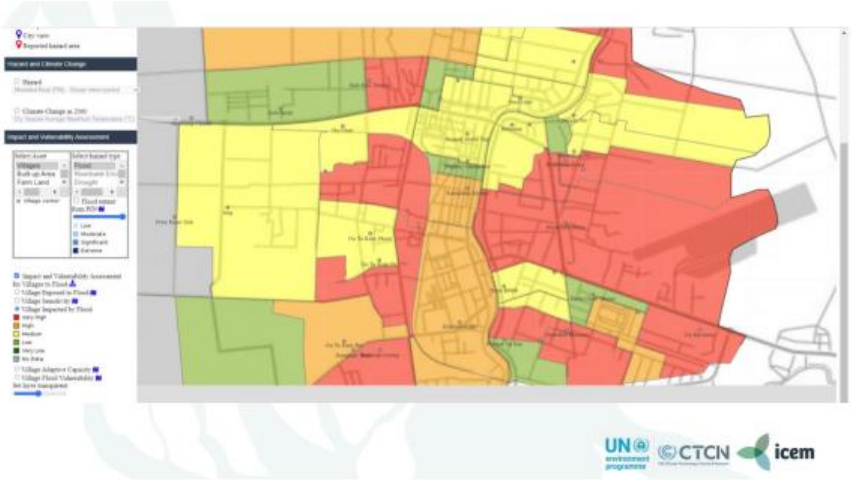
Data layers on: *for villages, transportation, land use*

- Exposure
- Sensitivity
- Impact

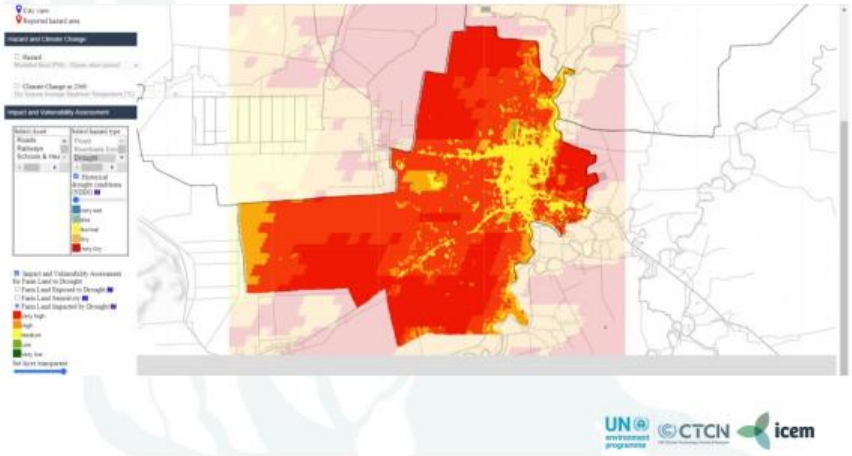
For flood and drought

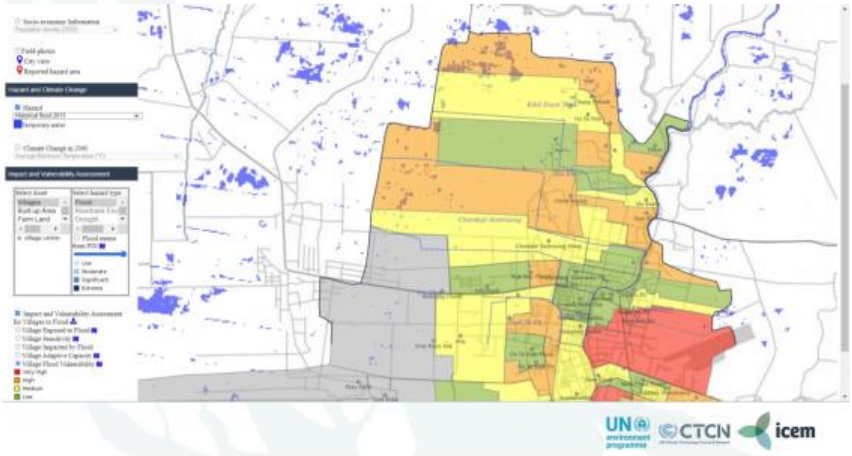




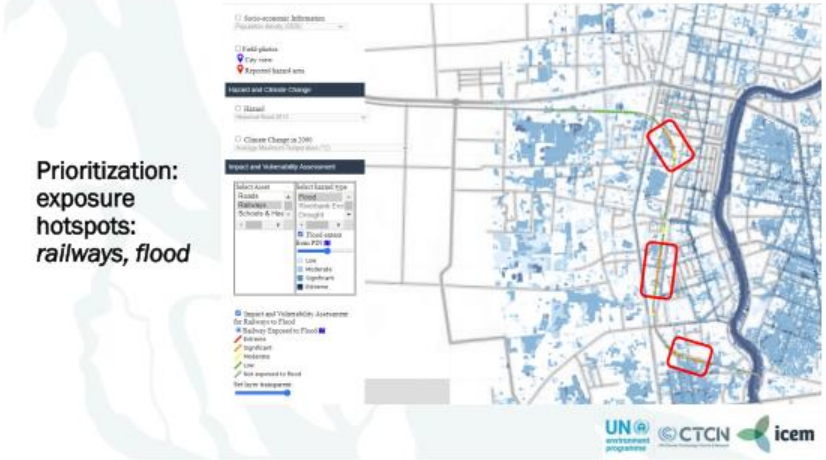


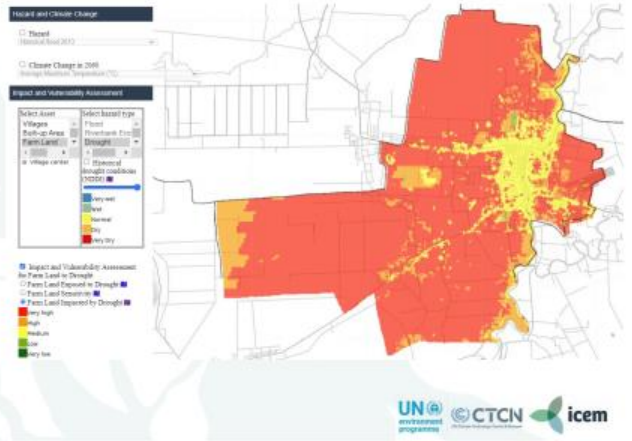

Application in the LISA platform: *Step 4-5 – Assess capacity and vulnerability*
Impact and Vulnerability Assessment
Select Asset
Select hazard type
Villages
Built-up Area
Farm Land
Flood
Riverbank Erosion
Drought
Hazard layer
Impact and Vulnerability Assessment for Built-up Area to Flood
Data layers on: *for villages only*
- Adaptive capacity
- Vulnerability

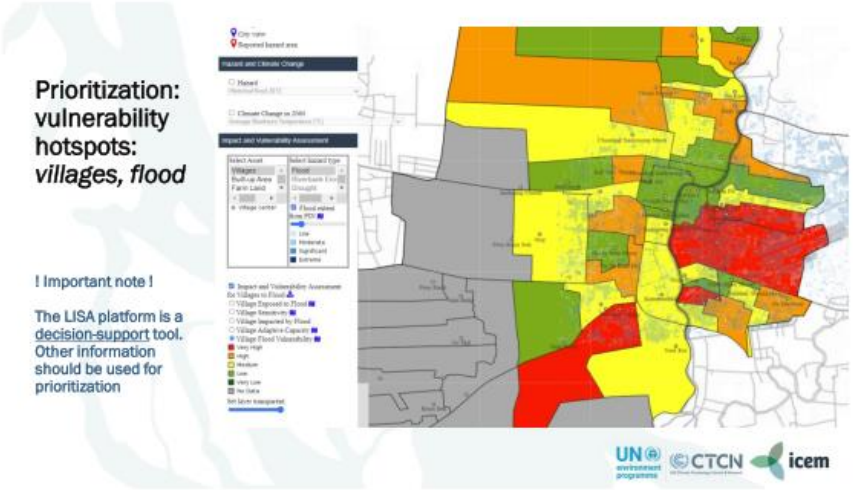


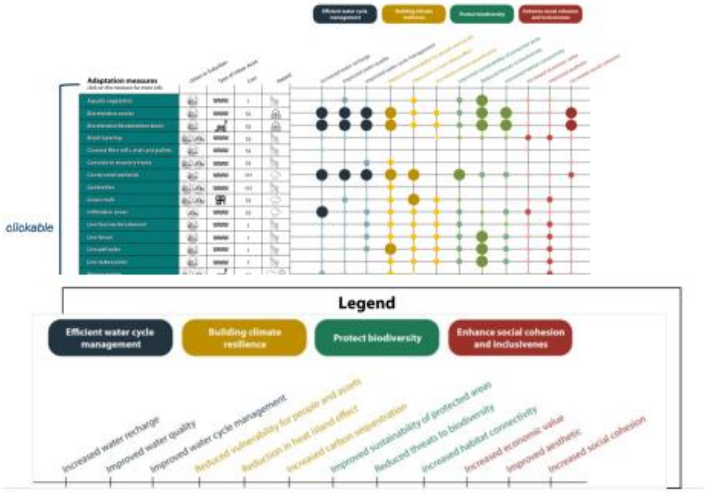


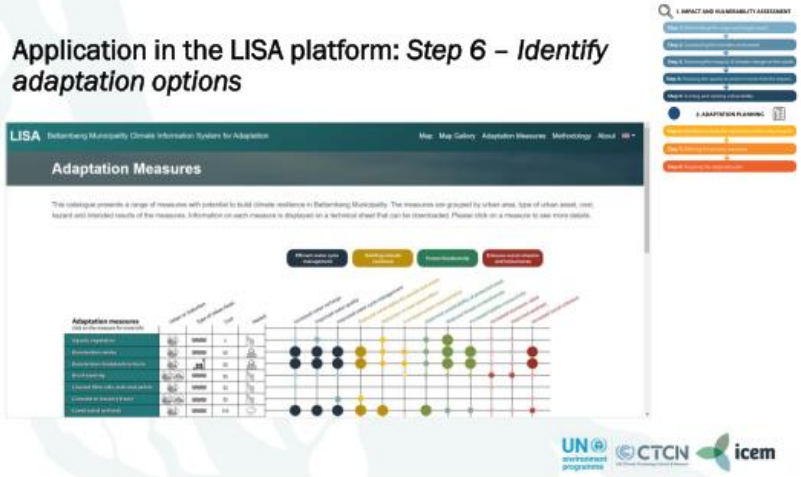

Prioritization: exposure hotspots: *schools and health facilities, flood*

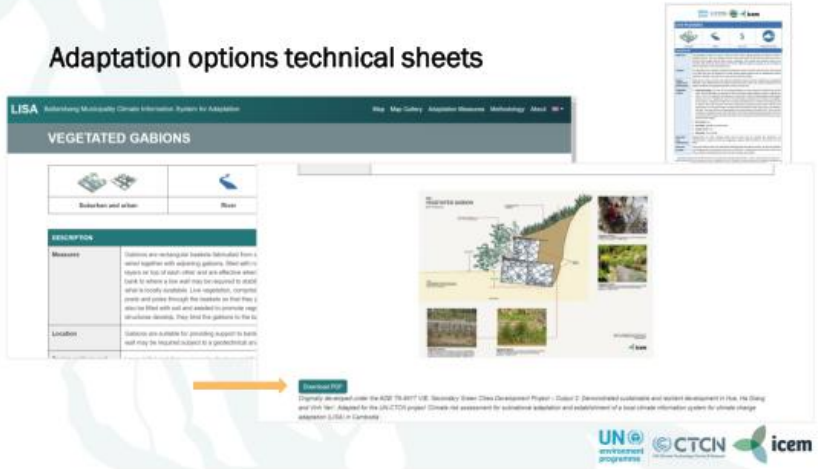

Prioritization: exposure hotspots: *railways, flood*


Prioritization: impact hotspots: *land, drought*

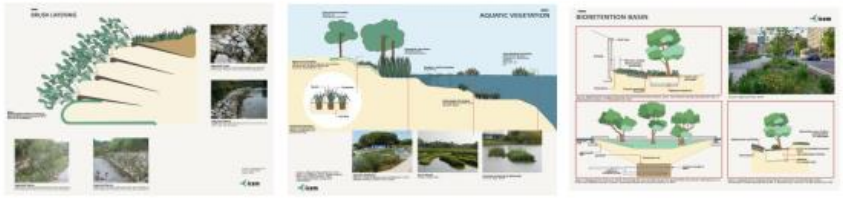

Prioritization: vulnerability hotspots: *villages, flood*
! Important note !
The LISA platform is a decision-support tool. Other information should be used for prioritization


clickable
Legend
Efficient water cycle management
Building climate resilience
Protect biodiversity
Enhance social cohesion and inclusivenes
Increased water recharge
Improved water quality
Improved water cycle management
Reduced vulnerability for people and assets
Reduction in heat island effect
Increased carbon sequestration
Improved sustainability of protected areas
Reduced threats to biodiversity
Increased habitat connectivity
Increased economic value
Improved aesthetic
Increased social cohesion

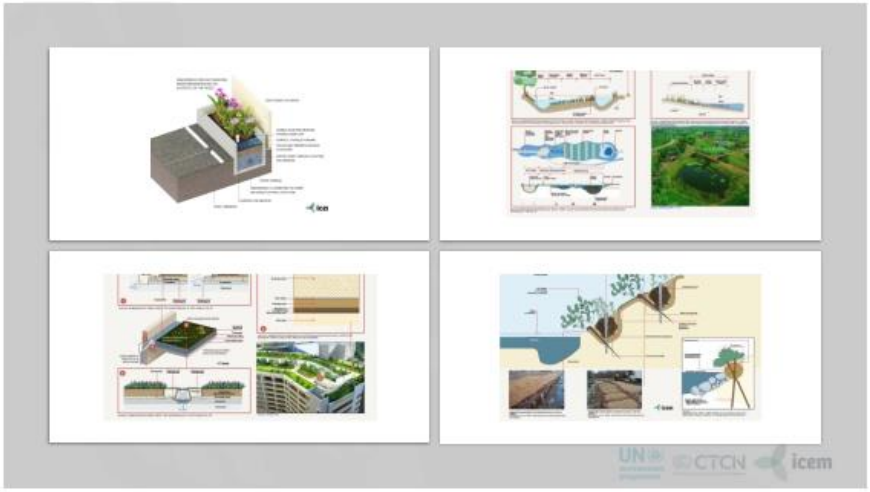

Application in the LISA platform: *Step 6 – Identify adaptation options*
LISA
Adaptation Measures


Adaptation options technical sheets
LISA
VEGETATED GABIONS

Adaptation options technical sheets



Adaptation planning: *next steps in the process*



Thank you

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Appendix 3.3: Presentation on Data management and proposed future training programme

Climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA) in Cambodia

UN-CTCN LISA Final Project Meeting:

Data/platform management and the proposed future training programme

Richard Cooper, DSS Specialist, ICEM
26 May 2023

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Data and platform management, and training programme

Two key aspects to the programme:
(i) Hosting/management of the LISA platform and
(ii) use of LISA for urban planning by the Municipality of Battambang

(i) Hosting/management capacity needs
- IT admin expertise (minimum of 2+ IT staff)
- Expertise in web GIS

(ii) User/urban planning needs
- An understanding of climate risk assessment and its application to Battambang

- ICEM preparing a training programme to address the above needs, to be submitted as one of the final deliverables of the LISA project

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Data/platform management and the proposed future training programme

Data and platform management, and training programme

Training programme:

In summary the aim of the training programme is to:

(i) provide technical training to government staff in the management of the LISA platform;

(ii) provide training in conducting/interpreting climate risk assessments so staff can readily use the LISA platform and better integrate climate change into urban planning; and

(iii) the LISA platform will be upgraded with all new findings from climate risk assessments conducted in the proposed Phase II of the project (ICEM project team)

Data and platform management, and training programme

- Twelve-month training programme (Phase II)
- Incorporates a total of four training modules to address technical management of the LISA platform and in conducting/interpreting climate risk assessments.
- The technical training addresses management of the frontend of LISA (Module 1), backend of the LISA (Module II), and also more general guidance on server configuration and maintenance (Module 3).
- The training of each module is anticipated to be conducted over 3+ days, and a follow up technical session will be held subsequently to answer any questions that government staff may have.

Data and platform management, and training programme

Phase II of the project aims:

- to train government staff so that they have the capacity to maintain the LISA platform and also the knowledge to use and interpret the data in LISA to improve resilience planning in the city.
- to supplement the current LISA platform by integrating outputs from vulnerability analyses of all key assets to hazards in Battambang.

At the end of the project the project team will deploy the revised LISA application to the government server and handover to Battambang municipality at the final workshop.

Data and platform management, and training programme

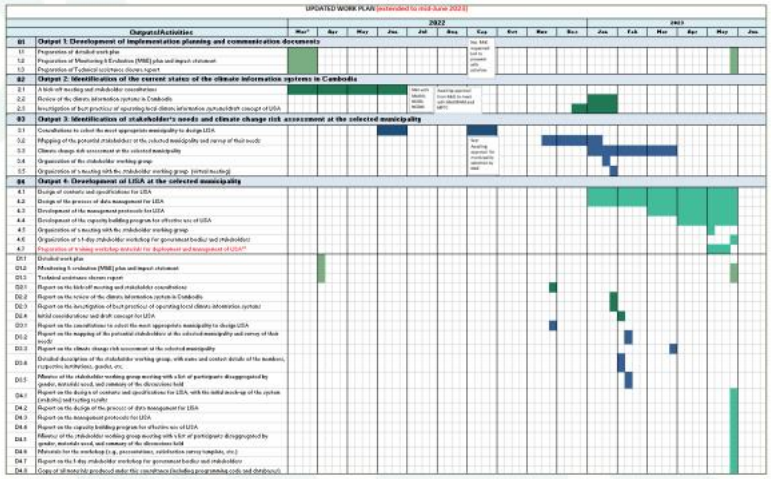
- Additional training will be provided on conducting climate risk assessments using ICEM's CAM methodology.
- The initial project conducted a full climate risk assessment on the vulnerability of villages to pluvial flooding. All of the outputs from this analysis were integrated into the LISA platform and can be accessed online.
- In Phase II of the project, full vulnerability analyses (including assessment of sensitivities, impacts, and adaptive capacities) will be conducted for other assets (roads, railway, schools and hospitals) in relation to flood, drought and landslide hazards.
- Phase II aims to build on the progress achieved in the original project.
- The training materials will be compiled into a LISA User and Administrator Guide (output 7.2).

LISA Phase II:

Plenary discussion on LISA's future development and training programme

Plenary discussion:

1. Final comments and queries
2. Satisfaction survey



Wrap-up and closing

Thank you

APPENDIX 4: GROUP WORK: LIZA QUIZ

Climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA) in Cambodia

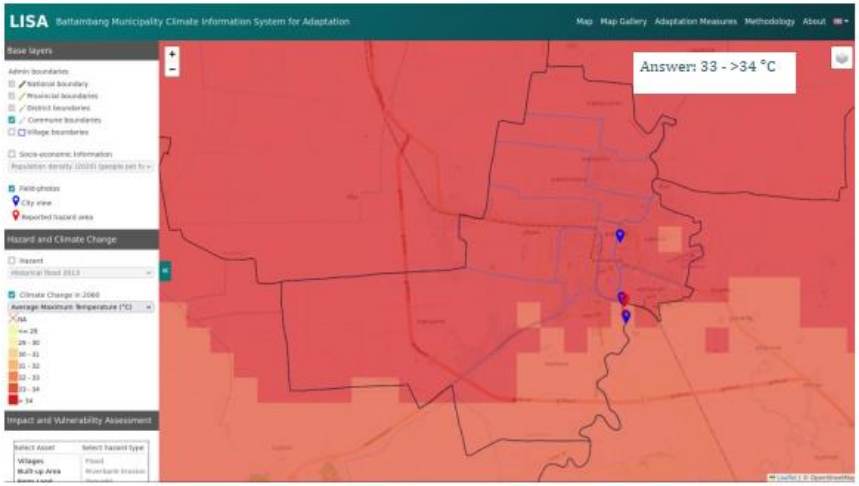
26 May 2023

UN-CTCN LISA Final Project Meeting

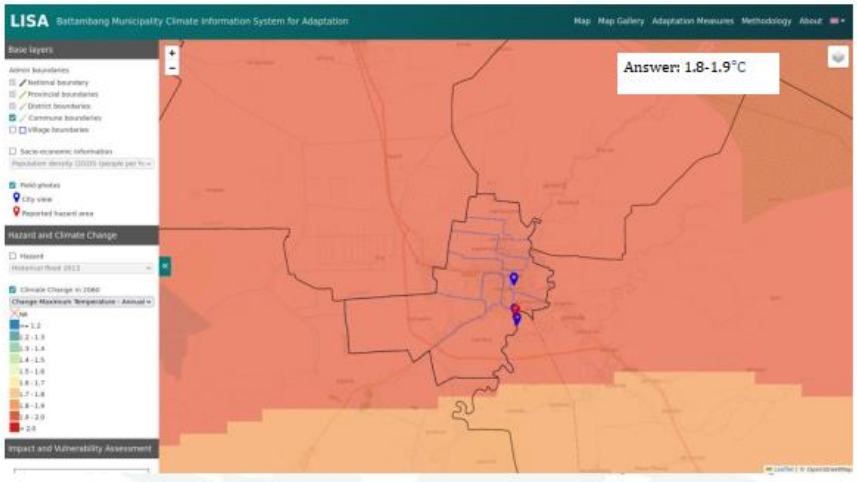
Exploring LISA – LISA quiz (group work)

(i) What is the annual average maximum temperature projected (RCP 8.5) for the municipality by the 2060s?

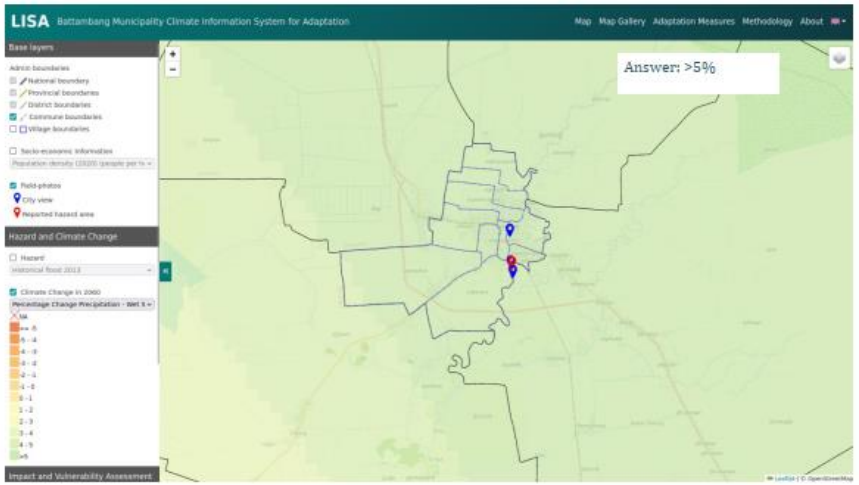
Exploring LISA: LISA quiz (Group work)



(ii) What is the **change** in the annual average maximum temperature (RCP 8.5) over the municipality by the 2060s?

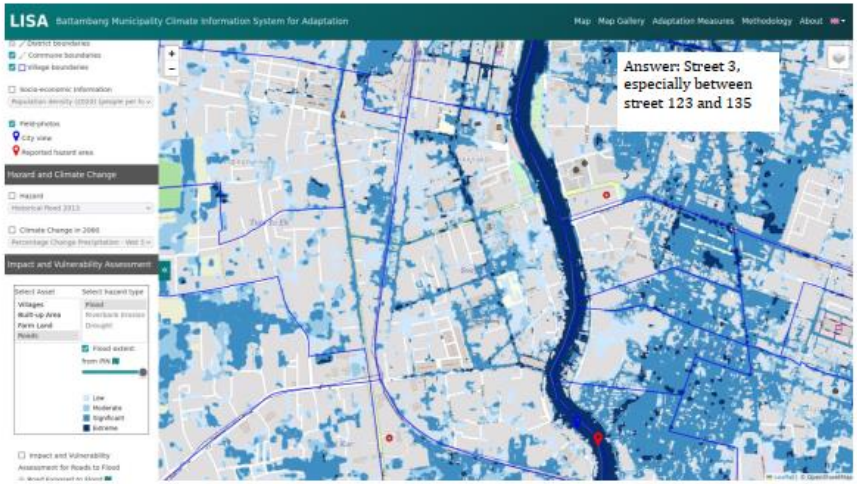


(iii) What is the projected change in rainfall over the municipality by the 2060s (RCP 8.5) in the wet season?

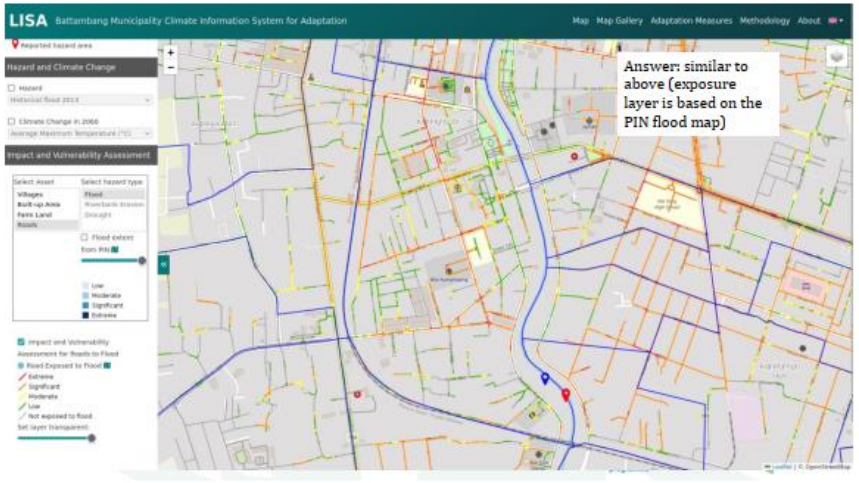


(iv) Which streets in Svay Por commune are most susceptible to rainfall-induced flooding?

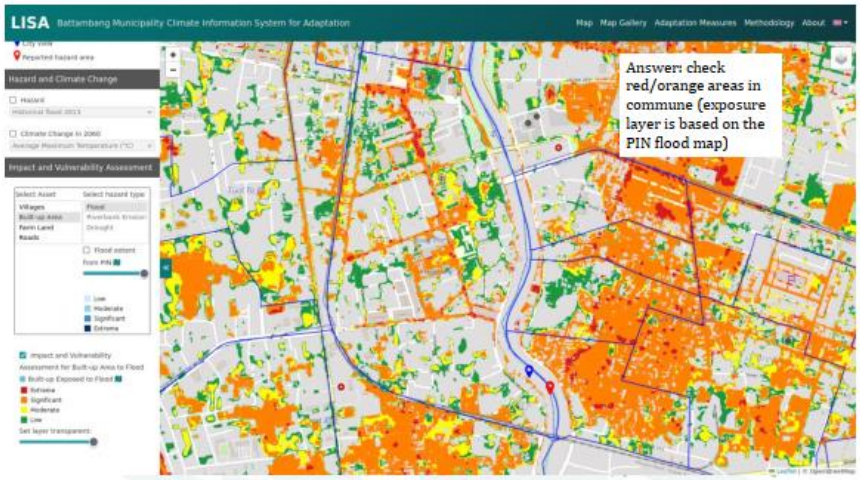
(1) Zoom into Svar Por commune
(2) Overlay with flood extent map (from PIN project)(50-year return period)
(3) Adjust transparency of flood layer as required



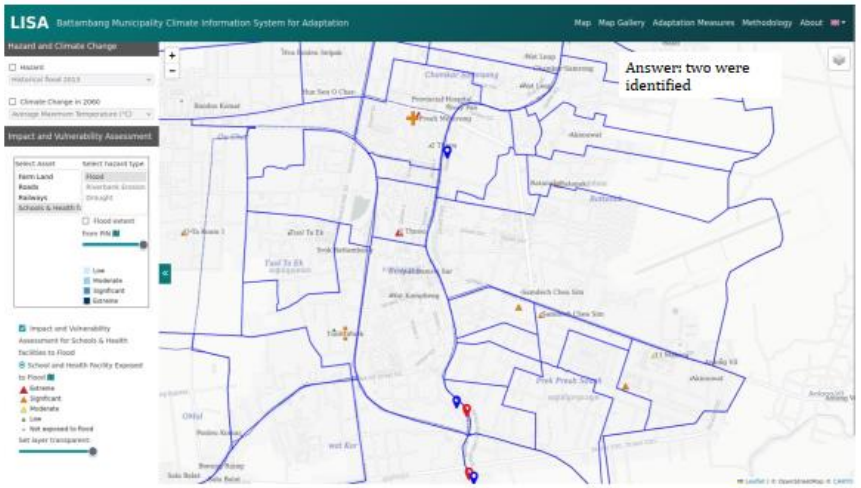
(v) Which area (streets) in Svay Por commune are extremely exposed to rainfall-induced flood?



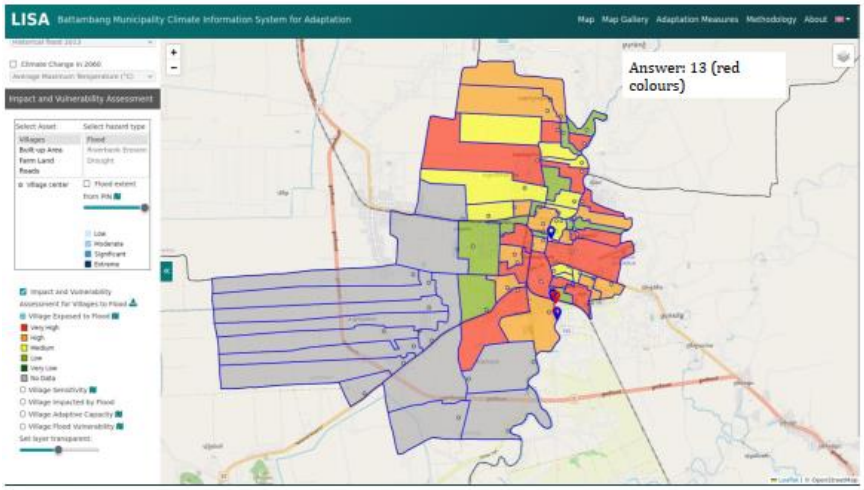
(vi) Which built up areas are most exposed to rainfall-induced flood in the Svay Por commune?



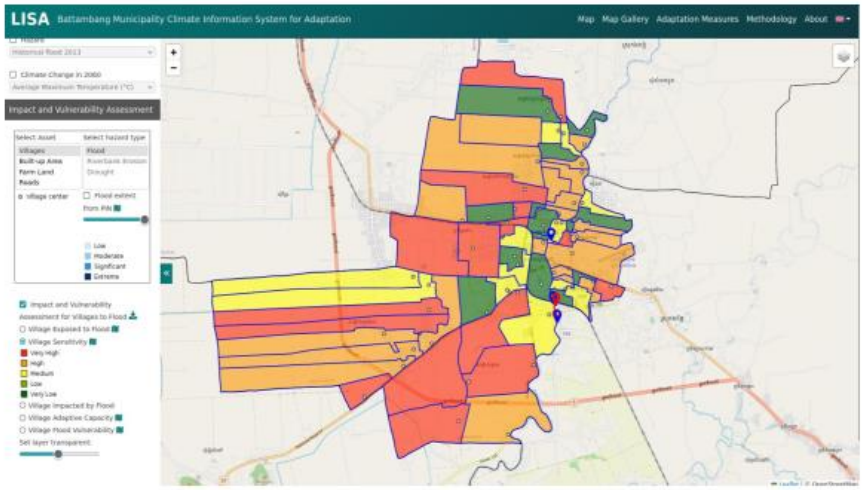
(vii) How many health facilities are 'significantly' exposed to rainfall-induced flood?



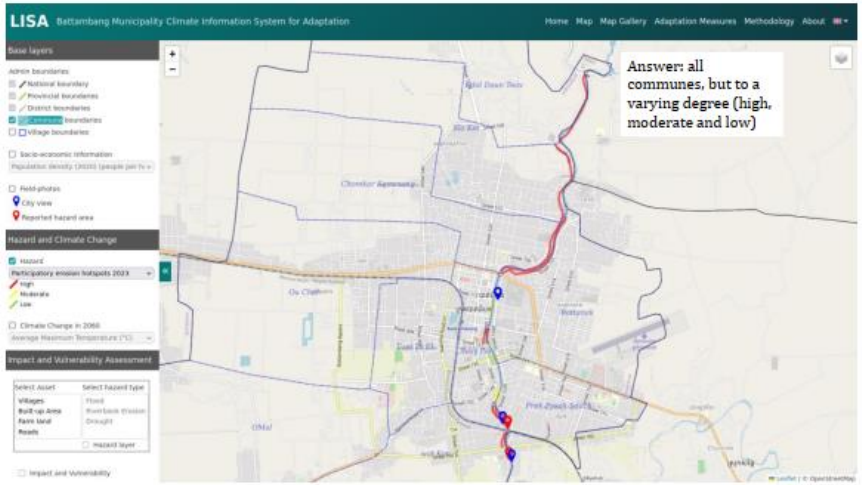
(viii) Which villages have a 'very high' level of exposure to rainfall-induced flood?



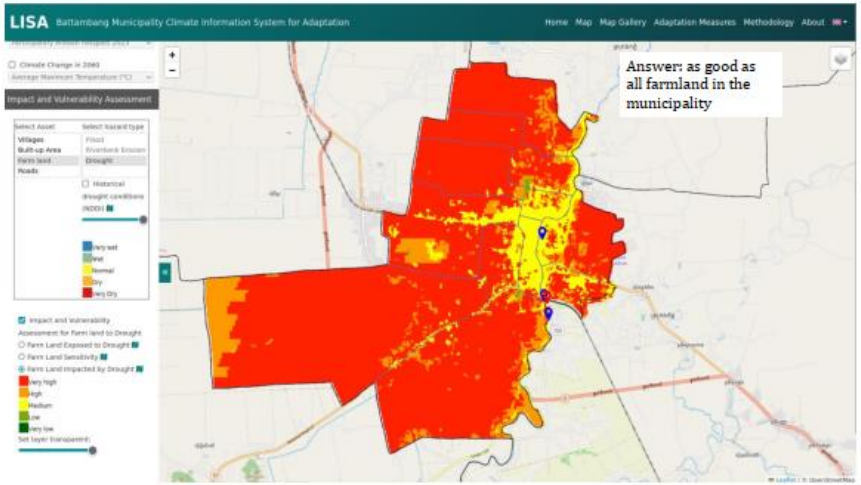
(ix) Which villages have the 'highest sensitivity' to flood?



(x) Which communes along the river experience riverbank erosion?



(xi) Where in the municipality is the farmland located with the highest impact from drought?



APPENDIX 5: LISA PLATFORM USER SATISFACTION SURVEY

Provision of technical assistance for climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA) in Cambodia

Final Stakeholder Meeting
LISA Platform User Satisfaction Survey

Agency or department:	
Male/female:	

Part 1

1. How <u>useful</u> or relevant are the following components of the LISA platform for your daily work? answers out of 13 respondents						
	Not at all useful	Slightly useful	Moderately useful	Very useful	Extremely useful	No opinion
						
1) Map	1 (1)	2	3 (1)	4 (3)	5 (8)	0
2) Map Gallery	1 (1)	2	3 (1)	4 (3)	5 (8)	0
3) Adaptation Measures	1	2	3 (2)	4 (5)	5 (5)	0
4) Methodology	1	2	3 (1)	4 (6)	5 (4)	0
2. How <u>easy-to-use/understand</u> are the following components of the LISA platform? – Answers: out of total 13 respondents						
	Not at all easy	Slightly easy	Moderately easy	Very easy	Extremely easy	No opinion
						
1) Map	1	2	3	4 (6)	5 (5)	0
2) Map Gallery	1	2	3	4 (4)	5 (5)	0
3) Adaptation Measures	1	2	3	4 (6)	5 (4)	0
4) Methodology	1	2	3	4 (7)	5 (3)	0

Part 2

Agency or department:	
Male/female:	

3. Suggestions for improvements: What <u>information</u> is missing in the LISA platform to conduct risk assessment and adaptation planning? Please be very specific – ----total respondents: 13
Answer: - There is enough data. - Should contain vulnerable groups segregated by sex for supporting risk assessment and adaptation planning. - Lack of information about greenhouse gases. - LISA platform is good, appropriate, and responds to the existing situation. - Users may not clearly understand the platform. - Should add more contents and there is a need to highlight adaptation planning. - Should reduce steps to reach information. - Lack of information for planning. - Communication and dissemination data at village and Sangkat levels are limited. - LISA platform can be integrated into smart City programme. - Should collect further information (as much as possible) to feed into this LISA platform. - The projection may not respond well to emerging land use changes in the city.
4. Suggestions for improvements: What <u>features or functions</u> do we need to add to the LISA platform to conduct risk assessment and adaptation planning? Please be very specific ---- total respondents: 13
Answer: - It is good enough, - Should add location and distance to safe elevated areas from vulnerable communities. - River flow and drainage should be studied. - Air quality in the city should be considered. - Should provide links to similar support websites like Smart City. - Store information, increase content in platform and allow platform to be accessed online by local people. - If possible, please include other hazards like air pollution, forest fire, disease, and pesticides. - Should share information by location, so it is easier for the user - click on the map and get information at that specific location.

Agency or department:	
Male/female:	

5. Suggestions for improvements: Has the LISA platform integrated gender well? If not, how can the LISA platform be improved to better integrate gender and gender analysis? Please be very specific -- total respondents: 13
Answer: - There is good content on gender. - The LISA platform should focus on baseline information on hazards and impacts at step 2. - Should identify vulnerable groups, location and segregate by sex. - Gender, vulnerable children and women should be prioritized in LISA. - The existing LISA platform is limited when addressing gender. - Should be a focus on women and children so these groups can be considered in decision making and planning.
6. Training: What topics do you require training on in order to use the LISA platform for risk assessment and adaptation planning? Please be very specific --- total respondents: 13
Answer: - Training on digital mapping. - Collection and entering data into the LISA platform. - Training on using the LISA platform is very important to access information on vulnerability assessment and adaptation planning. - It is important to train users on how to use the LISA platform, and disseminate information including adaptation measures. - Training should also focus on data interpretation, and the assessment and analysis of risks and impacts, and adaption planning. - It is good to have training as it will also support the green city initiative. - Training on adaptation planning. - Training on updating the LISA platform. - Training on IT, disaster management, and GIS.

Thank you!

Template of Final Stakeholder Satisfaction Survey

Provision of technical assistance for climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA) in Cambodia

Final Stakeholder Meeting
LISA Platform User Satisfaction Survey

Agency or department:	
Male/female:	

Part 1

7. How <u>useful</u> or relevant are the following components of the LISA platform for your daily work?						
	Not at all useful	Slightly useful	Moderately useful	Very useful	Extremely useful	No opinion
						
5) Map	1	2	3	4	5	0
6) Map Gallery	1	2	3	4	5	0
7) Adaptation Measures	1	2	3	4	5	0
8) Methodology	1	2	3	4	5	0
8. How <u>easy-to-use/understand</u> are the following components of the LISA platform?						
	Not at all easy	Slightly easy	Moderately easy	Very easy	Extremely easy	No opinion
						
5) Map	1	2	3	4	5	0
6) Map Gallery	1	2	3	4	5	0
7) Adaptation Measures	1	2	3	4	5	0
8) Methodology	1	2	3	4	5	0

Part 2

Agency or department:	
Male/female:	

9. Suggestions for improvements: What <u>information</u> is missing in the LISA platform to conduct risk assessment and adaptation planning? Please be very specific
Answer:
10. Suggestions for improvements: What <u>features or functions</u> do we need to add to the LISA platform to conduct risk assessment and adaptation planning? Please be very specific
Answer:

11. Suggestions for improvements: Has the LISA platform integrated gender well? If not, how can the LISA platform be improved to better integrate gender and gender analysis? Please be very specific
Answer:
12. Training: What topics do you require training on in order to use the LISA platform for risk assessment and adaptation planning? Please be very specific
Answer:

APPENDIX 6: REPORT ON THE CAPACITY BUILDING PROGRAM FOR EFFECTIVE USE OF LISA

1. Introduction

A capacity building programme (called LISA Phase II) is proposed for Battambang government officials to learn about how to manage the LISA platform and to conduct and interpret the outputs of climate risk assessments. The proposed twelve-month training programme incorporates a total of four training modules to address technical management of the LISA platform and in better understanding climate risk assessments (Figure 15).

The **IT-based technical training** addresses management of the frontend of LISA (Module 1), backend of the LISA (Module II) and more general guidance on server configuration and maintenance (Module 3). The training of each module is anticipated to be conducted over 3 days (face-to-face), and a follow up technical session will be held to answer any questions that government staff may have. The training materials will be compiled into a LISA User and Administrator Guide (output 7.2 in training programme).

Additionally, training on **conducting and interpreting the outputs of climate risk assessments** will be provided, based on ICEM's CAM methodology. The initial project conducted a full climate risk assessment on the vulnerability of villages to pluvial flooding. All outputs from this analysis were integrated into the LISA platform and can be accessed online. In Phase II of the project, full vulnerability analyses (including assessment of sensitivities, impacts, and adaptive capacities) will be conducted for other assets (roads, railway, schools and hospitals) in relation to flood, drought and landslide hazards. Phase II aims to address insufficiencies in the original project that were related to data unavailability, and limited team member inputs and field time to address all aspects relevant to Battambang municipality.

Phase II of the project will supplement the current LISA platform by integrating outputs from vulnerability analyses of all key assets to hazards in Battambang, and train government staff so that they have the capacity to maintain the LISA platform and the knowledge to use and interpret the data in LISA to improve resilience planning in the city.

In addition to training government staff, the outputs from the Phase II climate risk assessments will be integrated into the LISA website by the consultant. At the end of the project, the ICEM team will deploy the full LISA application to the government server and handover to Battambang municipality at the final workshop.

In summary the aims of the training programme are to:

(i) provide technical training to government staff in the management of the LISA platform;

(ii) provide training in conducting and interpreting climate risk assessments so that government staff can readily use the LISA platform and better integrate climate change into urban planning; and

(iii) the LISA platform will be supplemented with new findings from climate risk assessments conducted in Phase II of the project

2. LISA hosting

The LISA platform will be hosted by the Battambang Provincial Government. However, it is understood that they have limited IT expertise, and as such, this training programme would be designed to address this insufficiency. Ideally, at least two IT staff would be required to manage the application given the competencies required to manage all aspects of the platform.

An alternative to hosting the platform in-house might be for the government to consider using a commercial hosting company (e.g., https://www.acugis.com/geoserver-hosting.htm). The benefit of this approach is that the government would not need to purchase and manage a server - most of the technicalities would be addressed by the hosting company. This approach will be explored once Phase II

commences, as a new needs assessment will need to be undertaken to address any changes in capacity within the provincial and municipal administrations and at national level. For instance, it may be preferable that LISA be hosted at a national government agency for future scaling of the application to other municipalities, though during the implementation of the initial LISA project, no national agency currently has the capacity or commitment to hosting.

3. Training programme

The following is an overview of the proposed training, which comprises 4 modules.

Module 1: LISA frontend management

Outcome: Participants develop knowledge and practical skills on how to deploy, manage and update the WordPress site.

Topics:

Lesson 1: Configuration of LISA WordPress site

Presentation on the WordPress configuration and suggestions for general maintenance.

Lesson 2: Theme files and locations

Presentation on the theme framework and requirements (if editing).

Lesson 3: CSV files used for the map

Presentation on file locations and restoration of site.

Lesson 4: General security

Presentation on plugins and settings that are used and recommended.

Lesson 5: General performance

An overview of plugins and settings that are used and recommended.

Lesson 6: General maintenance suggestions

Presentation on core updates and plugin updates.

Lesson 7: Making backups

General backup suggestions (recommendations to be handled at the server level)

Lesson 8: Hands-on experience:

The participants can be trained to make some updates. A separate development version could be set up for this purpose, with the goal being that after some-hands on experience they would feel more comfortable making changes on the live application. It would be useful if participants prepare translations or other content to input before the session so that they can input this content during the session and would be closer to real world usage.

Module 2: LISA backend management

Outcome: Participants are knowledgeable and have gained practical skills in deploying and maintaining GeoServer, and have learned the basics of coding for the Leaflet map.

Topics:

Lesson 1: Installation of Docker software

Presentation of Docker containerization technology and LISA software framework.

Lesson 2: Deployment of Docker container with GeoServer software

Presentation and hands-on experience.

Lesson 3: An overview of Geoserver software

Presentation and hands-on experience.

Lesson 4: Updating datasets in Geoserver

Presentation and hands-on experience.

Lesson 5. Integration of Leaflet map into WordPress

Presentation of the steps for integrating Leaflet into the WordPress content management system.

Lesson 6: Hands-on experience in modifying the Leaflet map

Presentation and hands-on experience in Leaflet map coding.

Module 3: Server maintenance and monitoring

Outcome: Participants learn about key server tasks for maintaining the LISA platform

Topics:

Lesson 1: System backup of system components

A review of how to backup all LISA software components

Lesson 2: Updating and security of LISA software components

A review of software updates and security.

Lesson 3: Monitoring server processes

Systems for monitoring LISA.

Lesson 4: Open discussion on any issues of concern for maintenance of the LISA platform

A final opportunity for participants to raise any issues of concern for the maintenance of LISA.

Hand over of final LISA application to Battambang municipality

Module 4: Climate risk assessment

Outcome: Participants are knowledgeable about the various components of climate risk assessment and the interpretation of its findings, including addressing gender and social inclusion.

Topics:

Lesson 1: What is risk assessment and adaptation planning?

Presentation: Key concepts on risk, risk assessment and adaptation planning

Exercise: Recognize the concepts for Battambang

Lesson 2: Gender, social inclusion and resilience

Presentation: Identify and analyse gender and social inclusion issues for disasters and climate change

Exercise: Climate change, gender and social inclusion quiz

Exercise: Use the LISA platform to analyse gender and resilience issues

Lesson 3: Impact and vulnerability assessment

Presentation: Process for impact and vulnerability assessment

Exercise: Perform an impact and vulnerability assessment using the LISA platform

Lesson 4: Field observation and assessment

Participatory mapping: hazards, impacts and vulnerabilities – Identify hotspots for field assessment

Field assessment: Identify hazards, impacts, capacity and vulnerability of people and different types of assets

Lesson 5: Adaptation planning

Presentation: Best practice process on adaptation planning

Presentation: Value and benefits of nature-based solutions for adaptation and resilience

Exercise: Use the LISA platform to map and analyse nature-based solutions for adaptation

Presentation: Adaptation options analysis tool

Exercise: Identify and prioritize adaptation measures for specific assets or systems in Battambang

4. Upgrade of LISA platform

As mentioned above, in addition to training government staff, the outputs from the Phase II climate risk assessments will be integrated into the LISA website by the consultant. Full vulnerability analyses (including assessment of sensitivities, impacts, and adaptive capacities) will be conducted for assets not fully analysed in the initial LISA project (roads, railway, schools and hospitals) in relation to flood, drought and landslide hazards.

At the end of the project, the ICEM team will deploy the full LISA application to the government server and handover to Battambang municipality at the third (Module 3) training workshop.

Figure 15. Proposed Phase II Training Programme

PHASE II TRAINING PROGRAMME

	Outputs/Activities	Months in 2023/2024											
		1	2	3	4	5	6	7	8	9	10	11	12
01	**Output 1: Inception phase**												
1.0	Inception meetings to organise Phase II activities with municipality/stakeholder group												
02	**Output 2: LISA frontend management (module I)**												
2.1	Preparation of training materials for (i) WordPress (ii) Integration of map and other visuals into WordPress												
2.2	Training sessions/technical follow up			T	F								
03	**Output 3: LISA backend management (module II)**												
3.1	Preparation of training materials for managing the Leaflet map, spatial data and GeoServer												
3.2	Training sessions/technical follow up				T	F							
04	**Output 4: Server maintenance (module III)**												
4.1	Preparation of training in server maintenance: (i) reverse proxy, (ii) automating backups, (iii) system monitoring												
4.2	Training sessions (T) /technical follow up (F)					T	F						
05	**Output 5: Climate risk assessment (module IV)**												
5.1	Preparation of training materials												
5.2	Training and field work for conducting climate risk assessment of other assets (roads, railway, social services) to hazards (flood, drought, and erosion).												
06	**Output 6: Updating of LISA platform (technical development by ICEM consultants)**												
6.1	Integration of new data from climate risk assessment into LISA by ICEM team												
6.2	Organisation of workshop and hand-over of training materials and LISA platform												
07	**Reports**												
7.1	Inception report (Phase II)												
7.2	LISA user and IT administrator guide (integrates modules I, II, and III)												
7.3	Report on climate risk assessment (Phase II)												
7.4	Final report for Phase II (draft (D), final (F))												D F

		Months in 2023/2024											
		1	2	3	4	5	6	7	8	9	10	11	12
Events													
E1	Kick-off meeting and stakeholder consultations												
E2	Workshop: LISA frontend management (module I) (face-to-face)												
E3	Workshop: LISA backend management (module II) (face-to-face)												
E4	Workshop: LISA server maintenance (module III) (face-to-face)												
E5	Climate risk assessment field work and workshops (module (IV) (face-to-face)												
E6	Stakeholder consultations (2) for app development (hybrid face-to-face/virtual)												
E7	Final workshop to demonstratre final revised application												

NOTE:
It is estimated that 5 days will be required by ICEM consultants to travel to Battambang for the inception meetings, and then to deliver each the training sessions for the outputs 2, 3, 4 and 5. Two trips are envisaged for output 5.
A final one-day workshop in Battambang will be held to present the final/revised LISA application to the municipality.

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