



USAID
FROM THE AMERICAN PEOPLE



VIUP

Vietnam Climate Impacts Decision Support Tool (CIMPACT-DST™)

USER GUIDE

UPDATED JULY 2014





Welcome to Cascadia Consulting Group's Climate Impacts Decision-Support Tool (also known as CIMPACT-DST)!

This tool guide will help you understand and use the tool so that you can realize its full potential.

GUIDE OVERVIEW

This guide is organized into four sections. It begins with a Quick Start Guide that lists basic, key steps for using the tool. We recommend beginning with the Quick Start Guide, and then if you have questions, consulting the remainder of this document. The next section, Tool Overview, provides an overview of the tool, including its underlying conceptual and structural framework. The Tool Overview section establishes a solid foundation for understanding the individual sections of the tool. The following two sections—Getting Started and Using the Tool: A Step-by-Step Guide—discuss detailed steps for preparing for and using the tool.

- | | | |
|----------|-------------------------------|---|
| 1 | QUICK START GUIDE | Basic Steps for using the tool |
| 2 | TOOL OVERVIEW | Introduction to the tool's conceptual and structural framework. |
| 3 | GETTING STARTED | Checklist to prepare for best use of the tool |
| 4 | THE TOOL: STEP-BY-STEP | Detailed instructions on how to use the tool |

By the end of this guide, you should have the knowledge and capacity to:

- ✓ Discern situations in which CIMPACT-DST should be used.
- ✓ Identify and gather needed information.
- ✓ Navigate and complete the tool's required inputs.
- ✓ Understand and use the tool's outputs.

To make this guide as useful as possible, we suggest that you consider the following tips:

■ Go in order.

Because the tool is organized into sequential stages or “tabs,” we recommend that you follow this guide in order, from start to finish. Skipping to different sections could be confusing.

■ Follow alongside.

This guide references specific items in the tool quite often. Follow along with the tool open on your computer, rather than relying on the screen shots included in this document.

■ Look for hints embedded in the tool.

There are many hints and tips embedded inside the tool itself. If anything seems confusing, try experimenting with the tool to see if it helps. Click on the “Help” buttons (🔍) to provide useful information within the tool.

We have provided a number of easy-reference icons and sections to help you identify useful information throughout this guide:

	CAUTION!	Indicates important information to ensure tool functionality or usefulness.
	TIP!	Indicates tips, hints, and tricks for using and understanding the tool.
	CHECKLIST	Indicates items that will be needed for the tool's inputs.
	EXAMPLE	Indicates an example scenario.

1 QUICK START GUIDE

Below are basic instructions for using the tool. For more information, consult the relevant sections of this document.

STEP 1 ENTER BASIC INFORMATION

1

In the "Project Type" tab, select the planning type, sector, and location that best apply to your project.

STEP 2 SELECT PLANNING HORIZON

2

On the "Project Exposure" tab, select the design life of your project. If in doubt, choose the later year.

STEP 3 DETERMINE CLIMATE EXPOSURE

3

On the "Project Exposure" tab, identify the hazard zones that best apply to your project's location. If your project straddles zones, choose the zone that represents the highest hazard or vulnerability.

STEP
4

REVIEW TOOL OUTPUTS

On the "Temperature," "Sea Level Rise" and "Precipitation" tabs, examine how your project will be impacted by climate change and what you could do about it.

2 TOOL OVERVIEW

This section provides an overview of the tool’s conceptual and structural framework to help you navigate and understand the sections of the tool.

What is CIMPACT-DST?

CIMPACT-DST is an Excel-based tool that helps local governments and planning agencies incorporate climate change impacts into their jurisdictions’ planning and operations.

Once customized for the jurisdiction, local government staff and planners use the tool to identify and consider climate change impacts and adaptation options in their decision-making. Climate scientists call this process “mainstreaming.”

By using CIMPACT-DST, government staff members across sectors and departments can see policies, plans, regulations, and projects through a “climate lens” (see figure below). Consistent application of this lens across City departments will slowly build system-wide resilience to climate change within the jurisdiction.

Consideration of climate impacts:
Are you aware of the risks that climate change imposes on your project?

Consideration of climate actions:
Are you and your team aware of actions you can take to mitigate climate change risks to your project?

Climate-proofing:
How will you adjust your project to mitigate its risk to climate change impacts?

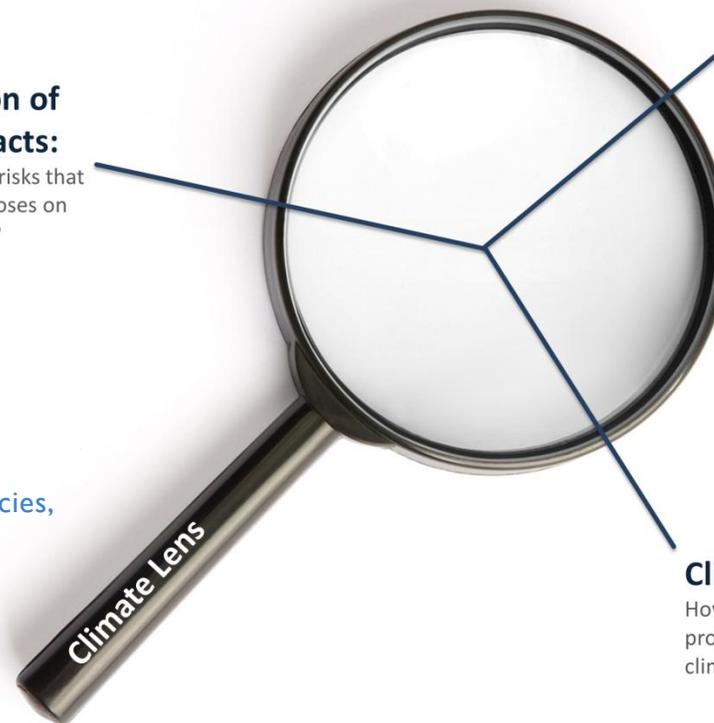


Figure 1. Users of CIMPACT-DST will begin to view policies, plans, regulations, and projects through a “climate lens.”

Adapted from the OECD Policy Guidance on Integrating Climate Change Adaptation into Development Co-operation (Organization for Economic Cooperation and Development (OECD). (2009).

How is CIMPACT-DST Different?

The tool works by compiling multiple sources of locally-relevant information—including reports, policies, and maps—and filtering it based on simple user inputs. This way, the user sees only information that is relevant and useful for the task at hand.

Contrast this to the alternative: wading through a 100-page guidance or policy document in search of pertinent information. CIMPACT-DST is quick, simple, and practical.



CAUTION! Please note that CIMPACT-DST is an *informational—not analytical—tool*. It does not conduct cost-benefit or feasibility analysis or compare alternatives. For such analyses, there are a variety of other tools available such as those described in GIZ's 2013 publication, *Economic Approaches for Assessing Climate Change Adaptation Options Under Uncertainty*.

Conceptual Design

CIMPACT-DST synthesizes, simplifies, and integrates different types of climate-related information from various sources. Information that is already built into the tool, listed in Figure 2 below, includes the following:

- Projected primary climate impacts from the latest climate modeling and science
- Local spatial analyses of projected climate hazards, exposures, and risks
- Reports on projected sector-specific secondary impacts and good practices for building resilience to those impacts
- Guidance from local, state/provincial, and national stakeholders, regulations, and policies



Figure 2. Information sources for CIMPACT-DST

The tool integrates the built-in information listed above with user-specified project inputs to provide project-specific impact summaries and guidance. The sectors and jurisdictions included in the national Vietnam CIMPACT-DST are listed below:

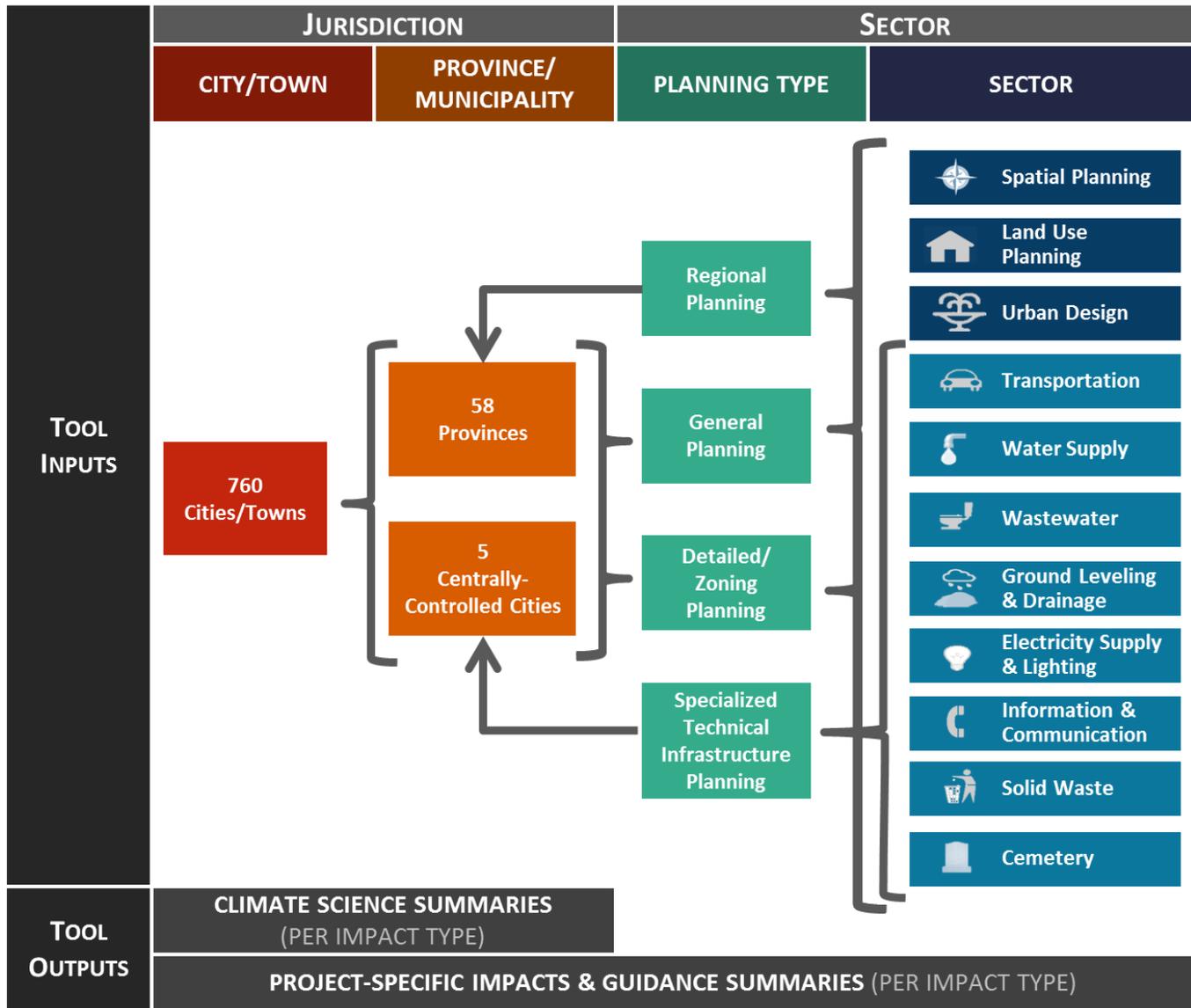


Figure 3. Project sectors and locations included in the Vietnam CIMPACT-DST

Information on climate projections, hazards, and sector-specific impacts and guidelines are embedded in the tool. When users add information on their project's sector, lifespan, and location, the tool produces output information. Output information includes bullet-point summaries of primary climate impact projections, secondary sector-specific impacts, and sector-specific guidelines and recommendations. You can think of these outputs as summaries of the **problem** (how climate change will affect your project) and the **solution** (what you can do about it). The figure below illustrates how user inputs and information programmed into the tool result in tool outputs.

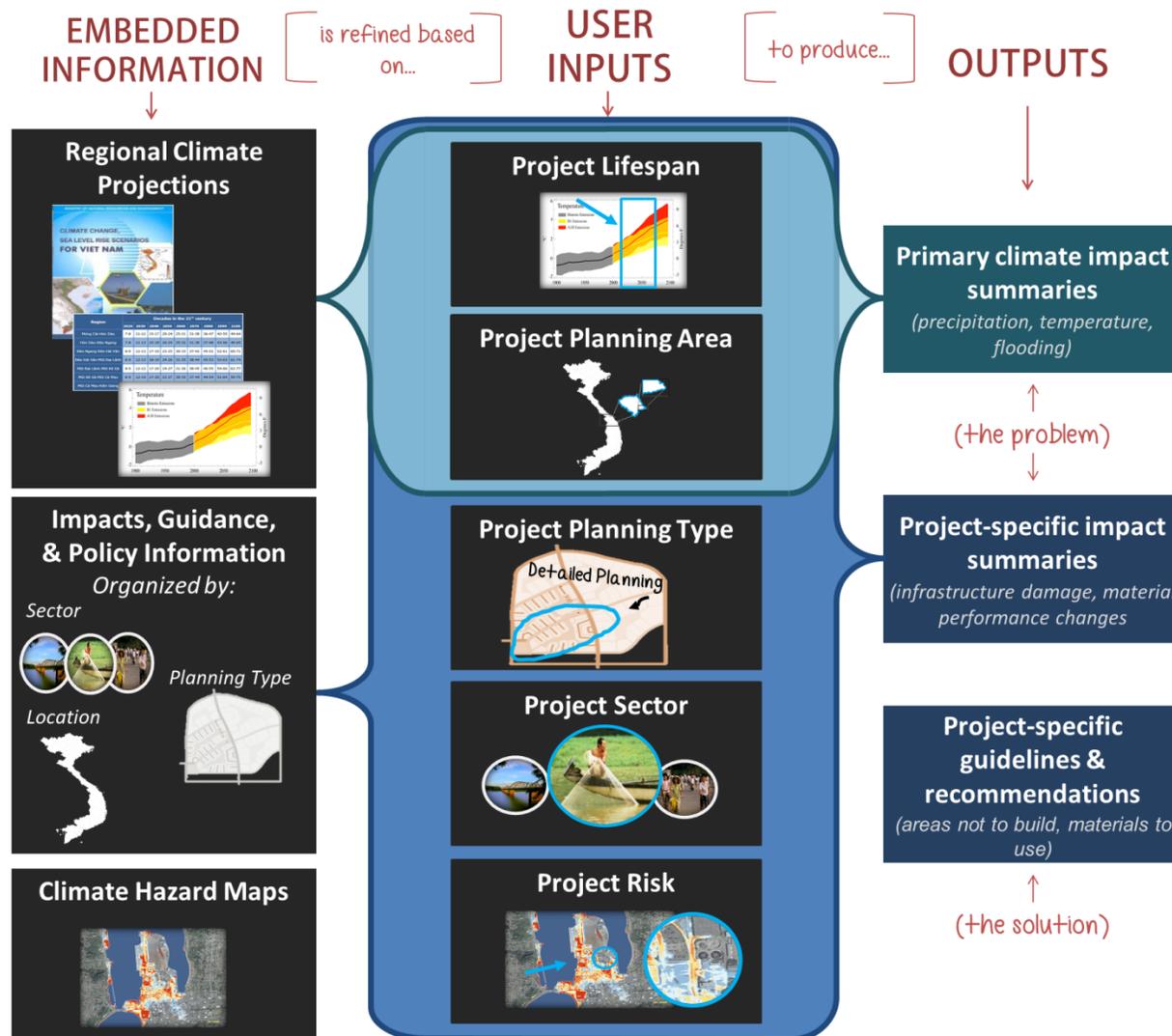


Figure 4. CIMPACT-DST information processing and outputs (circled items in blue indicate user inputs)

Tool Updates

The information embedded in the tool is not permanent. The tool can be easily updated as new climate information, policies, and analyses are available. It is the responsibility of a local Tool Administrator to periodically update the tool with this new information. If you have questions about the tool's content or would like to submit additions or revisions, please contact your local Tool Administrator.

Tool Format and Layout

Software and Restrictions

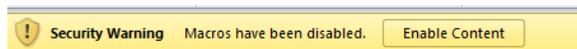
CIMPACT-DST is hosted in Microsoft Excel. The tool has macros—pieces of programming that help automate the tool—that render the tool only compatible with Microsoft Excel versions 2010 or higher. To use the tool, you must enable macros (see note below).



CAUTION! You must have Excel 2010 or a more recent version to use CIMPACT-DST. To determine your version of Excel, go to the “Help” menu and then click on “About Microsoft Excel.” If you do not see this option in the menu, you are probably using Excel 2010 or higher.



CAUTION! You must enable macros to use CIMPACT-DST. When you open the tool in Excel, you may see a yellow ribbon across the top that looks like the following:



To use the tool, you must select “Enable Content.” This will enable you to use all of the features of the tool.

Tool Roadmap

The tool is organized into input and output tabs. Each output tab is organized by the type of climate impact (temperature, precipitation, and sea level rise). The user consults climate impact maps to identify project hazard zones. The hazard zones of a project inform the content and language of the output tabs. Three reference tabs provide further information on the tool's information sources and underlying logic.



INPUT TABS

Where the user enters information about the project.



OUTPUT TABS

Where the tool provides summaries of climate impacts and guidance.



REFERENCE TABS

Details on the tool's information sources.

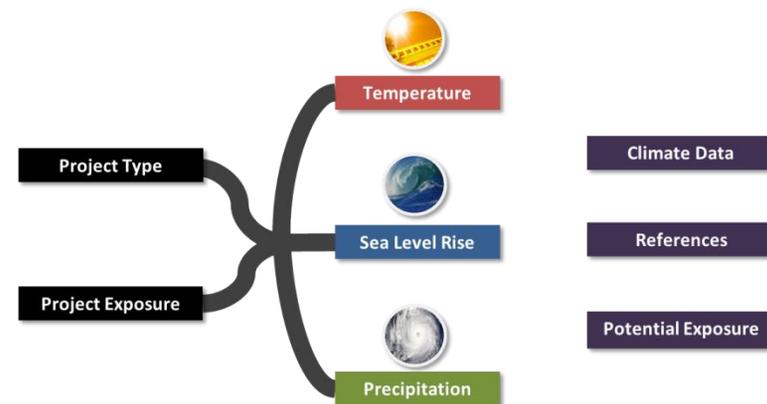


Figure 5. The sections, or tabs, of the Vietnam CIMPACT-DST

How It Works

There are a variety of protected and hidden elements in CIMPACT-DST that the user cannot see or edit. Hidden tabs hold embedded information and dropdown lists, hidden programming codes help automate the tool, and protected text helps avoid accidental editing. These elements are protected and hidden to make the tool simpler and easier to use.



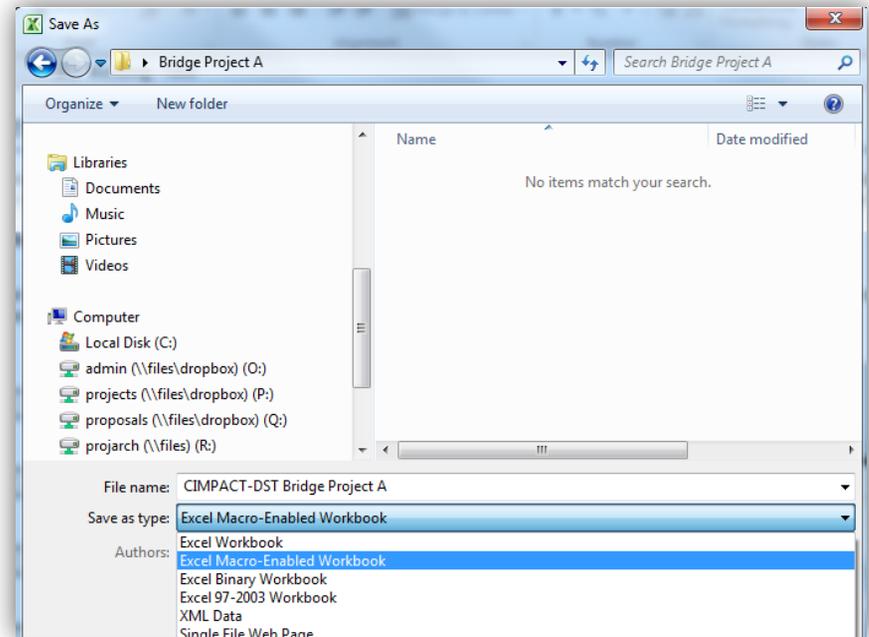
CAUTION! Do not attempt to view or change hidden or protected elements of the tool. Doing so may irreversibly compromise tool functionality.

Saving the Tool

The tool's inputs and outputs will likely be different each time you use it for a different project. You may encounter a scenario in which you would like to save these specific inputs and outputs. To do so, the tool functions like any other Excel file. If you save the file as a specific name, such as “CIMPACT-DST Bridge Project A.xlsm,” you will see those same inputs and outputs next time you open the file. We recommend that you save the tool as a separate file every time it contains information that you would like to remember or share with colleagues. When saving, be sure to save as an “Excel Macro-Enabled Workbook” (.xlsm).



CAUTION! Always save the tool as an “Excel Macro-Enabled Workbook (.xlsm).” Failure to do so will compromise tool functionality. The picture below shows how to select this option from the dropdown menu when using the “Save As” command in Excel.



3 GETTING STARTED

This section details steps that should be completed before opening the tool.

The Example Scenario



Throughout the remainder of the guide, we will provide an example scenario to help you understand the tool’s practical application. In the example scenario, John is a city planner at the City’s Urban Planning Institute who is hoping to update a popular tourist city building, called Town Center, to give it a more modern look. He is using CIMPACT-DST to explore ways in which he can build his city’s resilience to climate change through more informed design and development of the project.

Step 1: Determine what you need

Because the tool supplies information for only a limited number of sectors, it is first important to identify whether the tool contains the information you need. For example, the tool supplies information on urban-focused sectors such as urban land use planning, transportation planning, and water supply, but this

version does not supply information for rural-focused sectors such as agriculture or aquaculture.



EXAMPLE SCENARIO. John checks the list of sectors included in the tool and identifies that his Town Center project fits under the “Infrastructure Planning” sector of the tool. Step 1 is complete!

Step 2: Be prepared

To use the tool successfully, you will need to gather the following information about your project:

- Project name
- Project location
- Project sector
- Project lifespan (design life)



EXAMPLE SCENARIO. John’s project is named “Town Center”; it is located on 112 Main Street; and it has a design life of 50 years.

Step 3: Plan for use

The tool’s outputs are only as valuable as how you or others will use them. Before using the tool, develop a clear plan for what you will do with the tool’s outputs once you obtain them. This includes addressing how you will store, organize, and share the information.



EXAMPLE SCENARIO. John will share the outputs of the tool with his design team and consider them in project brainstorming meetings.

4 USING THE TOOL: A STEP-BY-STEP GUIDE

This section introduces the steps to using the tool, tab by tab. Each step has the following components:

- **Roadmap:** a screenshot of the tool tab
- **Overview/purpose:** information the tab uses or provides and how it fits into the overall process
- **Checklist:** information the user will need to complete the tab
- **Step-by-step guidance:** steps that detail the user options, how to decide which to choose, and the implications of each option for tool outputs

The Basics: Tool Navigation and Guidance

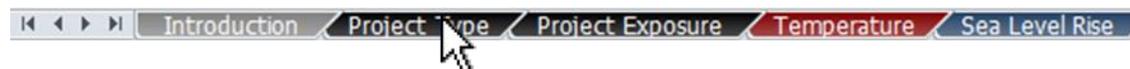
The tool progresses tab-by-tab in the following order:



Navigation buttons, such as depicted below, are provided throughout the tool to guide users through the tabs.



Note that you can also click on the tabs at the bottom of the Excel sheet to navigate between tabs:



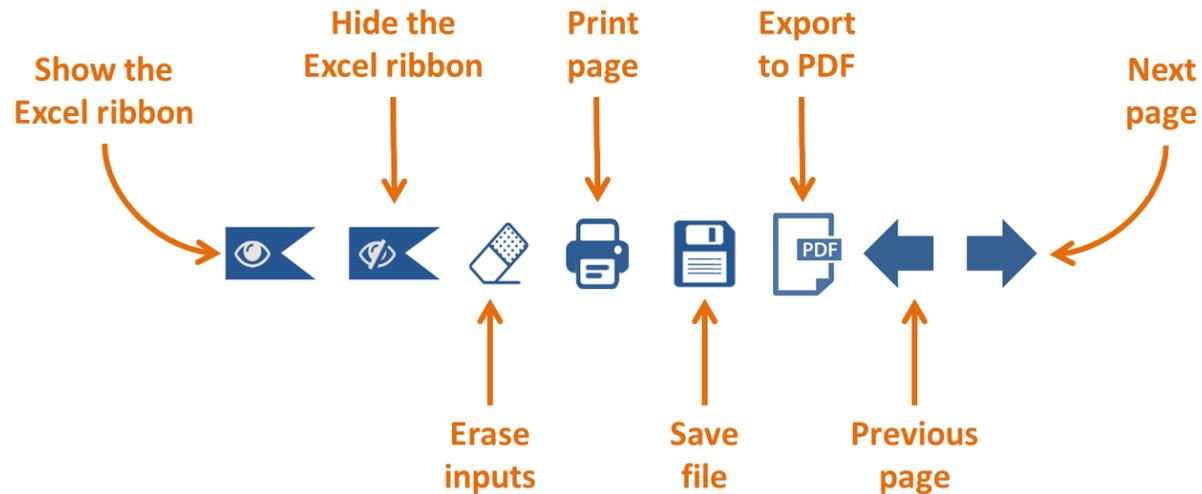


TIP! Help icons, indicated by question marks (?), are located throughout the tool to provide guidance. Simply click on the question marks to reveal or hide helpful information:

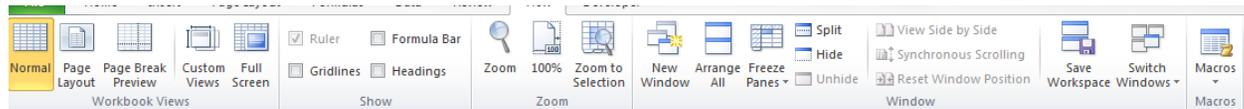


Click on the raindrop icon to view the rainfall map for your area. Choose the highest rainfall zone between the two maps.

The upper right of every tab has a series of modification buttons that provide a quick way to modify views and user inputs.



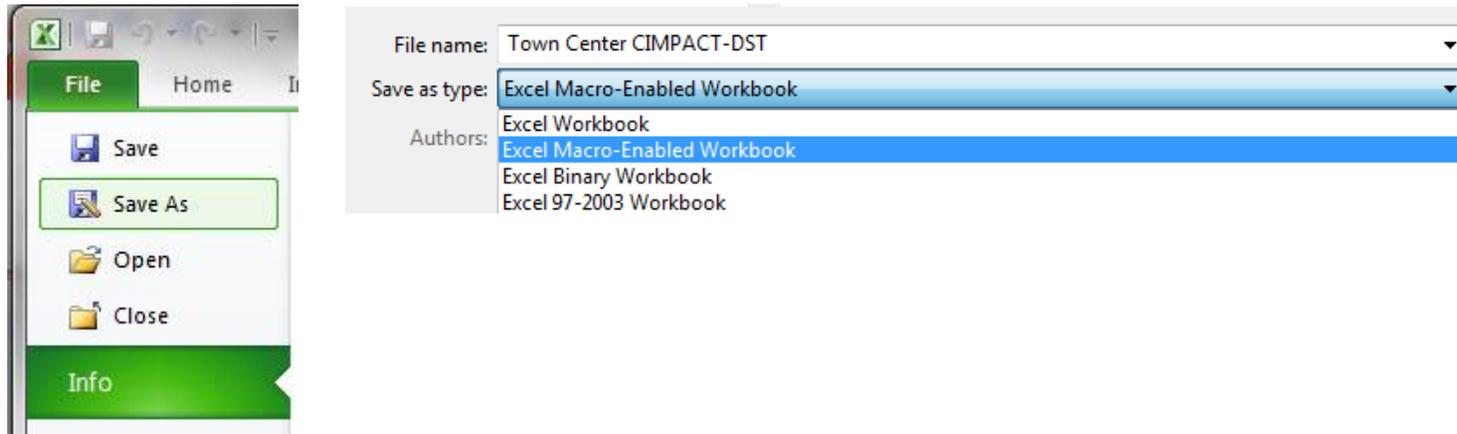
The “Excel Ribbon” refers to the belt of options and selection items across the top of the Excel interface (see below). Hiding the Excel Ribbon enables users to more easily view the tool.



CAUTION! The Erase Inputs button is irreversible. The eraser button will permanently remove user-entered information in the tool. This action cannot be undone. Be careful before clicking this button!

Saving and Printing

You can save the tool by selecting “View Excel Ribbon” (👁) and selecting “Save As” from the “File” menu. *Be sure to save as an “Excel Macro-Enabled Workbook (*.xism).* You can also use this approach to print the tool outputs (Select “Print” from the “File” menu).



You can also simply click the “save” and “print” buttons on the navigation pane:



TAB I: PROJECT TYPE

The "Project Type" tab is the first tab you will see on CIMPACT-DST.

Project Description



1. Enter information about your project.

Click for an overview of climate impacts.

Project Name:
Town Center

Planning Type:
Detailed/Zoning Planning

Sector: ?
Urban Design

Province/Centrally-Controlled City:
Cần Thơ

City/Town/District:
Binh Thủy

Primary Climate Impacts

Higher Temperatures Increased Flooding and Drought Risk Sea Level Rise

Climate Impact Overview: Precipitation

AVERAGE:
By the end of the 21st century, the annual rainfall is projected to increase about 2-7% over the baseline time period (medium emissions scenario).
The western highlands area is expected to experience a smaller increase in rainfall compared to other regions.

EXTREMES:
In the next 100 years, it is likely that maximum values of daily rainfall will:

- increase in North to North-Central regions of Vietnam
- decrease in the South-Central, Central Highlands, and Southern regions of Vietnam.

Overview/Purpose

The “Project Type” tab has a series of basic informational inputs that describe the project and provide the basis for specific temporal and spatial information later in the tool. The Project Type tab also introduces the tool, its requirements, and the primary climate change impacts that the tool addresses.



CHECKLIST. To complete this tab, you must have the following information ready:

- Project name
- Project planning type
- Project sector
- Project location

Step-by-Step Guidance



TIP! Be Patient! When choosing items from the dropdown menu, the software may take some time to update. Be patient and wait until the cross cursor is apparent () before selecting the next cell.

1: Project Name

This field is for informational purposes only. Enter whatever name makes sense to you so that you and your colleagues can remember and recognize it later.



EXAMPLE SCENARIO. John enters “Town Center” as the Project Name.

2: Planning Type

This is a **REQUIRED** field that indicates the scope of planning that the project entails. To complete this field, choose one of four

options: Regional, General, Detailed/Zoning, or Specialized Technical Infrastructure Planning.



EXAMPLE SCENARIO. John selects “Detailed/Zoning Planning” as the planning type.

3: Sector

This is a **REQUIRED** field that indicates the sector of the project. This input will inform the kind of impact and guidance information you receive on the output tabs of the tool. To complete this field, choose among the specified options. If your sector is not listed, consult the Tool Administrator or choose the best fit.



EXAMPLE SCENARIO. John selects “Urban Design” as the sector type.

4: Province/Centrally-Controlled City

This is a **REQUIRED** field that indicates the province or centrally-controlled city of the planning project.



EXAMPLE SCENARIO. John selects “Can Tho” as the province/centrally-controlled city.

5: City/Town/District

This is an **OPTIONAL** field that indicates the city, town, or district of the project. This input will only appear if the planning type is detailed/zoning planning.



EXAMPLE SCENARIO. John selects “Bình Thủy” as the city/town/district.

TAB 2: PROJECT EXPOSURE

The “Project Exposure” tab is the second tab of CIMPACT-DST. This is the second and final tab in which the user enters information about the project.

Project Exposure

Town Center (General Planning - Spatial Planning - Bình Thủy)



PLANNING HORIZON ⓘ

🕒 2050

2. Select the most appropriate planning horizon for your project.

TEMPERATURE IMPACTS

Temperature Exposure:

🌡️ + < 2.5 degrees C

3. For each impact, first click on the dropdown to view the exposure zones.

PRECIPITATION IMPACTS ⓘ

Rainfall Exposure:

💧 2.1 to 4%

Drought Exposure:

🌱 (select drought zone)

Flood Exposure:

🏠 (select flood zone)

Landslide Exposure:

🏔️ (select landslide zone)

Then, click the icon to identify exposure classifications for your project area.

Next, select the identified zone from the respective dropdown list.

SEA LEVEL RISE IMPACTS

Sea Level Rise Inundation Exposure:

🌊 (select sea level rise inundation zone)

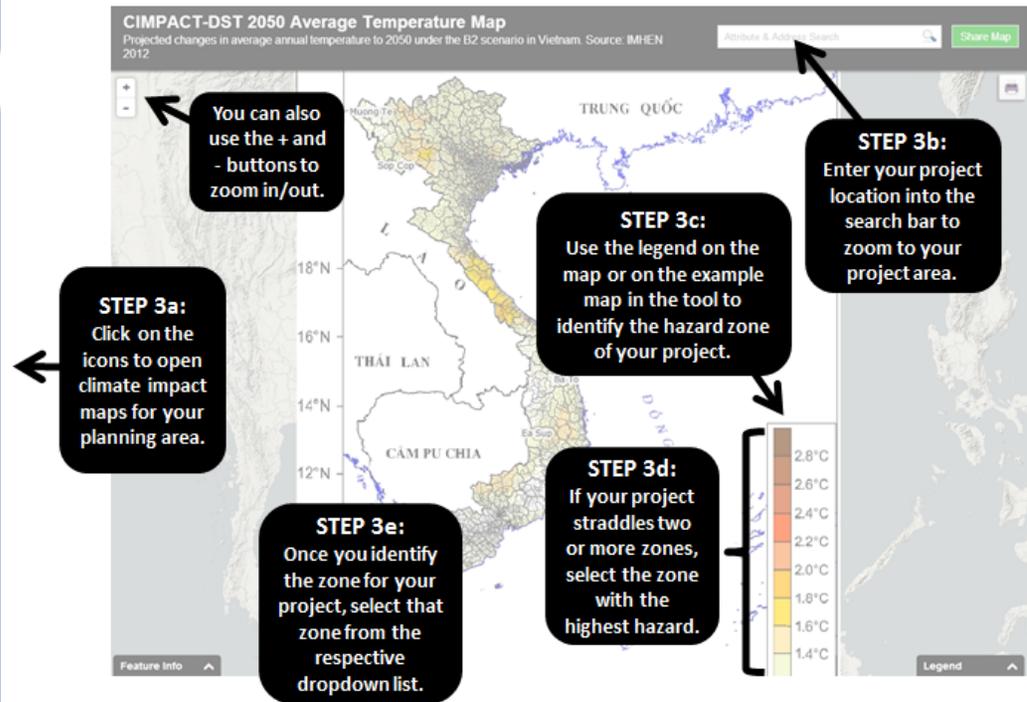
Coastal Erosion Exposure:

🌊 (select coastal erosion zone)

Salinity Intrusion Exposure:

🐟 (select salinity intrusion zone)

If your project straddles two or more zones, select the zone with the highest hazard.



Overview/Purpose

Because climate impacts will vary across time and landscapes, the tool requires spatial and temporal information about the project. This section allows the tool to provide more precise climate impact and guidance information.

To complete this tab, the user must consult project design specifications to specify the project lifespan and view maps to determine the extent to which the project is located in “hazard zones.”



CHECKLIST. To complete this tab, you must have the following information ready:

- Project lifespan
- Project location

Step-by-Step Guidance

I: Expected Lifespan of Project

This field can be interpreted as the design life of a project. The project lifespan is important because projects with longer lifespans will need to withstand more severe climate impacts. If you want the project to survive up to 2050, for example, you would have to design the project to withstand the projected impacts in 2050—such as a 1°C increase in temperature. If that same project was designed to survive only until 2030, then the project would only need to withstand the projected impacts in 2030, which could be something like a 0.5°C increase in temperature. The impact summaries in the tool would therefore reflect these differences.



TIP! What if my project lifespan is not an option? If the specified lifespan of your project is not one of the pre-set options, then choose the next *highest* available lifespan. For example, if your lifespan is 2040, choose 2050. This provides a conservative estimate that will serve to minimize the risk of potential climate change impacts to your project.



EXAMPLE SCENARIO. John’s Town Center project will be designed to last up to 2040. Because 2040 is not an option in the tool, John will select to next highest lifespan: “up to 2050.”

A screenshot of a web form field labeled "PLANNING HORIZON" with a question mark icon. The field contains the text "2050" and has a clock icon to its left.

2: Hazard Zones

The remaining fields are for indicating the hazard zone within which your project is located. There are eight potential hazard zone maps in the Vietnam CIMPACT-DST:

1. Temperature Exposure Map
2. Rainfall Exposure Map
3. Drought Exposure Map
4. Flood Exposure Map
5. Landslide Exposure Map
6. Sea Level Rise Inundation Exposure Map
7. Coastal Erosion Exposure Map
8. Salinity Intrusion Exposure Map

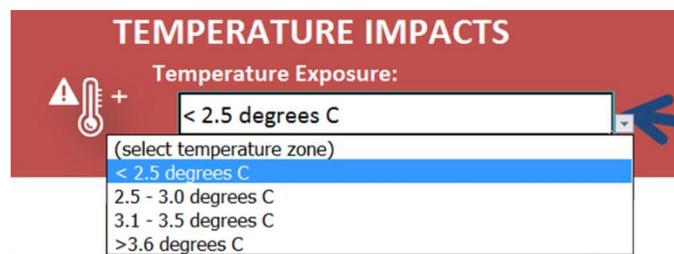
All of the above hazard zone maps are associated with a dropdown menu. The maps are located online and can be accessed using the icon buttons beside the dropdown menu.

The zones represent increasing levels of potential exposure or sensitivity to specific climate change impacts. For example, low-lying projects closer to the river are more likely to be exposed to increased flooding than inland projects. The hazard zone you select informs the severity and urgency of the impact descriptions and guidance information. This feature allows users to fully understand the risks and potential consequences associated with a project's proposed location.

To identify which hazard zone your projected is located, click on icon next to the dropdown menu. This leads you to a website where you can find the location of your project and the hazard zone associated with that location.

Step-by-step Instructions for Identifying Your Project Hazard Zones

These instructions are for identifying your project Temperature Exposure (the menu below). The same procedure can also be used for the other maps. *Note that you must have Internet Explorer to view the maps.*



1. First, click on the Temperature Exposure icon (). This will bring you to the “Temperature Exposure” map on your Internet Explorer browser. Note how zones are delineated: different colors represent different zones.

2. Next, use the “zoom” tools to zoom into your project area.
3. Note which temperature zone your project is located within using the map’s legend. Click back to Excel.
4. Choose your project's temperature exposure zone from the dropdown menu.



TIP! What if my project overlaps zones? If your project straddles two or more zones, choose the zone with the higher hazard. For example, if your project straddles the “2.5-3.0 degrees C” and “3.1-3.5 degrees C” zones then choose the “3.1-3.5 degrees C” zone. This provides a conservative estimate that accounts for the highest potential level of risk to your project.



TIP! What if there is more than one map? In some instances, you may be directed an interface with more than one map. In this case, choose the highest climate impact zone among the maps for your project area.

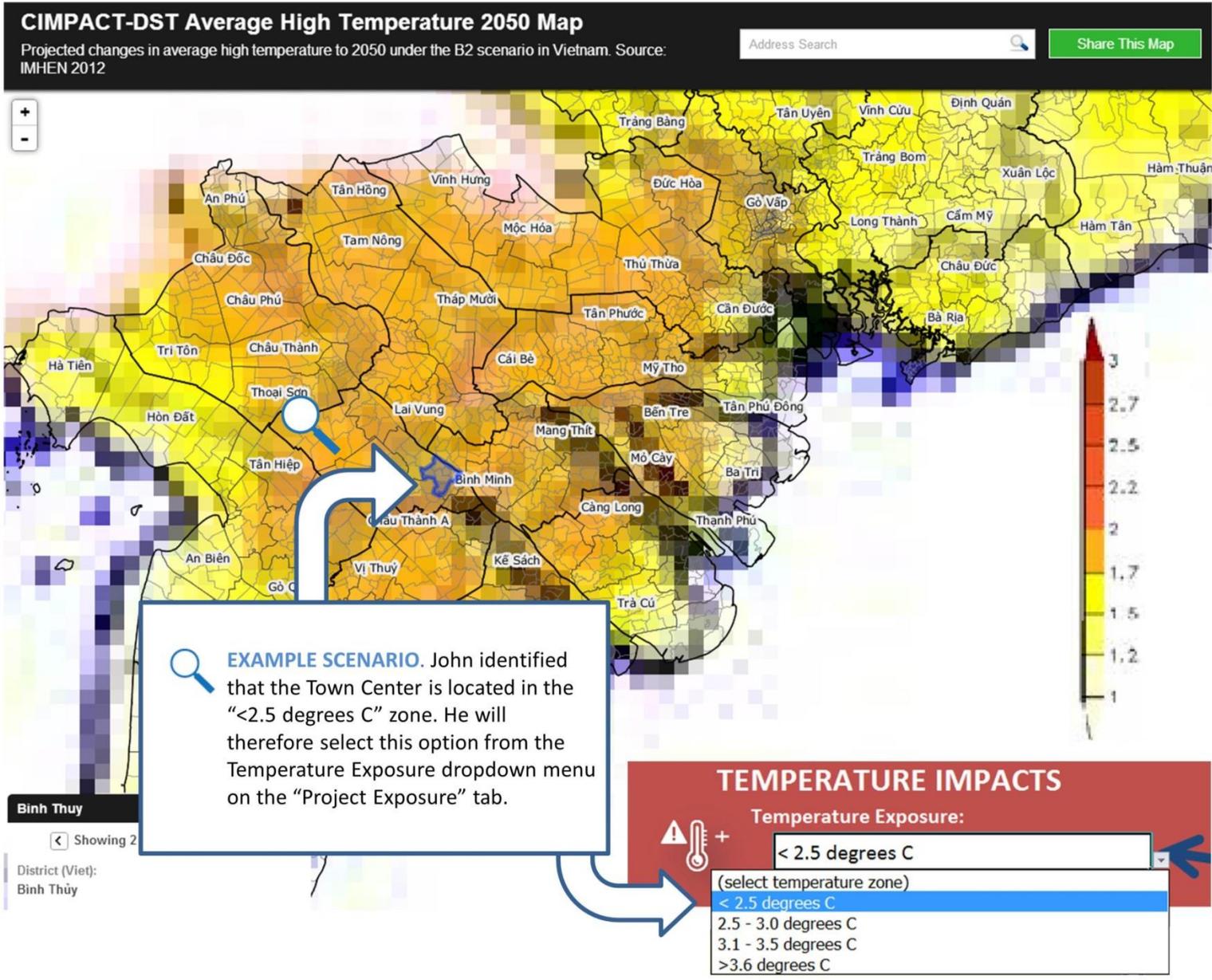


TIP! What if the zone is unclear due to low-resolution spatial information? Some maps, such as the national temperature exposure map, are lower resolution and may be difficult to discern at smaller scales. If your project area lies on a border or otherwise undiscernible area, choose the hazard zone for the closest discernable area to your project.

If Maps are Unavailable

If a map is not available for your area, choose the future (or, if not known, current) zone of your planning area to the best of your ability using local knowledge or available studies.

Temperature Exposure



TABS 3, 4, AND 5: TEMPERATURE, SEA LEVEL RISE, AND PRECIPITATION

The Temperature, Sea Level Rise, and Precipitation tabs are the output tabs of the tool.

Temperature Impacts

Town Center (Detailed/Zoning Planning - Urban Design - Binh Thủy)

4. Review projected climate impacts and adaptation strategies for your project.



Tip! Scroll down to view more. X

Projected Impacts and Exposure

Projected Range of Impact

The below projected impacts are based on the 2012 MoNRE report and relative to a 1980-1999 baseline time period. For more information, click on the "Climate Data" tab.

- ANNUAL: The latest MoNRE reports project that annual temperature in 2050 will be, on average, 1.2 degrees C HIGHER than the historic baseline time period in Cần Thơ.
- SEASONAL: The latest MoNRE reports project that SUMMER temperature in 2050 will be, on average, 1.5 degrees C HIGHER than the historic baseline time period in Cần Thơ.

Potential Exposure

- LOW potential exposure to increased thermal stress for this project. However, an increase in the number of isolated heat waves is expected.

Impact Summary

- Higher temperatures could lead to a higher incidence of pests and invasive species, harming trees and plant life. [5]
- Increased temperatures will likely increase electricity costs for cooling. [5]
- Increased urban heat island effect may introduce public health concerns for building inhabitants, especially for vulnerable populations. [5]
- Increased temperatures may increase demand for shaded roads by bicyclists and motorists. [5]
- Increased temperatures may cause vegetation to die, degrading the quality of green space. [24]
- Increased demand for shaded park and open spaces, and blue (water) space. More demand on areas that are close to the river, beach, and naturally forested locations and less demand on exposed areas (bare hills, sandy areas). [24]
- Higher temperatures pose increased public health risks from heat exposure and pathogen outbreaks such as malaria, dengue fever, and encephalitis, particularly to vulnerable groups in regions with poor sanitation and high-density areas. [31, p. 5]
- Increased temperatures may reduce the flood retention and water absorption capacity of vegetation. [1, p. 64(Eng), 48(Viet)]
- Increased temperatures reduce the ability of the drainage system to self-regulate. [1, p. 110(Eng), 98(Viet)]
- Increased temperatures and reduced precipitation will introduce heat and drought stress to vegetation. [23]

Guidance Information

- Consider developing design standards that would afford different levels of protection for different levels of climate risk. [5]
- Consider design standards for equipment and materials that accommodate higher temperatures (e.g. air piping, motors, electrical equipment, instrumentation) to reduce risks of equipment and material failures. [5]
- Design green roofs to insulate buildings and manage stormwater. [5]
- Prioritize accessibility to abundant shaded public spaces to mitigate urban heat island and temperature impacts, especially in areas with vulnerable populations. [5]
- In planning work, maintain current natural green spaces and forest landscapes. Integrate more green spaces, lakes, and tree canopy cover into city land use plans to mitigate urban heat island and temperature impacts. [5]
- Incorporate natural cooling mechanisms, such as increased tree canopy cover and water features such as lakes and ponds in urban planning to accommodate increasing demand for cooler spaces due to increasing temperatures and the urban heat island effect. [5]

Overview/Purpose

These three tabs are identical in structure and provide quantitative and qualitative summaries of climate change impacts and guidance for mitigating those impacts. Note that the outputs on these tabs are project-specific and dependent upon the project lifespan and location parameters entered on the “Project Exposure” tab.



CHECKLIST. No information needed

Step-by-Step Guidance

I: Projected Impacts and Exposure

The Project Impacts and Exposure sections provide quantitative province-specific climate impact information.

Projected Range of Impact. The projected range of impact summarizes the latest climate models for the time period of interest for the province. This information can help you understand the range of temperature, precipitation, and sea levels to expect and plan for over the lifetime of your project.



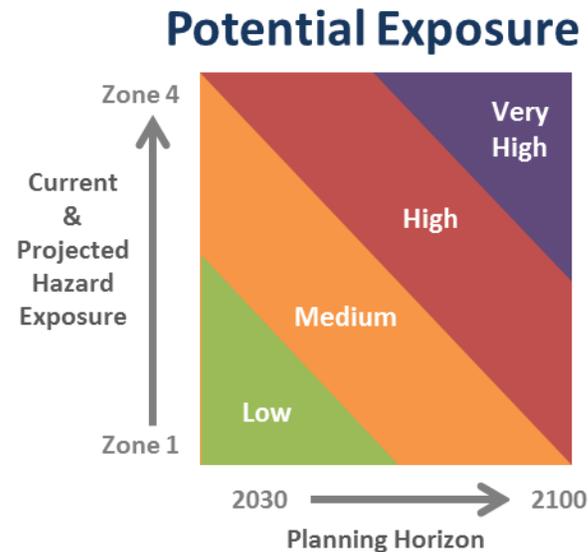
EXAMPLE SCENARIO. John found that the Town Center will be exposed to the following projected range of impacts. He will use this to inform his design team that all infrastructure materials must have the capacity to withstand this new range of temperatures.

Projected Range of Impact

The below projected impacts are based on the 2012 MoNRE report and relative to a 1980-1999 baseline time period. For more information, click on the "Climate Data" tab.

- ANNUAL: The latest MoNRE reports project that annual temperature in 2050 will be, on average, 1.2 degrees C HIGHER than the historic baseline time period in Cần Thơ.
- SEASONAL: The latest MoNRE reports project that SUMMER temperature in 2050 will be, on average, 1.5 degrees C HIGHER than the historic baseline time period in Cần Thơ.

Potential Exposure. Potential exposure summarizes the risk of your project to climate change impacts as a function of its lifespan and location within the hazard maps. For projects with a long planning horizon and located within high-risk hazard zones, for example, the tool will indicate a HIGH potential exposure for the project and provide a brief explanation of what that potential means for your project. This relationship is shown in the figure below.



EXAMPLE SCENARIO. John found that the Town Center has a LOW potential exposure to increased temperature stress. He will use this information to ensure that the Town Center features adequate “shaded retreat” areas to relieve visitors during extreme heat events. Because he is located within a low urban heat island zone with moderately vulnerable populations, he likely will not take more costly action to combat higher temperatures, such as the installation of expensive new air conditioning systems.

Potential Exposure

- LOW potential exposure to increased thermal stress for this project. However, an increase in the number of isolated heat waves is expected.

2: Impact Summary

The Impact Summary section is where you will find sector-specific qualitative summaries of climate change impacts you should expect to occur for your type of project. You should consider these impacts when making decisions about your project.

Underlined Impact Summary statements indicate a link to the statement's source document. Click once on an underlined statement to navigate to that specific page of the reference document on Internet Explorer.



TIP! Think of the Impact Summary (and Guidance Information) as a checklist. The Impact Summaries can sometimes lead to more questions than answers. For example, the impact may indicate that “higher temperatures may change material performance.” This may lead you to ask, “Which materials will change, and how will they change?” The tool does not provide answers to these questions; it can, however, bring this issue to your attention and allow you to consult the material or design experts on your team for more information. In this way, you can think of the Impact Overview as an informal checklist of key issues to consider. Review each item and make note as it is considered. Not all impacts will call for changes in project design or decisions, and that is acceptable. As long as you are aware of the issue and have considered it in the development of your project, you have used the tool correctly.



EXAMPLE SCENARIO. John found that the Town Center may incur the following temperature impacts from climate change. He will use this information to estimate visitation rates for different areas (e.g., shaded vs. exposed) of the Town Center.

Impact Summary

- Higher temperatures could lead to a higher incidence of pests and invasive species, harming trees and plant life. [5]
- Increased temperatures will likely increase electricity costs for cooling. [5]
- Increased urban heat island effect may introduce public health concerns for building inhabitants, especially for vulnerable populations. [5]
- Increased temperatures may increase demand for shaded roads by bicyclists and motorists. [5]
- Increased temperatures may cause vegetation to die, degrading the quality of green space. [24]
- Increased demand for shaded park and open spaces, and blue (water) space. More demand on areas that are close to the river, beach, and naturally forested locations and less demand on exposed areas (bare hills, sandy areas). [24]
- Higher temperatures pose increased public health risks from heat exposure and pathogen outbreaks such as malaria, dengue fever, and encephalitis, particularly to vulnerable groups in regions with poor sanitation and high-density areas. [31, p. 5]
- Increased temperatures may reduce the flood retention and water absorption capacity of vegetation. [1, p. 64(Eng), 48(Viet)]
- Increased temperatures reduce the ability of the drainage system to self-regulate. [1, p. 110(Eng), 98(Viet)]
- Increased temperatures and reduced precipitation will introduce heat and drought stress to vegetation. [23]

3: Guidance Information

The Guidance Information sections provide recommendations and suggestions for taking action to address and build resilience in your project to climate change impacts. The guidance, which includes information related to the physical system of your project, people or communities that may be affected, and the project's underlying institutions, propose ways to ensure that your project "stands the test of time." Like the Impact Summary section, you do not necessarily need to take action on all listed recommendations. Instead, think of this section as a checklist of actions to consider and evaluate further.

Underlined Guidance statements indicate a link to the statement's source document. Click once on an underlined statement to navigate to that specific page of the reference document on Internet Explorer.



EXAMPLE SCENARIO. John received the following guidance information from the tool. He will consider these recommendations and ask his design team to incorporate twice as many trees as usual in the design of the Town Center.

Guidance Information

- Consider developing design standards that would afford different levels of protection for different levels of climate risk. [5]
- Consider design standards for equipment and materials that accommodate higher temperatures (e.g. air piping, motors, electrical equipment, instrumentation) to reduce risks of equipment and material failures. [5]
- Design green roofs to insulate buildings and manage stormwater. [5]
- Prioritize accessibility to abundant shaded public spaces to mitigate urban heat island and temperature impacts, especially in areas with vulnerable populations. [5]
- In planning work, maintain current natural green spaces and forest landscapes. Integrate more green spaces, lakes, and tree canopy cover into city land use plans to mitigate urban heat island and temperature impacts. [5]
- Incorporate natural cooling mechanisms, such as increased tree canopy cover and water features such as lakes and ponds in urban planning to accommodate increasing demand for cooler spaces due to increasing temperatures and the urban heat island effect. [5]

TAB 6: REFERENCES

“References” is the first of three tabs that provide further information on the tool’s underlying information sources and logic.

References



Number ?	Full Citation
1	VIUP, "Guidline for Integrating Climate Change Response into Urban Planning in Vietnam," 2013.
2	CRURE, DCEA, Integra, "Guidance for Integrating Climate Change Considerations into the Strategic Environmental Assessment of Urban and Construction Plans in Vietnam," 2013.
3	Brandenburg University of Technology, "AdaptHCMC: Guidelines on Climate Change Adapted Urban Planning and Design for Ho Chi Minh City/Vietnam," 2013.
4	CRURE, "Climate Change Impacts on Urban Infrastructure: Phase II," 2013,
4	CRURE, "Climate Change Impacts on Urban Infrastructure: Phase I," 2013,
5	Cascadia Consulting Group (including the Seattle CIMPACT-DST)
6	Netherlands Climate Assistance Program (NCAP), "Climate Change Impacts in Huong River Basin and Adaptation in its Coastal District Phu Vang, Thua Thien Hue province," 2008.
7	Institute for Social and Environmental Transition (ISET), "Project Mekong - Building Climate Resilient Asian Cities in Hue City: Climate Change Vulnerability Assessment," 2013.
8	Rockefeller Foundation, "ACCRN Vietnam Country Report," 2009.
9	R. Wassmann, S. Jagadish, K. Sumfleth, H. Pathak, G. Howell, A. Ismail, R. Serraj, E. Redona, R. K. Singh and S. Heuer, "Regional Vulnerability of Climate Change Impacts on Asian Rice Production and Scope for Adaption," Advances in Agronomy, pp. 91-133,
10	United States Agency for International Development (USAID), "Addressing Climate Change Impacts on Urban Infrastruture: Factsheets," 2012.
11	United States Environmental Protection Agency, "Adaptation Strategies Guide for Water Utilities," 2012.
12	London Climate Change Partnership, "Adapting to Climate Change: A Checklist for Development," 2005.
13	City of Vancouver, "City of Vancouver Climate Action Strategy," 2012.
14	New York City Panel on Climate Change, "Climate Change Adaptation in New York City: Building a Risk Management Response," 2010.
15	City of Chula Vista, California, "Climate Adaptation Strategies Final Implementation Plans," 2011.
18	City of New York, "PlaNYC: A Stronger, More Resilient New York," 2013.
19	FHWA, "Regional Climate Change Effects: Useful Information for Transportation Agencies," 2010.
20	American Planning Association, "Policy Guide on Planning and Climate Change," 2011.
21	Thua Thien Hue Provincial People's Committee, "Thua Thien Hue Climate Action Plan," 2013.
22	United States Environmental Protection Agency, "Climate-Resilient Development: A Guide to Understanding and Addressing Climate Change," 2013.
23	USGCRP, 2009
24	Generated by project team (which includes Cascadia Consulting Group, ISET, and local core group members from Hue and Thua Thien Hue provincial government).
25	CDM Climate Impacts Database (no source identified)
26	Center for Social Research and Development (CSR), "Community-based Adaptation Strategies for Enhancing Resilience to Climate Change in the Huong River Basin," 2010.
27	P. Tran and R. Shaw, "Towards an Integrated Approach of Disaster and Environment Management: A Case Study of Thua Thien Hue Province, Central Viet Nam," Environmental Hazards, pp. 271-282, 2007.
28	People's Committee of Ba Ria-Vung Tau Province, Ministry of Natural Resources and Environment, "Building an Action Plan to Respond to Climate Change in Ba Ria-Vung Tau Province," July 2012
29	ISET, "Asian Cities Climate Change Resilience Network (ACCCRN): Responding to the Urban Climate Challenge," November 2009
30	MONRE & UNDP, "Project Terminal Report: Strengthening National Capacities to Respond to Climate Change in Vietnam, Reducing Vulnerabilities and Controlling Greenhouse Gas Emission," 2013
31	ISET, "Climate Resilience Case Study: Can Tho, Vietnam," April 2013

Overview/Purpose

The “References” tab is intended for informational purposes only. It contains full citations and links to all of the information sources referenced in the Impacts Summary and Guidance Information sections of the tool.



CHECKLIST. No information needed.

Step-by-Step Guidance

I: Reference Number

Every Impacts Summary and Guidance Information statement in the tool is followed by a number in brackets (e.g., [4]). This number represents the information source for that statement.

Underlined numbers contain hyperlinks to the location of that information source on the internet. Click once on the number to direct your internet browser to an online version of the document (see figure below).

4: Full Citation

This field is the full citation of the information source.



TAB 7: CLIMATE DATA

Climate Data



Data Presented in the Tool Output Tabs

The three output tabs of this tool summarize the climate projections from the 2012 MoNRE *Climate Change, Sea Level Rise Scenarios for Vietnam* report and other official local government reports, as available. The 2012 MoNRE report represents the most recent analysis by IMHEN and thus was chosen for use. These data are presented for the **B2 scenario**, usually referred to as the preferred or “official” emissions scenario to be used in planning and risk assessments in Vietnam report (for more information on emission scenarios, visit the Intergovernmental Panel on Climate Change [IPCC] [website](#)).

The B2 scenario values represent **mean values**. These mean values likely underestimate the full range of potential impacts, as they do not consider the wider distribution of model output data for the emissions scenario (e.g., the 5th and 95th percentile values). One exception is for years 2050 and 2100, in which a wider distribution of model output data is presented for the B2 scenario.

The 2012 MoNRE *Climate Change, Sea Level Rise Scenarios for Vietnam* report also provides values for other modeled scenarios: B1, B2, and A2 (except for Sea Level Rise, which includes B1, B2, and A1FI). Although not included in this tool, we advise tool users to consult this report in order to understand the full range of climate impacts that could apply to a planning area. Again, be advised that these values also likely underestimate the full range of possible future changes in climate, as they do not consider the wider distribution of model output data for each emissions scenario (e.g., the 5th and 95th percentile values).

Specifications Table: Baseline assumptions and modeled scenarios MoNRE 2012 report.	
Baseline Time Period	1980-1999
Modeled Scenarios	B1, B2, A2 (B1, B2, A1FI for sea level rise)

Overview/Purpose

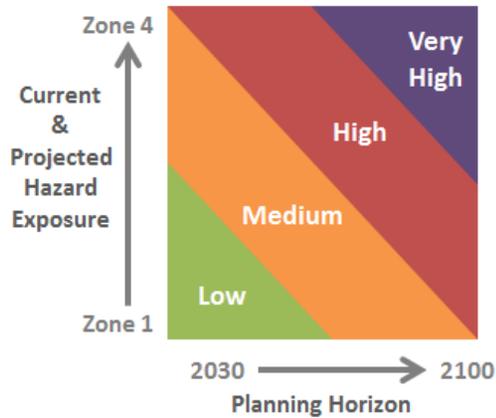
Like the “References” tab, the “Climate Data” tab is intended for informational purposes only. It elaborates on the climate projection data presented in the “Projected Range of Impact” sections of the tool. The page explains the climate projection data that are available for Vietnam and their assumptions and specifications.



CHECKLIST. No information needed

TAB 8: POTENTIAL EXPOSURE

Potential Exposure



The IPCC defines exposure as “the nature and degree to which a system is exposed to significant climate variations” (IPCC, 2007 - [Glossary](#)). In CIMPACT-DST, *Potential Exposure* to climate impacts is divided into four categories—Low, Medium, High, and Very High—depending on the project’s **climate exposure** and **planning horizon**.

Climate exposure encompasses the current and forecasted exposure to climate change and its likely effects. These analyses include the identification of *baseline climate conditions*, including historical climatic variability, *future climate projections*, including their departure from historical conditions, and the *resulting implications for changing dynamic processes*, such as erosion or hydrological regimes (Source: NatureServe.org). In CIMPACT-DST, climate exposure can be a product of the project’s position among current hazard zone classes and/or projected hazard zone classes, as data and information are available for the project area.

The project **planning horizon** is the expected lifetime of infrastructure established by the planning project. Any infrastructure currently or potentially existing in the project area will be subject to the changing climatic conditions incurred throughout its effective life.

Overview/Purpose

Like the “Climate Data” tab, the “Potential Exposure” tab is intended for informational purposes only. It elaborates on the statements presented in the “Projected Impacts and Exposure” sections of the output tabs of tool. The page explains how the Potential Exposure statements are generated from user-specified inputs.



CHECKLIST. No information needed

Questions?

If you have questions, encounter difficulties using the tool, or have encountered an error in the tool's functioning, content, or structure, please contact Dr. Luu Duc Minh of VIUP at:

luuducminhjp@gmail.com

He will respond to your inquiry as soon as possible.



USAID
FROM THE AMERICAN PEOPLE