My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > My Studies

My Projects

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Team | Context | Area | Data | Summary

Available Studies

The following is an overview of all available studies. Several options (when not disabled) exist for the user: **View** the final report of the study; **Clone** the study and adjust to the user's needs and perform a new study; **Delete** the study when it is in user's ownership.

Create new Climate Change Assessment Study

Study Acronym	Study Title	Study Type	Country	Last Saved	Status Pre-Feasibility	Tools
DC1	Adaptation Scenarios for Metropolitan Resilience Planning	Urban Infrastructure	Italy	15/03/2018	Completed	View Clone Delete
DC2	Fostering adaptation of large scale infrastructure in Sweden to local climate change effects	Urban Infrastructure	Sweden	15/03/2018	In Progress	View Clone Delete
DC3	Urban heat waves, urban heat islands, fresh air ventilation	Urban Infrastructure	Austria	15/03/2018	Completed	View Clone Delete
DC4	Spanish Transport Infrastructure	Transport Infrastructure	Spain	15/03/2018	Completed	View Clone Delete
						View Clone Delete

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARTITY > Climate Change Assessment > new Study

New Study

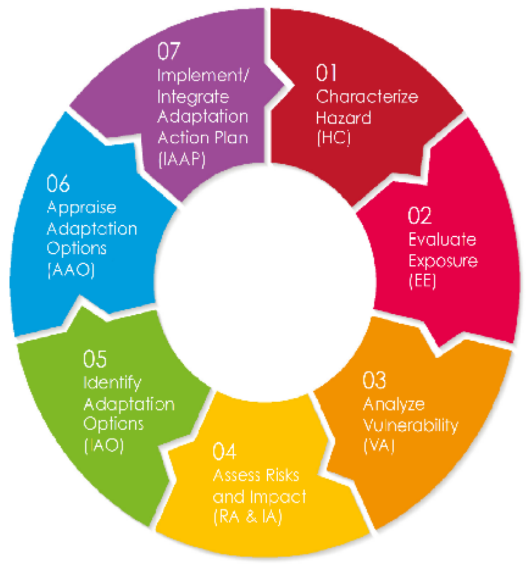
Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Team | Context | Area | Data | Summary

EU-GL Methodology

The EU Non-paper Guidelines for Project Managers: Making vulnerable investments climate resilient, identified as "EU-GLs" in the context of CLARITY, have been published with the aim to help project managers to account for current climate variability and future climate change within their infrastructure project developments (ranging from urban planning to civil buildings, critical infrastructures design), in order to make investments climate resilient. The guidelines make reference to a number of relevant EU policies or guidelines that are relevant to assets and infrastructure, like e.g. the "Guidance on integrating climate change and biodiversity into environmental impact assessment", published in March 2013.

The EU-GLs are structured so as to provide a toolkit to incorporate climate resilience into a conventional project cycle. The logic and the terminology adopted in the document reflects the state of the art knowledge in the field of climate change adaptation at the moment of the document release in 2013, represented by the Fourth Assessment Report (AR4) of IPCC. The significant methodological shift introduced by the AR5, which reconnects the climate risk/impact modelling to the more consolidated modelling framework from DRR (Disaster Risk Reduction) domain, requires an update of the EU-GLs approach to be adopted within CLARITY framework. According to a number of studies, the AR5 report has moved from a vulnerability-centred approach to a risk-based approach.



Pre-Feasibility Analysis (Climate Change Risk Screening)

Description of Scope and Limitations of Pre-Feasibility Analysis supported by CLARTIY ICT Services

Expert Analysis (Climate Change Risk Assessment)

Description of Scope of Expert Analysis supported by tailored CLARITY (Expert) Climate Services

< Prevoius   Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Team | Context | Area | Data | Summary

Study Team

Name: DC1 Team
Members: 12
Project Coordinator: Denis Havlik
Contact Info: denis.havlik@ait.ac.at

The following list provides an overview of the people involved in the study, including their basic informaton on their roles, study affiliations and contact information.

Surname	Name	Username	Affiliation	Affiliation/Role Type	Country	Additional Studies	E-Mail	Edit
Havlik	Denis	hav_den	Austrian Institute of Technology	Study coordinator	Austria	DC2, DC3	denis.havlik@ait.ac.at	☐
Carlos	Juan	carlos5	ATOS	Expert	Spain	-	j.carlos@atos.es	☐
Perez	Maria	Maria	ATOS	Expert	Spain	DC4	m.perez@atos.es	☐

Prevoius

Next

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Team | Context | Area | Data | Summary

Study Acronym*: DC1

Study Name*: Climate Change Baseline Assessment for Naples

Study Goal*: As city planner, I want to learn about the potential impacts of Climate Change in the Metropolitan City of Naples / Italy on buildings and population. Depending on the outcome of the coarse screening, I might want let experts perform a detailed impact scenario analysis taking into account my local data (e.g. census data and inventories) and further evaluate the effects of applying different adaptation measures.

Study Mode*: ◉ Pre-feasibility Assessment ○ Expert Assessment

Sector*: Energy, Transport, and other Built Environment and Infrastructure

Sub-Sector*: Urban development

Country*: Italy

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | **Characterise Hazard** | **Hazard-Local Effect** | **Evaluate Exposure** | **Analyse Valnerability** | **Assess Risk and Impact**

Introduction | Team | Context | Area | Data | Summary

Center Map | **Define Bounding Box** | **Enter Coordinates** | **Custom Backgrounds**

Prevoius | Next

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

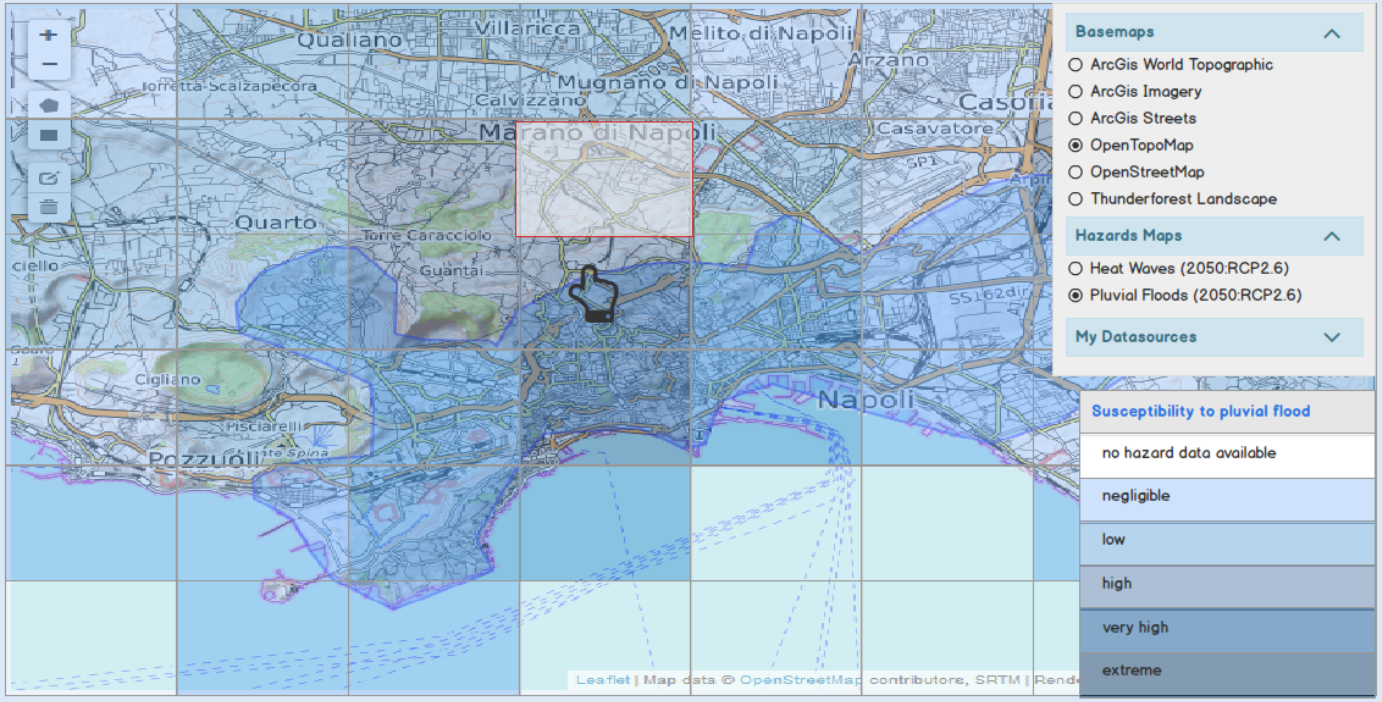
Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

Center Map | Show Legend

High — Suspectibility to pluvial flood

Property	Value
Grid Cell	31337
Value	High
Uncertainty	low
Period	2020-2050
Data Source	Espon
RCP	2.6
GCM	....



< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Vulnerability | **Assess Risk and Impact**

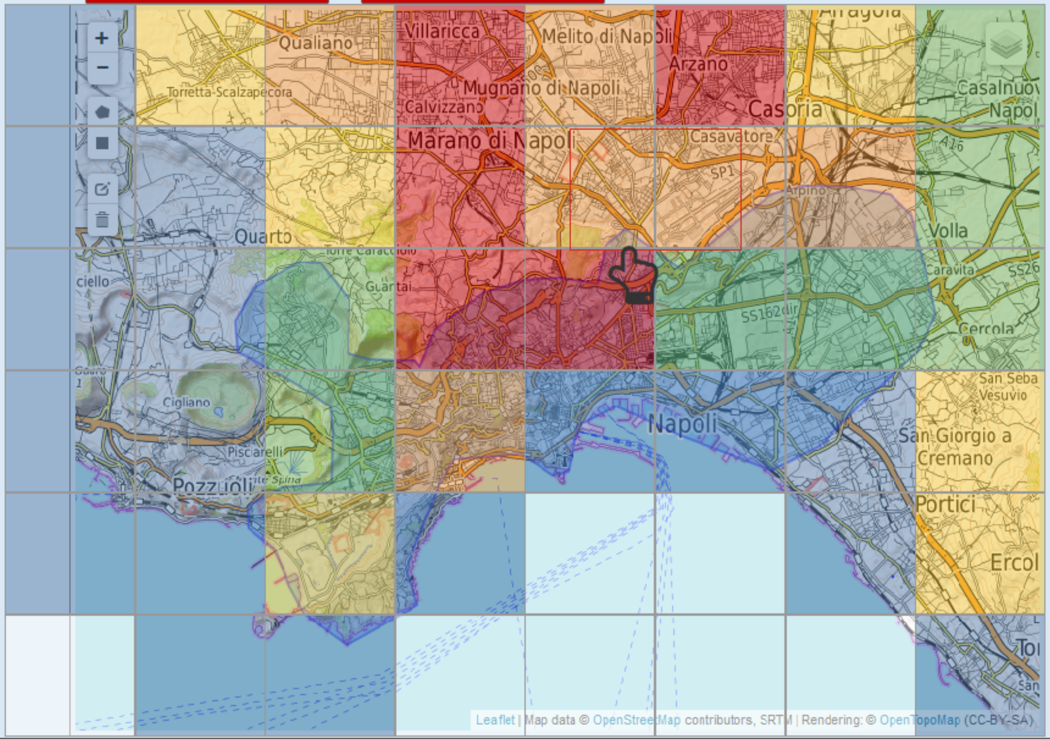
Introduction | Data | Impact Indicators | **Impact Maps** | Risk | Summary

Center Map | Show Legend

23

Heat Wave Impact (AVERAGE Scenario) on population per age-group

Proportion of population	Aspect	Indicator (AVERAGE)
Vulnerability Class A below 15 years	Mortality	0
	Morbidity	5
Vulnerability Class C between 15 and 65 years	Mortality	0
	Morbidity	3
Vulnerability Class D above 65 years	Mortality	1
	Morbidity	10



Basemaps

Impact Scenarios

Heat Wave
- [x] AVERAGE *(People impacted)*
- [ ] WORST *(People impacted)*
- [ ] MOST LIKELY *(People impacted)*

Pluvial Flood

My Datasources

Impact on Population
- n/a
- negligible (0-1)
- low (1-5)
- high (5-15)
- very high (15-50)
- extreme (> 50)

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

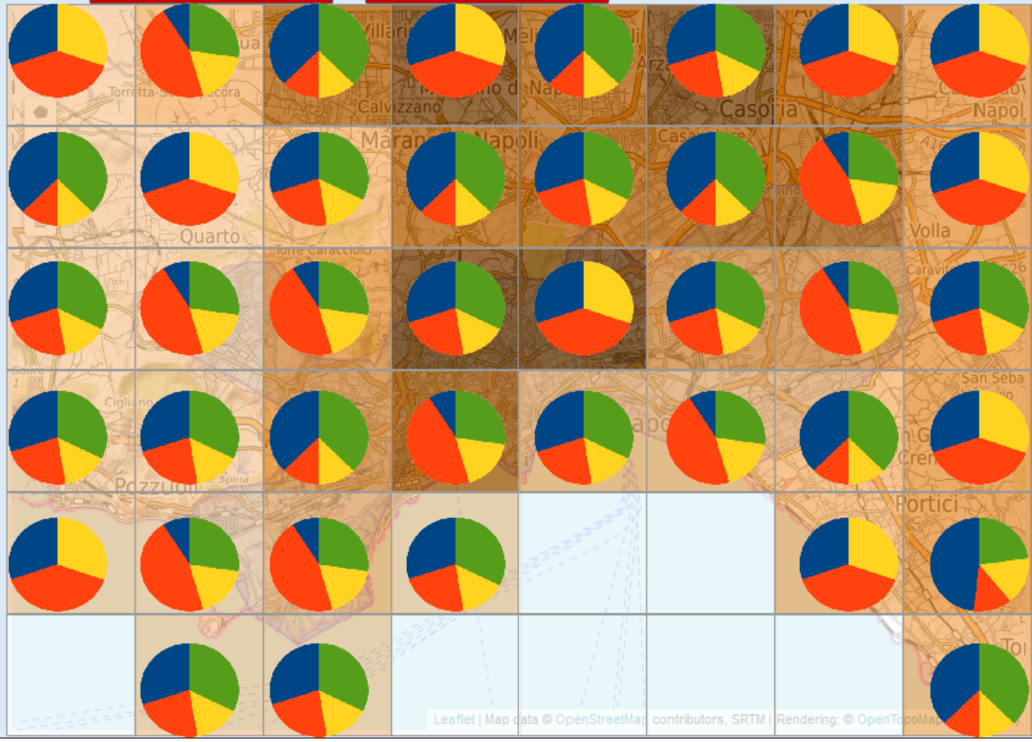
Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | **Analyse Valnerability** | Assess Risk and Impact

Introduction | Data | Table | **Maps** | Twins | Summary

Center Map | Show Legend

Inhabitants / hectare and population distribution per age-groups

Parameter	Value
Grid Cell	31337
Value	quite ...
Period	2012
Data Source	Urban Atlas
Vulnerability Class A Proportion of population below 15 years of age	40%
Vulnerability Class B Proportion of population between 15 and 65 y...	40%
Vulnerability Class C Proportion of population above 65 years of age	20%



Basemaps

Vulnerability Distribution

- **Population**
  - ☑ Population Density *(Inhabitans / hectare)*
  - ☑ Age Proportion *(Vulnerability Class)*
- **Buildings**
- **Transportation Network**

My Datasources

Inhabitants / hectare
not applicable (0.0)
highly sparse (0.1 - 5.0)
sparse (5.1 - 50.0)
quite dense (50.1 - 100.0)
dense (100.1-200.0)
highly dense (> 300.0)

Class A B C

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | **Hazard-Local Effect** | Evaluate Exposure | Analyse Vulnerability | Assess Risk and Impact

Introduction | Data | Table | **Maps** | Twins | Summary

Center Map | Show Legend

SCENARIO OPTIONS

Selection:

Early Response Scenario

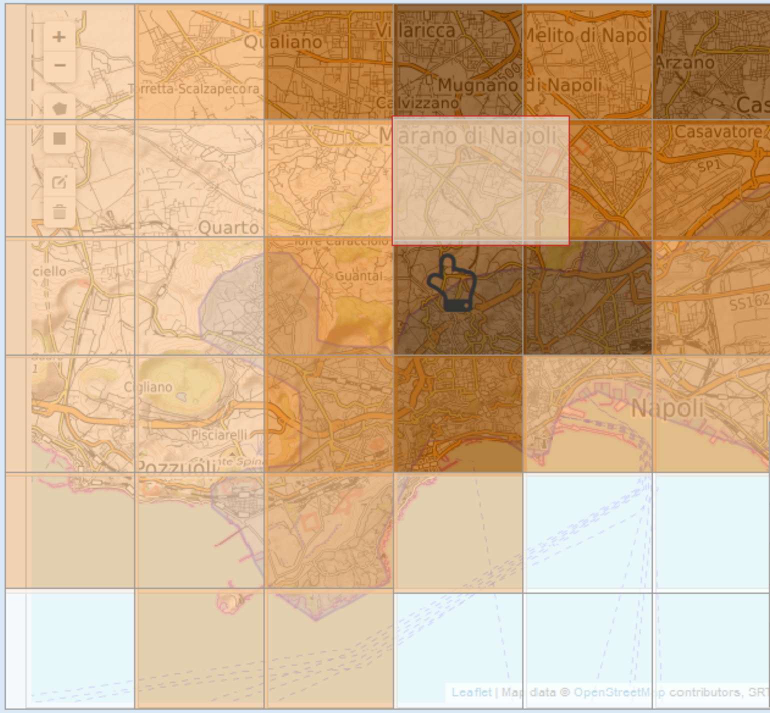
- Early Response Scenario
- Effective Measures Scenario
- Business as Usual Scenario
- My Scenario

Selecting "My Scenario" will allow you to edit the cells directly in the map (change the values) and investigate alternative scenarios.

50.1 - 100.0

Inhabitants / hectare
(People Density per ha)

Property	Value
Grid Cell	31337
Value	quite dense (40.000)
Uncertainty	low
Period	2012
Data Source	EuroStat
etc	...



Inhabitants / hectare

- not applicable (0.0)
- highly sparse (0.1 - 5.0)
- sparse (5.1 - 50.0)
- quite dense (50.1 - 100.0)
- dense (100.1-200.0)
- highly dense (> 300.0)

Basemaps

Local effect maps

- **Heat Wave - local effect**
  - [x] Current Scenario
  - [ ] Early Response Scenario
  - [ ] Effective Measures Scenario
  - [ ] Business as Usual Scenario
  - **Buildings**
    - [ ] Building Density
    - [x] Building Quality
  - **Open Spaces**
    - [ ] Surface Temperature
  - [ ] Hillshade
- **Pluvial Flood - local effect**
  - [ ] Early Response Scenario
  - [ ] Effective Measures Scenario
  - [ ] Business as Usual Scenario
  - **Open Spaces**
    - [ ] Building Fabric

Include in Report

Include all in Report

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | **Evaluate Exposure** | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Table | **Maps** | Twins | Summary

Center Map | Show Legend

SCENARIO OPTIONS

Selection:

Early Response Scenario

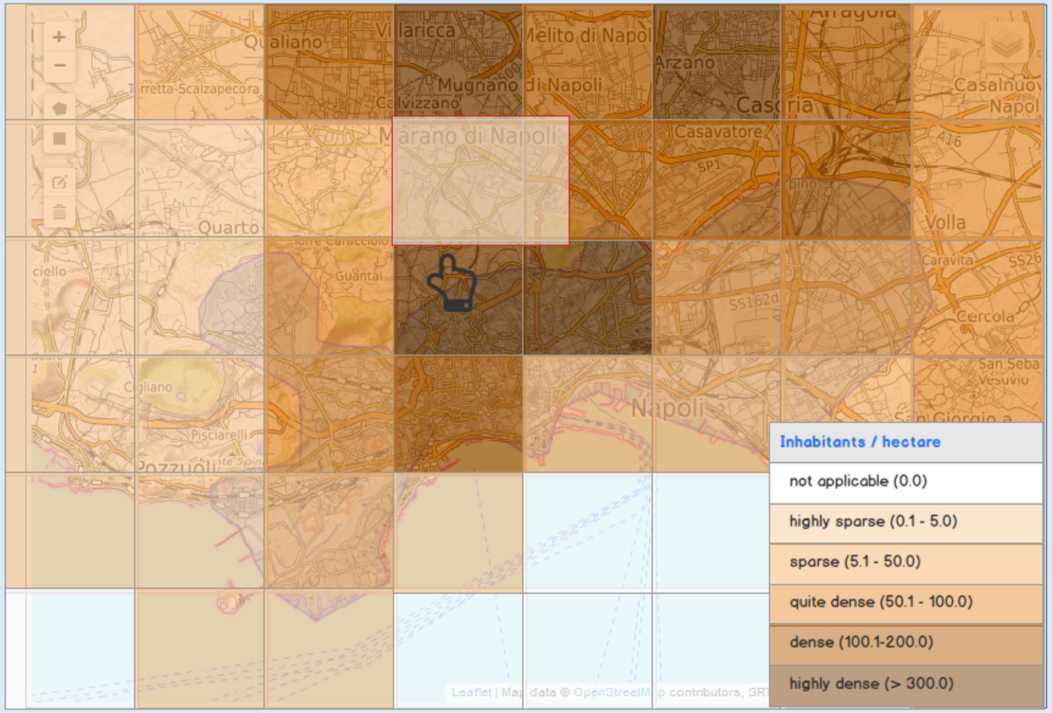
- Early Response Scenario
- Effective Measures Scenario
- Business as Usual Scenario
- My Scenario

Selecting "My Scenario" will allow you to edit the cells directly in the map (change the values) and investigate alternative scenarios.

50.1 - 100.0

Inhabitants / hectare
(People Density per ha)

Property	Value
Grid Cell	31337
Value	quite dense (40.000)
Uncertainty	low
Period	2012
Data Source	EuroStat
etc	...



Basemaps

Exposure Maps

- **Population**
  - [x] Population Density (Inhabitans / hectare)
- **Buildings**
  - [ ] Built-Up Density
- **Transportation Network**

My Datasources

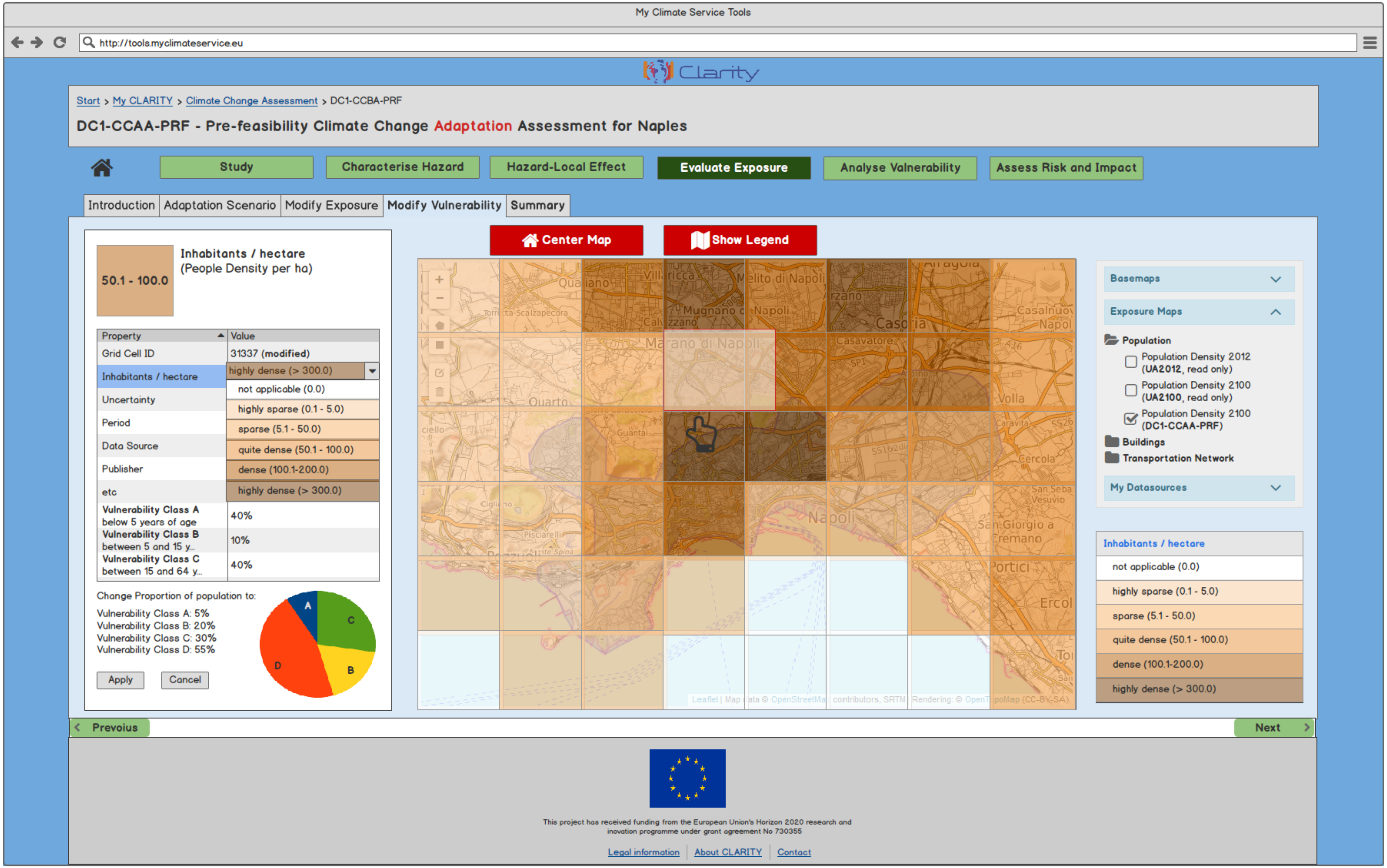
Include in Report

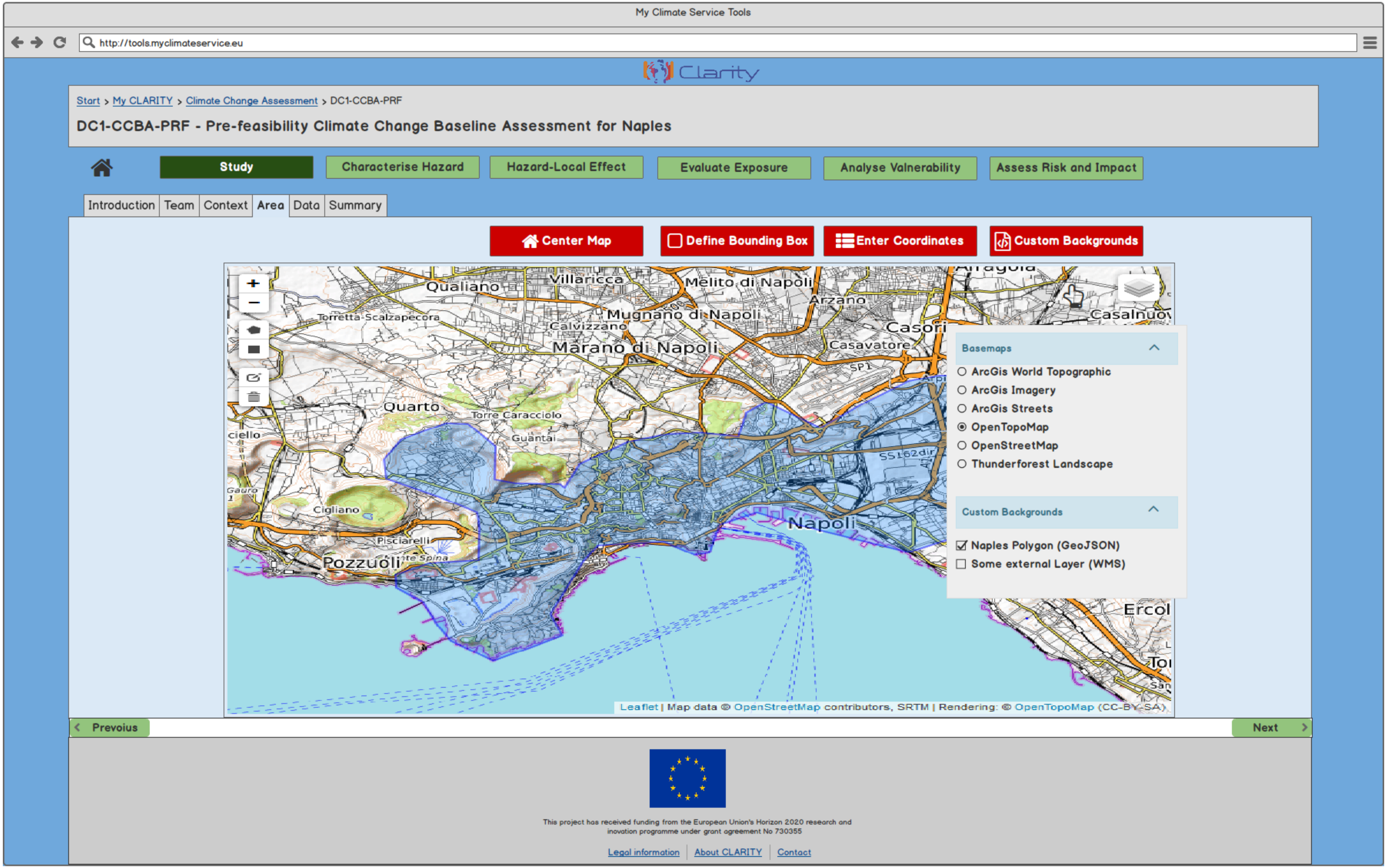
Include all in Report

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact


My Climate Service Tools
http://tools.myclimateservice.eu
Clarity
Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF
DC1-CCAA-PRF - Pre-feasibility Climate Change Adaptation Assessment for Naples
Study
Characterise Hazard
Hazard-Local Effect
Evaluate Exposure
Analyse Valnerability
Assess Risk and Impact
Introduction
Adaptation Scenario
Modify Exposure
Modify Vulnerability
Summary
50.1 - 100.0
Inhabitants / hectare
(People Density per ha)
Property
Value
Grid Cell ID
31337 (modified)
Inhabitants / hectare
highly dense (> 300.0)
Uncertainty
Period
Data Source
Publisher
etc
not applicable (0.0)
highly sparse (0.1 - 5.0)
sparse (5.1 - 50.0)
quite dense (50.1 - 100.0)
dense (100.1-200.0)
highly dense (> 300.0)
Vulnerability Class A below 5 years of age
40%
Vulnerability Class B between 5 and 15 y...
10%
Vulnerability Class C between 15 and 64 y...
40%
Change Proportion of population to:
Vulnerability Class A: 5%
Vulnerability Class B: 20%
Vulnerability Class C: 30%
Vulnerability Class D: 55%
A
B
C
D
Apply
Cancel
Center Map
Show Legend
Quarto
Marano di Napoli
Casoria
Volla
Napoli
Portici
Leaflet | Map data © OpenStreetMap contributors, SRTM | Rendering: © OpenTopoMap (CC-BY-SA)
Basemaps
Exposure Maps
Population
Population Density 2012 (UA2012, read only)
Population Density 2100 (UA2100, read only)
Population Density 2100 (DC1-CCAA-PRF)
Buildings
Transportation Network
My Datasources
Inhabitants / hectare
not applicable (0.0)
highly sparse (0.1 - 5.0)
sparse (5.1 - 50.0)
quite dense (50.1 - 100.0)
dense (100.1-200.0)
highly dense (> 300.0)
Prevoius
Next
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730355
Legal information
About CLARITY
Contact


My Climate Service Tools
http://tools.myclimateservice.eu
Clarity
Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF
DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples
Study
Characterise Hazard
Hazard-Local Effect
Evaluate Exposure
Analyse Valnerability
Assess Risk and Impact
Introduction
Team
Context
Area
Data
Summary
Center Map
Define Bounding Box
Enter Coordinates
Custom Backgrounds
Qualiano
Villaricca
Melito di Napoli
Arzano
Mugnano di Napoli
Calvizzano
Torretta-Scalzapecora
Marano di Napoli
Casavatore
Casalnuov
Quarto
Torre Caracciolo
Guantai
Cigliano
Pisciarelli
Pozzuoli
Napoli
Ercol
Basemaps
ArcGis World Topographic
ArcGis Imagery
ArcGis Streets
OpenTopoMap
OpenStreetMap
Thunderforest Landscape
Custom Backgrounds
Naples Polygon (GeoJSON)
Some external Layer (WMS)
Leaflet | Map data © OpenStreetMap contributors, SRTM | Rendering: © OpenTopoMap (CC-BY-SA)
Prevoius
Next
This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355
Legal information
About CLARITY
Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Team | Context | Area | Data | Summary

Data packages

The following data packages are available for the area and the study. More information can be provided for each data package by clicking on them, and each package can be selected to be included in the study. Additional filters can be applied, otherwise all data packages linked to the specified area are provided.

Additional Filters

- ☐ Impact Scenarios
  - ☑ Heat Wave
  - ☐ Pluvial Flooding
  - ☐ River Flooding
- ☐ Climate Change Scenarios
  - ☐ Low Emission (RCP 2.6)
  - ☐ Moderate Emission (RCP 4.5)
  - ☐ High Emission (RCP 8.5)
- ☐ Climate Change Impact Period
  - ☐ 2000's
  - ☐ 2050's
  - ☐ 2080's

Data Package Name	Topics Included	Selection
Copernicus Data Pack	Floods, Heat Waves, Storms, Infrastructure, Urban plans, Satellite images, Maps	☐
Climate Change Data Pack for the Bari Region (IT)	Floods, Heat Waves, Storms, Population estimates, Infrastructure, Urban plans, Satellite images, Maps	☑
Climate Change Data Pack for Italy & Slovenia	Climate Change Scenarios, Avalanches, Water flows, Storms, Hot Days, Marine, Urbanization, Infrastructure, Maps	☐
Climate Change Data Pack (Italian provinces): Marche, Abruzzo, Molise, Puglia	Floods, Storms, Hot Days, Marine, Urbanization, Infrastructure, Maps	☐
		☐

	Climate Change Data Pack for Italy & Slovenia	
Description:	data on hazards: heat waves, hot days, storms,river flooding, pluvial flooding, future 100-year impact scenarios, weather patterns; elements of risk - infrastructure, buildings, population statistics.	
Climate Change Scenarios	Low Emission Scenario & Impact Period up to year 2050	
Impact Scenarios	Heat Wave	Hot Days
Adaption Scenarios		
Resolution:	LAU2, from 30 m to 2 km grids	
Location:	Italy, Slovenia	
Source:	myclimateservice, Geodesic Institute, Bari University, Urban Atlas, Espon	
Package size:	93 MB (data), 550 MB (maps, raster data)	
File formats:	JSON, SHAPE, GeoJSON	
Price:	FREE for non-commerial use	

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARTITY > Climate Change Assessment > new Study

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Vulnerability | Assess Risk and Impact

Introduction | Team | Context | Area | Data | Summary

Study Summary - Consolidated View

This summary provides a consolidated view of selections and evaluations done in the previous steps related to the **Study**:

- Short background
- Data pack selected for the study

The overview will be integrated together with Hazard, Exposure, Vulnerability and Risk & Impact summaries in

Study

Contex

Study Acronym: DC1
Study Name: Climate Change Baseline Assessment for Naples
Study Goal: As city planner, I want to learn about the potential impacts of Climate Change in the Metropolitan City of Naples / Italy on buildings and population. Depending on the outcome of the coarse screening, I might want let experts perform a detailed impact scenario analysis taking into account my local data (e.g. census data and inventories) and further evaluate the effects of applying different adaptation measures.
Study Mode: Pre-feasibility Assessment
Sector: Energy, Transport and other Built Enviornment and Infrastructure
Sub-Sector: Urban development

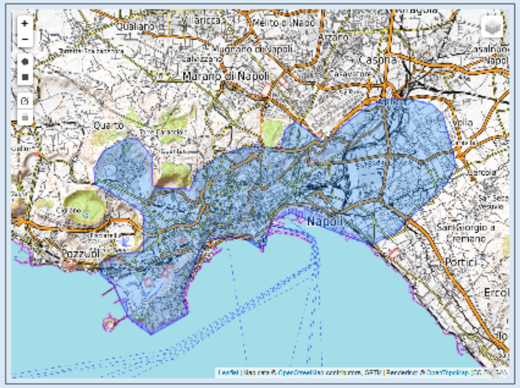
Data

The following data pack is selected for the study:

Climate Change Data Pack for Italy & Slovenia

- Description: Data on: **Hazards** - heat waves, hot days, storms, river flooding, pluvial flooding, future 100-year impact scenarios, weather patterns; **Exposure Elements** - population data; **Vulnerability data** - vulnerability curves.
- Sources: Geodesic Institute, Bari University, EC Commision, EUROSTAT

Area of study



Previous | Next

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

Characterize Hazard (HC)

EU-GL Module Description

The first step to build an adaptation strategy is to identify hazard conditions in the project area, in relation to a range of climate variables and natural hazards.
Climate variables and hazards related to baseline/observed climate, can be modelled by processing historical datasets. As first step the relevant climate variables are selected and serve as a base to derive climate indices necessary for the hazard analysis. For each climate-related hazard one or more relevant indices, such as probability of occurrence, exceedances over threshold values, are identified. The indices are calculated for a defined climatic period and climate variables can be combined with other parameters to evaluate characteristics of more complex natural hazards, such as landslides or floods. Given a defined hazard scale, the hazard conditions in the project area can be quantified.
In dealing with climate change conditions, it is essential to determine for each climate variable or hazard considered how this may evolve in the future, by examining the outputs of climate models. Uncertainty in climate model projections should be acknowledged and recorded by presenting a summary of climate model outputs using appropriate downscaled data.
Therefore hazard analysis focuses on three main characteristics: intensity, frequency, and size or location of the natural hazard.

- Intensity is the observed or potential magnitude of a given natural hazard.
- Frequency relates to how often a natural hazard of a particular intensity is likely to occur, or has occurred, in a given location. This probability is often expressed in return periods.
- Location refers to the affected geographical area. A careful analysis must be made of the actual area to be considered in any project, given that on the one hand the intensity of an event may be related to the evolution of a climatic episode in nearby areas, and on the other hand the modification of e.g. drainage and land use conditions in the project area may modify the intensity of threats from adjacent areas.

Concerning hazard assessment and the needed downscaling of climate models in the area of interest, it is of outmost importance to take into account the environmental variables affecting the addressed area in different ways (e.g. urban morphology, surface types, green cover), especially when dealing with urban development and building/open spaces design.

Scope & Limitations of generic CLARITY ICT Climate Services for Pre-Feasilbity Analysis

CLARITY ICT Climate Services for Pre-Feasilbity Analysis provide support for the following Hazard Data Sets on European level

- Heat Wave (2020, 2050, 2080 / RCP2.6, 4.5, 8.5)
- Pluvial Flood (2020, 2050, 2080 / RCP2.6, 4.5, 8.5)
- River Flood (2020, 2050, 2080 / RCP2.6, 4.5, 8.5)
- Land Slides (2020)

Prevoius | Next

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | **Characterise Hazard** | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | **Data** | Table | Maps | Twins | Summary

The following data and maps on Hazards will be used for the study. Please click on each to see more information.

Heat Wave
- **Euro Cordex 2012**

Pluvial Flooding
- **ESPON Flood Hazards Maps**
- **C3S SWICCA Surface Runoff**
- **Impact Scenario years 2025-2050**

Change data pack

Floods

A flood occurs when water temporarily covers land where it normally does not, such as when water overflows the banks of a river (fluvial flood) or when extremely heavy precipitation saturates the drainage system and the excess water cannot be absorbed (**pluvial flood**). Floods can be produced by heavy precipitation over short periods of time (thunderstorms), moderate precipitation over longer periods of time (stationary low pressure systems), rapid melting of large quantities of snow/ice, or through the rupture of dam walls.

Floods impact on both individuals and communities, and have social, economic, and environmental consequences. Negative impacts include the loss of life, damage to property, destruction of crops, loss of livestock, and the risk to health through waterborne diseases.
In Europe, flood events (especially river floods) rate as one of the greatest with regards to the amount of economic damage produced.

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | **Characterise Hazard** | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | **Table** | Maps | Twins | Summary

Hazard estimates

The following table shows the previously selected hazards, their indices and their current situation for the selected period, as well as their probable occurances for the three future scenarios (early response, effective measures and business as usual).

Hazard	Current Scenario	Early Response Scenario	Effective Measures Scenario	Business as Usual Scenario	Include in Summary
Heat Wave	Medium	Low	Medium	No data	☐
Hot Days	Low	Low	Low	No data	☐
Summer Days	Medium	Low	Medium	No data	☑
Tropical Nights	Low	Low	Medium	No data	☑
River Flooding	High	Low	High	Medium	☑
Flood recurrence	Medium	Low	Low	Medium	☐
River flow	High	Medium	High	Medium	☐

Early Response Scenario – RCP2.6: Radiative forcing peaks by mid-century to a value around 3.1 W/m^2, but returns to 2.6 W/m^2 by 2100 due to a significant reduction in greenhouse gas emissions over time.
Effective Measures Scenario – RCP4.5: The application of a range of technologies and strategies for reducing greenhouse gas emissions is anticipated, which stabilize the total radiative forcing shortly after 2100 to 4.5 W/m^2.
Business as Usual Scenario – RCP8.5: Greenhouse gas emissions increase over time owing to no intervention which lead to high greenhouse gas concentration levels by 2100 resulting in a radiative forcing of 8.5 W/m^2.

Reference:
Special Issue: The representative concentration pathways: an overview, Climatic Change, Volume 109, Issue 1-2, November 2011

LEGEND

Low: of no concern for the study

Medium: will probably affect some types of elements at

High: will most probably affect some types of elements at

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

This tab shows studies (project reports, publications, news, maps) that are relevant to hazards of high and medium occurances for your future scenarios (from the Table tab). Based on your selected hazard, a list of studies is provided, as well as their geo-location on the map. You can either select studies directly on the map, or in the list. You can include these in your final report for the reference and ilustration purposes. More information is available via the View Details button for each study.

Add the following Twin Projects to My Report:

☑ Heat wave in Paris (2012)

Summary: Set of news on heat wave event in Paris (duration, casulties, measures, costs)

Hazard: Heat Wave

Elements at Risk: Population

Adaption measures: green roofs, air conditioning

☑ Include maps — View details

☑ Hot Summer in Spain (2017)

Summary: News on heat wave in summer 2017 in Spain. Set of scientific publications dealing with effects and adoption measures options.

Hazard: Heat Wave, Heat Island

Elements at Risk: Population, Live Stock

Adaption measures: green roofs, air conditioning, extension of green areas

☑ Include maps — View details

☐ Oslo Heat Wave (2003)

Summary: Scientific publication on effects of heat wave with daily temperatures above 25 degrees C, which lasted for 23 days in Oslo and the surrounding area.

Hazard: Heat Wave, Hot Days

Elements at Risk: Population, Live Stock

Adaption measures: none

☐ Include maps — View details

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

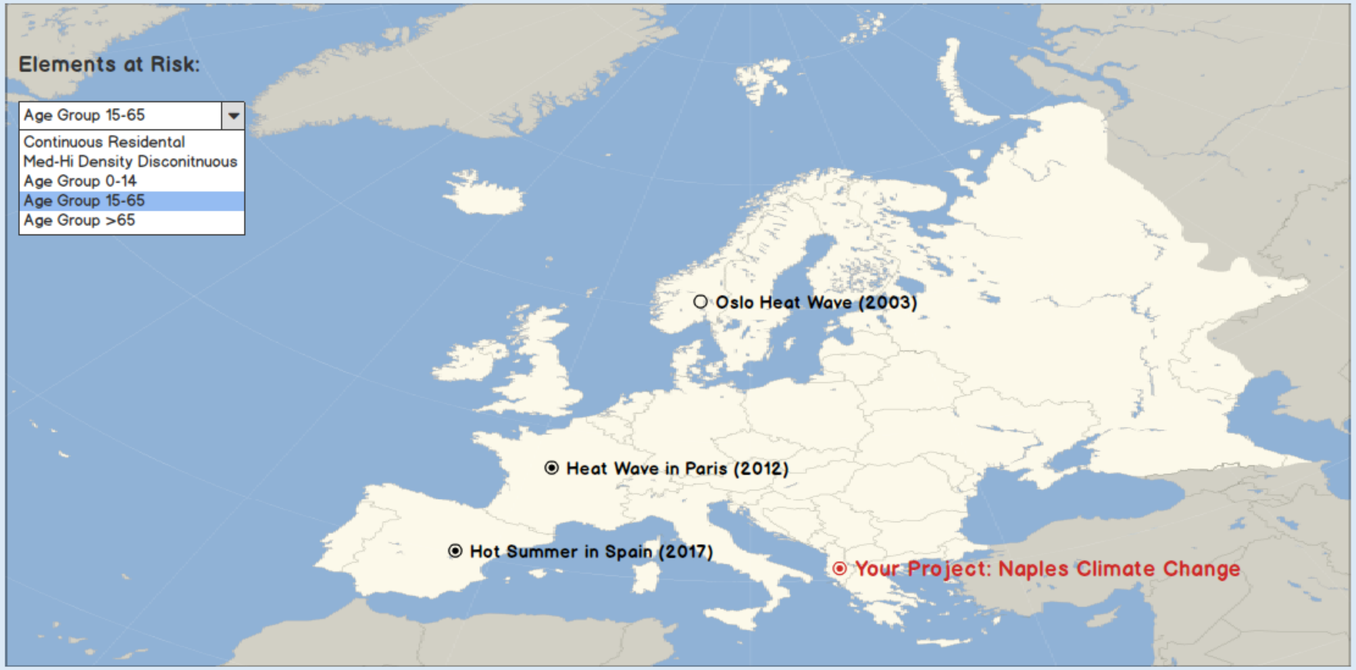
Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | **Evaluate Exposure** | Analyse Vulnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | **Twins** | Summary

This tab shows studies (project reports, publications, news, maps) that are relevant to your elements at risk. Based on your selected exposure element, a list of studies is provided, as well as their geo-location on the map. You can either select studies directly on the map, or in the list. You can include these in your final report for the reference and ilustration purposes. More information is available via the View button for each study.



Add the following Twin Projects to My Report:

☑ Heat wave in Paris (2012)

Summary: Set of news on heat wave event in Paris (duration, casulties, measures, costs)

Hazard: Heat Wave

Elements at Risk: Population

Adaption measures: green roofs, air conditioning

☑ Include maps — View details

☑ Hot Summer in Spain (2017)

Summary: News on heat wave in summer 2017 in Spain. Set of scientific publications dealing with effects and adoption measures options.

Hazard: Heat Wave, Heat Island

Elements at Risk: Population, Live Stock

Adaption measures: green roofs, air conditioning, extension of green areas

☑ Include maps — View details

☐ Oslo Heat Wave (2003)

Summary: Scientific publication on effects of heat wave with daily temperatures above 25 degrees C, which lasted for 23 days in Oslo and the surrounding area.

Hazard: Heat Wave, Hot Days

Elements at Risk: Population, Live Stock

Adaption measures: none

☐ Include maps — View details

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | **Characterise Hazard** | Hazard-Local Effect | Evaluate Exposure | Analyse Vulnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | **Summary**

Hazard Summary - Consolidated View

This report provides a consolidated view of selections and evaluations done in the previous steps related to **Hazard**:

- Short background
- Data of hazards that are selected for the study
- Tableview of the hazards relevant for the study
- Maps for distribution of hazards relevant for the selected area
- Expert studies

The overview will be integrated together with Exposure, Vulnerability and Risk & Impact reports in the final report on "Climate Change Baseline Assessment for Naples".

Background on Hazards

After evaluating the exposure to climate hazards, the next step is to assess the vulnerability to baseline/ observed climate and the expected future climate.
The process includes assessing vulnerability to baseline/ observed climate where a project is considered to be affected by a particular climate variable or hazard, in relation to the project's location and exposure data, will be integrated into a GIS in order to assess the vulnerability with respect to the distribution of the exposed elements at risk.

Data

The following data are selected for the Hazards:

- Basic Clarity dataset on city of Naples
- Data pack 1 (Italian provinces), Buildings' vulnerability estimates based on construction year, building MSL and height, construction material, etc., Year: 2016

Tableview

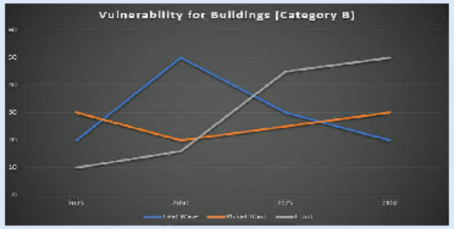
The following tables provide estimates for the selected hazard, exposure elements and years.

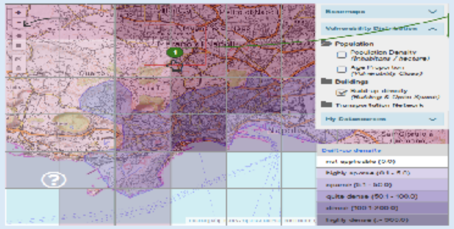
Maps

The following maps are generated for selected hazards, exposure elements and years.

	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium

	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium





< Prevoius Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | **Hazard-Local Effect** | Evaluate Exposure | Analyse Vulnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | **Summary**

Hazard - Local Effects Summary - Consolidated View

This report provides a consolidated view of selections and evaluations done in the previous steps related to **Hazard - Local Effect**:

- Short background
- Data of hazards and exposure elements (scenarios) that are selected for the study
- Tableview of the hazards and exposure elements (scenarios) relevant for the study
- Maps for distribution of hazards and exposure elements (scenarios) relevant for the selected area
- Twin expert studies and publications

The overview will be integrated together with Hazard, Exposure, Vulnerability and Risk & Impact summaries in the final report on "Climate Change Baseline Assessment for Naples".

Background on Hazards

After evaluating the exposure to climate hazards, the next step is to assess the vulnerability to baseline/ observed climate and the expected future climate.
The process includes assessing vulnerability to baseline/ observed climate where a project is considered to be affected by a particular climate variable or hazard, in relation to the project's location and exposure data, will be integrated into a GIS in order to assess the vulnerability with respect to the distribution of the exposed elements at risk.
And so on...

	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium

	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium

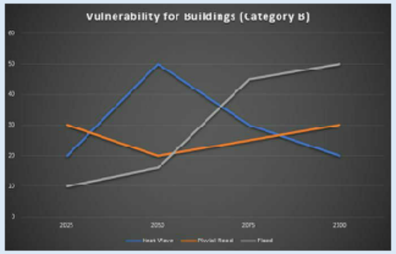
Data

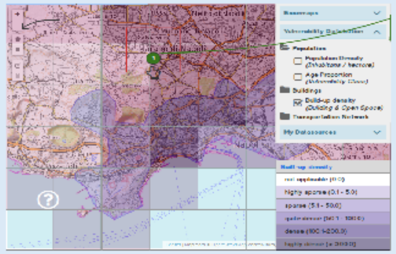
The following data are selected for the Hazards:

- Basic Clarity dataset on city of Naples
- Data pack 1 (Italian provinces), Buildings' vulnerability estimates based on construction year, building MSL and height, construction material, etc., Year: 2016

Tableview

The following tables provide estimates for the selected hazard, exposure elements and years.





Maps

The following maps are generated for selected hazards, exposure elements and years.

Previous | Next

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | **Analyse Valnerability** | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | **Summary**

Vulnerability Summary - Consolidated View

This report provides a consolidated view of selections and evaluations done in the previous steps related to **Vulnerability**:

- Short background
- Data of vulnerability factors/sources that are selected for the study
- Tableview of the vulnerability estimates for selected hazards and (exposure) elements
- Maps for distribution of vulnerability estimates according to elements of interest (e.g., buildings)
- Expert studies

The overview can be integrated together with Hazard, Exposure and Risk & Impact reports in the final report on "Climate Change Baseline Assessment for Naples".

Background on Vulnerability Assessment

After evaluating the exposure to climate hazards, the next step is to assess the vulnerability to baseline/ observed climate and the expected future climate.
The process includes assessing vulnerability to baseline/ observed climate where a project is considered to be affected by a particular climate variable or hazard, in relation to the project's location and exposure data, will be integrated into a GIS in order to assess the vulnerability with respect to the distribution of the exposed elements at risk.
And so on...

Data

The following data are selected for the Vulnerability assessment:

- Basic Clarity dataset on city of Naples
- Data pack 1 (Italian provinces), Buildings' vulnerability estimates based on construction year, building MSL and height, construction material, etc., Year: 2016

Tableview

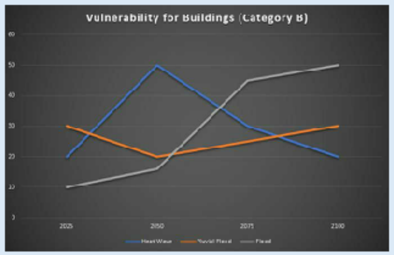
The following tables provide estimates for the selected hazard, exposure elements and years.

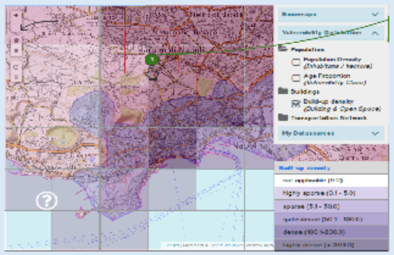
Maps

The following maps are generated for selected hazards, exposure elements and years.

	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium

	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium





< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | **Hazard-Local Effect** | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | **Data** | Table | Maps | Twins | Summary

Data

The following data and maps for Hazard Local effects will be used for the study. Please click on each to see more information.

Heat Wave
- **Buildings**
  - Building Density
    - FUA (Urban Atlas)
    - Building Hieghts (Urban Atlas and elaboration with populaiton data
  - Building Quality
    - Cooling loads (S/V shape factor) - Clarity generated
    - Cooling loads (building envelope quality) - Clarity generated
- Open Spaces
  - Surface Temperature
    - Emissivity by land use (Urban Atlas)
    - Albedo by surface type (Urban Atlas and European Settlement Map)
  - Hillshade
    - Green fraction (Tree Cover Density High Resolution Layers)
    - Aspect (EU-DEM)

Residential Buildings

There are two common types of buildings relevant to this study:
- Continuous residential, which are typical for urban areas and the post-1980 period
- Medium-High discontinuous, which cover large areas, but which follow a more chaotic pattern than the continuous residental

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

[Start](#) > [My CLARITY](#) > [Climate Change Assessment](#) > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | **Evaluate Exposure** | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

Data

The following data and maps for Hazard Local effects will be used for the study. Please click on each to see more information.

- v Population
  - ^ Age group 0-14
  - ^ Age group 15-65
  - ^ Age group >65
- ^ Residental Buildings
- v Infrastructure
  - ^ Roads
  - ^ Railways

Residential Buildings

There are two common types of buildings relevant to this study:
- Continuous residential, which are typical for urban areas and the post-1980 period
- Medium-High discontinuous, which cover large areas, but which follow a more chaotic pattern than the continuous residental

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

[Legal information](#) | [About CLARITY](#) | [Contact](#)

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | **Evaluate Exposure** | Analyse Valnerability | Assess Risk and Impact

Introduction | **Data** | Table | Maps | Twins | Summary

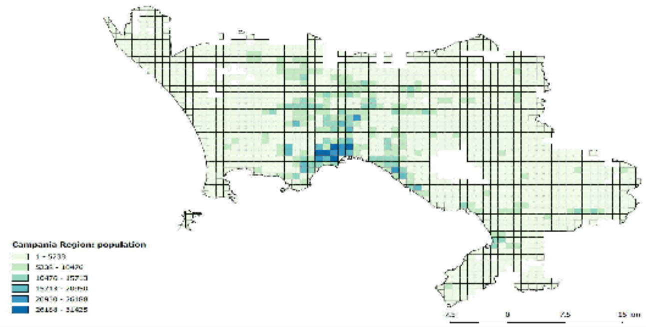
Data

The following data and maps on Exposure Elements will be used for the study. Please click on each to see more information.

- v Population
  - ^ Age group 0-14
  - v Age group 15-65
    - **Eurostat 2011 Census Data**
    - Population and Vital statistics report (UN)
  - ^ Age group >65
- ^ Residental Buildings
- v Infrastructure
  - ^ Roads
  - ^ Railways

	Population census data
Resolution:	NUTS 3 Level, 100 m grid
Location:	Italy
Source:	Eurostat 2011 Census data , Clarity (myclarityservices.eu)
Package size:	58 MB (data), 550 MB (maps, raster data)
File formats:	zip, shp, xlsx
Last update:	2011

An example of the content: The map shows the population distribution for Naple's area.



< Prevoius

Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | **Evaluate Exposure** | Analyse Valnerability | Assess Risk and Impact

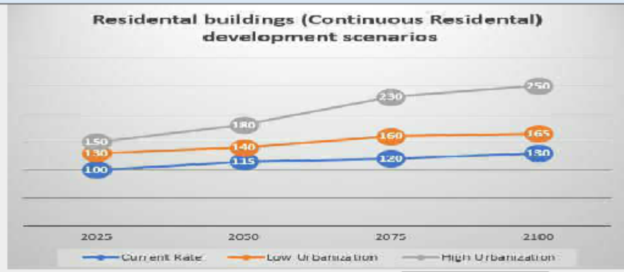
Introduction | Data | **Table** | Maps | Twins | Summary

Exposure elements estimates for future scenarios

The following table and the associated chart show the development of different categories' elements for several scenarios. There are always 3 scenarios considered: 1) the current, today's rate development, 2) low rate development and 3) high rate development for the selected time period. The values will be used in assessing the vulnerability, risk and impact in the next steps.

RESIDENTAL BUILDINGS	Current	2050	2100
Continous Residental	100	130	250
Med-Hi Density Discontinuous	100	70	160
Non Residential	130	100	100

Include in Report



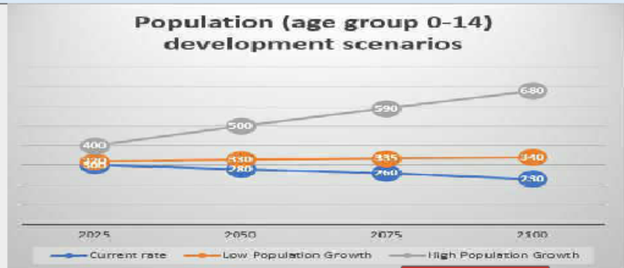
Include in Report

Scenario:

Business as Usual Scenario
Early Response Scenario
Effective Measures Scenario
Business as Usual Scenario

POPULATION	Current	2050	2100
Age group 0-14	300	320	400
Age group 15-65	400	440	600
Age group >65	100	120	170

Include in Report



Include in Report

Include all in Report

< Prevoius

Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | **Hazard-Local Effect** | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

Data

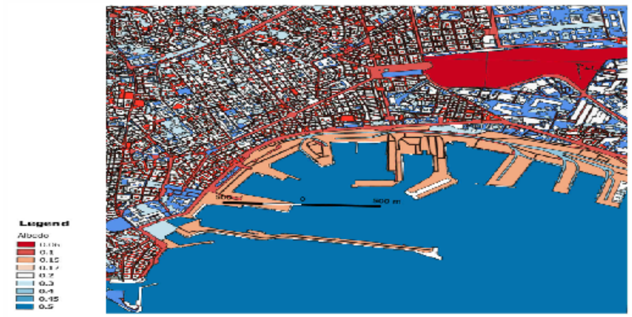
The following data and maps for Hazard Local effects will be used for the study. Please click on each to see more information.

Heat Wave
- Buildings
  - Building Density
    - FUA (Urban Atlas)
    - Building Hieghts (Urban Atlas and elaboration with populaiton data
  - Building Quality
    - Cooling loads (S/V shape factor) - Clarity generated
    - Cooling loads (building envelope quality) - Clarity generated
- Open Spaces
  - Surface Temperature
    - Emissivity by land use (Urban Atlas)
    - Albedo by surface type (Urban Atlas and European Settlement Map)
  - Hillshade
    - Green fraction (Tree Cover Density High Resolution Layers)
    - Aspect (EU-DEM)

	Albedo distribution	
Resolution:	EEA39 countries, Class 1: 0.25 ha	Class 2-5: 1ha
Location:	Italy	
Source:	Clarity (myclimateservices.eu)	
Package size:	Napoli: 100,5 MB (vector data)	
File formats:	shp	
Last update:	2017	

The albedo and surface temperature associated with various land covers differ differ according to the type of surface. The use of materials with high solar reflectance and thermal emissivity, as well as the increase of vegetation in urban areas, allow to increase albedo and reduce heat stress. Extensive use of light colors in paving public spaces, which can cause glare and visual discomfort, needs to be balanced in accordance to shading conditions of the site.

An example of the content:
The map shows the distribution of albedo for one of Naple's districts.



< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1 - Adaptation Scenarios for Metropolitan Resilience Planning

Study | Characterise Hazard | **Hazard-Local Effect** | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

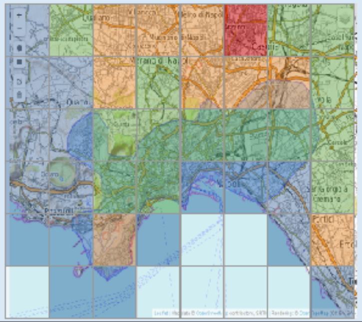
Hazard estimates

The following table shows the previously selected hazards, their indices and their current situation for the selected period, as well as their probable occurances for the three future scenarios (early response, effective measures and business as usual).

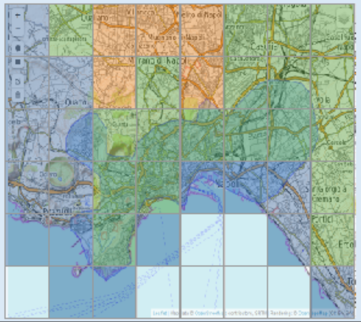
Hazard	Exposure Element	Parameter	Current Level	Current Scenario	Early Response Scenario	Effective Measures Scenario	Business as Usual Scenario	Include in Summary
Heat Wave	Buildings	Building Density	Medium	High	High	High	High	☐
Heat Wave	Buildings	Building Quality	High	High	High	High	High	☐
Heat Wave	Open Spaces	Surface Temperature	Low	Medium	Medium	High	High	☑
Heat Wave	Open Spaces	Hillshade	Medium	Medium	Medium	High	High	☐
Pluvial Flood	Open Spaces	Building Fabric	High	Medium	Medium	High	High	☐
Pluvial Flood	Open Spaces	Slope	Medium	Medium	Medium	High	High	☐
Pluvial Flood	Open Spaces	Surface Quality	Medium	Medium	Medium	High	High	☑

Heat Wave Hazard - local effects

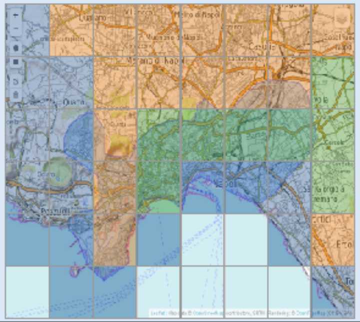
Current Scenario



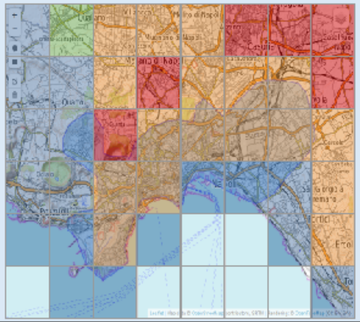
Early Response Scenario



Effective Measures Scenario



Business as Usual Scenario



Early Response Scenario – RCP2.6: Radiative forcing peaks by mid-century to a value around 3.1 W/m^2, but returns to 2.6 W/m^2 by 2100 due to a significant reduction in greenhouse gas emissions over time.
Effective Measures Scenario – RCP4.5: The application of a range of technologies and strategies for reducing greenhouse gas emissions is anticipated, which stabilize the total radiative forcing shortly after 2100 to 4.5 W/m^2.
Business as Usual Scenario – RCP8.5: Greenhouse gas emissions increase over time owing to no intervention which lead to high greenhouse gas concentration levels by 2100 resulting in a radiative forcing of 8.5 W/m^2.

LEGEND

Low: of no concern for the study

Medium: will probably affect some types of elements at risk

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Vulnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

Evaluate Exposure (HC)

EU-GL Module Description

Once the hazard characterization in the project area has been assessed, the next step is to evaluate exposure to climate hazards of the elements at risk considered (e.g. population, buildings, infrastructures, etc.) relevant at the project location(s).
The exposure is the quantitative distribution, in space and time, of elements exposed (people, buildings, infrastructures, etc.) grouped on the base of their behaviour under effect of the hazard into categories (called "vulnerability classes"), defined on the base of specific characteristics (i.e., age for people, structur- al-typological characteristics for buildings, etc.), able to influence the damageability of the elements ex- posed against hazards.
Due to differences in assessment approaches between AR4 and AR5, the nature of the EU-GL modules 2a and 2b changes in CLARITY, resulting in:

- **Module 2a** - Baseline exposure, that is based on the current distribution of the elements at risk in the area of interest. Baseline exposure can be estimated by combining the available data on e.g. population distribution, land use and land cover. Exposure must be calculated separately for each element at risk type.

- **Module 2b** – Future exposure, that is based on the planned distribution of the elements at risk in the future. In CLARITY, this will usually correspond to the planned project and the expected distribution of the elements at risk will have to be provided by the user or by an expert working on their behalf.

Due to a combination of ethical and technical considerations, in the CLARITY project will not be specified individual elements at risk. Instead, all elements at risk of a certain type in a certain area will be grouped together, resulting in a per element at risk exposure map.

Scope & Limitations of generic CLARITY ICT Climate Services for the Pre-Feasilbity Analysis

CLARITY ICT Climate Services for Pre-Feasilbity Analysis provide support for the following Exposure Data Sets on European level

- Population (current conditions)
- Buildings (current conditions)

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | **Evaluate Exposure** | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | **Summary**

Exposure Summary - Consolidated View

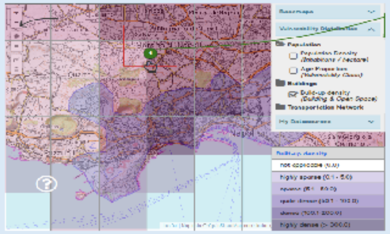
This report provides a consolidated view of selections and evaluations done in the previous steps related to **Exposure**:

- Short background
- Data of exposure factors/sources that are selected for the study
- Tableview of the exposure estimates for selected hazards and elements
- Maps for distribution of exposure estimates according to elements of interest (e.g., buildings)
- Expert studies

The overview can be integrated together with Hazard, Vulnerability and Risk & Impact reports in the final report on "Climate Change Baseline Assessment for Naples".

	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium

	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium



Background on Vulnerability Assessment

After evaluating the exposure to climate hazards, the next step is to assess the exposure to climate hazards of the elements at risk considered (e.g. population, buildings, infrastructures, economy, environment, etc.) relevant at the project location(s).
And so on…

Data

The following data are selected for the Vulnerability assessment:

- **Basic Clarity dataset on city of Naples**
- **Data pack 1 (Italian provinces), Buildings' vulnerability estimates based on construction year, building MSL and height, construction material, etc., Year: 2016**

Tableview

The following tables provide estimates for the selected hazard, exposure elements and years.

Maps

The following maps are generated for selected hazards, exposure elements and years.

Prevoius | Next

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | **Analyse Valnerability** | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

Analyse Vulnerability (VA)

EU-GL Module Description

After evaluating the exposure to climate hazards, the next step is to assess the vulnerability to baseline/ observed climate and the expected future climate.

- **Module 3a - Assess vulnerability to baseline/ observed climate**: where a project is considered to be affected by a particular climate variable or hazard (Module 1), in relation to the project's location and exposure data (Module 2a), will be integrated into a GIS in order to assess the vulnerability with respect to the distribution of the exposed elements at risk.

For each project site, the vulnerability (V) is calculated for each element at risk considered, by developing appropriate vulnerability functions (that take into account hazard parameters as derived by the climate change models applied as well as the typology, characteristics and properties of each element at risk to consider its adaptive capacity) able to correlate the relevant hazard parameters (e.g. duration of a heat wave in days) with the expected impact/damage on the element at risk (potentially split in relevant subcategories according to adaptability e.g. "population" can be split in children, elders, low-income, etc.).

- **Module 3b: Assess future climate vulnerability**: future vulnerability (V) is calculated by developing appropriate vulnerability functions that take into account using the hazard parameters as derived by the climate change models applied (see Module 3a). (The adaptive capacity is frequently kept stable for each element at risk – property, unless the shares of the different elements at risk classes may change over time– e.g. the number of old / low quality houses, share of elderly people in certain areas).

The uncertainty, inherent in the assessment, should also be acknowledged in the final vulnerability classification, which is tricky as various uncertainties come together (modelling uncertainty resulting in hazard, uncertainty in projecting share and distributions of elements at risk, uncertainty in capability to better adapt and coping with the expected exposure.

In general, a vulnerability analysis might reveal that more attention is needed regarding specific risks. A detailed vulnerability analysis should then be carried out (repeat step 1-3), which e.g. involves a more detailed breakdown of the project into smaller elements and potentially on-site inspections of specific locations to assess the exposure to climate hazards and address the different adaptation capacities.
For infrastructural projects, the EU-GL considers several aspects of the project when determining the sensitivity of the project to climate related hazards. Determining the relevance to the response of project options to climate variables in relation to each of the following four key themes should be taken in into account:

- On-site assets and processes (physical + functional impact);
- Transport links (physical + functional impact);
- Inputs (water, energy, others) (functional impact);
- Outputs (products, markets, customer demand) (functional impact).

Scope & Limitations of generic CLARITY ICT Climate Services for Pre-Feasilbity Analysis

CLARITY ICT Climate Services for Pre-Feasilbity Analysis provide support for the following Exposure Data Sets on European level

- Population (current conditions)
- Buildings (current conditions)
- Road Network (current conditions)

We used fixed vulnerability classes / curves, ...

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | **Analyse Valnerability** | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

Vulnerability curves for selected hazard and exposure element

Vulnerability curves display the relation between hazard intensity and degree of damage for a group of elements-at-risk (e.g., a certain building type). You can select your element at risk and hazard below.

Element at Risk:

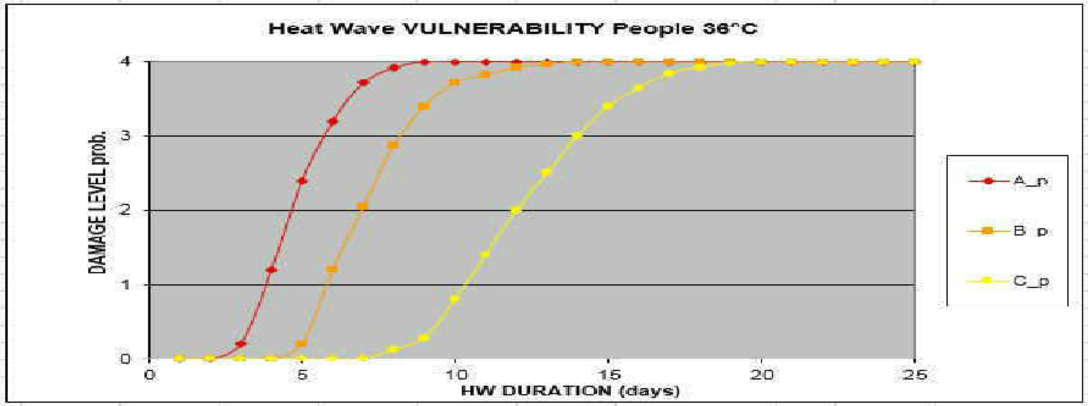
Population
- Buildings
- Population

Hazard:

Heat Wave
- Heat Wave
- Pluvial Flooding
- River Flooding

Description:
There is a well-established link between increased ambient temperatures and adverse health outcomes, such as dizziness, headhache, faining, heat stroke and sunstroke. Especially the elderly population is affected and thus is in greater danger than the other population groups.

The increase of temperature has been demonstrated for several countries (e.g., UK), and across a range of settings. It is also unequivocal that the global climate is warming and the consensus is that this is largely due to anthropogenic causes. The frequency of extreme heat events or heat waves is also projected to increase.



Level of damage			Description
(yellow)	D0	No damage	
(green)	D1	Caution	Fatigue possible, discomfort
(blue)	D2	Extreme caution	Sunstroke, heat cramps, heat exhaustion possible
(orange)	D3	Danger	Sunstroke, heat cramps, heat exhaustion likely and heatstroke possible
(red)	D4	Extreme danger	Sunstroke and heatstroke highly likely

Include in Report

Include All in Report

< Prevoius

Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | **Analyse Valnerability** | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

Vulnerability estimates for elements when exposed to hazards

The following table and bar chart show the vulnerability levels of (selected) exposure elements when exposed to hazards.

	Heat Wave	Pluvial Flooding	River Flooding
Buildings			
Continuous Residental	Low	Low	Low
Med-Hi Density Discontinous	Low	Medium	Medium
Population			
Age group 0-14	High	Medium	Low
Age group 15-50	Low	Medium	Medium
Age group >50	High	High	Medium

Include in Report

Include in Report

The vulnerability distribution for the selected area with categorizations (Low, Medium, High) according to the estimates related to building location and altitude, building materail (bricks, concrete, etc.), height of the building (e.g., number of floors), and other relevant information.

LEGEND
Low: of no concern for the study
Medium: will probably affect some types of elements at risk
High: will most probably affect some types of elements at risk

Continous Residental

- Continous Residental
- Med-Hi Density Discontinous
- Low-Density Discontinous
- Non Residental
- Age group 0-14
- Age group 15-65
- Age group >65

Include All in Report

Prevoius | Next

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Vulnerability | **Assess Risk and Impact**

Introduction | **Data** | Impact Indicators | Impact Maps | Risk | Summary

Data

The following data on impact scenarios and climate scenarios are used for the study. Please click on each to see more information.

Impact Scenarios:

v Heat Wave

Lucifer + 2 Degrees Scenario (based on 2017 Lucifer Heat Wave in southern Europe)

Southern Europe Heat Wave + 2 degrees increase (based on 2007 heat wave)

^ Pluvial Flooding

^ River Flooding

Climate Scenarios:

^ Heat Wave

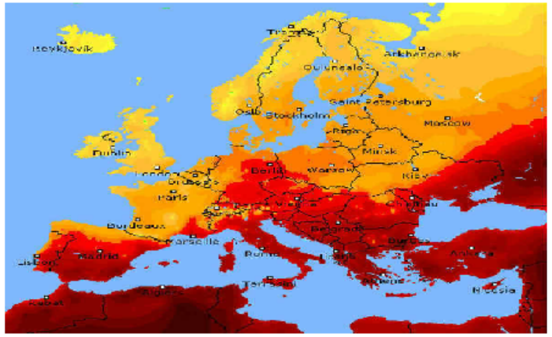
^ Pluvial Flooding

^ River Flooding

Heat Wave Lucifer Scenario

The heat wave dubbed Lucifer or Jolanda (by the Deutscher Wetterdienst) was an extreme heat wave that affected Southern Europe in 2017. It started at the end of July, and lasted till the fifth of August, before conditions gradually began to cool down again. Some countries that were affected included Italy, France, Croatia, Spain, Greece and Turkey. Those countries experienced temperatures of 40 °C or more, killing at least five people in the process. The remainder of August was very warm, with temperatures around 30 °C, but not dangerously hot as it had been earlier on in the month. (Source: Wiki)

The scenario offers a view on the impact of a Lucifer-like event, but now with even higher temperatures (+ 2 degrees).



< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Impact Indicators | Impact Maps | Risk | Summary

Assess Risks and Impact (RA & IA)

EU-GL Module Description

This module provides a structured method of analysing climate hazards and their impacts to provide the fundamental information for decision-making.
In line with the updated approach as outlined in the IPCC-AR5, this evaluation is derived by the general relation R=H x E x V.
The risk and impact assessment1 process work through taking into account the magnitudes and likelihoods of the impacts associated with the hazards identified in Module 2 - Evaluate exposure to climate hazards and assessing the significance of the assessed risks to the success of the project. Risk and impact assessment may well identify issues which have not been picked up in the vulnerability analyses.

- **Risk assessments**: aim at defining a synthetic index/coefficient, representing the convolution of the probabilities of different hazard intensities (H), in relation to the exposure (E) and vulnerability (V) conditions in a given area. Such a risk index is useful to allow high-level comparisons between alternative project options but does not allow detailed quantification of impacts on considered elements at risk.
To produce reliable results that can be a sound basis for decision making in the field of infrastructure development, risk assessment should be always based on numerical modelling procedures . Probabilistic quantitative risk assessments can be undertaken in the early phases of the asset lifecycle, with different levels of detail (including the spatial resolution of the models' output) depending on the availability of exposure and vulnerability. This requires running various scenarios and comparing the results with respect to the frequency of event occurrence and event magnitude by means of a probability distribution.

Impact scenario analysis: as a complement to the risk assessment, by choosing in a "deterministic" way one or more reference events (among actually occurred past events or as a result of numerical hazard simulation models) the corresponding "impact scenario analyses" can be performed using numerical impact models, providing detailed damage evaluation on selected elements at risk following specific event(s) (Here again one has to consider the uncertainty delivered by the risk-modelling, and vulnerability modelling and the exposure modelling with respect to future distribution of the elements at risk..
Unlike the risk assessment, the impact scenario analysis represents a simulation of the expected impacts of a specific hazard (in terms of intensity, location, etc.), derived from the application of an impact model able to correlate hazard (H), exposure (E) and vulnerability (V) characteristics to produce a detailed quantification of damage on elements at risk considered (e.g. population, buildings). An analysis based on the output of the impact models can be used to support decision-making, e.g. by applying multi-criteria and/or cost-benefit analyses on a number of relevant impact scenarios.
Probabilistic assessment and uncertainty evaluation are provided also in relation to impact scenario analyses, mainly related to the probability of occurrence of the hazard type and intensity at the location of the analysis.

The detailed risk assessment and/or scenario analysis is divided into 3 steps: (1) It involves an analysis (e.g. refinement of hazard properties, exposure distribution, and algorithms to model the relations between H, E, V) by specialists to quantitatively evaluate risks while taking into account climate (and socio-economic) change. (2) Aspects and characteristics of the most relevant climate hazards need to be defined (e.g. magnitude and direction of change, statistical basis, averaging period and joint probability events). In addition, it is also essential to determine the aspects and characteristics related to exposure and vulnerability parameters relevant for the elements at risk considered in the area of interest. (3) The ability of the project to cope with existing climate variability and with future climate hazards should be assessed. This typically involves the use of numerical models (e.g. climate impact models), that describe some element of the project, namely the relevant exposure and vulnerability parameters likely to be affected by the hazard(s) considered (e.g. spatial and technical characteristics of ground and underground floors of a building in a flood-prone area). The assessment should involve a number of climate models (e.g. hydrological, flood risk, heat wave models, etc.) as well as specific vulnerability functions in relation to the hazard(s) and element(s) at risk considered. A range of future climate scenarios should be investigated based on a number of climate models and a range of greenhouse gas emissions scenarios, such as RCP4.5 and/or RCP8.5.

1 Risk is a probabilistic measure that relates to a cumulative effect of all (likely) hazard occurrences, whereas the impact merely indicates the effects of specific reference events.

Scope & Limitations of generic CLARITY ICT Climate Services for Pre-Feasilbity Analysis

CLARITY ICT Climate Services for Pre-Feasilbity Analysis provide support for the following Exposure Data Sets on European level

- Population (current conditions)
- Buildings (current conditions)

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Table | Maps | Twins | Summary

Evaluate Exposure (HC)

EU-GL Module Description

Once the hazard characterization in the project area has been assessed, the next step is to evaluate exposure to climate hazards of the elements at risk considered (e.g. population, buildings, infrastructures, etc.) relevant at the project location(s).
The exposure is the quantitative distribution, in space and time, of elements exposed (people, buildings, infrastructures, etc.) grouped on the base of their behaviour under effect of the hazard into categories (called "vulnerability classes"), defined on the base of specific characteristics (i.e., age for people, structur- al-typological characteristics for buildings, etc.), able to influence the damageability of the elements ex- posed against hazards.
Due to differences in assessment approaches between AR4 and AR5, the nature of the EU-GL modules 2a and 2b changes in CLARITY, resulting in:

- Module 2a - Baseline exposure, that is based on the current distribution of the elements at risk in the area of interest. Baseline exposure can be estimated by combining the available data on e.g. population distribution, land use and land cover. Exposure must be calculated separately for each element at risk type.

- Module 2b – Future exposure, that is based on the planned distribution of the elements at risk in the future. In CLARITY, this will usually correspond to the planned project and the expected distribution of the elements at risk will have to be provided by the user or by an expert working on their behalf.

Due to a combination of ethical and technical considerations, in the CLARITY project will not be specified individual elements at risk. Instead, all elements at risk of a certain type in a certain area will be grouped together, resulting in a per element at risk exposure map.

Scope & Limitations of generic CLARITY ICT Climate Services for the Pre-Feasilb

CLARITY ICT Climate Services for Pre-Feasilbity Analysis provide support for the following Exposure Data Sets on European level

- Population (current conditions)
- Buildings (current conditions)

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | **Assess Risk and Impact**

Introduction | Data | Impact Indicators | Impact Maps | Risk | **Summary**

Assess Risk & Impact Summary - Consolidated View

This report provides a consolidated view of selections and evaluations done in the previous steps related to **Assess Risk & Impact**:

- Short background
- Data on risk and impact factors/sources that are selected for the study
- Impact estimates for a selected hazard and impact scenarios
- Maps for distribution impact estimates according to elements at risk and hazards
- Risk estimates based on elements at risk and hazards

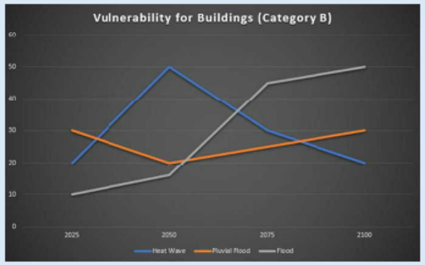
The overview will be integrated together with the Hazard (including local effects), Exposure and Vulnerability summaries in the final report on "Climate Change Baseline Assessment for Naples".

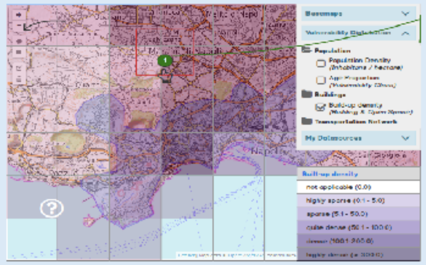
	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium

	Heat Wave	Pluvial Flood	Flood
Buildings			
A (concrete)	Medium -> High	Medium -> High	High -> Medium
B (bricks)	Medium -> High	Medium -> High	High -> Medium
Population			
A (age: 0<18)	Medium -> High	Medium -> High	Medium -> Low
B (age: 19<50)	Medium -> High	Medium -> High	High -> Medium
C (age: >50)	Medium -> High	Low -> High	Low -> Medium

Background on Assess Risk and Impact

After evaluating the exposure and vulnerability of elements at risk to climate hazards, the next step is to assess the risk and impact considering chosen impact and climate scenarios.





Data

The following datapack is selected for the risk and impact assessment:

- Climate Change Data Pack for Italy and Slovenia.

Topics included are: climate change scenarios, avalanches, water flows, storms, hot days, marine, urbanization, infrastructure, maps.
Description: Data on hazards, heat waves, hot dasy, storms, river flooding, pluvial flooding, future 100-year impact scenarios, weather patterns, elemtns at risk.

< Prevoius | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Clarity

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | Assess Risk and Impact

Introduction | Data | Impact Indicators | Impact Maps | Risk | Summary

Heat Wave: Population

3 representative Heat Wave Scenarios 2050-2100, RCP 2.6

no varation in exposure considered (city expansion), no adaptation measures considered (changes in building typology)

Name	Duration (Days)	avg. Temp (°C).
AVERAGE	13	38.5
WORST	21	41.3

Casualties

Proportion of population	Aspect	Indicator (AVERAGE)	Indicator (WORST)	Indicator (MOST LIKELY)
Vulnerability Class A below 14 years of age	Mortality (# of People)	0	2	0
	Morbidity (# of People)	25	100	50
Vulnerability Class B between 14 and 65 years of age	Mortality (# of People)	0	1	0
	Morbidity (# of People)	24	180	50
Vulnerability Class D above 66 years of age	Mortality (# of People)	3	15	1

Economic Impact

Pluvial Flood: Buildings

Pluvial Flood: Raod Network

< Prevoius Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

My Climate Service Tools

http://tools.myclimateservice.eu

Start > My CLARITY > Climate Change Assessment > DC1-CCBA-PRF

DC1-CCBA-PRF - Pre-feasibility Climate Change Baseline Assessment for Naples

Study | Characterise Hazard | Hazard-Local Effect | Evaluate Exposure | Analyse Valnerability | **Assess Risk and Impact**

Introduction | Data | Impact Indicators | Impact Maps | **Risk** | Summary

Risk estimates/assessments for all hazards and exposure elemer

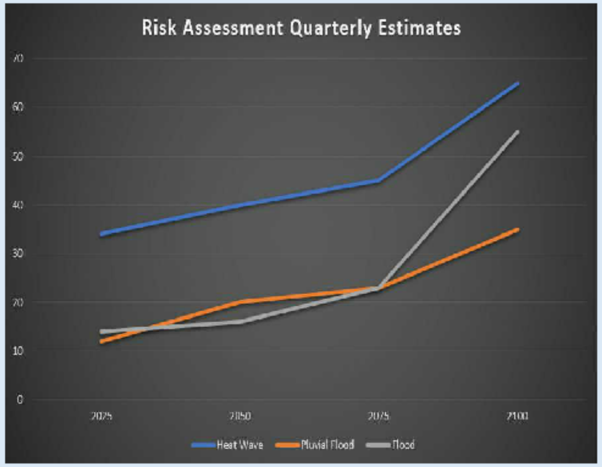
One year assessment

2025 ▾
2025
2050
2075
2100

	Heat Wave	Pluvial Flood	Flood
Population			
Age group 0-14	53	12	10
Age group 15-65	34	12	14
Age group >65	34	12	12
Buildings			
Med-Hi Density Disc. Residential	-	45	33
Low Density Disc. Residential	-	79	18

Age group 16-65 ▾
Age group 0-15
Age group 16-65
Age group >65
Med-Hi Density Disc. Residential
Low Density Disc. Residential
Non Residential

Quarterly risk assessments for selected exposure element



Comparisons

2025 vs 2075 ▾
2025 vs 2050
2025 vs 2075
2025 vs 2100
2050 vs 2075
2050 vs 2100
2075 vs 2100

	Heat Wave	Pluvial Flood	Flood
Population			
Age group 0-14	53 -- 78	12 -- 23	10 -- 8
Age group 15-65	34 -- 45	12 -- 23	14 -- 23
Age group >65	34 -- 23	12 -- 56	12 -- 33
Buildings			
Med-Hi Density Disc. Residential	-	45 -- 10	33 -- 12
Low Density Disc. Residential	-	79 -- 67	18 -- 12
Non Residential	-	56 -- 45	18 -- 13

< Previous | Next >

This project has received funding from the European Union's Horizon 2020 research and inovation programme under grant agreement No 730355

Legal information | About CLARITY | Contact