The climate impact assessment marketplace

Helping urban planners to understand the climate change risks, develop and implemet adaptation plans

CLARITY 4 CLIMATE RESILIENCE

CLARITY4CR Webinars

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

Clarity4CR webinar topics:

- **"Climate Services Marketplace"** webinars presenting the tools and services for climate change adaptations as well as experience the online portal myclimateservices.eu.
- **"Climate impact check - In my region"** webinars presenting the findings of various regional Climate Adaptation studies.
- **"Climate Adaptation Policy & Technology"** webinars discussing the Climate Change Adaptation policy and the tools and services that will help addressing the policy requirements in the EU, its member states and regions.

Schedule: *every Thursday 10:00-11:00 CET*

Target audience: *most webinars will target people with professional interest in the Climate Change Adaptation – scientists, planers, infrastructure and solutions owners.... Occasionally, we may also organise educational webinars for the general public (tbd.).*

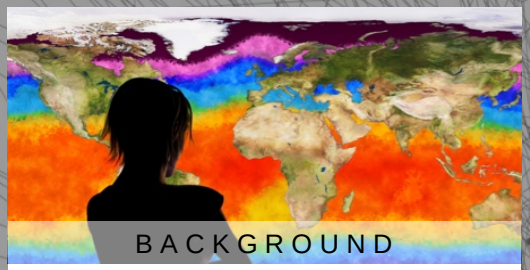
TYPE ☑ Multiple Choice With Multiple Answers

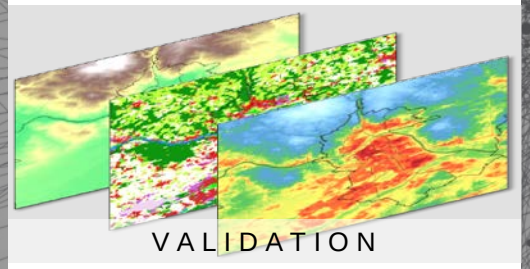
(How) would you like to participate in (future) Clarity4CR webinars

- ☑ As (co-)organizer — 61 characters left
- ☑ As a panelist — 43 characters left
- ☑ As part of the audience — 47 characters left
- ☑ Not sure. — 37 characters left

51 characters left

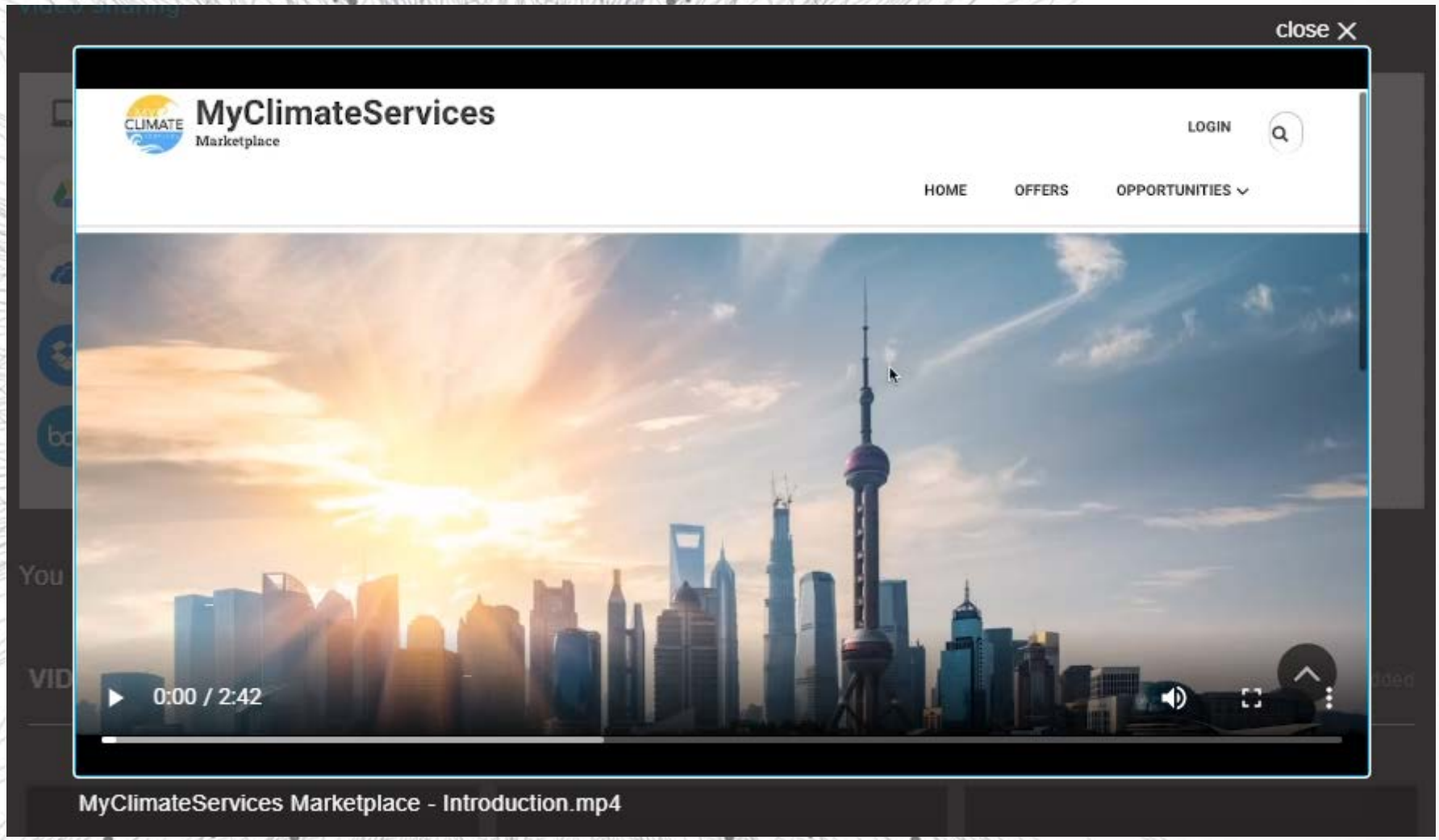
+ Add another answer

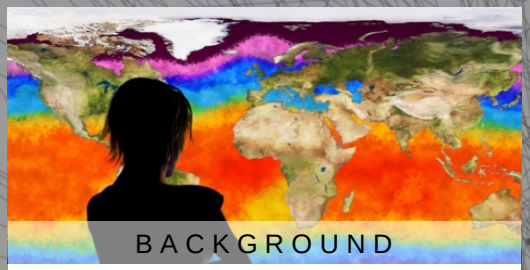


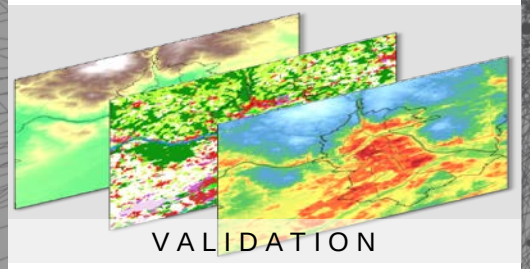


Optimize the climate change adaptation planning process (easier, faster, lower cost)

1. **Marketplace** where project owners are offered relevant **Expert Services and Solutions**
2. **Self-service screening** of the relevant hazards, exposed elements at risk, vulnerabilities, resulting climate risks and relevant adaptations measures
3. Standardized workflow and reports template for **expert studies.**


close
MyClimateServices
Marketplace
LOGIN
HOME
OFFERS
OPPORTUNITIES
0:00 / 2:42
MyClimateServices Marketplace - Introduction.mp4





For Climate Adaptation experts and solution providers: reach (more) potential customers

1. Advertise <u>your</u> Services and Solutions on the “myclimateservices.eu” Marketplace
2. Co-organise CLARITY4CR webinars
3. Integrate your solutions in CLARITY reporting workflow(s).

Do you think that myclimateservices.eu can contribute to better market access for climate services?

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- Yes

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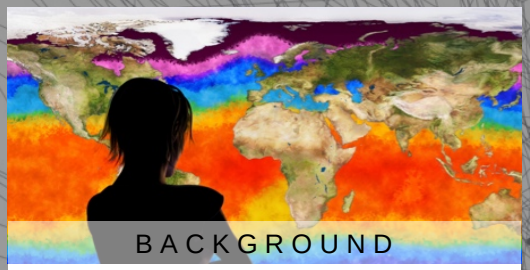
- No

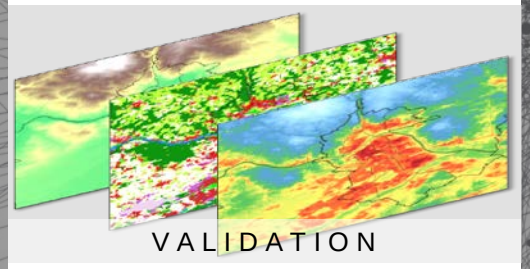
58 characters left

- Not sure

52 characters left

+ Add another answer





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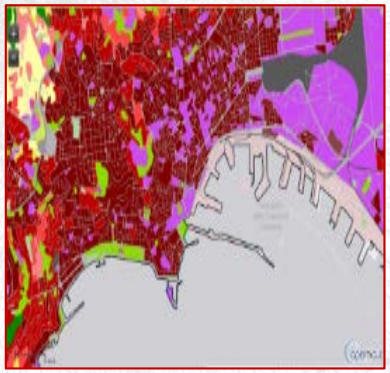
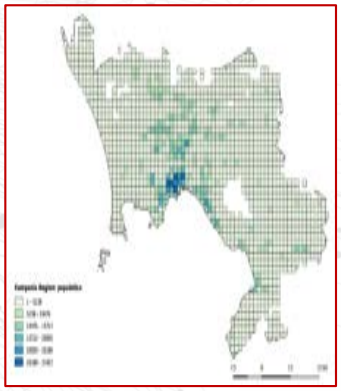
Starting point: existing EU-level (open) Data

Euro Cordex

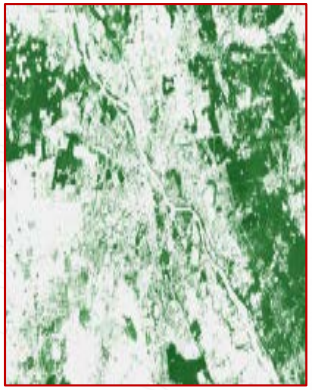
European Settlement Map (ESM)



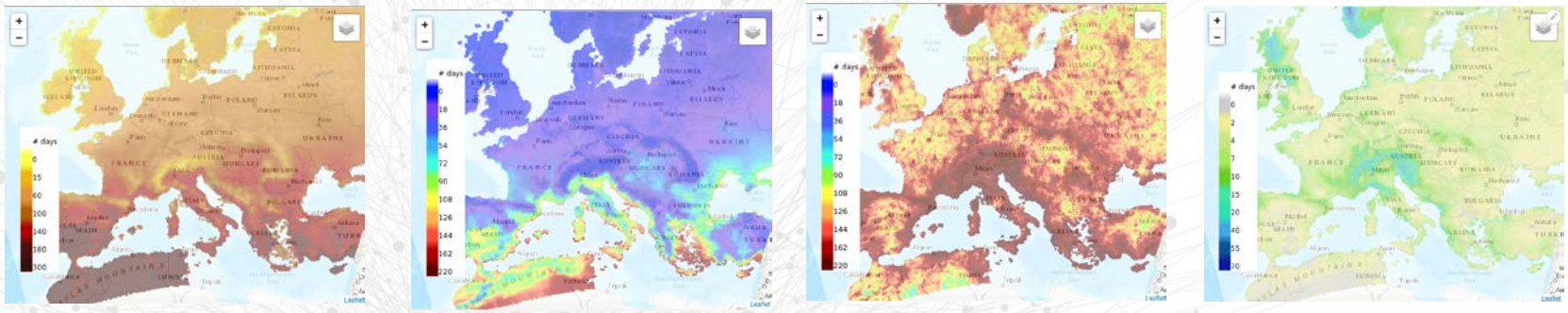
Urban Atlas (UA)



Eurostat



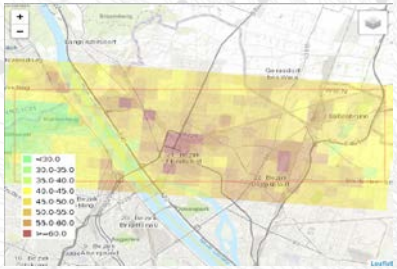
Street tree layers (STL)

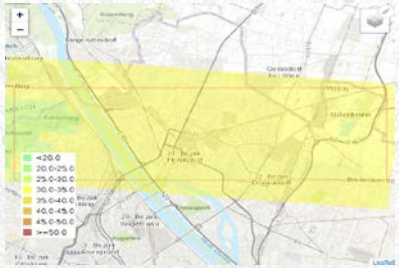


23 CLARITY hazard layers for the whole EU (12x12 km^2; 3 RCPs; 2 future periods, 3 occurrence frequencies): summer days, tropical nights, consecutive dry days, etc.

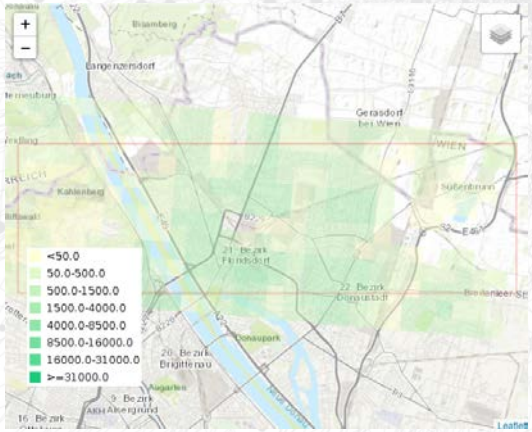
13 CLARITY high resolution land cover layers for >400 urban areas: traffic, buildings, green areas, water, elevation, permeability, albedo, etc…

Screening project: calculated on demand (500x500m^2 resolution, 3RCPs, 2 periods, 3 frequencies; ca. 15 min calculation time)

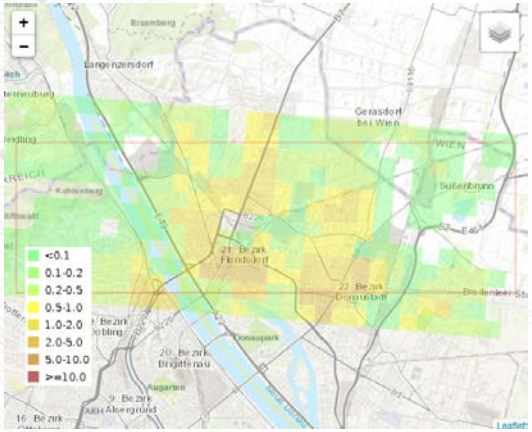




“Hazard Local effect”: heat hazard modulated by land cover (Mean radiant temperature & apparent temperature)



Exposure (Population)



Impact (comfort, mortality, cost)

Green infrastructures

A GREEN FACADES

A TECHNICAL DESCRIPTION
B CO-BENEFITS

ADAPTATION TARGETS

Heat Wave

Pluvial Flooding

Fluvial Flooding / Storm Surge

PERFORMANCE PARAMETERS

Albedo
N/A

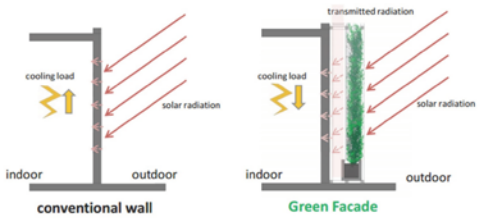
Emissivity
N/A

Run-off
N/A

COSTS

Construction
€€€

Maintenance / Management
€€€



DESCRIPTION

The advantage of green façades in dense urban areas is that they occupy a small horizontal surface compared to urban green spaces, giving at the same time a lot of vertical surface of greenery, considering that a generic climbing plant is able to cover the façade of a five storey building in only few years. To propearly design green façade systems it is necessary to carefully assess the need for spaces for the root system in relation to the desired extension on the façade, providing enough space to allow the roots growing in a healthy way that guarantee resistance of plants especially in prolonged drought periods, limiting the consumption of water for irrigation. There are several types of green façade depending on plant type and needed support on building façades. It is necessary, to avoid structural damages, to conduct preventive inspections to check eventual problems, as melted grout or cracks, which must be repaired before realizing the green façade system.

CLIMATE BENEFITS

Vertical vegetation protects from direct solar radiation the external façades of buildings, reducing their overheating and facilitating the heat release during the night. Plants produce also water vapour trough evapotranspiration, promoting the cooling effect of surrounding areas. Vertical vegetation produces also a mitigating effect on maximum external temperatures, improving both indoor and outdoor thermal perceived comfort.

B

Co-benefits in total

Environmental
low high

Social
low high

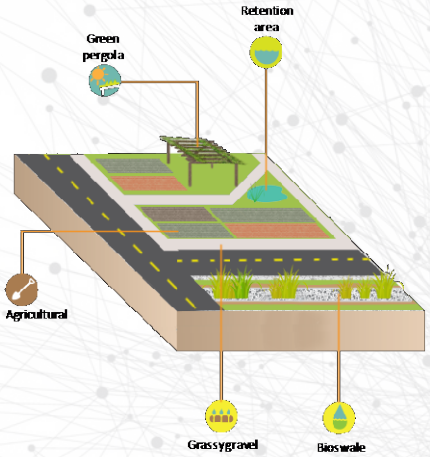
Economic
low high

CO-BENEFITS

Green façades, by capturing particulate matter and air pollutants, like CO2, improve air quality. Green façades can also improve biodiversity, by giving habitat for birds and insects.

By protecting buildings facades by direct solar radiation, green facades give an insulating effect that increases internal thermal comfort and therefore it influences positively human health, reducing heat related disorders. Mitigating temperatures, both in autumn and winter, can help to save on energy costs that came from both heating and cooling. Evergreen climbing plants, like ivy, reduce building thermal dispersion during fall and winter periods. Vertical vegetation reduces also noise emissions and noise reflection from building façades.

Their aesthetic value improves the perceived quality of urban places and can contribute to increase the real estate value. Furthermore, if integrated with solutions for rainwater collection and reuse for irrigating the vegetation on the façade, they contribute to reduce water consumption..

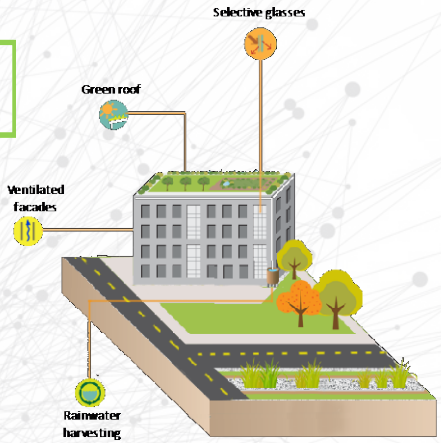


Vegetated areas

A. **Agricultural park:**
Bioswale (16%), Agricultural (64%), Grassy gravel (10%), Green pergolas (10%), Retention areas (3%)
€ 4.001.562,00/ Area TOT 62500 mq; € 64,03/mq

B. **Standard Park:**
Bioswale (16%), Meadow (64%), Average trees (5%), Grassy joint flooring (10%), Fixed canopies (10%)
€ 3.856.250,00/ Area TOT 62500 mq; € 61,70/mq

C. **Water park:**
Meadow (5%), Small trees (5%), Grassy joint flooring (10%), Permeable concrete (5%), Fixed canopies (10%), Retention area (10%), Water Square (50%)
€ 18.614.844,00/ Area TOT 62500 mq; € 297,84/mq

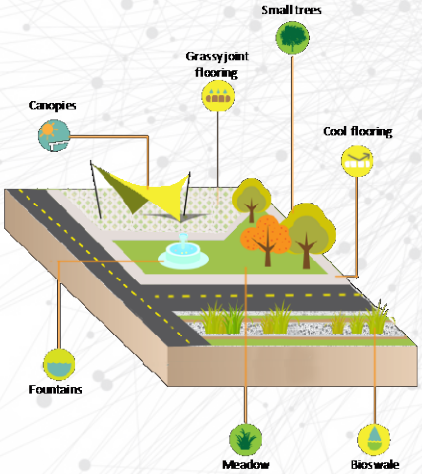


Buildings

A. Green roof (extensive vegetated/semi-vegetated), ventilated facades, fixtures with selective glasses, rainwater harvesting and reuse system
€ 227.070,00/ Area TOT 1050 mq; € 216,26/mq

B. Green roof (intensive vegetated/semi-vegetated), coat insulation, blinds, rainwater harvesting and reuse system
€ 248.662,50/ Area TOT 1050 mq; € 236,82/mq

C. Cool roof (medium, mineral membrane reflex white), green walls, blinds, rainwater harvesting and reuse system
€ 471.397,50/ Area TOT 1050 mq; € 448,95/mq

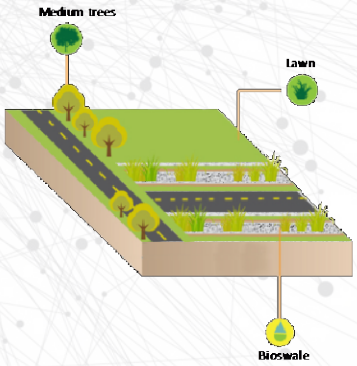


Built open spaces

A. Meadow (15%), Bioswale (16%), Small trees (10%), Grassy joint flooring (30%), Cool flooring (10%), Canopies (15%), Basins and fountains (4%)
€ 3.745.312,50/ Area TOT 62500 mq; € 59,93/mq

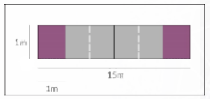
B. Bioswale (16%), Small trees (10%), Permeable concrete (30%), Cool flooring-HIGH (10%), Fixed canopies (10%), Basins and fountains (9%), Gutters (5%)
€ 4.863.281,25/ Area TOT 62500 mq; € 77,81/mq

C. Medium trees (10%), Grassy joint flooring (10%), Permeable concrete (15%), Fixed canopies (10%), Water square (50%), Gutters (5%)
€ 35.142.187,50/ Area TOT 62500 mq; € 562,28,84/mq

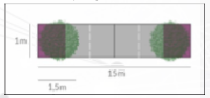


Roads

A. Drainage areas
The bioswales draining effect reduces sewers-directed water flow and, with permeable concrete, reduces the surface run-off effect.
Bioswale (100%)

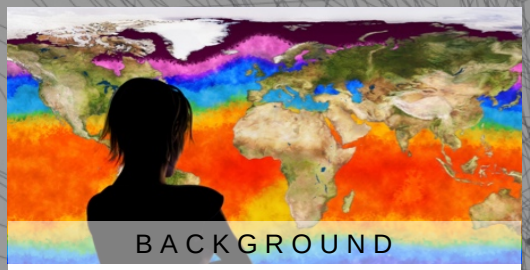


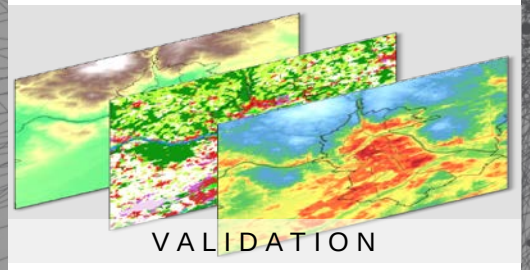
B. Green areas
Green areas helps mitigating urban heat island phenomenon and promotes high transpiration.
Lawns and green areas (50%), medium canopy diameter trees (50%)



C. New rain gutters, ditches and manholes
Increase and improvement of sewer system for surface run-off effect reduction.
Rain gutters, ditches and manholes (100%)

www.clarity-h2020.eu

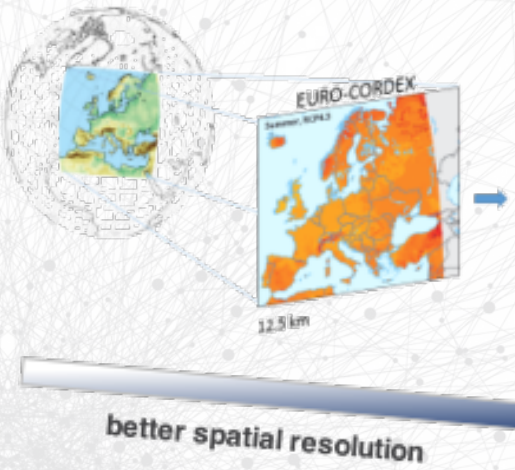




Industrialize the climate change adaptation planning in <u>your</u> city/region/organisation

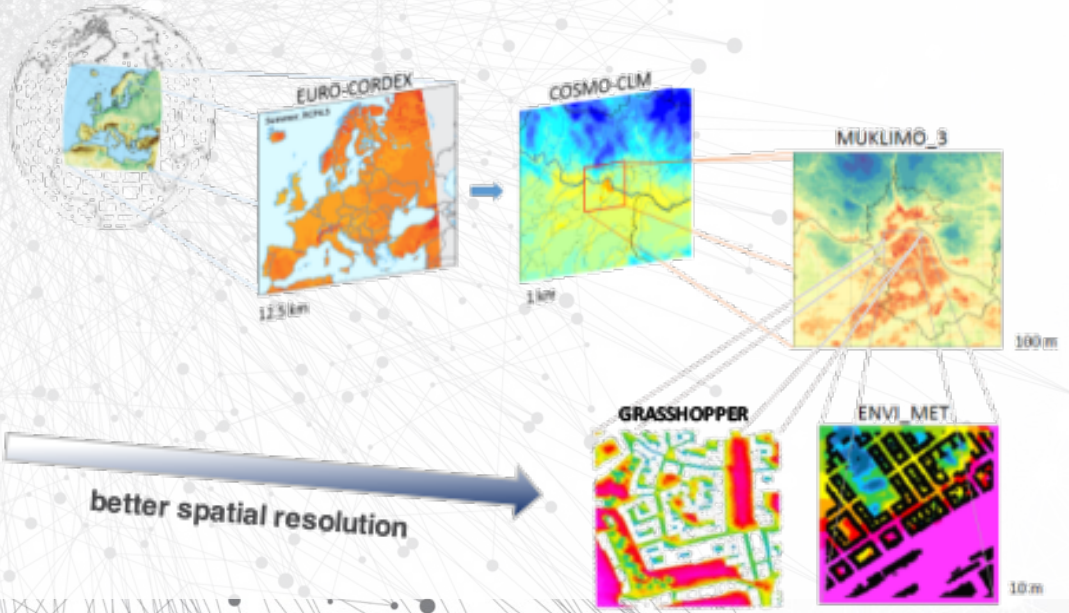
- Localized user interface:
  - Currently English-only, localization is possible
- Co-creation
  - Accommodate local planning and reporting needs
- Tailored data package(s):
  - Hazards and element at risk classes that are relevant for your region or business
  - Localized vulnerability functions
  - Exposure scenarios, impact scenarios

SCREENING LEVEL	GCM >25km	REANALYSIS, CMIP5 MODELS
	RCM 1-25km	EURO-CORDEX / RCM
	UCM 250-500m	URBAN MICROCLIMATE / CLARITY
EXPERT LEVEL	GCM >25km	REANALYSIS, CMIP5 MODELS
	RCM 1-25km	EURO-CORDEX RCM
	UCM 0.2-1km	URBAN MICROCLIMATE MUKLIMO_3, GIS TOOLS
	MICRO 1-200 m	PARAMETRIC DESIGN TOOLS, ENVI-MET



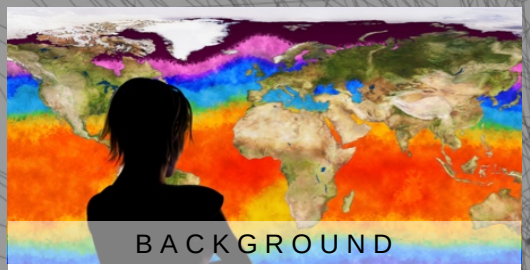
CLARITY simplified models

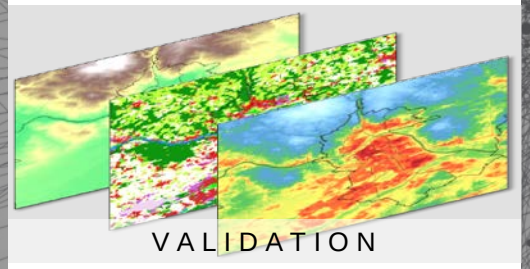
Clarity



Do you think that a regional screening service(s) are important for improving the Climate Resilience?

- Yes
- No
- Not sure





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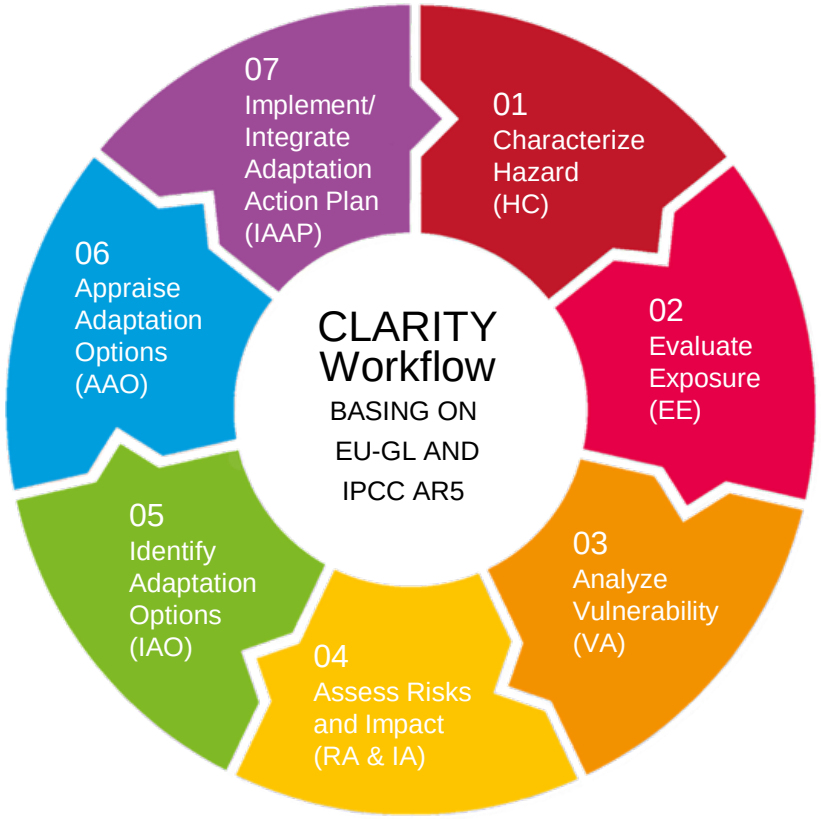

Based on EU-GL method, see:
http://climate-adapt.eea.europa.eu/metadata/guidances/non-paper-guidelines-for-project-managers-making-vulnerable-investments-climate-resilient/guidelines-for-project-managers.pdf

CLARITY WORKFLOW

Allow end-users to explore climate resilience of their projects through alternative planning and adaption scenarios considering:

1. variable local context
2. expert-based climate intelligence
3. customized risk analysis
4. varying impact scenarios
5. flexible adaption and alternative options
6. integration of data and model results into action plans

4 CLARITY DEMONSTRATION CASES

- Linz: The city suffers from heat waves, ventilation as well as green areas are needed to cool down the city
- Sweden: Stockholm is highly sensitive to future changes in river runoff as well as lake and sea levels – the concept for Stockholm can also be applied to the city of Jönköping
- Spain: The roads and transport infrastructure suffer from extreme oscillation in temperature, therefore roads have to be rebuilt and adapted
- Naples: The city has to deal with various issues at the same time – i.e. floods, droughts, and heat waves

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

Please contact us to explore mutual collaboration and business opportunities

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- Denis Havlik, AIT Austrian Institute of Technology GmbH
  denis.havlik@ait.ac.at; +43 664 620 7638

What is holding back wider use of CC adaptation planning/implementation?

- [ ] Lack of legislation and/or stakeholders interest.
- [ ] Relevant data/services/partners are difficult to find.
- [ ] Price is too high compared to project costs.
- [ ] Planing is too difficult..
- [ ] Other

Which topics for next webinar(s)?

- [x] (Finding) Climate Services, data and experts.
- [x] Scientific approaches and methodology
- [x] Climate indices / other data
- [x] Screening services / online services.
- [x] Regional findings, forecasts and recommendations.