The climate impact assessment marketplace
Helping urban planners to understand the climate change risks, develop and implement adaptation plans

CLARITY 4 CLIMATE RESILIENCE

CLARITY4CR Webinars

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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, planners, infrastructure and solutions owners.... Occasionally, we may also organise educational webinars for the general public (tbd.).
(How) would you like to participate in (future) Clarity4CR webinars

- As (co-)organizer
- As a panelist
- As part of the audience
- Not sure.

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

1. Advertise **your** Services and Solutions on the “myclimateservices.eu” Marketplace

2. Co-organise CLARITY4CR webinars

3. Integrate your solutions in CLARITY reporting workflow(s).
<table>
<thead>
<tr>
<th>Do you think that myclimateservices.eu can contribute to better market access for climate services?</th>
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<tbody>
<tr>
<td>Yes</td>
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<td>☐ Yes</td>
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<td>☐ Not sure</td>
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Starting point: existing EU-level (open) Data

- European Settlement Map (ESM)
- Urban Atlas (UA)
- Eurostat
- Street tree layers (STL)
- Euro Cordex
23 CLARITY hazard layers for the whole EU (12x12 km²; 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: Green Facades**

**A. Technical Description**

**Green Facades**

*Description*

The advantage of green facades 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 facade of a five storey building in only few years. To properly design green facade systems, it is necessary to carefully assess the need for spaces for the root system in relation to the desired extension on the facade, allowing enough space to avoid the roots growing in a healthy way that guarantees resistance of plants especially in prolonged drought periods, limiting the consumption of water for irrigation. There are several types of green facade depending on plant type and needed support on building facades. 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 facade system.

**B. Co-Benefits in Total**

**Environmental**

- Low
- High

**Social**

- Low
- High

**Economic**

- Low
- High

**Co-Benefits**

- 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 can be transferred 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 facades.

- 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 facade, they contribute to reduce water consumption.
ADAPTATION STRATEGIES

Vegetated areas

A. Agricultural park:
- Bioenergy (10%), Agricultural (64%), Grassy gravel (10%), Green pergola (10%), Retention areas (0%)
  - € 4,010,562.00/ Area TOT 625000 m²; € 64,83/m²

B. Standard Park:
- Bioenergy (10%), Meadow (64%), Average trees (5%), Grassy joint flooring (10%), Fixed canopies (10%)
  - € 3,856,350.00/ Area TOT 625000 m²; € 61,70/m²

C. Water park:
- Meadow (10%), Small trees (10%), Grassy joint flooring (10%), Permeable concrete (5%), Fixed canopies (10%), Retention area (10%), Water Square (50%)
  - € 18,614,844.00/ Area TOT 625000 m²; € 297,98/m²

Built open spaces

A. Meadow (15%), Bioenergy (15%), Small trees (10%), Grassy joint flooring (10%), Cool flooring (10%), Canopies (15%), Basins and fountains (15%)
  - € 3,745,317.50/ Area TOT 625000 m²; € 59,93/m²

B. Bioenergy (15%), Small trees (10%), Permeable concrete (10%), Cool flooring (10%), Fixed canopies (10%), Basins and fountains (10%), Gutters (10%)
  - € 4,863,281.52/ Area TOT 625000 m²; € 77,81/m²

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 625000 m²; € 562,78,84/m²

Buildings

A. Green roof (extensive vegetated/semi-vegetated), ventilated facades, Retractable with selective glasses, rainwater harvesting and reuse system
  - € 223,670,00/ Area TOT 1050 sqm; € 214,62/m²

B. Green roof (intensive vegetated/semi-vegetated), cool insulations, blinds, rainwater harvesting and reuse system
  - € 248,667,50/ Area TOT 1050 sqm; € 234,32/m²

C. Cool roof (medium, mineral membrane reflex white), green walls, blinds, rainwater harvesting and reuse system
  - € 471,397,50/ Area TOT 1050 sqm; € 448,95/m²

Roads

A. Designing roads
- The pavements have a specific design that includes permeable concrete, reducing the surface runoff effects, and downstream flow.

B. Green roads
- Grassy areas with barriers that help to drain run-off water and provide high permeability.

C. Rainwater retention, ditches and channels
- Increasing and improvement of stormwater drainage system for surface run-off reduction.

www.clarity-h2020.eu
Industrialize the climate change adaptation planning in your 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
Do you think that a regional screening service(s) are important for improving the Climate Resilience?

- Yes
- No
- Not sure
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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

Based on EU-GL method, see:
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
Please contact us to explore mutual collaboration and business opportunities

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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.
- Planning is too difficult.
- Other
Which topics for next webinar(s)?

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