» How much does climate change affect our cities? «

» How green are our cities? «

» How many people are affected by climate change effects? «

» How much energy do our buildings lose? «

» How high is the air pollution in our cities? «

» How does bad air quality affect our daily life? «

AIR QUALITY | HEALTH | ENERGY EFFICIENCY | URBAN GROWTH | IMPACT ASSESSMENT

USER QUOTES

"Climate change management requires reliable knowledge about the adequate scale of adaptation measures and, on the other hand, how the emissions from energy use can be effectively decreased. This is exactly what the DECUMANUS services will deliver [...]. Besides, we can use this data in monitoring the implementation of our regional climate strategies."

Johannes Lounasheimo, Climate Specialist, HSY

DECUMANUS contact

To discover how DECUMANUS services can more effectively address the societal challenges facing your city contact:

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DECUMNAUS project partners

INDRA
Spain

UWE
United Kingdom

DLR
Germany

Eurosense
Belgium

Universidad Politécnica de Madrid
Spain

GEOVILLE
Austria

CWARE
Denmark

DECUMNAUS city partners

City of Antwerp
Belgium

Helsinki HSY
Finland

Kensington & Chelsea
United Kingdom

City of Milan
Italy

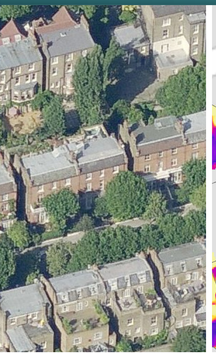
City of Madrid
Spain

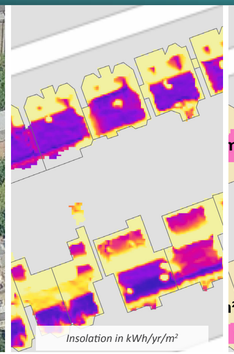
decu|manus

URBAN GOVERNANCE STRATEGIES

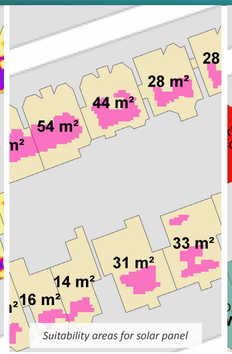
Smart governance sustaining urban futures

The DECUMANUS project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under the grant agreement no 607183

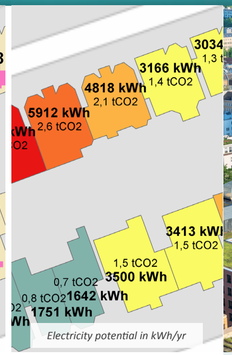




Insolation in kWh/yr/m²



Suitability areas for solar panel



Electricity potential in kWh/yr

BACKGROUND OF DECUMANUS

In 2012 for the first time in human history the majority of the population globally live in cities. Urbanization is a fundamental force of change, and in Europe has underpinned the flourishing of civilization for millennia. However, the 21st-century is also witnessing the impact of other societal challenges, including climate change, and the need to secure the efficient utilisation of finite resources. These societal challenges are impacting not only the social fabric of urban life, and the economy of cities, but also the civil quality of urban environments throughout Europe.

It is clear that if properly governed cities can become a major part of the solutions to the growing threat of societal challenges, and so can become economically vital, culturally vibrant, and healthy environments delivering first-class quality of life for hundreds of millions of city dwellers throughout Europe. Nonetheless, the challenge of urban governance is immense, and must address the complex and interconnected reality of urban systems to secure a proper balance between the socio-economic and environmental dynamics of urban areas.

The key to effective governance of cities is the generation of the necessary intelligence to inform decision-making by politicians, to guide urban policy making and implementation, and to inform and engage all citizens in the delivery of sustainable urban development.

DECUMANUS is dedicated to provide this urban intelligence, and aims fundamentally to secure the more effective governance of the cities of Europe, targeting the needs of urban planners, policymakers and politicians to secure and apply enhanced intelligence in the decision-making process that underpins the management of cities. In doing so DECUMANUS addresses the fundamental needs of all citizens for sustainable urban futures, as well as the key components of the political priorities of the European Union as defined by the framework policies of Europe 2020 and the Lisbon agenda, as well as those specifically targeting sustainable urban development.

DECUMANUS addresses these societal challenges and the corresponding research and development gaps necessary to secure effective urban governance. DECUMANUS provides services accessible to urban managers dealing with societal challenges including climate change, based on the philosophy that it is possible to adapt to, and mitigate, the challenges if you can understand and measure them.

WHAT ARE THE IMPACTS OF CLIMATE CHANGE IN EUROPEAN CITIES?

MAJOR IMPACTS OF CLIMATE CHANGE

Northern Europe

- more damage by winter storms and floods
- sea level rise and increased frequency of storm surges

North-Western Europe

- more droughts
- heat waves
- river floods

Central and Eastern Europe

- more droughts
- heat waves
- water scarcity

Mediterranean Region

- more droughts
- heat waves and water scarcity
- sea level rise and increased frequency of storm surges

Based on: Climate change impacts and adaptation EEA (2012)

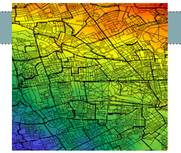
DECUMANUS OUTREACH

- DECUMANUS will become operational in mid 2016
- DECUMANUS roll-out of services to 100+ cities across Europe within the next 5 years is planned
- DECUMANUS geo-portal access for European cities with a modest yearly subscription fee, where the strategic services and benchmarking tools will be freely available
- DECUMANUS Premium services offered on ad hoc basis tailored to the needs of the individual city
- DECUMANUS development of new services in response to the needs of cities

POLICY DRIVERS AND COMMITMENTS

Understanding of the potential impacts of societal challenges for individuals and society is developing fast. In addition, a number of legislative drivers and policy commitments are encouraging European city administrations to take actions with regard to societal challenges including climate change adaptation, reduction of CO2 emissions, energy efficiency, poor air quality, and the re-naturing of cities.

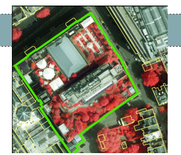
The aim of the DECUMANUS services is to support European city administrations to tackle these societal challenges by improving the means to inform decision makers in the more effective strategic planning and governance of cities.



Differences of annual mean of daily minumum temperature

URBAN CLIMATE ATLAS

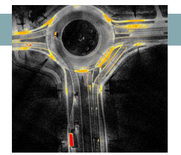
The service shows how urban climate responds to different future global climatic scenarios identifying vulnerability hotspots over cities (Basic service: 200m / Premium service: up to 50m). Based on a large list of indicators, the service helps city planners to understand the impact of global climate change on the local urban environment identifying vulnerabilities. It also assists to identify key adaptation challenges using reliable science-based information.



Green roof detection
Backgroun image: Getmapping

LAND MONITORING

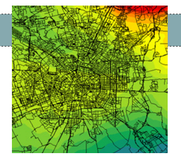
The service comprises indicators describing the development of cities, such as the delineation of urban settlements over time and the estimation of the percentage of impervious surface (soil sealing). In addition the service provides more detailed information on current and potential green roof locations, as well as the location of single trees within the city. All these products can be effectively used to characterize scenarios of current and future trends in urbanization.



Luminance map (cd/m²)

CITY ENERGY EFFICIENCY

The service provides information to detect energy waste due to anthropogenic heating and provides a quantitative estimate of integral light pollution. This information can be used to locate areas with anomalous high energy losses (thermal losses), to quantify where energy is consumed in specific areas of the city, and to identify high potentials for solar panel installation. Furthermore, the service can be used to monitor light emissions over time, for example, as evidence-based policy support before, during, or after large-scale retrofitting/renewal campaigns across the city.



Differences of annual mean change of respiratory mortality

CITIZEN HEALTH

The service demonstrates how urban air pollution responds to different future climatic scenarios and how human health could be affected identifying vulnerability hotspots over the cities (Basic service: 200m / Premium service: up to 50m). The service will assist users to understand the health impact of the global climate change for the local urban environment, identifying vulnerabilities, and how human health may be affected by changes induced by global warming emissions. The health service focus is on the direct health effects of global climate in relation to temperature and air quality.

Day-time population impact assessement based on a 250 year flood event

POPULATION IMPACT ASSESSMENT

The service provides information on the night-time (residential) population based on census population data. Based on a variety of input data, for example commuting data, work places, the service furthermore derives day-time population distribution information on building level. Both datasets are then combined with, for example the outcomes of urban climate models and urban air quality models and flood risk/sea level rise datasets to derive the exposure of population according to selected environmental threats and climate change risk within the wider urban area.