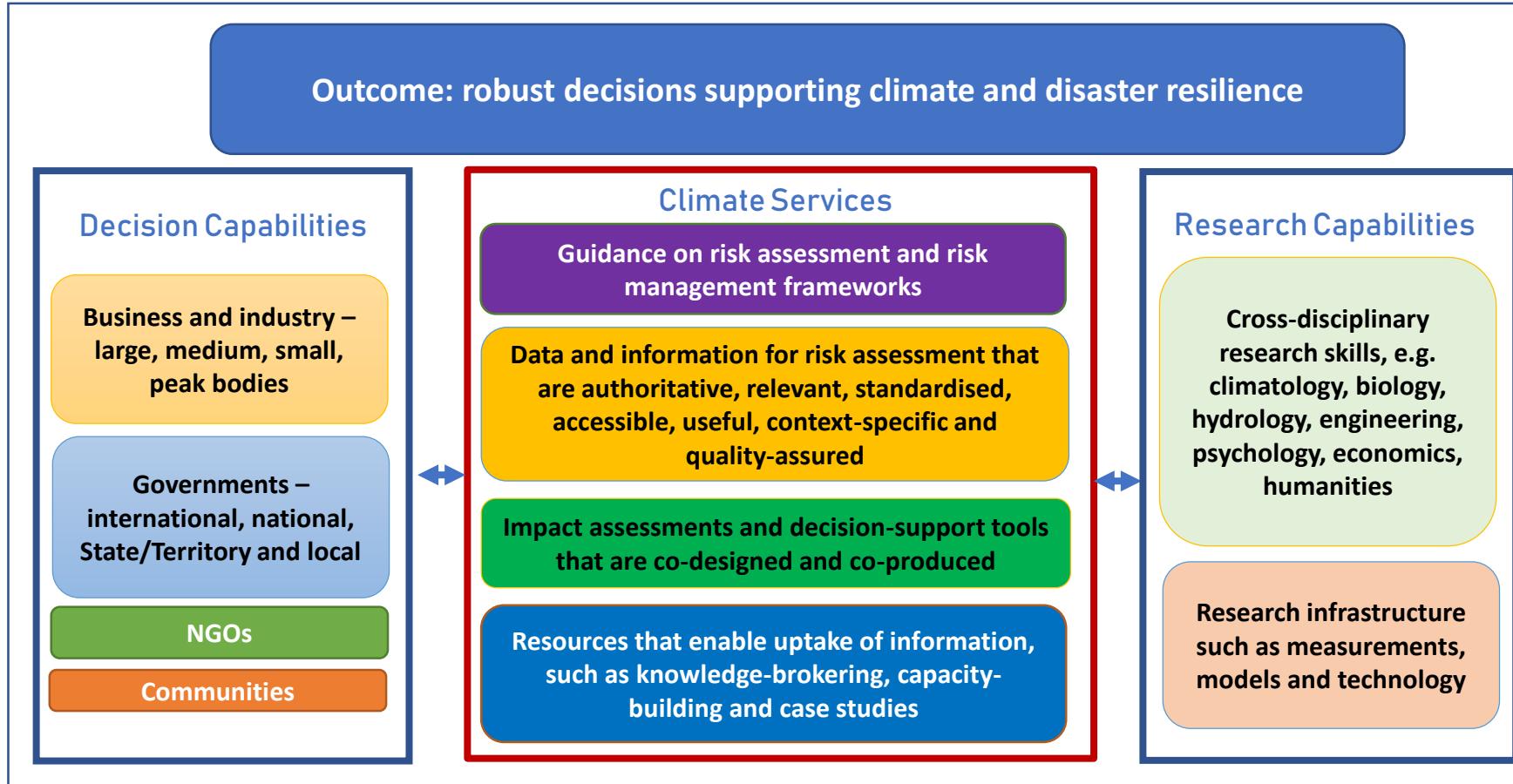


Recap from Day 1

Climate Services in Australia



Current situation

- There are core and differentiated market needs and associated business models involving public and private sector actors, with implications for public-good vs private-profit
- The supply-side of the Australian market for climate services is established but fragmented and poorly coordinated. The demand-side is rapidly emerging and evolving
- Mixed success of public investment in climate products and services due to limited coordination and funding
- Governance has hampered the development, coordination and uptake of climate services
- Clients are ‘shopping’ from a wide range of different climate products and services

Current situation

Challenges and opportunities:

- building trusted relationships
- data accessibility and traceability
- seamless information from days to weeks, months, years and decades
- information about extreme weather risks at local scales
- transparency, comparability and credibility
- tailoring information/portals for different purposes and audiences
- enabling uptake of information in planning and decision-making
- assessing the value of climate services in terms of return on investment, jobs, effectiveness and efficiency
- potential for traditional knowledge to inform climate services

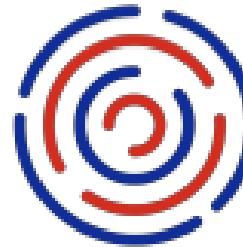
Future vision

- Services that are decision-driven and science-informed, rather than science-driven and decision-informed
- Authoritative, relevant, standardized, accessible and quality-assured products and services
- Transparent links between core and tailored services
- Robust and transparent governance to promote both public and private investment in climate services
- Better understanding of climate risk profiles
- Strategic approach to climate risk management
- Greater representation of traditional knowledge and owners at the COP

How to reach the future state

- A central trusted authority for core climate services
- Innovative business models, including PPPs for tailored climate services
- Map the climate services landscape and assess what areas need priority investment
- Develop a compelling business case
- Better alignment of policy and coordination of climate services between different levels of government
- Product and service development in line with a technology roadmap
- Enablers such as knowledge-brokering, case studies, capacity-building, and continuous learning through M&E
- Better communication and coordination between climate services providers and purveyors
- Incentives for collaboration

European Web-based Platform Landscape



KE4CAP

Knowledge Exchange between
Climate Adaptation Platforms

Outline

A brief history of European web-based adaptation platforms

Knowledge exchange and drive for improvement why?

Next steps

Changing business models – include the move to only supporting transactional webs

New platforms

Evaluation and updating of platforms

Linking platforms

A brief History of European Web-based adaptation platforms

Recognition – need for access to relevant and high-quality information and data

- To support development and implementation of adaptation plans and strategies

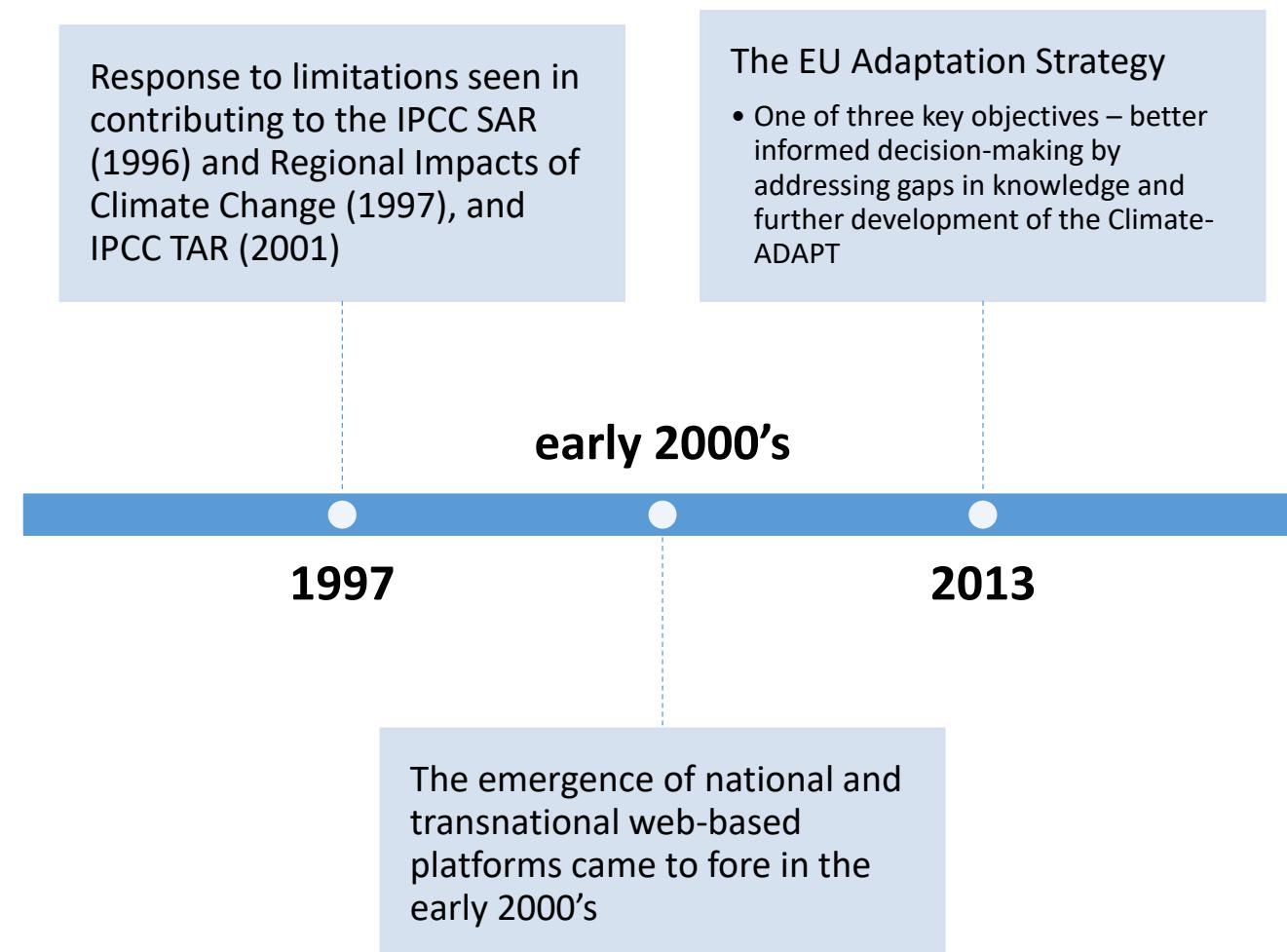
There were a number of early climate data platforms primarily as provided by Met Services going back into the early 1990s

- Primarily supply driven and to a large extent data focused to support impact assessments

In the late 1990s the focus was moving to better supporting the needs of users – **user-informed** – and the need for information that supports vulnerability assessment and adaptation actions

- Increasing levels of guidance being supplied and more attention to accessibility and usability
- UK (Met Office and UKCIP), The Netherlands (KNMI), Sweden (SMHI) as well as elsewhere in the world (Canada, USA and South Africa)

Emerging Web-based Adaptation Platforms



Adaptation Platforms

UK	2000 (UKCIP)
France, Norway, Sweden	2006-07
Denmark, Germany, Austria, Finland, Switzerland, Pyrenees	2008-09
Spain and Ireland (phased approach with launch in 2016)	2010-11
Climate-ADAPT, Poland, Alpine Region and Baltic (window on Climate-ADAPT), Hungary, The Netherlands	2012-13

- Web-based adaptation platforms in Europe are not homogeneous in terms of the nature and scope of remit, roles and services provided, nor in terms of their stage of development and development pathways.
- Platforms have varied histories and operate within different policy contexts – implications for the scope of information and other services provided and in their respective operational and business models.
- In 2013 there was increasing interest to exchange experiences, to learn lessons and discuss possible next steps for further development

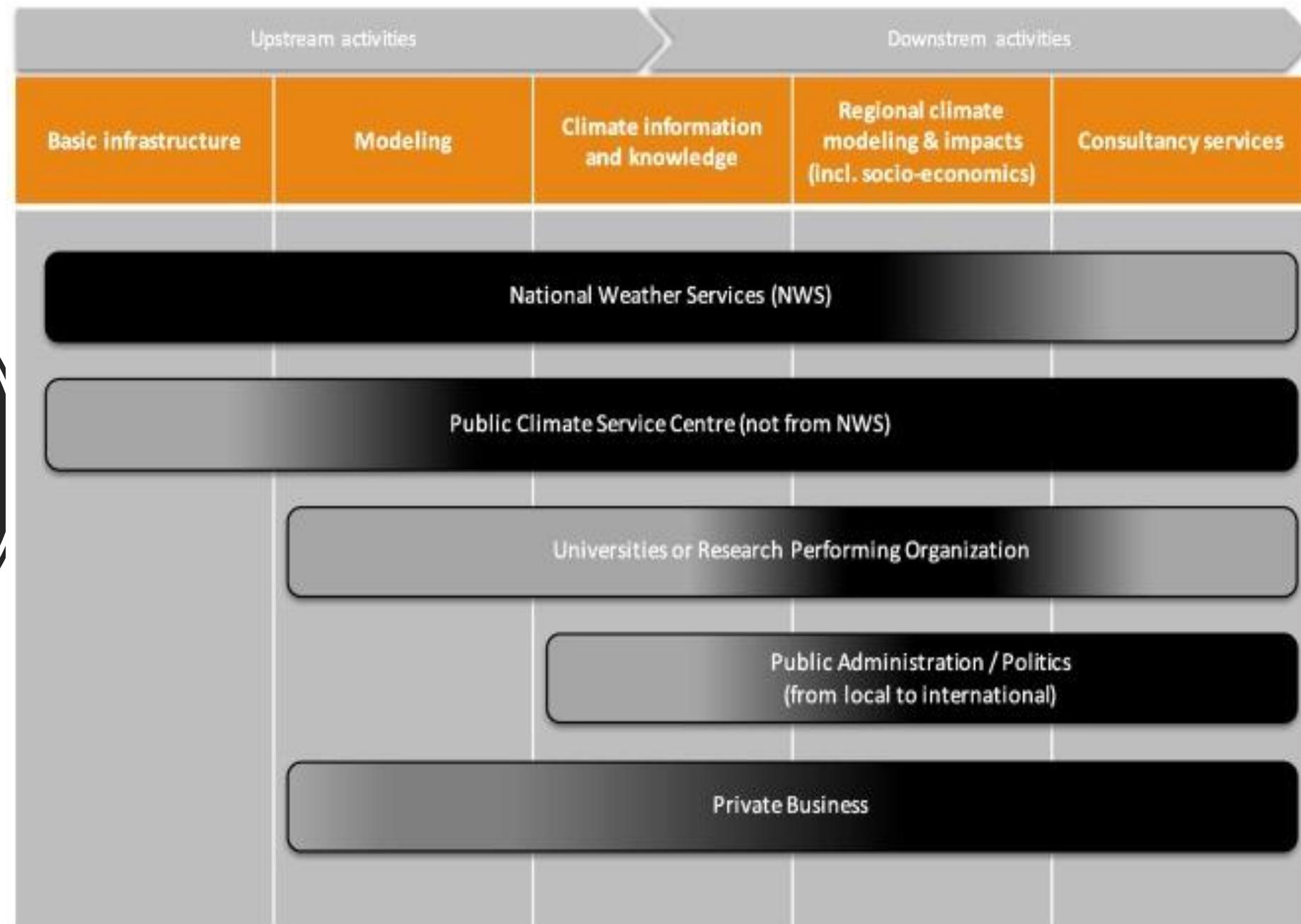
Timing associated with early development

Climate Service Providers in Europe

- Over 371 public and private climate service providers in the EU Member States.
- Market is still dominated by public climate service providers.
- Unequal distribution of climate service providers in the EU Member States with a significant gap between Eastern Member States and the rest of the European Union.
- Supply side is dominated by downstream activities such as advisory services or publications compared to upstream services such data collection.
- Primarily targeted sectors are water, energy, agriculture and urban/spatial planning, including decision makers and politicians
- General public and researchers are mainly addressed by public providers whereas corporations/industries are primarily served by private providers.

<https://doi.org/10.1016/j.cliser.2019.100125>

Expertise of
Climate Service
Providers along
the value chain



Knowledge Exchange and Drive for Improvement

CIRCLE-2 – Climate Impact Research and Response Coordination for a Larger Europe (<http://www.circle-era.eu/np4/home.html>)

Two Experts meetings held in 2013 on national adaptation platforms provided opportunities for platform operators to:

- Present their platforms, the main challenges and the development plans;
- Learn from each other (e.g. visibility, engaging with the audiences, evaluation of the platform) and explore relationships with each other;
- Identify and explore synergies and associated challenges (horizontally and vertically); and
- Understanding the adaptation platform landscape across Europe (e.g. scope and objectives, audiences, governance), sharing experiences and lessons learnt, and the main challenges.
- Explore knowledge gaps and challenges related to using web-based platforms for disseminating research results, and communicating findings and knowledge related to adaptation.
- Identify where and how it will be important to prioritize related research funding.

Knowledge Exchange and Drive for Improvement

EEA Expert workshop on climate change adaptation platforms (2014)

- Exchanged experiences in developing and implementing climate change adaptation (CCA) platforms and links to the European Climate Change Adaptation Platform (Climate-ADAPT).
- Explored linkages of national CCA platforms with knowledge base systems on disaster risk reduction (DRR) and climate change services.
- Presented and updated the ETC/CCA draft Technical Paper “Overview of climate change adaptation platforms/services in Europe”

<https://www.eea.europa.eu/publications/overview-of-climate-change-adaptation#tab-news-and-articles>

Knowledge Exchange and Drive for Improvement

Technical Paper “Overview of climate change adaptation platforms/services in Europe”

Challenges and Reflections and Lessons learnt:

- Funding and sustaining platforms
- Understanding, communicating and engaging with users
- Identifying and maintaining relevant knowledge and information
- Presenting relevant knowledge and information
- Design, technical and structural elements of a platform
- Linking across sectors, scales and platforms
- Monitoring, evaluating and improving a platform

Knowledge Exchange and Drive for Improvement

Interest continues in exchanging experiences, to learn lessons and address challenges – there are research, innovation and business model challenges that all are facing

- European Environment Agency continuing the dialogue with Member States
- European Conference on Climate Adaptation
- Adaptation Futures conferences
- Regional efforts outside of Europe – Japan International Conferences of Climate Platforms (annually since 2018)
- Stepping-up Knowledge Exchange between Climate Change Adaptation Platforms (KE4CAP)

Changing Environment

Challenges continuing due to the changing and evolving policy and practice drivers, but also changing technologies and innovations

- Breadth of the areas for which climate services are needed (beyond adaptation and mitigation)
- New users, new and evolving requirements – systemic risks and systemic response
- Changing business models – public and private domains within the climate service market
- Changing perceptions of how governments should be using internet platforms – move to only supporting transactional websites
- New platforms – others entering into this space

Next Steps

Enhancing policy and practice relevance

The need for collaboration, coordination and shared learning is increasing – response nationally and internationally

- ‘Linking’ web-based platforms

Need for evaluation and updating existing platforms to address the challenges

Need to enhance the user experience and build trust and communities of practice

- Innovations and digital-domain balance

Linking platforms – to enhance the user experience and build trust



European Presentations

To share experiences, learning and challenges:

Copernicus

Climate-ADAPT – the European Climate Adaptation Platform

Climate Ireland

End-user perspectives

Mapping users expectations to current climate adaptation support

Q&A Panel



Stepping-Up Knowledge Exchange between Climate Adaptation Knowledge Platforms

Supported by:



This event has been organised with the financial support of the European Union's Partnership Instrument. The opinions expressed are the sole responsibility of the speakers and do not necessarily reflect the views of the European Union.

<https://tinyurl.com/EU-KE4CAP>

CIRCLE-2/EEA Experts' meeting on 'National Adaptation Platforms' (Copenhagen, 19 June 2013) (<http://www.circle-era.eu/np4/576.html>);

- CIRCLE-2/EEA Workshop on 'Adaptation Platforms in Europe: Addressing challenges and sharing lessons' (Vienna, November 2013) (<http://www.circle-era.eu/np4/AdaptationPlatforms.html>);
- EEA Expert workshop on 'Climate change adaptation platforms' (Copenhagen, 23 June 2014) (<https://forum.eionet.europa.eu/nrc-climate-change-adaptation/library/workshops-meetings/expert-workshop-climate-change-adaptation-platforms/guide-meeting-results/final-draft-summary-report-23-june-2014>).



Climate Change

Copernicus Climate Change Service

Carlo Buontempo
ECMWF

[@carlo_tuitter](https://twitter.com/carlo_tuitter) ; Carlo.Buontempo@ecmwf.int





Summary

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What is C3S?

Who are the targeted users and how do you understand their requirements

Links with the private sector (issues and challenges)

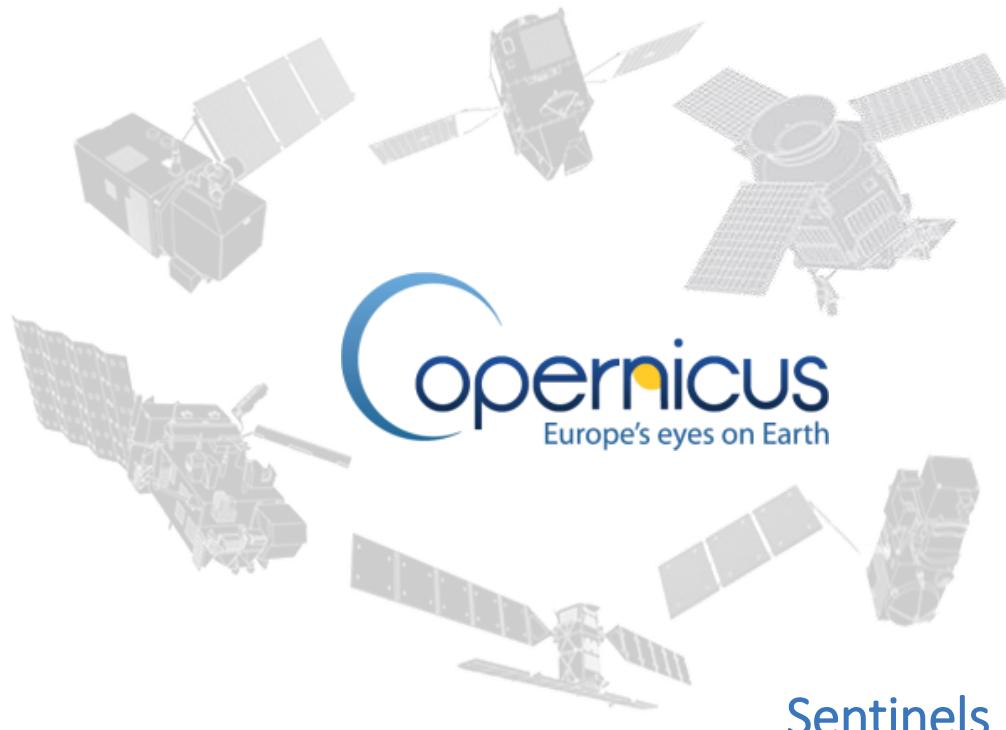
Standards and QA/QC process

Challenges and opportunities associated with linking with other platforms

Catalogue management and user support

User support, outreach and training

The EU Copernicus programme



Copernicus is the European Union's operational Earth Observation and Monitoring programme, looking at our planet and its environment for the ultimate benefit of all citizens.

User-driven with free and unrestricted data access

Observations
feeding into
value-added
Services





Climate
Change

Homepage | Copernicus <https://climate.copernicus.eu>

Aplicaciones ECMWF METEO Trabajos Things to do in rg... IT eBooks - Free ... Todos los periódicos XKCD Plots in Mat... Goolzoom AZ Las mejores páginas

Implemented by ECMWF as part of The Copernicus Programme

News Events Press Tenders Help & Support

Climate Change Service

ABOUT US WHAT WE DO DATA SEARCH

European Commission | Copernicus Europe's eyes on Earth IMPLEMENTED BY ECMWF close

We provide authoritative information about the past, present and future climate, as well as tools to enable climate change mitigation and adaptation strategies by policy makers and businesses.

Operational

Key products and services

www.copernicus.eu

?



C3S offering

Climate
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- Open and free access to climate data and information
- Toolbox
- Information on sectoral impacts
- Quality assurance
- Training and educational material
- Climate bulletins

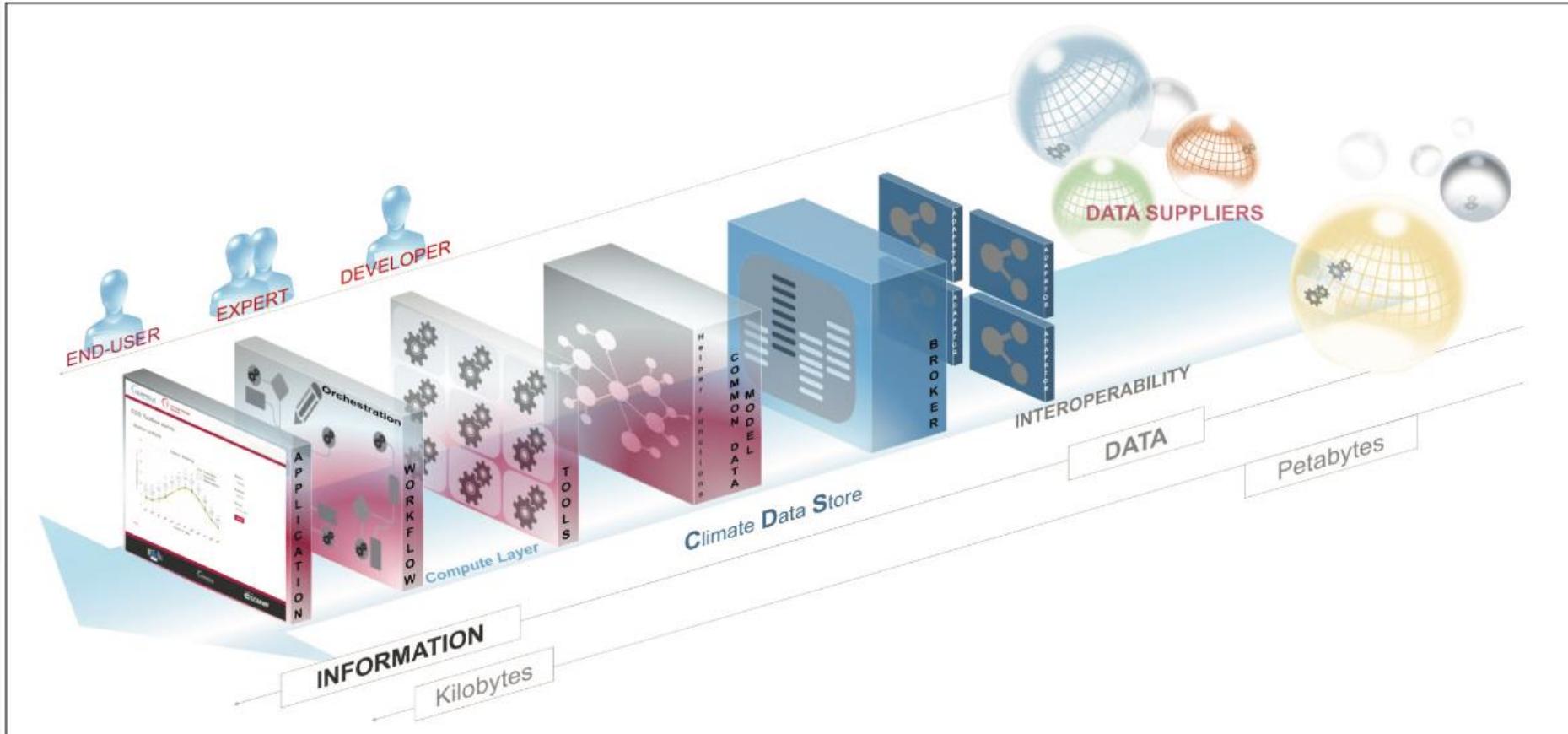
One-stop Climate Data Store

<http://climate.copernicus.eu>

The screenshot shows the Copernicus Climate Change Service website. At the top, there's a navigation bar with links for News, Events, Press, Tenders, Help & Support, About Us, What We Do, Data, and Search. Below the navigation is the European Commission logo and the Copernicus logo. A red arrow points to the 'WHAT WE DO' link in the navigation bar. The main content area features a large image of a computer monitor displaying the Climate Data Store (CDS) interface. To the right of the monitor, under the heading 'What we do', there are four sections: 'Climate datasets', 'Tools for using climate data', 'Sectoral impacts', and 'Quality assurance'. Each section includes a brief description and two 'Read more' buttons. A red arrow points to the 'Read more' button in the 'Quality assurance' section. In the bottom right corner of the page, there's a small orange circle with a question mark.



BRINGING THE USERS TO THE DATA

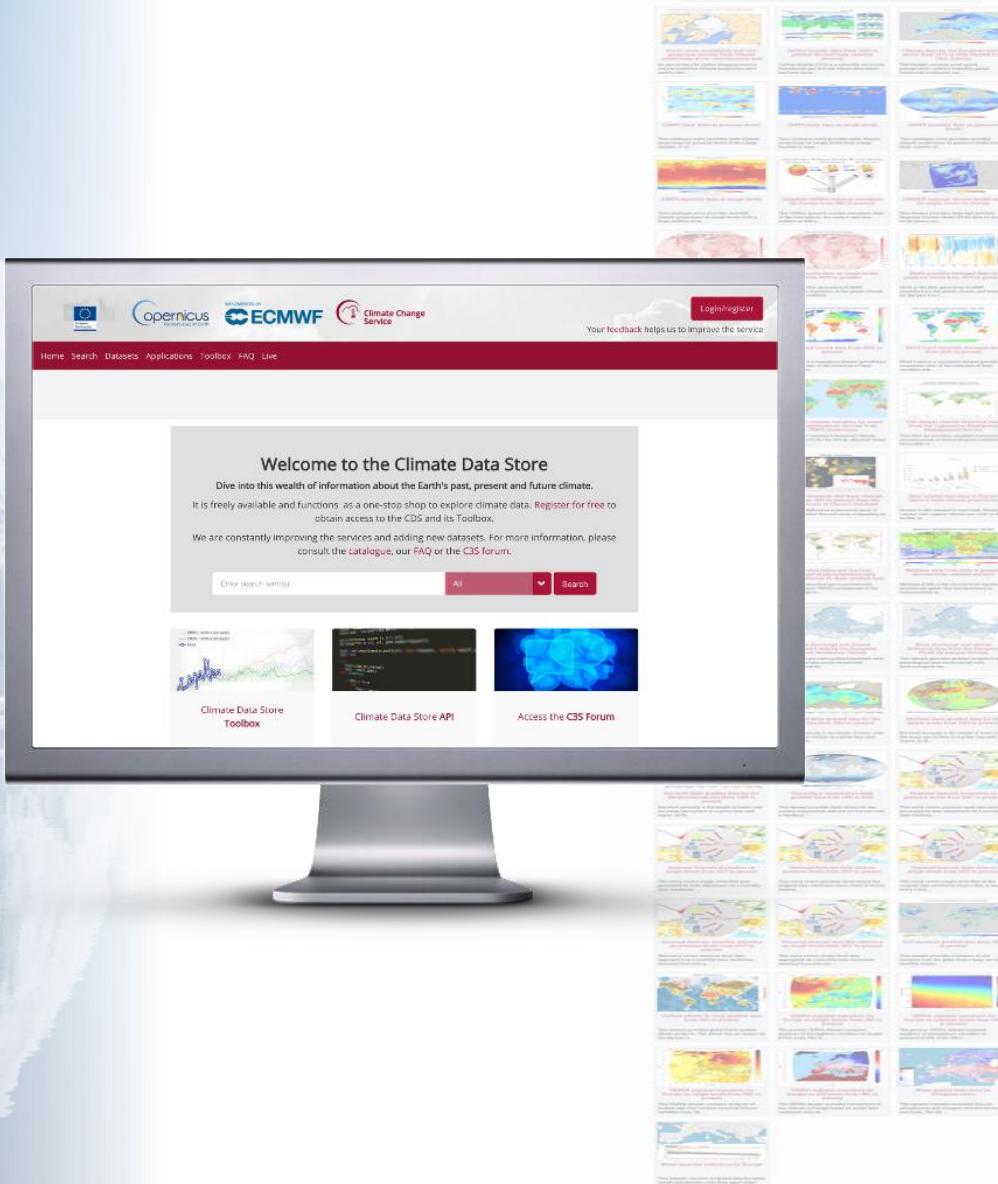


As part of Copernicus, ECMWF is developing the “Climate Data Store”, which is a Cloud-based service (SaaS) allowing solution to work directly on a number of (massive) datasets, stored at ECMWF and in a few other places in Europe (such as CMIP climate projections).
<http://cds.climate.copernicus.eu>



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The Climate Data Store



- Registered users: **35 400 +**
- TB/day: **~50** (30-60)
- Datasets: **60**

Status on 28th Feb. 2020 at 18h00 CET

The number of users increased by 5000+ in the last couple of months.

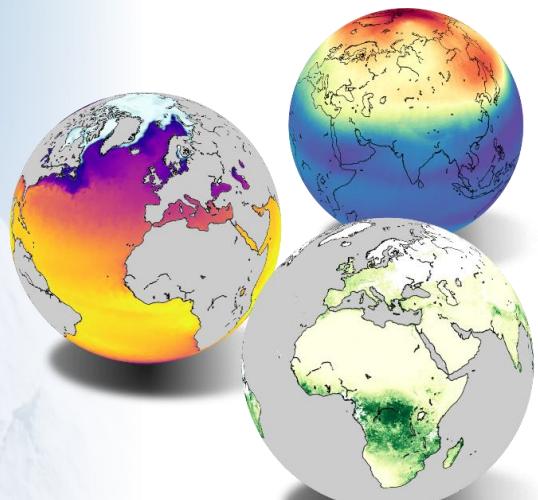


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C3S portfolio: Access to past, present and future climate information

Observations, climate data records, ECVs and climate

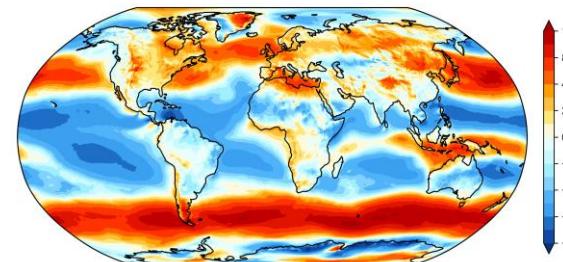
Reanalyses



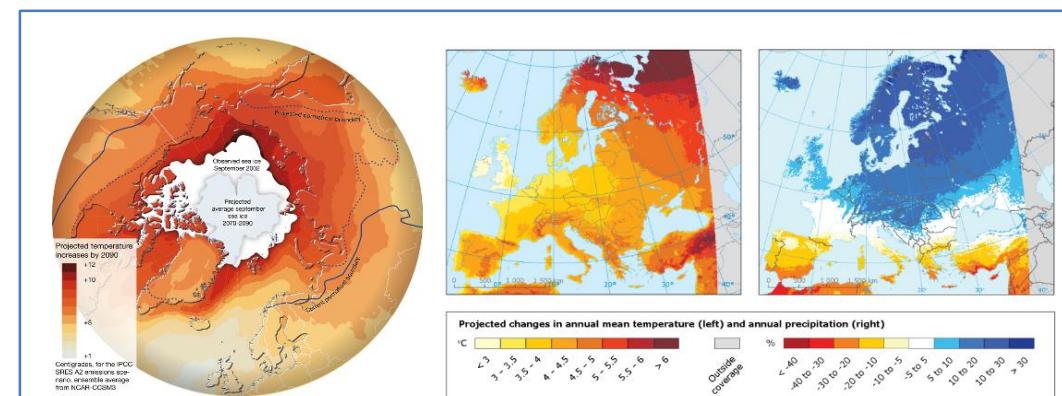
Seasonal forecast data
and products

The screenshot shows the C3S website interface. At the top, there's a navigation bar with links like 'ABOUT C3S', 'NEWS & MEDIA', 'EVENTS', 'TENDERS', 'PRODUCTS', 'SERVICES', 'HELP & SUPPORT'. Below the navigation, there's a 'Seasonal forecasts' section with a map of the world showing projected SST anomalies. To the right, there's a detailed view of a 'C3S multi-system seasonal forecast' for SST anomalies, showing a world map with color-coded anomalies from -2.0°C to +2.0°C.

ERA5 Monthly Mean U Wind Component at 100m Above Surface - January 2019



Climate model simulations
Sectoral climate impact
indicators



Copernicus
Europe's eyes on Earth



European
Commission

ECMWF



Climate
Change

Simplicity and
coherence

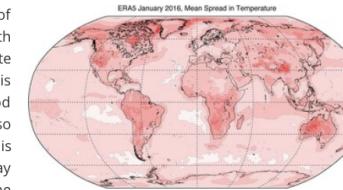
The screenshot shows the Copernicus Climate Change Service website interface. At the top, there are logos for Copernicus (Europe's eyes on Earth), ECMWF, and Climate Change. Below the header, a search bar contains "Search dataset" with a magnifying glass icon. To the right of the search bar are buttons for "All" and "Datasets". A sidebar on the left provides filtering options: "Sort by" (Relevancy, Title), "Product type" (Climate projections, Reanalysis, Satellite observations, Seasonal forecasts, Sectoral climate indices), "Spatial coverage" (Global), and "Temporal coverage" (Past). The main content area displays search results for "Reanalysis". Two items are listed:

- ERA5 hourly data on pressure levels from 2000 to present**: A brief description states that ERA5 is the fifth generation ECMWF atmospheric reanalysis of the global climate, combining model data with observations from across the world into a globally complete and consistent dataset.
- ERA5 hourly data on single levels from 2000 to present**: A brief description states that ERA5 is the fifth generation ECMWF atmospheric reanalysis of the global climate, combining model data with observations from across the world into a globally complete and consistent dataset.

ERA5 hourly data on pressure levels from 2000 to present

Overview Download data Documentation

ERAS is the fifth generation ECMWF atmospheric reanalysis of the global climate. Reanalysis combines model data with observations from across the world into a globally complete and consistent dataset using the laws of physics. This principle, called data assimilation, is based on the method used by numerical weather prediction centres, where every so many hours (12 hours at ECMWF) a previous forecast is combined with newly available observations in an optimal way to produce a new best estimate of the state of the atmosphere, called analysis, from which an updated, improved forecast is issued. Reanalysis works in the same way, but at reduced resolution to allow for the provision of a dataset spanning back several decades. Reanalysis does not have the constraint of issuing timely forecasts, so is more time to collect observations, and when going further back in time, to allow for the ingestion of improved versions of the original observations, which all benefit the quality of the reanalysis product.



ERA5 hourly data on pressure levels from 2000 to present

Overview Download data Documentation

Variable

At least one selection must be made

- Divergence
- Fraction of cloud cover
- Geopotential
- Ozone mass mixing ratio
- Potential vorticity
- Relative humidity
- Specific cloud ice water content
- Specific cloud liquid water content
- Specific rain water content
- Temperature
- U-component of wind
- Vertical velocity
- Vorticity (relative)

Select all

Pressure level

At least one selection must be made

- | | | |
|-----------------------------------|----------------------------------|----------------------------------|
| <input type="checkbox"/> 1 hPa | <input type="checkbox"/> 2 hPa | <input type="checkbox"/> 3 hPa |
| <input type="checkbox"/> 5 hPa | <input type="checkbox"/> 7 hPa | <input type="checkbox"/> 10 hPa |
| <input type="checkbox"/> 20 hPa | <input type="checkbox"/> 30 hPa | <input type="checkbox"/> 50 hPa |
| <input type="checkbox"/> 70 hPa | <input type="checkbox"/> 100 hPa | <input type="checkbox"/> 125 hPa |
| <input type="checkbox"/> 150 hPa | <input type="checkbox"/> 175 hPa | <input type="checkbox"/> 200 hPa |
| <input type="checkbox"/> 225 hPa | <input type="checkbox"/> 250 hPa | <input type="checkbox"/> 300 hPa |
| <input type="checkbox"/> 350 hPa | <input type="checkbox"/> 400 hPa | <input type="checkbox"/> 450 hPa |
| <input type="checkbox"/> 500 hPa | <input type="checkbox"/> 550 hPa | <input type="checkbox"/> 600 hPa |
| <input type="checkbox"/> 650 hPa | <input type="checkbox"/> 700 hPa | <input type="checkbox"/> 750 hPa |
| <input type="checkbox"/> 775 hPa | <input type="checkbox"/> 800 hPa | <input type="checkbox"/> 825 hPa |
| <input type="checkbox"/> 850 hPa | <input type="checkbox"/> 875 hPa | <input type="checkbox"/> 900 hPa |
| <input type="checkbox"/> 925 hPa | <input type="checkbox"/> 950 hPa | <input type="checkbox"/> 975 hPa |
| <input type="checkbox"/> 1000 hPa | | |

Select all

Product type

- Reanalysis
- Ensemble members
- Ensemble mean

Select all Clear all

Year

At least one selection must be made

- | | | |
|-------------------------------|-------------------------------|-------------------------------|
| <input type="checkbox"/> 2000 | <input type="checkbox"/> 2001 | <input type="checkbox"/> 2002 |
| <input type="checkbox"/> 2003 | <input type="checkbox"/> 2004 | <input type="checkbox"/> 2005 |
| <input type="checkbox"/> 2006 | <input type="checkbox"/> 2007 | <input type="checkbox"/> 2008 |



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Simplicity and
coherence

Home Search Datasets Applications Your requests Toolbox Help & support

Search results

Search dataset 🔍

All Datasets

Sort by **Relevancy**

Title

Product type

- Climate projections (4)
- Reanalysis (2)
- Satellite observations (11)
- Seasonal forecasts (6)
- Sectoral climate indices (2)

Spatial coverage

- Global (6)

Temporal coverage

- Future (6)
- Past (6)

Seasonal forecast to present

Seasonal forecasts provide a long-range outlook of changes in the Earth system over periods of a few weeks or months, as a result of predictable changes in some of the slow-varying components of the s...

Seasonal forecast monthly statistics on pressure levels from 2017 to present

Seasonal forecasts provide a long-range outlook of changes in the Earth system over periods of a few weeks or months, as a result of predictable changes in some of the slow-varying components of the s...

Seasonal forecast daily data on pressure levels from 2017 to present

Seasonal forecasts provide a long-range outlook of changes in the Earth system over periods of a few weeks or months, as a result of predictable changes in some of the slow-varying components of the s...

Seasonal forecast daily data on single levels from 2017 to present

Seasonal forecasts provide a long-range outlook of changes in the Earth system over periods of a few weeks or months, as a result of predictable changes in some of the slow-varying components of the s...

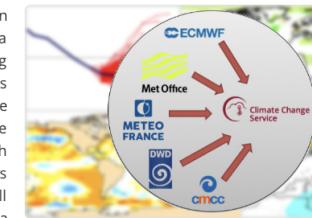
Seasonal forecast monthly statistics on single levels from 2017 to present

Overview

Download data

Documentation

Seasonal forecasts provide a long-range outlook of changes in the Earth system over periods of a few weeks or months, as a result of predictable changes in some of the slow-varying components of the system. For example, ocean temperatures typically vary slowly, on timescales of weeks or months; as the ocean has an impact on the overlying atmosphere, the variability of its properties (e.g. temperature) can modify both local and remote atmospheric conditions. Such modifications of the 'usual' atmospheric conditions are the essence of all long-range (e.g. seasonal) forecasts. This is different from a weather forecast, which gives a lot more precise detail - both in time and space - of the evolution of the state of the atmosphere over a few days into the future. Beyond a the chaotic nature of the atmosphere limits the possibility to predict precise changes at local scales. This is c reasons long-range forecasts of atmospheric conditions have large uncertainties. To quantify such uncertain range forecasts use ensembles, and meaningful forecast products reflect a distributions of outcomes.



Seasonal forecast monthly statistics on single levels from 2017 to present

Overview

Download data

Documentation

Originating centre

Variable ?

Product type



Climate
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European State of the Climate – March/April each year



The complete report is available online:
climate.copernicus.eu/ESOTC



Summary

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What is C3S?

→ Who are the targeted users and how do you understand their requirements

Links with the private sector (issues and challenges)

Standards and QA/QC process

Challenges and opportunities associated with linking with other platforms

Catalogue management and user support

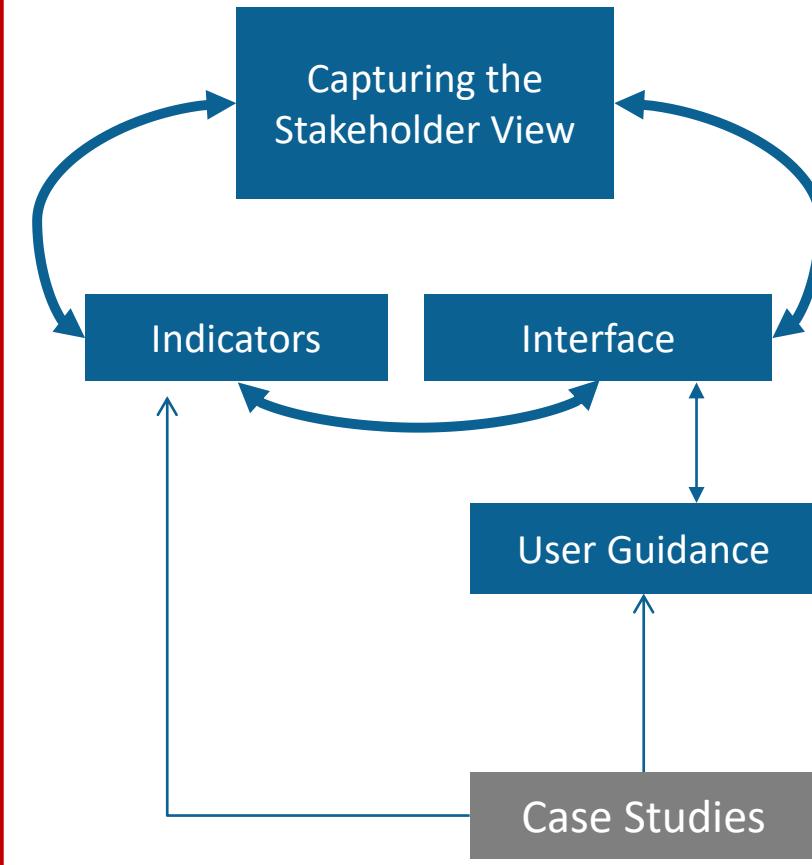
User support, outreach and training



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Change

User event

Evidence Gathering



Stakeholder
Engagement

Deliverables

SC Impact Indicators
User friendly interface
User guidance
Technical reports
Case Study fact sheets
Model output

Stakeholder Engagement: Workshops

Climate
Change
Policy

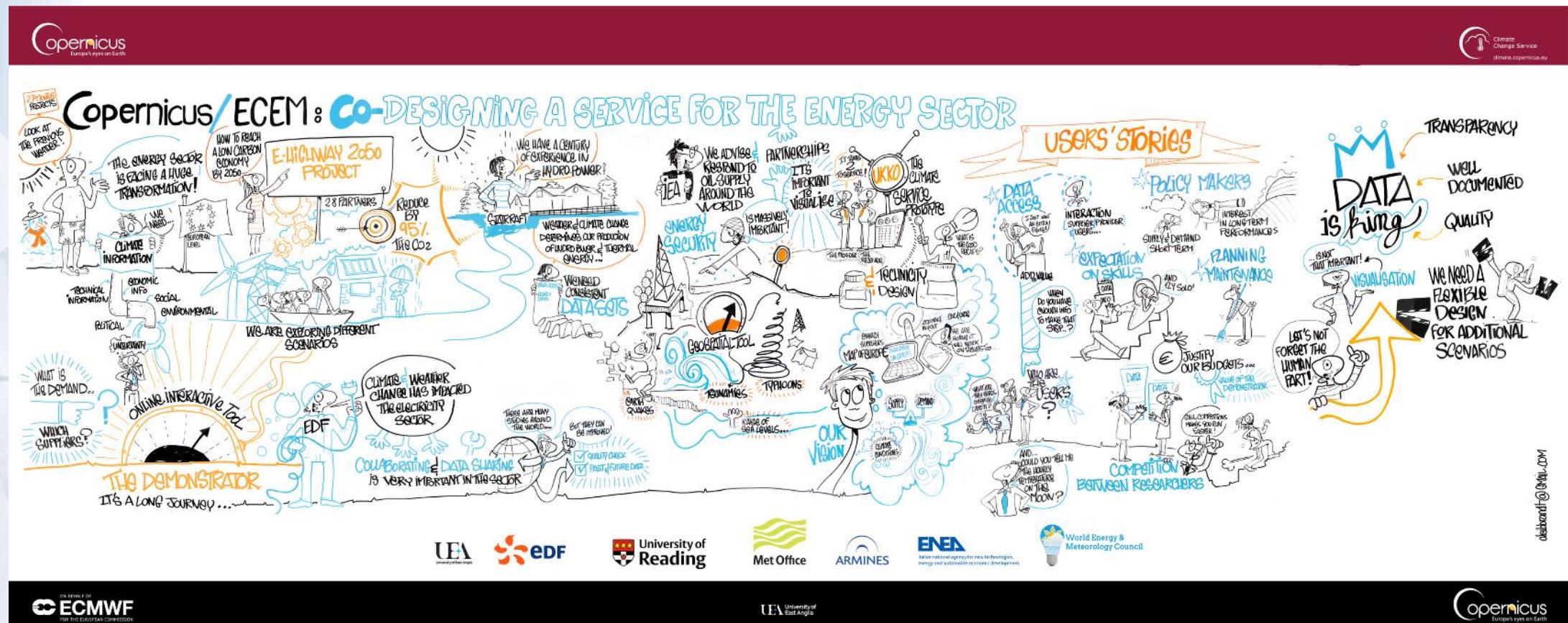
The collage includes:

- A large group photo of attendees at the symposium, standing in front of a backdrop featuring a large screen with the text "Copernicus Symposium on Climate Services for the Energy Sector".
- A group photo of attendees outdoors in front of a modern glass building.
- Logos for various partners and sponsors: UEA (University of East Anglia), EDF, University of Reading, University of Met Office, ARMINES, ENEA, ECMWF, Copernicus Climate Change Service, and CEA.
- Text describing the symposium's purpose: "practitioners and public decision makers to present new possibilities in climate predictions, discuss new ideas and better shape future public C3S products for the energy sector".
- Text about the C3S Energy Demonstrator: "developments of the C3S Energy Demonstrator designed to assess how well energy supply will meet demand in Europe, focusing on the role of climate".



Stakeholder Engagement: Workshops

Climate
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Copernicus Climate Change Service User Requirement Database

[Home](#) [List Requirements](#) [Add Requirement](#)

toolbox

 Search including hidden fields

Filter

Showing 144 requirements

Summary	Topic	Subject	Insert Date	
Data processing capabilities available through the C3S CDS should include subsetting of data	CDS Toolbox	Python scripts	2019/04/30	Edit View
Data processing capabilities available through the C3S CDS should include basic statistical analysis, including calculating the mean and standard deviation	CDS Toolbox	Python scripts	2019/04/30	Edit View
Data processing capabilities available through the C3S CDS should include dataset merging	CDS Toolbox	Python scripts	2019/04/30	Edit View
Data processing capabilities available through the C3S CDS should include statistical downscaling	CDS Toolbox	Python scripts	2019/04/30	Edit View
Data processing capabilities available through the C3S CDS should include the ability to create maps	CDS Toolbox	Python scripts	2019/04/30	Edit View
Data processing capabilities available through the C3S CDS should include the ability to calculate percentages	CDS Toolbox	Python scripts	2019/04/30	Edit View
Data processing capabilities available through the C3S CDS should include data reprojection	CDS Toolbox	Python scripts	2019/04/30	Edit View
If data merging capabilities are made available through the C3S CDS, it should include flagged areas where there is possible conflicting data	CDS Toolbox	Python scripts	2019/04/30	Edit View
If data merging capabilities are made available through the C3S CDS, the coherence of the data should first be assessed and corrected if necessary	CDS Toolbox	Python scripts	2019/04/30	Edit View
Data processing capabilities available through the C3S CDS should include statistical analysis where users can define the area of interest for these statistics to be calculated	CDS Toolbox	Python scripts	2019/04/30	Edit View
It should be made possible for the C3S CDS to deliver data into other research data processing engines, such as Thematic	CDS	Other	2019/04/30	Edit View



All sectors addressed

Climate
Change



Agriculture



Insurance



Biodiversity



Shipping



Coastal areas



Storm surges



Energy



Tourism



Health



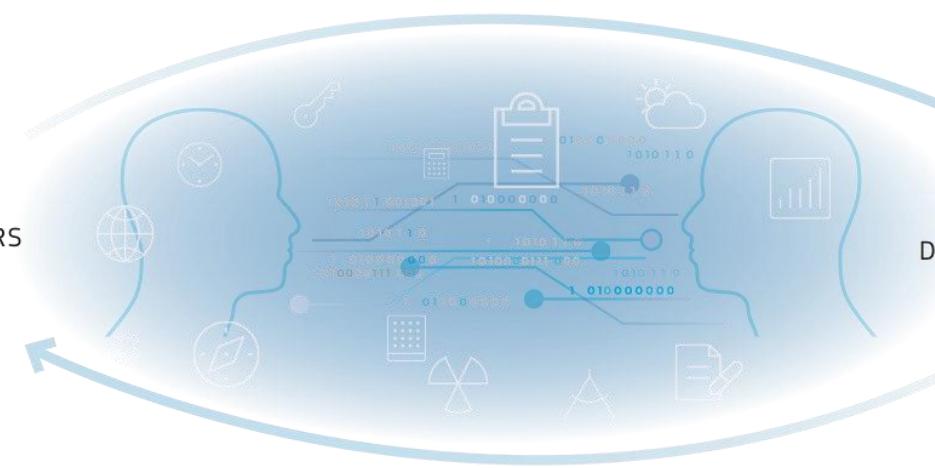
Water management



Infrastructure

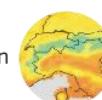


USERS

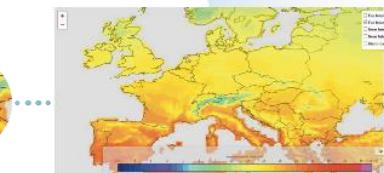


CLIMATE
DATA STORE

PRACTICAL EXAMPLES



Documentation



Tools and
applications



Case studies



Sector
relevant
data

ECMWF

Copernicus
Europe's eyes on Earth



European
Commission



Climate
Change

The Climate Data Store

The Climate Data Store is a web-based platform for exploring and visualizing climate data. It features a search function and filters for sorting by relevance or sector. The sidebar on the right lists over 20 applications, each with a brief description and a link to its details page. Some of the applications shown include:

- Arctic sea ice extent from 1993 to 2018
- C3S monthly climate bulletin explorer
- Climate estimates of European cities from 2008 to 2017
- Climate projections of Arctic sea ice extent
- Asian tiger mosquito (Aedes albopictus) survival suitability
- Heat wave days for European countries
- Asian tiger mosquito in European cities from 2008
- Onset
- Leisure surface water temperature for tourism
- Navigability of the Arctic Northeast Passage from 1993 to 2018
- Projections of European temperature exposure
- Projections of navigability for the Arctic Northeast Passage
- Seasonal forecasts of ship performance
- Seasonal forecasts of shipping route optimisation
- Ship performance estimates from 1993 to 2018
- Shipping route optimisation based on reanalysis data
- Temperature exposure for current climate

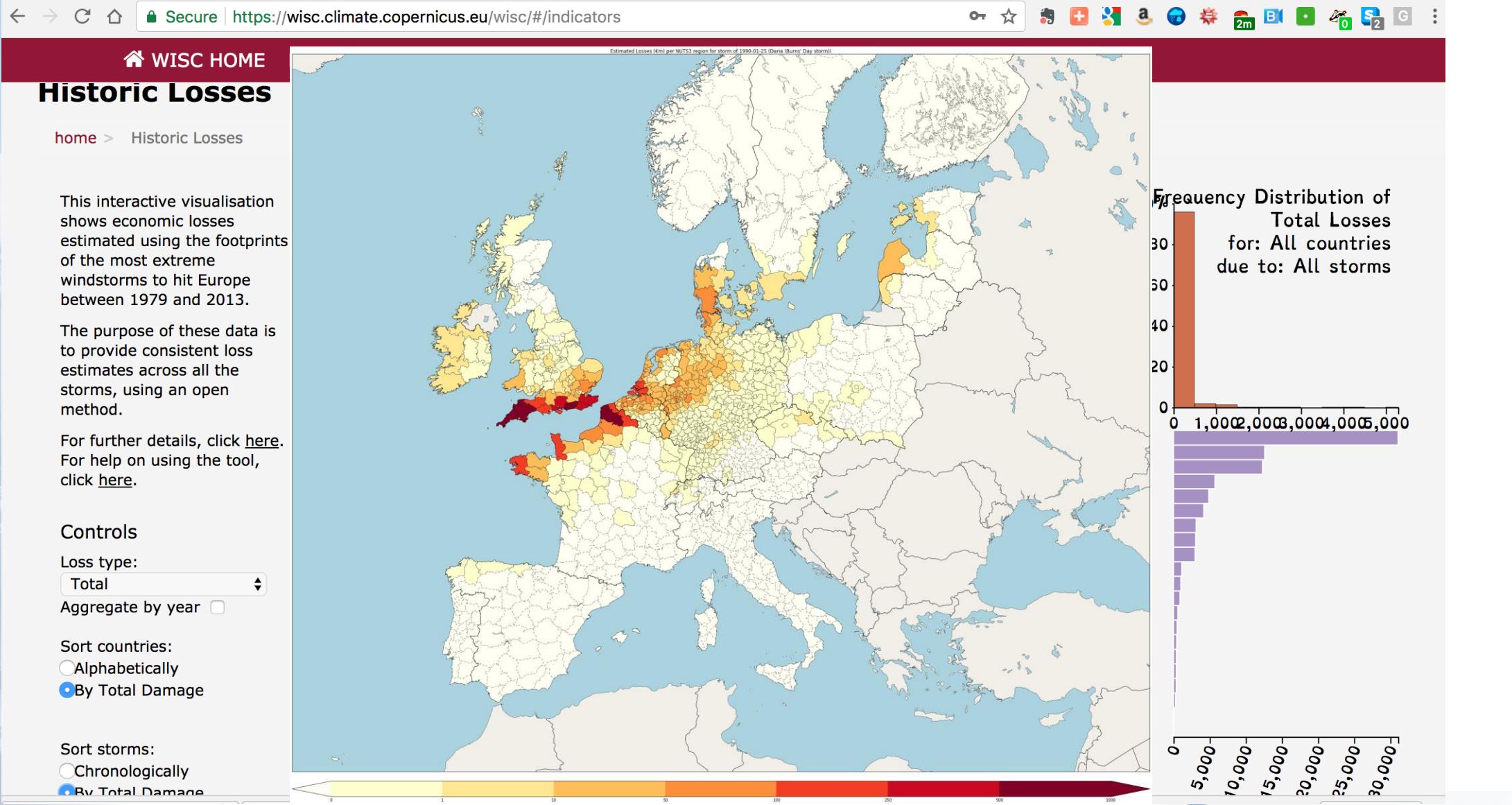
... and more than **20 applications**
(Health, tourism, transport, ...)

Status on 28th Oct. 2019 at 9h30 CET



Climate
Change

Ex-post bias evaluation: what can the impact modelling tell us about the model biases?



ECMWF

Copernicus
Europe's eyes on Earth

European Commission



Summary

Climate
Change



What is C3S?

Who are the targeted users and how do you understand their requirements

Links with the private sector (issues and challenges)



Standards and QA/QC process

Challenges and opportunities associated with linking with other platforms

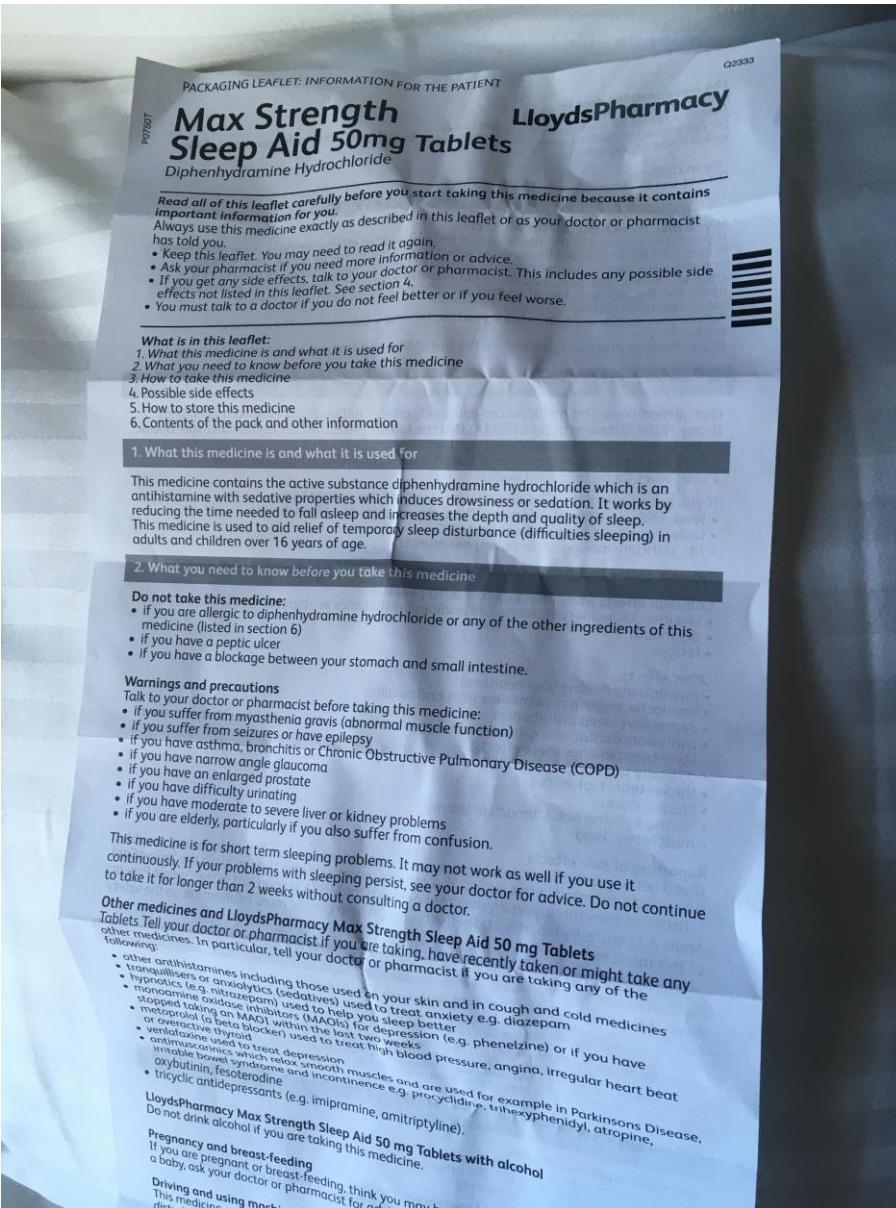
Catalogue management and user support

User support, outreach and training



Instructions

Climate
Change





Evaluation and Quality Control (EQC) for the CDS

Climate
Change

Home Search Datasets Help & support

Copernicus Europe's eyes on Earth Climate Change Service **BETA**

Global glaciers elevation changes and mass balance

Time series of glacier-wide changes in elevation and changes in mass

Overview Download data Interactive map **data quality**

The Glacier Change Service provides time series of glacier-wide changes in:

- Elevation from terrestrial, air and space borne geodetic surveys
- Changes in mass from glaciological in-situ measurements.

Both subsets are provided as **ESRI shapefiles** containing the location of the glacier label point in geographic coordinates (longitude and latitude in degrees), which are referenced to the WGS84 datum, and some general statistic information about the glacier. Both shapefiles come with one ancillary **.csv** file containing the time series of observed glacier changes and information of the original sources.

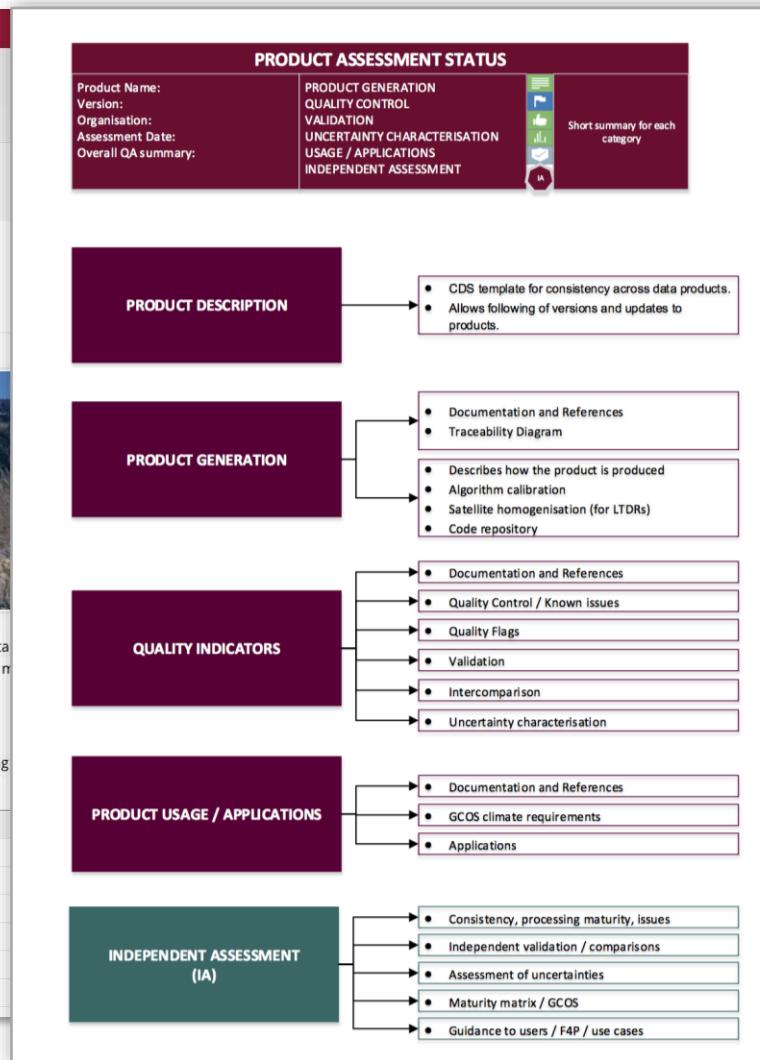
Note: The mass balance series consists of usually continuous annual balance measurements. The elevation change series consist of multi-annual changes with sometimes overlapping survey periods. For combining mass balance and elevation change data need again to be converted to annual change rates and mass changes need to be converted to $m\text{ yr}^{-1}$.

Keywords: glacier, change series, geodetic elevation change, glaciological mass balance

Reference | Citation: WGMS (2016): Fluctuations of Glaciers Database. World Glacier Monitoring DOI:10.5904/wgms-fog-2016-08. [WGMS downloads](#)

DATA DESCRIPTION

Global glaciers elevation changes and mass balance	
Spatial coverage:	World Glacier Monitoring Service
Spatial resolution:	25km
Temporal coverage:	1850-2015
Temporal resolution:	from annual to decadal
Data format:	ESRI shapefiles



Quality of data

- Assessments
- User guidance
- Gaps and limitations

Quality of tools

- Fitness for purpose
- Best practices

Quality of service

- Speed, responsiveness
- System availability, ...



EQC function is pre-operational

- ✓ Content Management System integrated into the CDS
- ✓ 100+ Quality Assurance Reports produced
- ✓ EQC tab with synthesis table in CDS-test
- ✓ Ready to go live in Q2 2020



EQC Sea ice monthly and daily gridded data from 1978 to present derived from satellite sensors

Overview Download data Quality assessment Documentation

- [Sea ice monthly and daily gridded data from 1978 to present + Sea ice concentration](#)

INTRODUCTION	USER DOCUMENTATION	ACCESS	INDEPENDENT ASSESSMENT
A1. Dataset overview	B1. User guide	C1. Toolbox compatibility	D1. Data check
A2. Temporal and spatial coverage and resolution	B2. Scientific methodology	C2. Archiving	D2. Expert Evaluation
A3. Providers	B3. Uncertainty quantification		D3. Dataset Maturity
A4. Dataset version	B4. Validation		D4. Summary of Independent Assessment
A5. Record update	B5. Inter-comparison		

Analysis of User Requirements underway

- ✓ Operational URDB holding 3000+ requirements
- ✓ First URADs on data, toolbox and sectors produced
- ✓ Internal EQC Review Board established to address issues reported by EQC
- ✓ Mechanism put in place to inform service evolution



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Climate
Change



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User support, outreach and training



Climate ADAPT

SHARING ADAPTATION INFORMATION ACROSS EUROPE

Search all site | Help | My Climate-ADAPT

ABOUT EU POLICY COUNTRIES, TRANSNATIONAL REGIONS, CITIES KNOWLEDGE NETWORKS

Incorporating climate change risks in planning the modernization of the railway corridor in Slovakia

Rail transport plays an important role in Slovakia, providing 35.6% of the total volume of passenger transport and 19.0% of freight transport in 2017. The main railway corridor, which connects the cities of Bratislava, Žilina and Košice, part of the trans-European TEN-T transport system and Rail...

[» READ MORE](#)

About Climate-ADAPT Latest News & Events Most recent Case Study Most recent Publication or Report Fact sheet

Image credits: Railways of the Slovak Republic

Getting Started Search the Database EU Sector Policies Country Profiles Case Studies Adaptation Support Tool

Are you new to Climate-ADAPT?

I want to develop a LOCAL adaptation strategy or action plan.

I want to develop a NATIONAL or REGIONAL adaptation strategy or action plan.

I want to develop a TRANSNATIONAL adaptation strategy or action plan.



- 12 month contract kicked off in Jan 2020
- Currently within an initial 3 month scoping phase and consolidation of requirements with EEA

Goals:

- Deliver CDS tools to adaption community via ClimatAdapt
- Bespoke interface to access and visualise Climate Impact Indicators (CIIIs) at European scale
- First line of dataset support for all countries
- Support for transnational regions



Summary

Climate
Change



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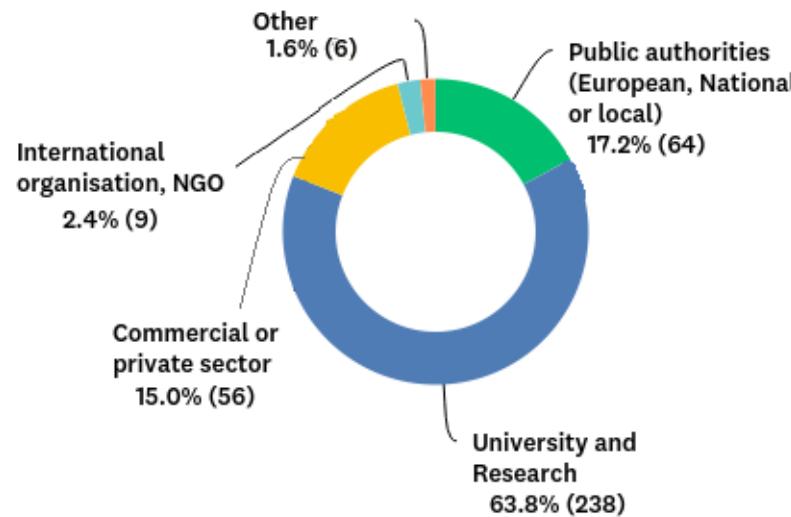
Challenges and opportunities associated with linking with other platforms

→ Catalogue management and user support

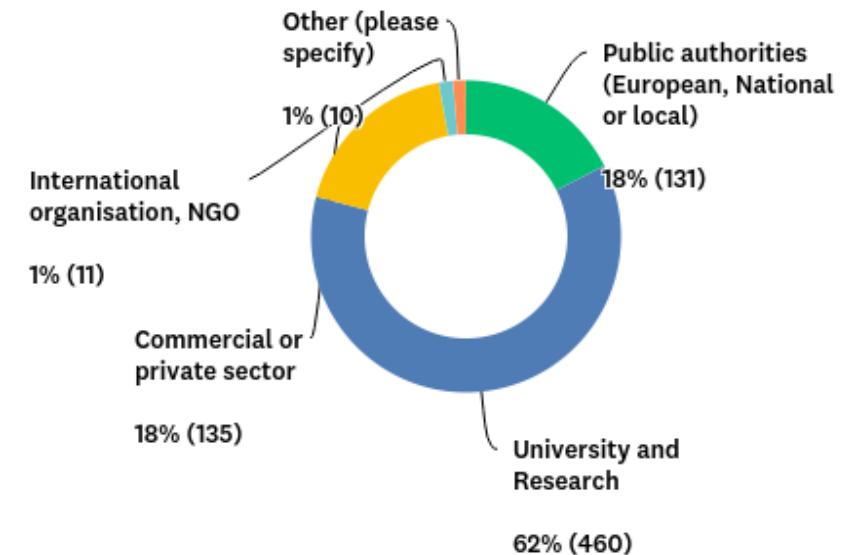
User support, outreach and training



2018



2019



A significant majority of survey participants (70%) works in academia and research, followed by 14% in the public sector, and 11% in the commercial sector.

Within the EU-based responses we see a more even distribution than elsewhere (see plots above), with public sector and commercial entities having 18% each.

The sectoral distribution shows how C3S products continue to find significant uptake among commercial and public-sector users. The fraction of users from these sectors is increasing both in absolute and relative terms.



Most popular datasets

Climate
Cha

Datasets Top 8 (Running or queued)

1. ERA5 complete
2. ERA5 hourly data on single levels from 1979 to ...
3. ERA5 hourly data on pressure levels from 1979 ...
4. ERA5-Land hourly data from 2001 to present
5. Seasonal forecast daily data on single levels fro...
6. Seasonal forecast monthly statistics on single le...
7. Seasonal forecast daily data on pressure levels f...
8. UERRA regional reanalysis for Europe on single ...

Datasets Top 8 (Running or queued)

1. Seasonal forecast daily data on single levels fro...
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6. ERA5-Land hourly data from 2001 to present
7. UERRA regional reanalysis for Europe on single ...
8. Seasonal forecast monthly statistics on single le...

A typical day

On the 13th of the month



 Copernicus Knowledge Base 

SPACE SHORTCUTS

-  How-to articles
-  ERA5: data documentation

PAGE TREE

- > General articles
- > Copernicus Atmosphere Monitoring
- > Copernicus Climate Change Service
 - What data and maps are available
 - **Climate Data Store (CDS) documentation**
 - What are the changes from ERA-IR
- > CDS dataset documentation
- > CDS application documentation
- > C3S precursor dataset documentation
- > ECMWF model and products
- > How-to articles

 Space tools 

Climate Data Store (CDS) documentation

Created by Michela Giusti, last modified on Feb 28, 2020

- Introduction
- How the CDS works
- Request states
- Limits
- Datasets
 - Data hosted on the CDS/MARS internal'
 - Data hosted on 'MARS external'
 - Data hosted by external contractors
- Efficiency tips
- CDS API and CDS Toolbox examples

Introduction

The [Climate Data Store \(CDS\)](#) is the cornerstone infrastructure which supports the implementation of the [Copernicus Climate Change Service \(C3S\)](#). It enables the provision of Essential Climate Variables (ECVs), climate analyses, reanalyses, projections and indicators at temporal and spatial scales relevant to adaptation and mitigation strategies for various sectoral and societal benefit areas.

The CDS is designed as a distributed system which provides improved access to local and remote datasets via a powerful service-oriented architecture.

The CDS offers seamless web-based and API-based search and retrieve facilities to access climate data and information. In addition, the CDS also provides a generic software toolbox that allows users to develop web-based applications that make use of the datasets available in the CDS.

The data provided by the [CDS](#) are free and open data, subject to the user agreeing to the relevant dataset licence(s). For further details, please see this article from the [ECMWF Newsletter 151](#) and this [C3S User Learning Services video](#).

How the CDS works

The CDS provides a [Catalogue](#) which lists C3S data and products, including observations, reanalyses, seasonal forecasts and climate projections. Users



Summary

Climate
Change



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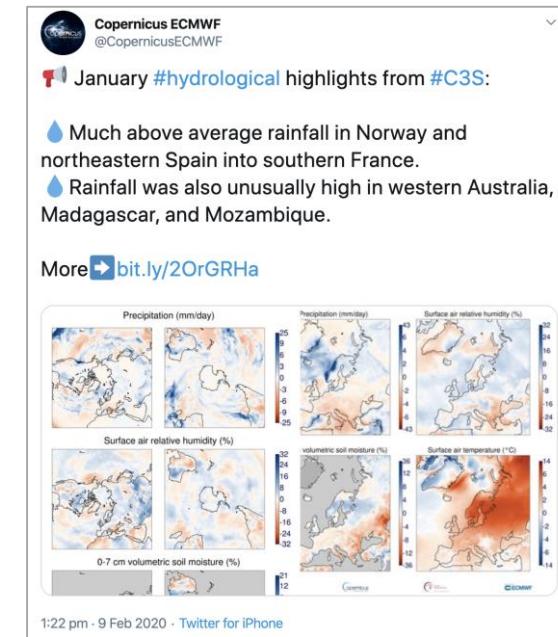
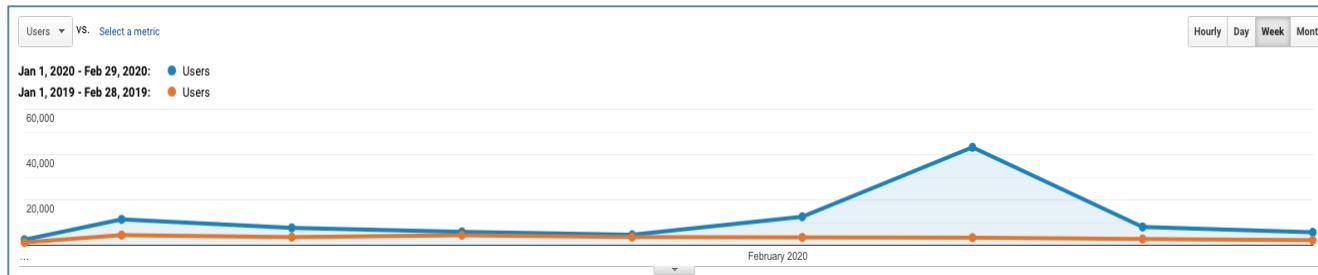
Catalogue management and user support

→ User support, outreach and training



C3S website

- 01 January – 29 February 2020
 - 218.5k page views
 - 175k unique page views
 - 95.5k users vs 25.4k the Jan-Feb 2019.
 - 43k users visited the site following 9 February's newsflash on January's temperature



Instagram

- 5.4k followers

Twitter

- 20k follower milestone passed.



Climate
Change

Our resources

We have a range of resources on climate models, data resources, reanalysis, bias correction, downscaling, climate change uncertainty, climate change adaptation case study. More is coming!

New training resources in preparation:

- *Sectoral application Agriculture & forestry (in preparation)*
- *Robustness & confidence (in preparation)*
- *A climate change adaptation case study highlighting the use of data from the CDS in different decision making steps (in preparation)*
- CDS API (data access) now **[published!](https://uls.climate.copernicus.eu)**

The image shows a grid of 15 training resource cards, each with a title, description, rating, and status. The cards are arranged in three rows of five. The titles include: C3S ULS: Monitoring and Evaluation, C3S ULS: Introduction to Copernicus program, C3S ULS: User Engagement - Identifying training needs, C3S ULS: Train the Trainers - Background Information, C3S ULS: Data Resources - Reanalyses, C3S ULS: Data Resources - Observations, C3S ULS: Sectoral Application - Water, C3S ULS: Data Resources - Introduction, C3S ULS: Climate Change Uncertainties, C3S ULS: Bias Correction and Downscaling, C3S ULS: Hands on Case Study, and C3S ULS: Climate Data Store & Toolbox. The descriptions provide details about the content and date of creation. The status indicates if the resource has been started or attempted.

Resource Title	Description	Rating	Status
C3S ULS: Monitoring and Evaluation	30 min • Emma Daniels 21/12/2018	★★★★★	NOT STARTED 0%
C3S ULS: Introduction to Copernicus program	12 min • Maria del Pozo 09/05/2019	★★★★★	NOT STARTED 0%
C3S ULS: User Engagement - Identifying training needs	10 min • Emma Daniels 21/12/2018	★ 5	NOT STARTED 0%
C3S ULS: Train the Trainers - Background Information	30 min • Emma Daniels 14/12/2018	★★★★★	ATTEMPTED 0%
C3S ULS: Data Resources - Reanalyses	30 min • Emma Daniels 28/12/2018	★★★★★	ATTEMPTED 0%
C3S ULS: Data Resources - Observations	35 min • Emma Daniels 28/12/2018	★★★★★	NOT STARTED 0%
C3S ULS: Sectoral Application - Water	40 min • Emma Daniels 21/12/2018	★★★★★	NOT STARTED 0%
C3S ULS: Data Resources - Introduction	45 min • Emma Daniels 06/12/2018	★★★★★	NOT STARTED 0%
C3S ULS: Climate Change Uncertainties	30 min • Emma Daniels 14/09/2018	★★★★★	IN PROGRESS 0%
C3S ULS: Bias Correction and Downscaling	25 min • Emma Daniels 21/12/2018	★★★★★	NOT STARTED 0%
C3S ULS: Hands on Case Study	45 min • Emma Daniels 21/12/2018	★★★★★	ATTEMPTED 0%
C3S ULS: Climate Data Store & Toolbox	25 min • Emma Daniels 21/12/2018	★★★★★	ATTEMPTED 0%



Climate
Change

Thank you !

For more info:

copernicus-support@ecmwf.int

Carlo.Buontempo@ecmwf.int

Twitter: @carlo_twitter

The screenshot shows the homepage of the climate.copernicus.eu website. At the top, there is a header with the service's logo and navigation links for News, Events, Press, Tenders, Help & Support, About Us, What We Do, Data, and a search bar. Below the header, there are logos for the European Commission, Copernicus (Europe's eyes on Earth), and ECMWF. A main banner features a photograph of icebergs and contains text about providing authoritative information for climate mitigation and adaptation. Below the banner, there is a section for Key products and services, and a footer with links to the website and logos for Copernicus, European Commission, and ECMWF.





The European Climate Adaptation Platform **(Climate-ADAPT)**

<https://climate-adapt.eea.europa.eu/>

Sergio Castellari & José Ramón Picatoste
European Environment Agency (EEA)

Outline:

- European Environment Agency (EEA)
- Climate-ADAPT:
 - *EU policy context*
 - *Purpose, target audience and relevance in Europe*
 - *Evaluation and current strategy*
 - *Structure*
 - *Update of web content*
 - *Governance and team*
 - *Dissemination Strategy*
 - *Link with other platforms*
 - *Further developments*
 - *Conclusions and further work*

The European Environment Agency (EEA):

EEA mandate and objectives

To provide a sound decision basis for the EU and member countries' environmental policies, by producing

- European, regional and global environment-related data and indicator sets
 - Integrated environmental assessments
 - Thematic environmental analyses
- And managing web platforms



EEA is:

- An independent EU agency
- Analysing, assessing and providing information
- An interface between science and policy
- Dependent upon strong networks to carry out its work

The European Environment Agency (EEA):

EEA is not....

- Formulating or proposing new legislation
- An executive body implementing environmental measures
- A funding body

EEA's target groups?

Stakeholders: Institutions and governments

- European Commission, Parliament, Council, EEA member countries

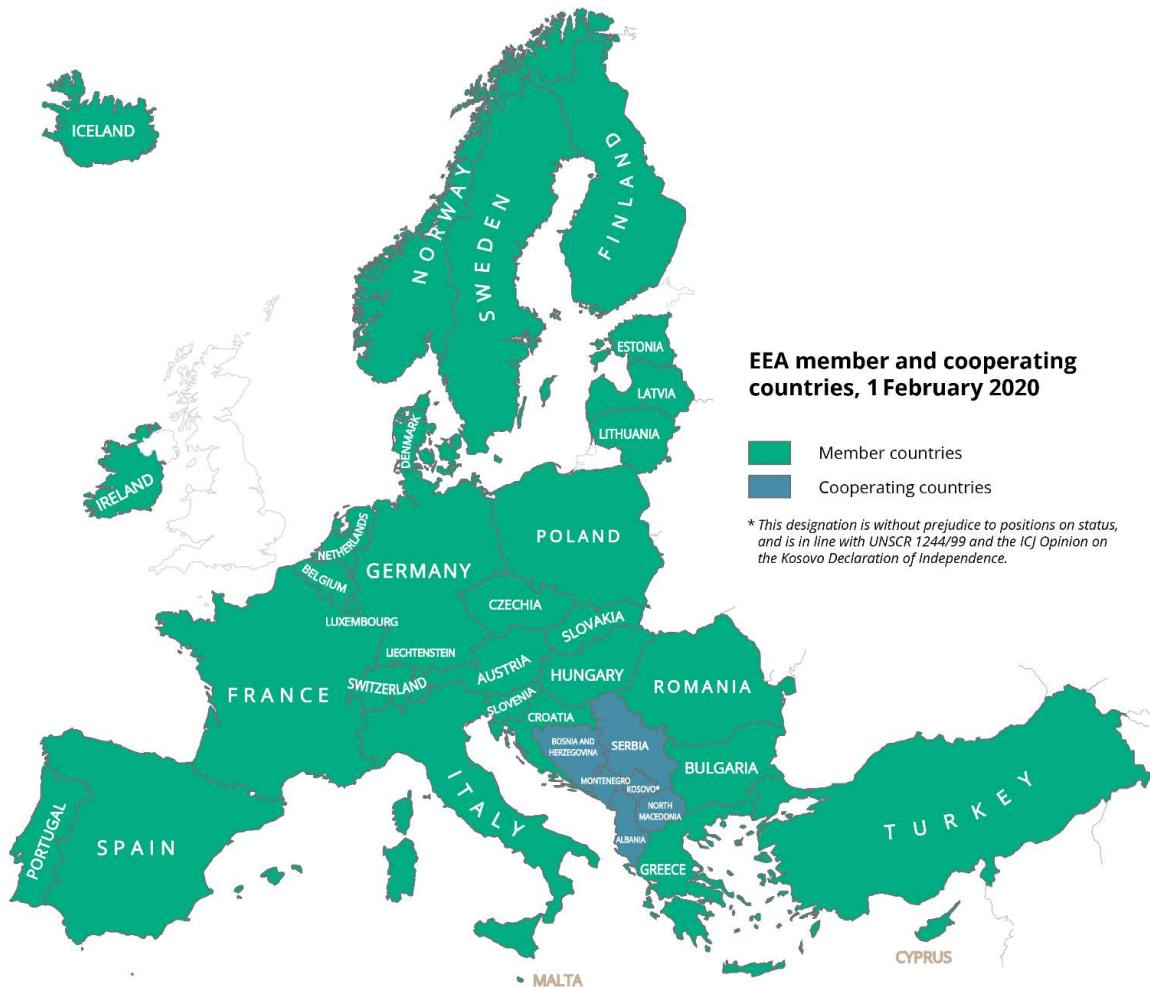
Policy influencers: Civil society

- NGOs, business, media, advisory groups, scientists, debaters

The general public



Which are the EEA member and collaborating countries?



European environment information and observation network (Eionet)

About **300 national institutions** in **32 member countries** + collaborating countries, comprising

- *National focal points (NFPs)*
- *European topic centres (ETCs)*
- *National reference centres (NRCs)*
- *Other institutions*



Seven consortia of European institutions support the EEA

European Topic Centres:

- Are consortia working under contract with the EEA.
- Deal with specific environmental topics and perform activities as defined in the EEA Strategy and the Annual Management Plan.
- Presently comprise the following topical areas:
 - **European Topic Centre on Air Pollution, Transport, Noise and Industrial Pollution**
 - **European Topic Centre on Climate Change Mitigation and Energy**
 - **Climate Change Impacts, Vulnerability and Adaptation**
 - **Biological Diversity**
 - **Inland, Coastal and Marine Waters**
 - **Urban, Land and Soil Systems**
 - **Waste and Materials in a Green Economy**



Climate-ADAPT: <https://climate-adapt.eea.europa.eu/>

The screenshot shows the homepage of the Climate-ADAPT website. At the top, there is a navigation bar with links for "ABOUT", "EU POLICY", "COUNTRIES, TRANSNATIONAL REGIONS, CITIES", "KNOWLEDGE", and "NETWORKS". The "KNOWLEDGE" section is currently active. A search bar and a "Help" link are also present. The main content area features a large banner image showing a display board with climate adaptation information. Overlaid on this is a callout box titled "Foresight for policy and decision makers" which contains text about foresight as a process to inform decisions and mobilise joint actions. Below the banner are several buttons: "About Climate-ADAPT", "Latest News & Events", "Most recent Case Study", "Most recent Publication or Report", and "Fact sheet". A "» READ MORE" link is also visible. At the bottom of the page, there is a section titled "Are you new to Climate-ADAPT?" with three options: "Getting Started", "Search the Database", "EU Sector Policies", "Country Profiles", "Case Studies", and "Adaptation Support Tool". Each option has a corresponding image icon and a brief description below it. The "Getting Started" section includes a link to a video thumbnail showing a cityscape. The "Country Profiles" section includes a map of Europe with a video thumbnail. The "Transnational regions" section includes a map of Europe with a video thumbnail.

Image credits: Mario Calvo on Unsplash, 2014

Foresight for policy and decision makers

Foresight is a systematic, participatory, future intelligence gathering and vision-building process to inform present-day decisions and mobilise joint actions. The EU PLACARD project has published a report, which explores the potential role of foresight in integrating Disaster Risk Reduction and Cli...

» READ MORE

About Climate-ADAPT Latest News & Events Most recent Case Study Most recent Publication or Report Fact sheet

Getting Started Search the Database EU Sector Policies Country Profiles Case Studies Adaptation Support Tool

Are you new to Climate-ADAPT?

I want to develop a LOCAL adaptation strategy or action plan.

I want to develop a NATIONAL or REGIONAL adaptation strategy or action plan.

I want to develop a TRANSNATIONAL adaptation strategy or action plan.

EU Policy context: EU Adaptation Strategy (2013)



- Climate-ADAPT has become the **EU Adaptation Strategy's** vehicle to disseminate information on adaptation to decision-makers at various governance levels and organisations supporting them.
- Climate-ADAPT is explicitly mentioned in the **Governance of the Energy Union and Climate Action regulation**, as the channel to disseminate information reported by MS on adaptation.

PRIORITY 1: TO ENCOURAGE ACTION BY MEMBER STATES	
Action 1	Encourage all Member States to adopt comprehensive adaptation strategies
Action 2	LIFE funding to support capacity building and step up adaptation action in Europe
Action 3	Promoting adaptation actions by cities along the Covenant of Mayors initiative
PRIORITY 2: TO SUPPORT BETTER-INFORMED DECISION-MAKING	
Action 4	Knowledge gap strategy
Action 5	Further develop Climate-ADAPT as the 'one-stop shop' for adaptation information in Europe
PRIORITY 3: TO PROMOTE ADAPTATION IN KEY EU VULNERABLE SECTORS	
Action 6	Climate-proofing of the Common Agricultural Policy, the Cohesion Policy and the Common Fisheries Policy
Action 7	Making infrastructure more resilient
Action 8	Promote insurance and other financial products for resilient investment and business decisions



EU Policy context: European Green Deal (2019)

Proposal on a European 'Climate Law' enshrining the 2050 climate neutrality objective	March 2020
Comprehensive plan to increase the EU 2030 climate target to at least 50% and towards 55% in a responsible way	Summer 2020
Proposals for revisions of relevant legislative measures to deliver on the increased climate ambition, following the review of Emissions Trading System Directive; Effort Sharing Regulation; Land use, land use change and forestry Regulation; Energy Efficiency Directive; Renewable Energy Directive; CO ₂ emissions performance standards for cars and vans	June 2021
Proposal for a revision of the Energy Taxation Directive	June 2021
Proposal for a carbon border adjustment mechanism for selected sectors	2021
New EU Strategy on Adaptation to Climate Change	2020/2021



Climate-ADAPT: target audience and relevance in Europe

- **Target audience of Climate-ADAPT:**
 - **governmental decision-makers**, as well as the **organisations** supporting them in the development, implementation and evaluation of adaptation strategies, plans and actions at all levels. Furthermore, **businesses and non-governmental organisations, scientists and practitioners**.
- **Profile of users:**
 - **high diversity of Climate-ADAPT users** in terms of their professional backgrounds, capacities and governance level of activity.
- **The platform is used across all governance levels in Europe from city/local level to sub-national, national, transnational up to the European level.**
 - However, some specific user groups have not yet been sufficiently reached, i.e. sectoral experts at the EU level and across Europe and users from eastern and central European countries.
- Climate-ADAPT is becoming **the integrative tool for outputs and dissemination results from other EEA tasks and other projects**.

EEA Climate-ADAPT evaluation (2018): conclusions

Relevance:

- Sharing the knowledge across Europe, assisting the uptake of information, and supporting cooperation among sectors and across governance levels, for better informed decision making, is still needed.

Effectiveness:

- Growth of knowledge was captured.
- Knowledge presented in the policy context is useful and reaches a wide audience.
- Informed policy processes across Europe at various levels of governance.

Efficiency :

- Climate-ADAPT resources were limited, taking into account the increase in user demands and the available knowledge.

Coherence:

- Climate-ADAPT aims to be coherent with other EU platforms, which are also continuously developing.

EU Added value

- Climate-ADAPT adds value as the main reference for “state-of-the-art” knowledge on adaptation in Europe, supports peer-to-peer learning and increases the coherence of EU member states regarding better informed decision-making.

Complementarity (additional):

- Climate-ADAPT aims to be complementary to transnational and national knowledge platforms. Information is not duplicated, but users are guided to the relevant information sources.

European Environment Agency



Climate-ADAPT Strategy 2019-2021



The **Climate-ADAPT Strategy 2019-2021** is the strategic planning instrument that identifies the objectives and mission / vision of the platform, as well as it defines the governance and lines of activities to be developed during its 3-year period of validity

<https://climate-adapt.eea.europa.eu/about/c-a-strategy-2019-2021-final-jan-2019-docx.pdf>

Climate-ADAPT Strategy 2019-2021

(January 2019)



The European Climate Adaptation Platform Climate-ADAPT is a partnership between the European Commission and the European Environment Agency.



European Environment Agency



Climate-ADAPT structure: components



EU POLICY -

COUNTRIES, TRANSNATIONAL REGIONS, CITIES -

KNOWLEDGE -

Two main components:

1. **Web content:** mainly textual content and tools organised under three main entry points: (i) **EU policies**, (ii) **countries cities and regions**, (iii) **knowledge**. Additional sections such as *About, Networks, Help, News and Events, Newsletter*
2. **The database:** provides access to the relevant sources of information, searchable through filters and keywords

Both components are connected in the platform to enable users to access information from the DB resources in relation to various policy contexts on the Climate-ADAPT webpages

European Environment Agency



Climate-ADAPT structure: web content

EU POLICY -	COUNTRIES, TRANSNATIONAL REGIONS, CITIES -	KNOWLEDGE -
EU ADAPTATION POLICY		
EU Adaptation Strategy	EU Covenant of Mayors	
EU Reporting on Adaptation (MMR)	EU funding of adaptation	
ADAPTATION IN EU POLICY SECTORS		
Agriculture	Financial	
Biodiversity	Forestry	
Buildings	Health	
Coastal areas	Marine and fisheries	
Disaster risk reduction	Transport	
Ecosystem-based approaches	Urban	
Energy	Water management	
EU REGIONAL POLICY		
COUNTRIES, TRANSNATIONAL REGIONS, CITIES -		KNOWLEDGE -
COUNTRY PROFILES		CITIES AND TOWNS
TRANSNATIONAL REGIONS		
Adriatic-Ionian		Mediterranean
Alpine Space		North Sea
Atlantic Area		North West Europe
Balkan-Mediterranean		Northern Periphery and Arctic
Baltic Sea		South West Europe
Central Europe		Other regions
Danube		
REGIONS, CITIES -		KNOWLEDGE -
TOPICS		TOOLS
Impacts, vulnerabilities and risks		Adaptation Support Tool
Adaptation options		Urban Adaptation Support Tool
Uncertainty guidance		Urban Adaptation Map Viewer
Monitoring, Reporting and Evaluation		Economic tools
Europe's vulnerability to climate change impacts occurring outside Europe		
PRACTICE		
Case studies		
LIFE projects		
INTERREG projects		
Climate-ADAPT use cases		
DATA AND INDICATORS		
Copernicus Climate Change Service (C3S)		
Indicators in Climate-ADAPT		
RESEARCH PROJECTS		
 SEARCH THE DATABASE		



Climate-ADAPT: EEA member countries profiles

Updating Country pages, based on the formal reporting process (MMR)

ABOUT - EU POLICY - COUNTRIES, TRANSNATIONAL REGIONS, CITIES - KNOWLEDGE - NETWORKS

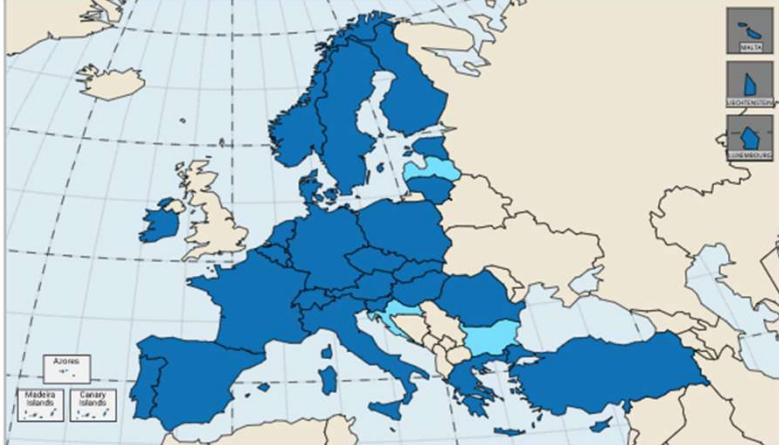
Home > Countries, regions and cities > Country Profiles

Country Profiles

EEA Member countries are at different stages of preparing, developing and implementing national adaptation strategies and plans. See in the map below the information provided by each Member State of the European Union under the European mechanism for monitoring and reporting information relevant to climate change (Regulation (EU) No 525/2013). For other EEA Member countries, the information provided is based on voluntary submissions to EEA.

Select one of the two options from the list of thematic map (National Adaptation Strategy or National Adaptation Plan) and the map will indicate the content available for each country. To navigate to the information just click one country on the map and a pop-up window will show the existing link(s) and allow clicking on them.

Select a country to go to country's page: Choose a country ▾



Choose thematic map:

- NATIONAL ADAPTATION STRATEGY (NAS)
- NATIONAL ADAPTATION PLAN (NAP)

NAS adopted
NAS not adopted

[Disclaimer]

ABOUT - EU POLICY - COUNTRIES, TRANSNATIONAL REGIONS, CITIES - KNOWLEDGE - NETWORKS

Home > Countries, regions and cities > Country Profiles > Italy

Choose a country: Italy ▾



Last update: Nov 19, 2019

Item	Status	Links
National adaptation strategy	Adopted	<input checked="" type="checkbox"/> National Climate Change Adaptation Strategy
National adaptation plan	Being developed	<input checked="" type="checkbox"/> National Climate Change Adaptation Plan
Impacts, vulnerability and adaptation assessments	Completed	<input checked="" type="checkbox"/> Report on the state of scientific knowledge on impacts, vulnerability and adaptation to climate change in Italy
Research programs	Currently being undertaken	<input checked="" type="checkbox"/> National Research Program <input checked="" type="checkbox"/> National Operational Program for Research and Innovation
	Established	<input checked="" type="checkbox"/> Aeronautical Military Meteorological Service <input checked="" type="checkbox"/> National Flight Assistance Organization <input checked="" type="checkbox"/> Council for Agricultural

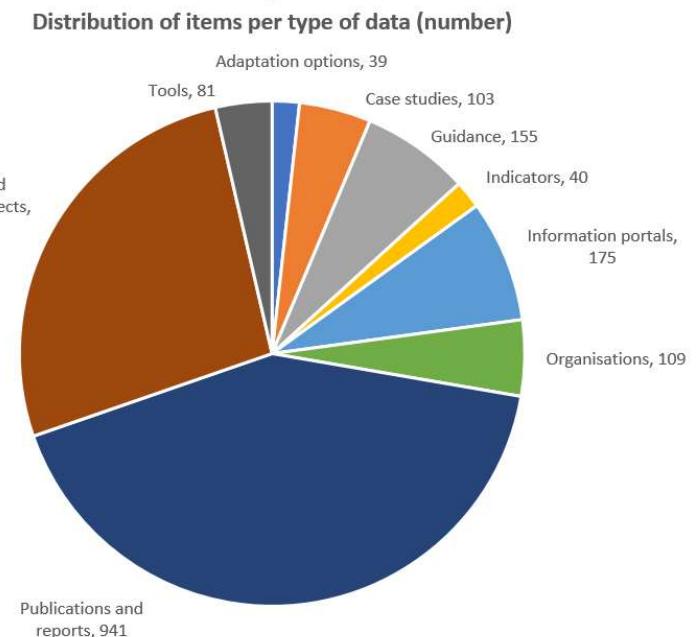
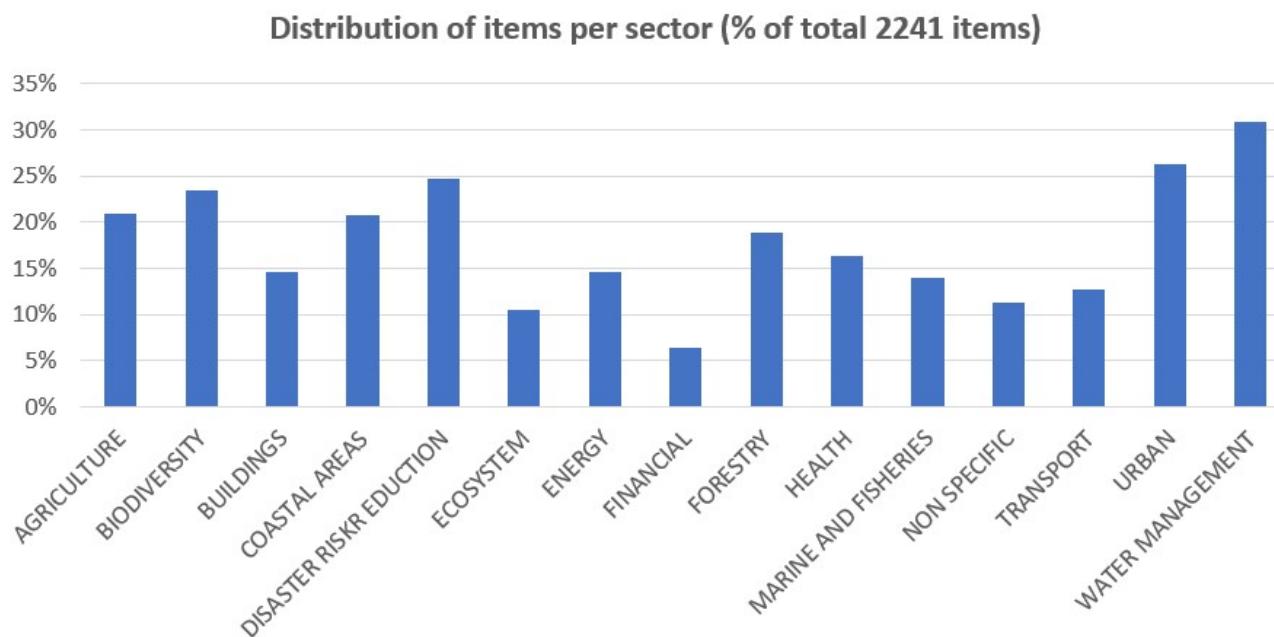
Climate-ADAPT structure: database

Climate-ADAPT DB - structure

Type of data	Publication and reports Research and knowledge projects Indicators Guidance Tools	Case studies Adaptation options Organizations Information portals Videos
Sectors	Agriculture Biodiversity Buildings Coastal areas Disaster Risk Reduction Ecosystem based approaches Energy	Financial Forestry Health Marine and fisheries Transport Urban Water management
Impacts	Droughts, Extreme temperatures, Flooding, Ice and snow, Sea level rise, Storms, Water scarcity	
Elements, Regions and Countries		ent Agency 

Climate-ADAPT database content

2241 items in Climate-ADAPT database as of December 2019



- Capture the new knowledge on CCA: regular updating the database with new items
- Improve consistency of the database: retagging and updating/archiving/deleting existing items

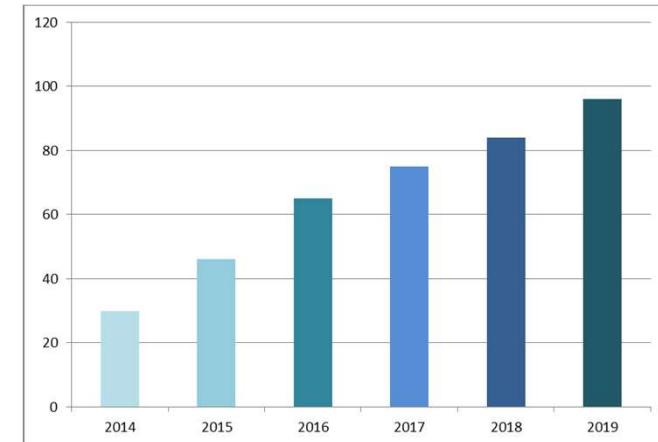
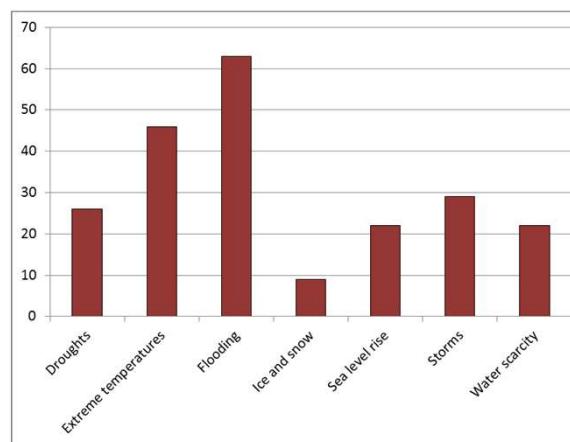
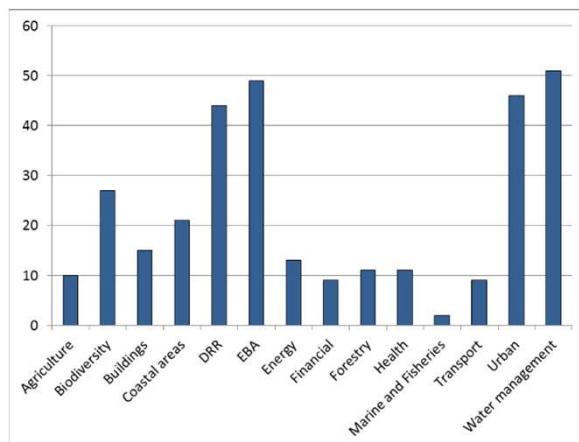
Climate-ADAPT: case studies and adaptation options (i)

Climate-ADAPT case studies:

showcase measures that are already being carried out in Europe to increase resilience to extreme weather and slow-onset events, as well as improve adaptation to climate change.

They are aimed at supporting policy and decision-makers, in particular at the local and regional scale, in their efforts to cope with the effects of climate change by demonstrating the implementation of real adaptation measures.

98 case studies in Climate-ADAPT database as of December 2019



- Systematically update the Climate-ADAPT DB case studies published before 2015
- Develop new case studies based on the identified key gaps in terms of sectors, impacts and geographic coverage

Climate-ADAPT: case studies and adaptation options (ii)

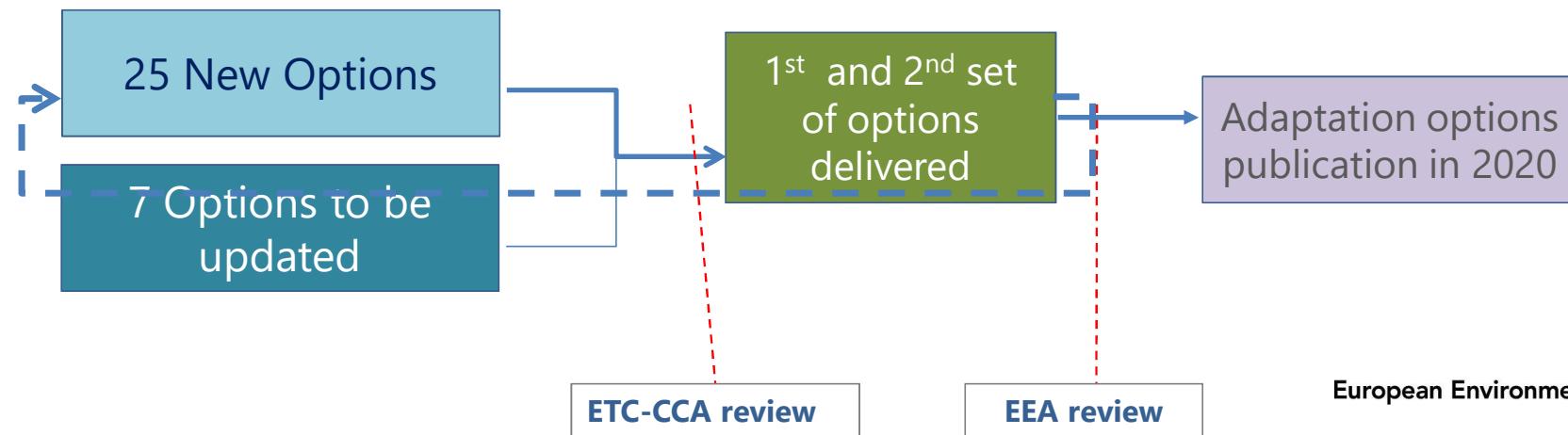
Climate-ADAPT adaptation options:

measures and actions that can be implemented to improve adaptation to climate change.

Climate-ADAPT provides a catalogue of potential adaptation options that can be explored by selecting a specific climate impact and adaptation sector of interest. Case studies providing illustrative and inspiring examples of implemented adaptation options across Europe.

40 adaptation options in Climate-ADAPT database as of December 2019

- Significant improvement of this collection during 2019-2020, with 25 new adaptation options and 7 updated, to be published in 2020
- Cross check case studies and adaptation option items to assure full consistency



Criteria for selection of case studies

- 1) **Actual implementation:** the case studies shall describe either implemented adaptation measures or measures which are in an implementation phase.
- 2) **Clear link to climate change adaptation:** the case studies shall describe measures which have been designed and implemented to reduce vulnerability to climate change and/or address its impacts or opportunities, therefore also adopting a long-term perspective.
- 3) **Accessibility to more detailed information:** more detailed information on the case studies shall be easily accessible and re-assessment should be feasible.



© Rijkswaterstaat/Joop van Houdt
Sand Motor – building with nature solution to improve coastal protection along Delfland coast (the Netherlands)



© Luciano Pia
Living in a tree house in Torino (Italy): combining adaptation and mitigation measures to improve comfort



Aerial photo of the valley garden area after construction of the lakes was completed.



© Barcelona City Council
Green corridor at Passeig del Sant Joan, Barcelona.



© INGENIERIA
Overview of the four Archimedes screws installed in one of the six lock systems. The last screw on the right is equipped with a casing to avoid harming fish.



© Ecologic
The design of the coastal flood defence measure included several sections with extra solutions applied. The glazed retention walls increase the attractiveness of the area for visitors and local citizens.



© Flanders Regional Government
Map of the project area. The dark green area to the left is the Dutch Hedwige Polder (with the Seeflinke wetlands beyond); the light green area to the right is the Belgian Prosper Polder.



©Corvinus University of Budapest — EPI-WATER Project
The retention of flood peaks in the agricultural areas allows the protection of the built environment.



© Birgit Georgi
Renovation of Sankt Ann Plads, Copenhagen. The park in the middle has a concave design to increase the volume of water it can contain, and it drains to the nearby harbour.



© Stephan Brenneisen
Green roof on Wiesenplatz tram depot in Basel, part of the 'Meadow carpet' project.

European Environment Agency



Climate-ADAPT: Adaptation Support Tool



The Adaptation Support Tool - Getting started

- » How is the European climate changing?
- » Why adapt to climate change?
- » Key principles for adaptation
- » How to use the Adaptation Support Tool?

1. Preparing the ground for adaptation

2. Assessing risks and vulnerabilities to climate change

3. Identifying adaptation options

4. Assessing adaptation options

5. Implementation

6. Monitoring and evaluation

The Adaptation Support Tool – Getting started

What is the Adaptation Support Tool?

The aim of the Adaptation Support Tool is to assist users in developing climate change adaptation strategies and plans by providing guidance, links to relevant sources and dedicated tools (urban practitioners find a specific [Urban Adaptation Support Tool](#)).

The European Commission has issued [EU guidelines on developing adaptation strategies](#) as a component of the [EU strategy on adaptation to climate change](#), with the aim to support EU Member States in the process of developing, implementing and reviewing their adaptation strategies. They provide a common understanding of key features relevant to adaptation processes, building on the experience available in the EU. The steps and recommendations of the Adaptation Support Tool are aligned with the contents of these guidelines.

The tool is based on the policy cycle, which highlights that climate change adaptation is an iterative process that will help ensuring decisions are based on up-to-date data and knowledge. This iterative process will be supported by monitoring and timely assessment of measures. In its design the Adaptation Support Tool borrows from the UKCIP Adaptation

[▼ READ MORE](#)

Highlighted resources

- » Guidelines on developing adaptation strategies
- » Methods and Tools for Adaptation to Climate Change - A Handbook for Provinces, Regions and Cities
- » UKCIP 'Adaptation Wizard'



Climate-ADAPT: update of web content

Table 1 -- Web pages (main navigation menu in green)		Frequency of updating	
Homepage		annually	
About		annually	
Climate-ADAPT Database		annually	
EU policy	EU Adaptation policy	EU Adaptation Strategy annually EU Adaptation Reporting (MMR) every 2 years EU Covenant of Mayors annually EU funding of Adaptation annually	
	EU sector policies (all the sectors)	Introduction page annually Agriculture annually Biodiversity annually Coastal areas annually Forestry annually Water management annually Marine and fisheries annually Ecosystem-based approaches (GI) annually Disaster risk reduction annually Financial annually Buildings annually Energy annually Transport annually Health annually Urban annually	
		EU Regional policy every 4 years	
Countries, transnational regions, cities	Transnational regions (direct link to EU regional policy)		
	Cities and towns (direct link to urban sector)		
	Country profiles every 2 years		
	Knowledge	Impacts, Risks and Vulnerabilities every 4 years Adaptation options every 2 years Uncertainty guidance every 4 years Monitoring, Reporting, Evaluation (MRE) every 2 years EU vulnerability to outside Europe CC impacts every 4 years	
Data & Indicators		Climate Services - C3S annually	
		Climate-ADAPT Indicators annually	
		Research projects annually	
Tools		AST annually	

Regular and systematic update of the content of the Climate-ADAPT web pages, as an element of the Climate-ADAPT Strategy 2019-2021

Table 1 -- Web pages (main navigation menu in green)		Frequency of updating
Practice	Urban AST	annually
	Urban Adaptation Map Viewer	every 2 years
	Economic tools	annually
	Case study (with search tool)	every two years
	LIFE projects	annually
	INTERREG projects	annually
	Climate-ADAPT use cases	every 4 years
	Network - Organizations	biannually
Help	Intro	annually
	Glossary	every 2 years
	FAQ users	annually
	FAQ providers	annually
	Guidance to search function	every 2 years
	Tutorial videos for different types of users	annually
	Share your info	every 2 years
	News and Events	on-going
Newsletter		quarterly

Climate-ADAPT: governance

Climate-ADAPT is a partnership between *EC DG CLIMA* and the *EEA*

The approach to governance of Climate-ADAPT

EEA Content and IT hosting, dissemination

Institutional funding for content, IT, and dissemination

ETC/CCA Support

DG CLIMA Joint responsibility

IT funds for new functionalities

EC Framework contracts (new content and promotion of Climate-ADAPT)

Advisory Group

Meeting twice per year
DG CLIMA, AGRI, REGIO, ECHO, ENV, JRC, NEAR, RTD and EASME

EIONET NRC:
European Environment Information and Observation Network – National Reference Centers on CCA



Climate-ADAPT: the team

EEA, supported by **ETC/CCA experts**, has the main responsibility for the preparation and updating of content published on Climate-ADAPT, with the active participation of **key information providers**, including:

- **Countries**
- **Transnational organisations / Conventions**
- **Networks of cities and the Covenant of Mayors**
- **Research community**
- **EC Directorate-Generals**
- **Joint Research Centre**
- **Other stakeholders**

- **EEA project manager:** José Ramón Picatoste
- **EEA team:** Sergio Castellari, Blaz Kurnik, Wouter Vanneuville, Aleksandra Kazmierczak
- **EEA IT support:** Silvia Dalla Costa
- **ETC task co-managers:** Valentina Giannini, Katie Johnson

ETC/CCA THEMATIC EXPERTS PER SECTOR POLICIES	
Sector policy	Thematic Expert
Health	Markus Leitner
Biodiversity	Sonja Völler
Ecosystem-based approaches	DB by all experts; webpage by Disaster risk reduction expert
Forestry	Serena Marras
Agriculture	Valentina Mereu
Coastal areas	Chiara Castellani
Marine and fisheries	Chiara Castellani
Disaster risk reduction	Silvia Cocuccioni
Financial	Thomas Dworak
Water management	Magdalena Rogger
Infrastructure - Energy (Infrastructure – Buildings)	Andrea Bigano DB by Energy and Urban experts; webpage by Energy expert
Infrastructure – Transport	Jan Mertl
Urban sector	Katrin Jurish (in Task 1.4.2.2)

Climate-ADAPT: dissemination strategy

Line of activities	
General	Produce general and specific dissemination material
	Participate in relevant climate change adaptation events at EU level
Sharing information	Produce regular dissemination products
	Organization of webinars
Uptake of the relevant knowledge	Develop regular (6-month frequency) products that summarise the C-A database contents and recent updating
Coordination among sectors and levels	Coordination meetings



Climate-ADAPT: link with other platforms

Climate-ADAPT is exploring ways to integrate DBs between platforms and cross harvesting specific elements at different levels.

Progress with **AdapteCCA** and **DRMKC**:

- **AdapteCCA** (Spanish national platform on CCA)

A platform created from Spanish Office of Climate Change and Biodiversity Foundation aiming to exchange information on CCIVA, to facilitate the coordination and transfer of information, knowledge and experiences.

<https://www.adaptecca.es/>

AdapteCCA.es

Plataforma de intercambio y consulta de información sobre adaptación al Cambio Climático en España

- European Commission **Disaster Risk Management Knowledge Centre (DRMKC)**

Managed from DG JRC provides a networked approach to the science-policy interface in DRM, across the Commission, EU Member States and the DRM community within and beyond the EU.

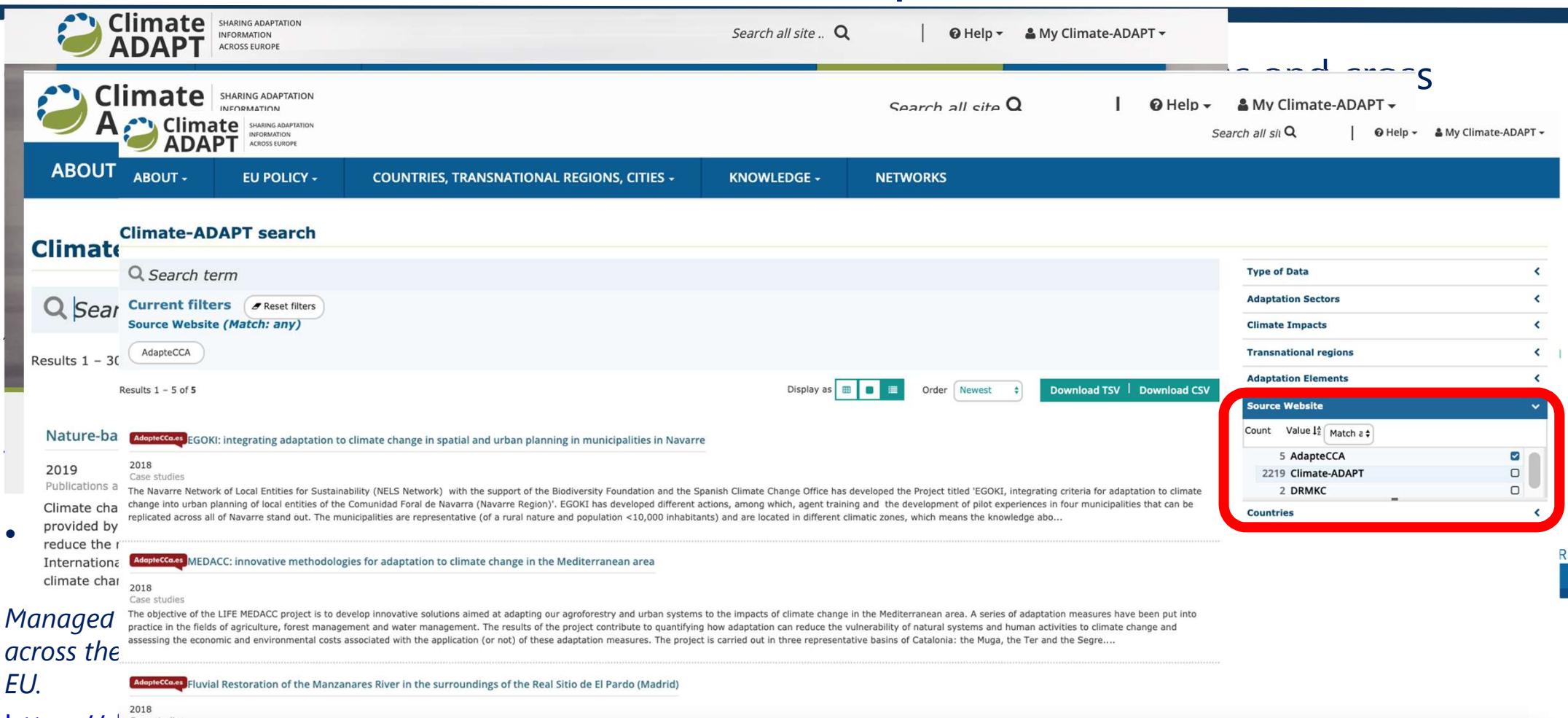
<https://drmkc.jrc.ec.europa.eu/>



European Environment Agency



Climate-ADAPT: link with other platforms



The screenshot shows the Climate-ADAPT search interface. At the top, there are two header sections for 'Climate ADAPT' and 'Climate ADAPT' (with a different logo). The main navigation bar includes links for 'ABOUT', 'EU POLICY', 'COUNTRIES, TRANSNATIONAL REGIONS, CITIES', 'KNOWLEDGE', and 'NETWORKS'. Below this, the 'Climate-ADAPT search' section features a search bar, a 'Current filters' button, and a 'Source Website (Match: any)' dropdown. The search results show 30 items, with the first one being 'EGOKI: integrating adaptation to climate change in spatial and urban planning in municipalities in Navarre'. A red box highlights the 'Source Website' filter dropdown on the right side of the page, which lists 'AdapteCCA' (Count: 5), 'Climate-ADAPT' (Count: 2219), and 'DRMKC' (Count: 2). The bottom of the page shows a footer with a URL and a small logo.

Climate ADAPT

SHARING ADAPTATION INFORMATION ACROSS EUROPE

Search all site ...

Help My Climate-ADAPT

Climate ADAPT

SHARING ADAPTATION INFORMATION ACROSS EUROPE

Climate ADAPT

SHARING ADAPTATION INFORMATION ACROSS EUROPE

ABOUT ABOUT EU POLICY COUNTRIES, TRANSNATIONAL REGIONS, CITIES KNOWLEDGE NETWORKS

Climate-ADAPT search

Search term

Current filters Reset filters

Source Website (Match: any)

Results 1 – 30

Display as Order Newest Download TSV | Download CSV

Nature-based EGOKI: integrating adaptation to climate change in spatial and urban planning in municipalities in Navarre

2019 Case studies

The Navarre Network of Local Entities for Sustainability (NELS Network) with the support of the Biodiversity Foundation and the Spanish Climate Change Office has developed the Project titled 'EGOKI, integrating criteria for adaptation to climate change into urban planning of local entities of the Comunidad Foral de Navarra (Navarre Region)'. EGOKI has developed different actions, among which, agent training and the development of pilot experiences in four municipalities that can be replicated across all of Navarre stand out. The municipalities are representative (of a rural nature and population <10,000 inhabitants) and are located in different climatic zones, which means the knowledge abo...

Climate change provided by International climate char

AdapteCCA.es MEDACC: innovative methodologies for adaptation to climate change in the Mediterranean area

2018 Case studies

The objective of the LIFE MEDACC project is to develop innovative solutions aimed at adapting our agroforestry and urban systems to the impacts of climate change in the Mediterranean area. A series of adaptation measures have been put into practice in the fields of agriculture, forest management and water management. The results of the project contribute to quantifying how adaptation can reduce the vulnerability of natural systems and human activities to climate change and assessing the economic and environmental costs associated with the application (or not) of these adaptation measures. The project is carried out in three representative basins of Catalonia: the Muga, the Ter and the Segre...

Managed across the EU.

AdapteCCA.es Fluvial Restoration of the Manzanares River in the surroundings of the Real Sitio de El Pardo (Madrid)

2018 Case studies

The objective of the LIFE MEDACC project is to develop innovative solutions aimed at adapting our agroforestry and urban systems to the impacts of climate change in the Mediterranean area. A series of adaptation measures have been put into practice in the fields of agriculture, forest management and water management. The results of the project contribute to quantifying how adaptation can reduce the vulnerability of natural systems and human activities to climate change and assessing the economic and environmental costs associated with the application (or not) of these adaptation measures. The project is carried out in three representative basins of Catalonia: the Muga, the Ter and the Segre...

Source Website

Count Value 1 Match 2

5 AdapteCCA

2219 Climate-ADAPT

2 DRMKC

Countries

RE

<https://drmkc.jrc.ec.europa.eu/>



Further developments of Climate-ADAPT web content

- **Adaptation Support Tool (AST):**
implement the recommendations of the 2019 revision under the option defined 'incremental update'.
- **Research projects:**
coordination with EASME when updating research webpages.
- **Climate Services interface in Climate-ADAPT:**
contribute to the development and testing of the **Copernicus Climate Change Service** interface in Climate-ADAPT.
- **Pilot virtual “Observatory on Climate Change and Human Health”:**
as a component of Climate-ADAPT > Identify and organise the initial content of the observatory, based on data, information and tools already available in Climate-ADAPT.



Climate-ADAPT: Links with Copernicus Climate Change Service (C3S)

Aim:

- To develop an **interactive tool** in Climate-ADAPT to offer the users **to access specific climate information data** to support the adaptation efforts at different levels in Europe.

Products:

- Observed (reanalysis) and projected climate change indicators
- Multiple options for Climate-ADAPT users regarding climate variables, timeframe, scenarios, spatial aggregation



Types of information:

- Download numerical data: time series, averages, stat. distributions
- Visualise maps and graphs

'European Climate Data Explorer'

European Environment Agency



Conclusions and further work

- Increased action at all governance levels makes **Climate-ADAPT** a key platform to continue providing access to relevant information needed for adaptation decision-making and planning.
- Information needs change in the different stages in the adaptation policy cycle, challenging the development and policy relevance of Climate-ADAPT.
- The continuous increase in knowledge generation and practical experiences coming from European projects and initiatives can challenge the finding of relevant information needed for each specific user. **Climate-ADAPT is updating its structure and layout to facilitate users overcome this challenge** (e.g. highlighting the most relevant DB items in the sectoral webpages portlets, improving the search engine in a more transparent way).
- **Further need to cross harvesting between platforms at different levels.** The increasing landscape of adaptation platforms (and related areas) across Europe at all levels requires to enhance the complementarity and connections between them.



Thanks!

European Environment Agency (EEA)

Website: <https://www.eea.europa.eu/>

Sergio Castellari

Email: sergio.castellari@eea.europa.eu

José Ramón Picatoste

Email: JoseRamon.Picatoste@eea.europa.eu



Knowledge Exchange: Services and Science Supporting Climate Action
An EU-Australia bi-lateral workshop on developing and using web-based resources to enhance climate intelligence and support climate action. March 4th, 2020, CSIRO Aspendale, Melbourne.



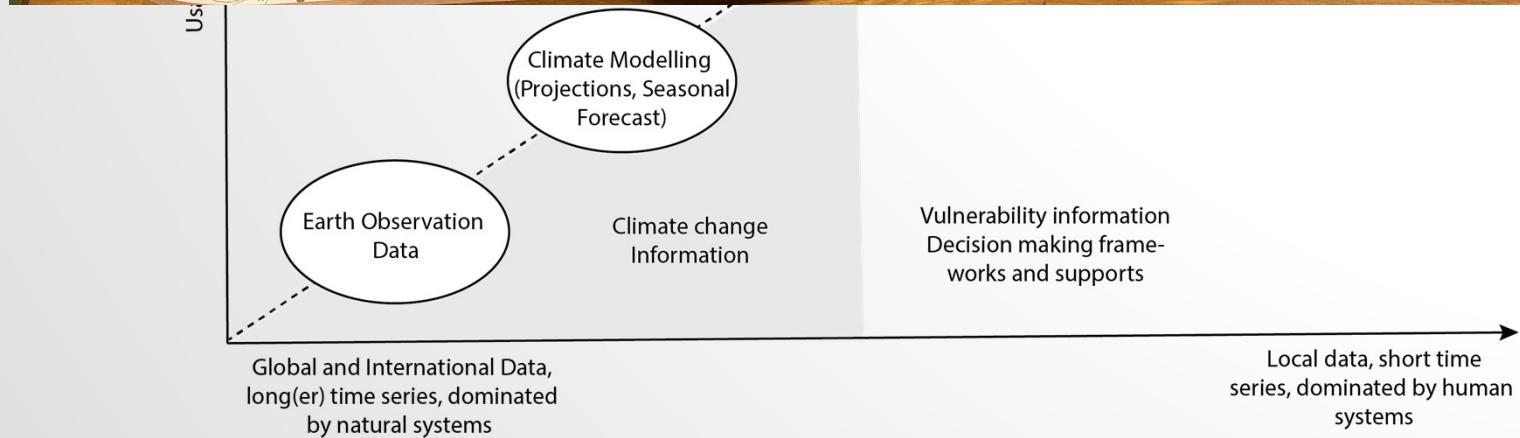
CLIMATE IRELAND: SUPPORTING NATIONAL ADAPTATION POLICY AND PLANNING

Barry O'Dwyer, Mohammad Hashemi, James Fitton, Hester Whyte & Jeremy Gault
MaREI Centre, ERI,
University College Cork, Ireland.

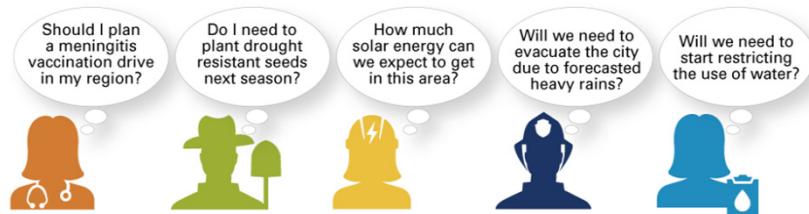
Climate Ireland .ie TIME TO ADAPT

Useful Information
(Considered useful by
the producer/'**Boffins'**)

Usable Information
(Address decision-making
context and needs – '**Actionable**')



THE CHALLENGE



Impacts, vulnerability and adaptation knowledge (whose adaptation knowledge?) have improved significantly, the challenge is to transform and combine this data in a way that is relevant, easy to understand and use, credible, robust and easy to use.

Addressing this challenge requires:

- Understanding users are people that need to make decisions quickly and on short (**operational**) and long time scales (**strategic**);
- Knowledge of why and how the information is (**and could be**) used by decision-makers and how to link operational and strategic decision-making;
- Understanding of user capacity (current and **potential future**) to employ climate and adaptation information – **Decision Capability**;
- The role that knowledge and data play in supporting implementing decisions;

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Climate Action & Environment

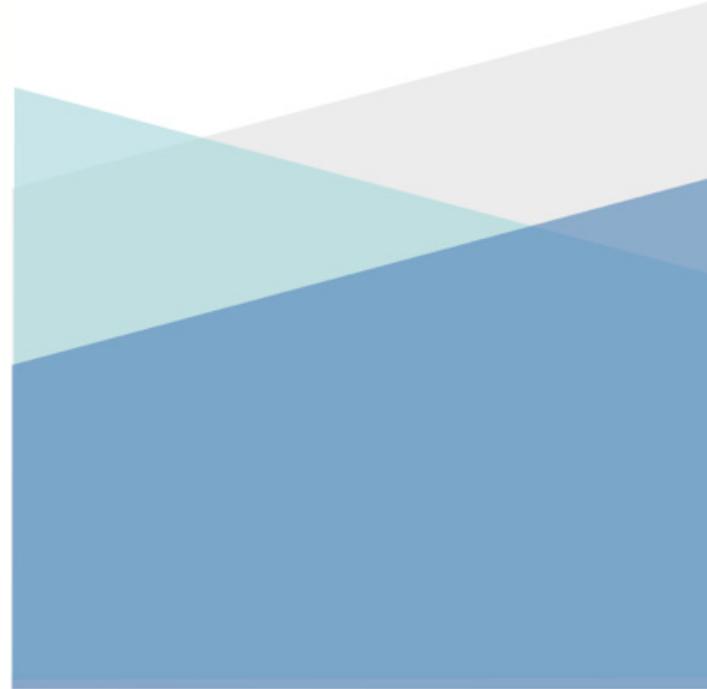
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Department of Communications,
Climate Action & Environment

Sectoral Planning Guidelines
for Climate Change Adaptation
May 2018

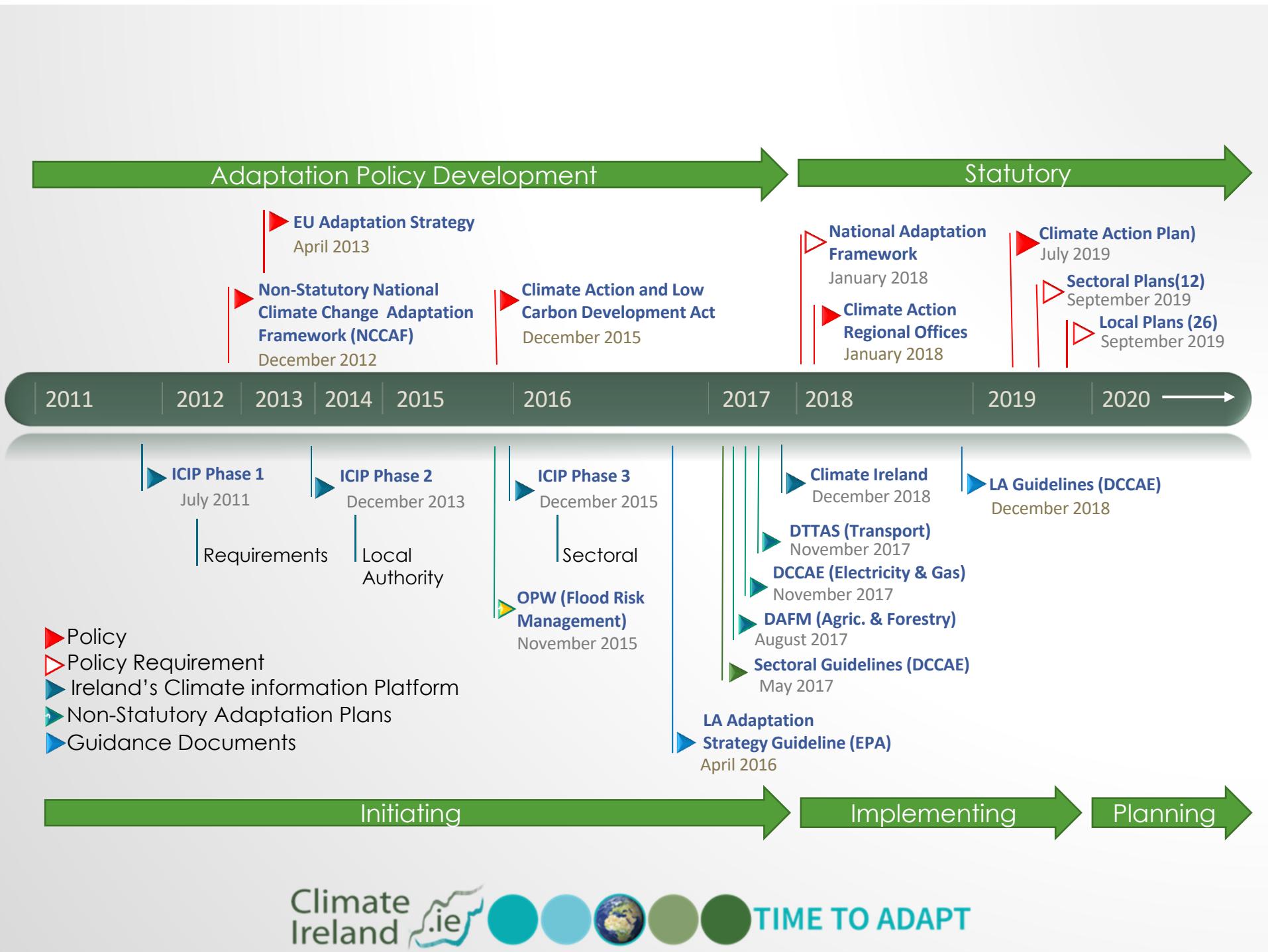
Local Authority Adaptation
Strategy Development
Guidelines
December 2018



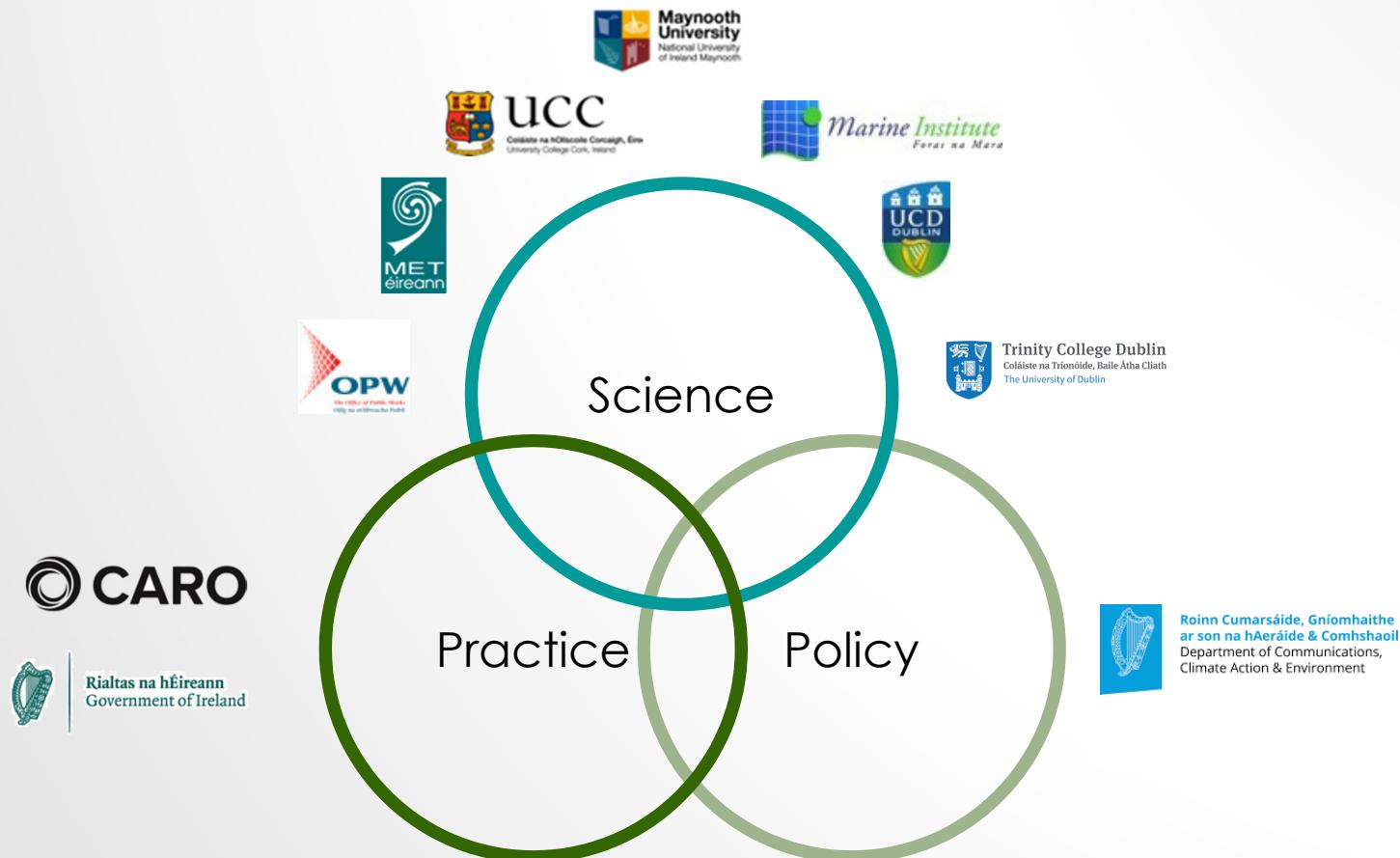
Climate
Ireland



TIME TO ADAPT



WORKING IN PARTNERSHIP



Important to remember that the stakeholder groups changes and expands through development, design and delivery



NATIONAL WEB-BASED SOURCE CLIMATE ADAPTATION INFORMATION

Climate Ireland provides information, advice and support to help Ireland adapt to our changing climate.

TIME TO ADAPT

Not sure where to start? Begin your exploration from here.

Get Started Information & Data Plan & Manage

Adaptation Strategy Explorer

Under Ireland's National Adaptation Framework a number of Government Departments are required to prepare sectoral adaptation plans in relation to the priority areas they are responsible for.

Explore Local and Sectoral Adaptation Strategies and Plans >



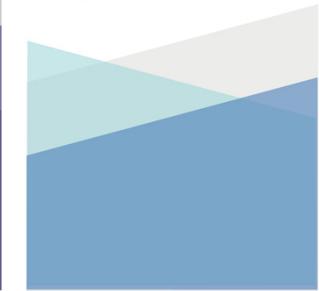
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Department of Communications,
Climate Action & Environment

Local Authority Adaptation
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December 2018



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May 2018



POLICY SUPPORT: DEVELOPMENT & IMPLEMENTATION



DEVELOPING CAPACITY & SUPPORTING PLANNING



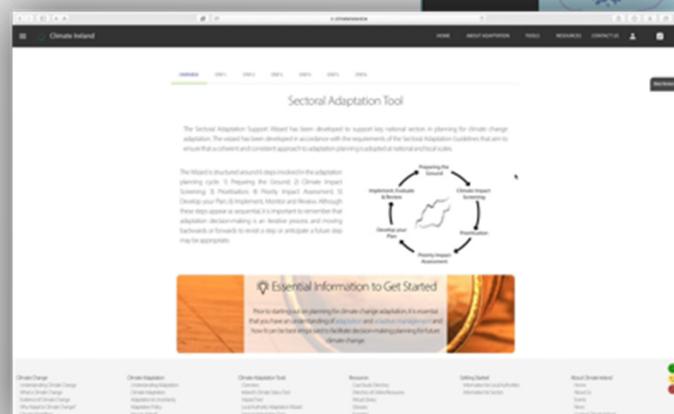
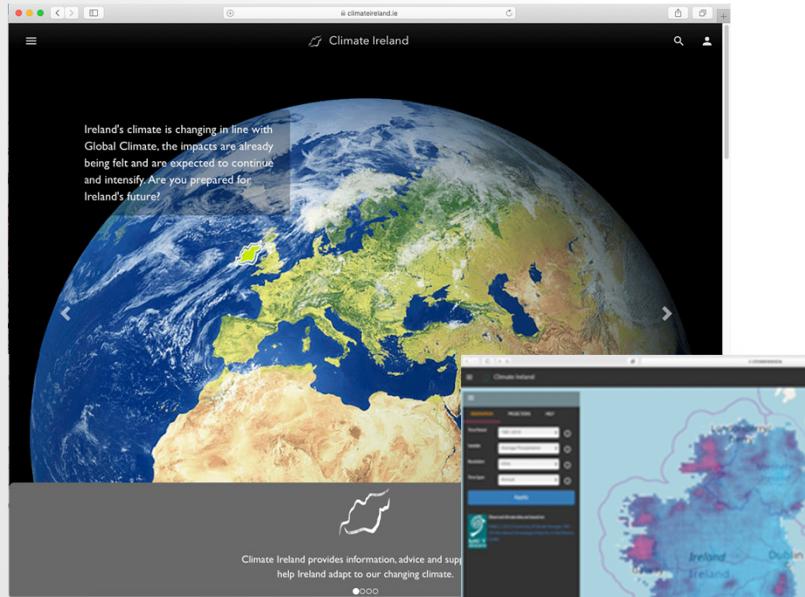
Climate
Ireland



TIME TO ADAPT



CLIMATE IRELAND



Get Started



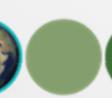
Information & Data



Planning & Managing



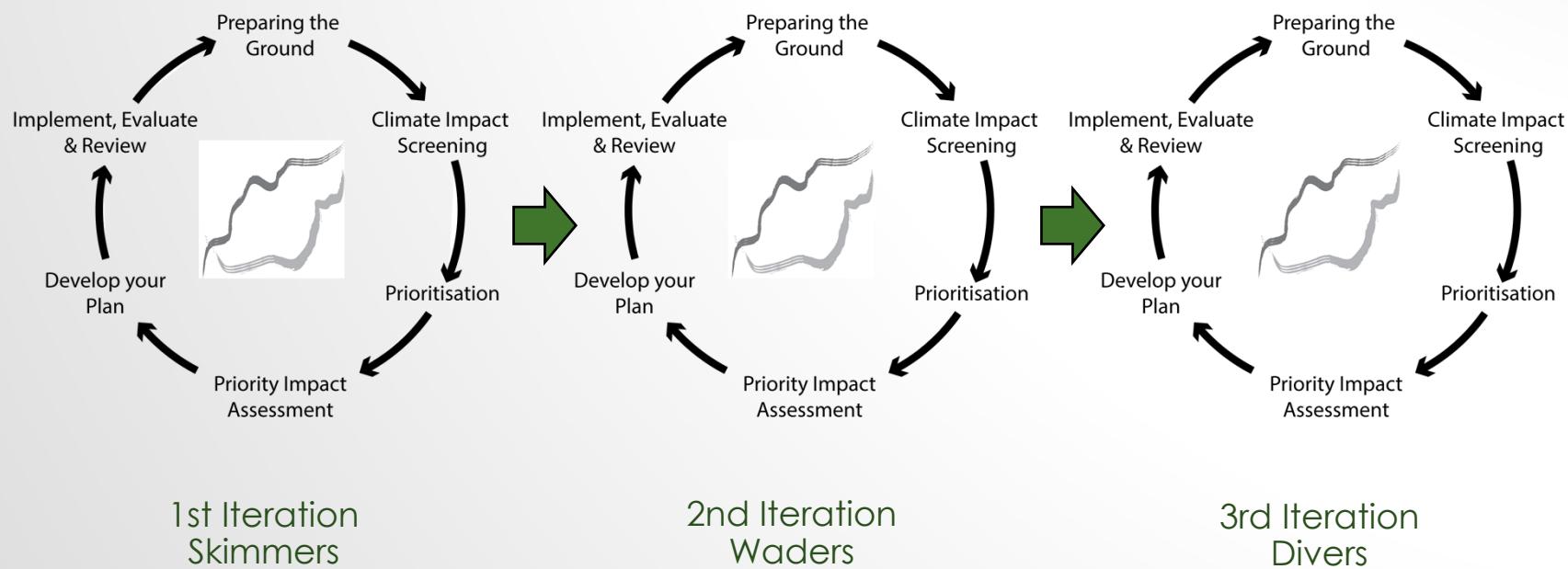
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TIME TO ADAPT

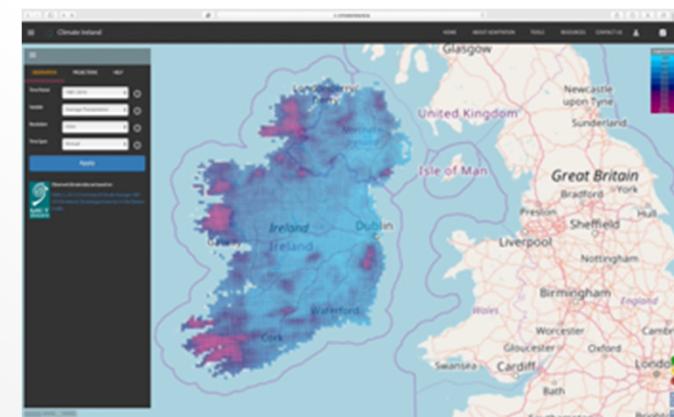
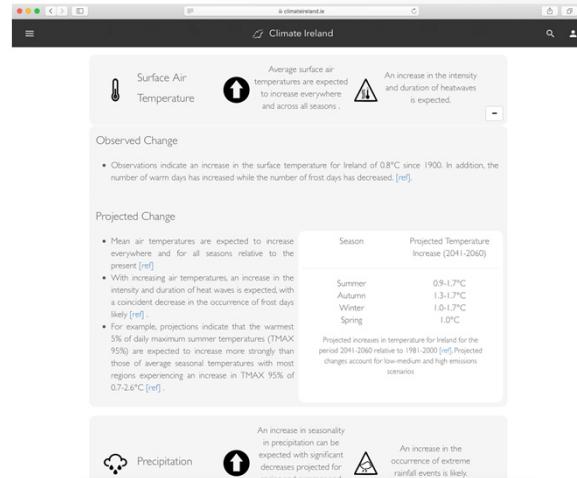
DELIVERY OF CLIMATE AND ADAPTATION INFORMATION

- Important to consider that adaptation is an iterative process (learning by doing).

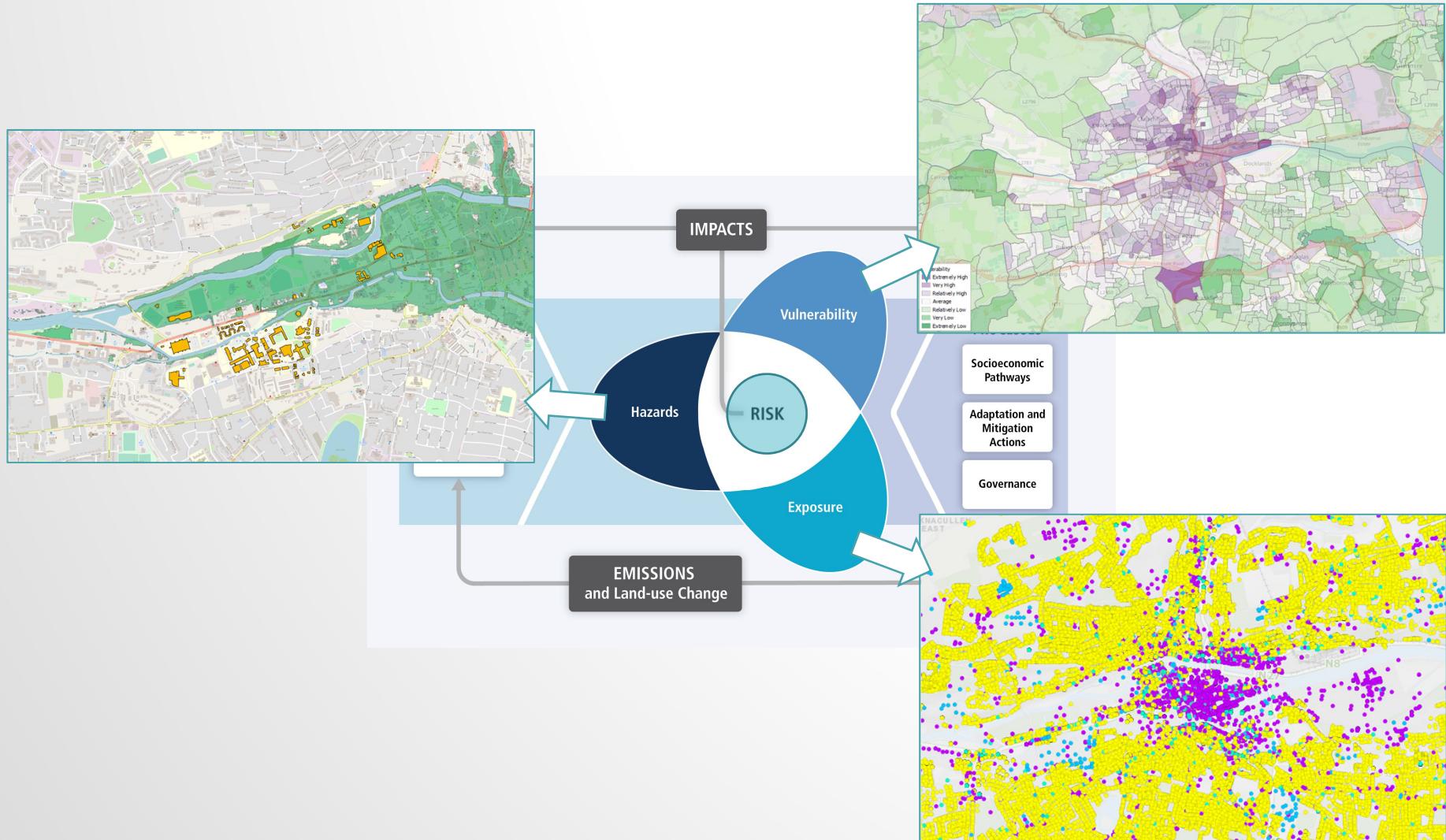


DELIVERY OF CLIMATE AND ADAPTATION INFORMATION

- **Understanding** (current and emerging risks);
- Making it **relevant** (current and future exposure; vulnerability; risk identification);
- More **detailed understanding** (risk assessment– where and when).



RESPONDING TO NEEDS (IN DEVELOPMENT)





Sectoral



Local



**DEVELOPING
CAPACITY &
SUPPORTING
PLANNING**



SUPPORTING SECTORAL PLANNING

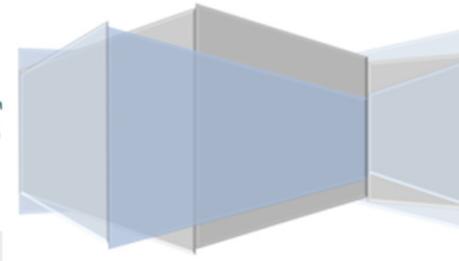
ADAPTATION PLANNING

Developing Resilience to Climate Change in the Irish Transport Sector

Adaptation Planning - Developing Resilience to Climate Change in the Irish Agriculture and Forest Sector

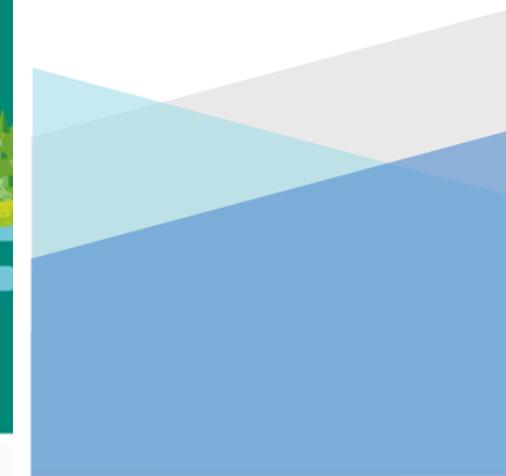


August 2017



Roinn Cumarsáide, Gníomhaíthe ar son na hAeráide & Comhshaoil
Department of Communications,
Climate Action & Environment

Sectoral Planning Guidelines
for Climate Change Adaptation
May 2018



Climate
Ireland



TIME TO ADAPT



SUPPORTING LOCAL LEVEL ADAPTATION

Climate Change Adaptation Guidelines Research Workshop

Date: 20 May 2014, 10.00am - 4pm
Venue: EPA Regional Inspectorate, Clonskeagh Road, Dublin 14

Purpose: Under the National Climate Change Adaptation Framework, Local Authorities are required to produce climate adaptation plans. This process is to be underway by mid-2014. The EPA, through this workshop, will support Local Authorities to develop their climate adaptation plans.

Aims: The workshop aims to introduce Local Authorities to the science of climate change and its impacts and how to integrate climate adaptation into local authority plans.

Selected Agenda Items:

- Climate Change and its Impacts
- A guide for Local Authorities on developing an adaptation strategy
- Case studies from the EPA's work on climate adaptation
- How to utilise funding via the LEADER programme

Please contact speccy@epa.ie to confirm attendance

Climate Change Adaptation in Action: Science, Policy and Practice

Date & Venue:
November 4th - 5th, 2014, Claremorris House, Dublin
November 12th - Galway City Council City Hall, Galway
November 19th - Local Authority Learning Centre, Ballincollig, Cork

Purpose: The Climate Change Adaptation in Action Seminar will provide a platform for the exchange of information and analysis in support of this activity through a one day seminar for Local Authorities.

Audience: Local Authority and independent experts in climate adaptation at all stages.

Selected Agenda Items:

- Climate Policy
- The State of Climate Change and its Impacts for Ireland
- Case Studies for Climate Adaptation
- Flooding and Adaptation Planning - South Dublin County Council
- Case Studies from the EPA's work on climate adaptation

Places are limited, please contact speccy@ucc.ie to confirm attendance

INVITATION

CLIMATE IRELAND

WINTER REGIONAL ADAPTATION TRAINING WORKSHOPS

CLIMATE IRELAND

CLIMATE ACTION REGIONAL OFFICES SEMINAR | ATLANTIC SEABOARD SOUTH

AGENDA

ADAPTATION PLANNING TRAINING WORKSHOPS

Planning for Local Adaptation Action

CLIMATE IRELAND

TIME TO ADAPT

CLIMATE IRELAND

CLIMATE ACTION REGIONAL OFFICES

AGENDA

ADAPTATION PLANNING TRAINING WORKSHOPS

Planning for Local Adaptation Action

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TIME TO ADAPT

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CLIMATE ACTION REGIONAL OFFICES

AGENDA

ADAPTATION PLANNING TRAINING WORKSHOPS

Planning for Local Adaptation Action

CLIMATE IRELAND

TIME TO ADAPT



September 2018

Local Authority Climate Action Training Plan

CARO

May
2014

November
2015

September/
October 2016

May/
June 2018

September
2018

February
2019

April - May
2020

Report No. 164

Local Authority Adaptation Strategy Development Guideline

Author: Stephen Gray

www.epa.ie

Local Authority Adaptation Planning Workshops Report

Author: Barry O'Dwyer, Paul Alexander, Cathal Ó hUalláin, Margaret Desmond, Sophie Power and Eithna Paterson.

March 2017

CLIMATE IRELAND

TIME TO ADAPT

Karen Connolly, Sustainable Development Officer, Department of Communications, Climate Action & Environment

Local Authority Adaptation Strategy Development Guidelines

December 2018

CLIMATE IRELAND

TO CONCLUDE

- National Climate Platforms are **essential tools** in providing **usable/actionable** information for the purposes of adaptation planning;
- National climate adaptation platforms should aim to **go beyond delivering science** and connect science, policy and practice;
- **Co-design, co-development and co-delivery** is a simple concept but is difficult to implement and resource intensive;
- **Capacity building** is essential to support the delivery of adaptation, climate change is not termed a 'wicked problem' for no reason!;
- Essential that these climate adaptation platforms adapt to the **evolving requirements and capacities** of decision-making communities (Adapt or Perish).



Thank you for your attention

- 🌐 <http://www.climateireland.ie>
- ✉️ b.odwyer@ucc.ie
- 🐦 [@ClimateIreland](https://twitter.com/ClimateIreland)



This event has been organised with the financial support of the European Union's Partnership Instrument. The opinions expressed are the sole responsibility of the speakers and do not necessarily reflect the views of the European Union.



Ríaltas na hÉireann
Government of Ireland



Climate Action by Local Authorities – End User Perspective



KE4CAP
Knowledge Exchange between
Climate Adaptation Platforms



**Earth Systems and
Climate Change
Hub**

National Environmental Science Programme

KE4CAP Bilateral – CSIRO, Melbourne
Wednesday 3rd March 2020





(Tara Dodd - Age 10)

Tags # CLARE # FLOODED # RAINFALL # SHANNON

'It's bringing hell back again': Clare families brace for further flooding as River Shannon rises

Around 7,000 sandbags, and pumping stations were delivered to 10 houses, some of which have been cut off from roads

8 hours ago 27,258 Views 32 Comments

[Share 25](#) [Tweet](#) [Email 1](#)

RESIDENTS OF SPRINGFIELD, Clonlara, Co Clare, were evacuated from their homes and more were braced for "hell" and "misery" as the flooded River Shannon swept around their homes.

Around 7,000 sandbags, and pumping stations were delivered to ten houses, some of which have been cut off from roads, and are now effectively languished on islands.



Image: David Raleigh

The nightmare of previous devastating floods, in 1995, 2009, and 2016 returned for Joe and Geraldine Quinlivan who have built a sandbag trench around their bungalow.

Storm Jorge: Warning of power outages, fallen trees and flooding across Ireland

Red level wind warning in place for counties Galway and Clare on Saturday afternoon

about 11 hours ago Updated: 27 minutes ago

Sorcha Pollak, Sarah Burns



A wind map from Saturday morning showing the anticipated movement of Storm Jorge off the west coast of Ireland.
Image: Magicseaweed

[Share](#) A series of weather warnings are in place for Ireland on Saturday as Storm Jorge passes over Ireland and is expected to lead to power outages, fallen trees and flooding.

[Comment](#) Severe winds were due batter the entire country with people in some areas being advised to "stop everything" and stay indoors as the storm, the seventh of the season, arrives from the Atlantic.

Met Éireann has upgraded its weather warning to the rarely issued status red wind alert, the highest level, for counties Galway and Clare.

Presentation Outline

- CARO Background and Work Programme
- Dublin Climate Change Action Plans
- Climate Services
 - Traditional and emerging
 - Met Forecasts
 - Flood info.ie
 - Copernicus/Satellite
 - National Flood Forecasting Service
 - Smart and Innovative
 - WIRE App
 - Gully Sensors..
 - Needs and opportunities – e.g. GIS, integration,..



Dublin Metropolitan
Climate Action
Regional Office

Local Authorities leading
on Climate Action

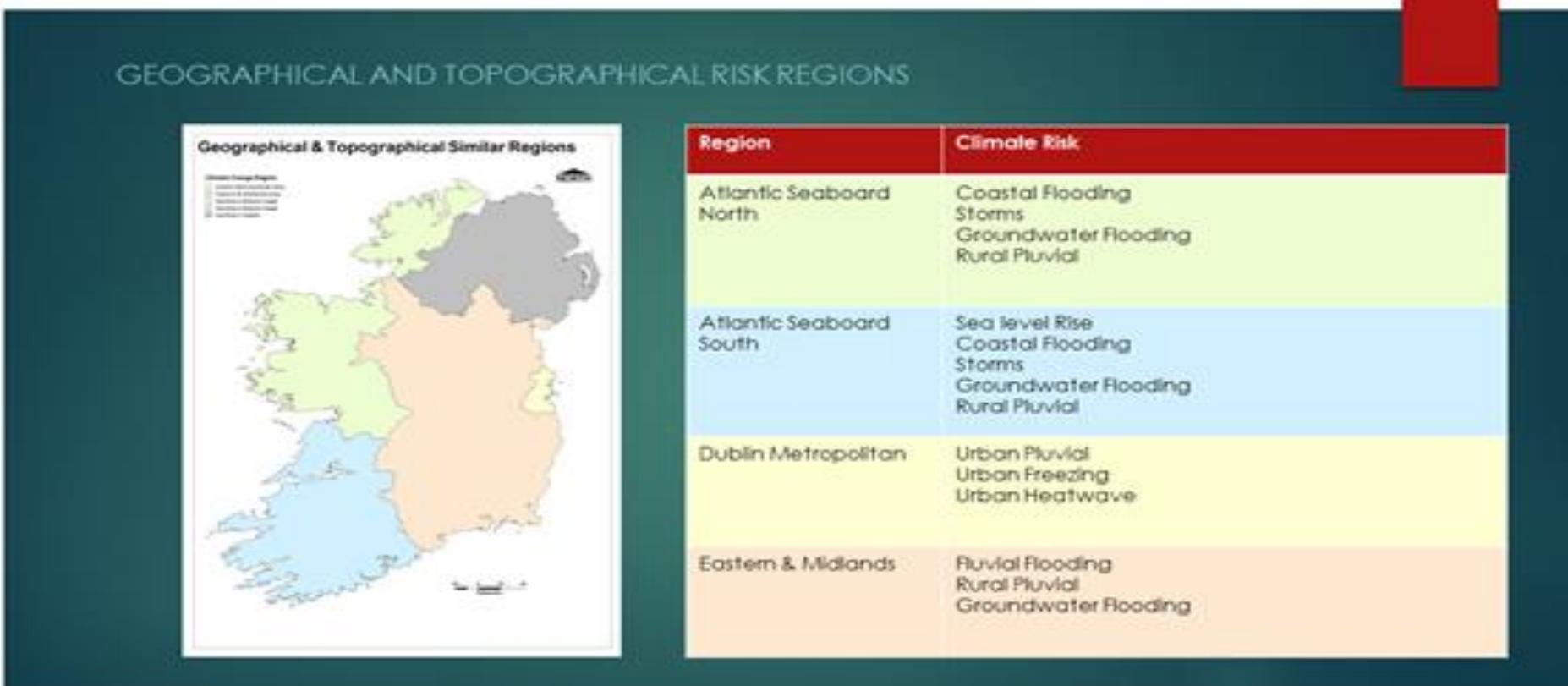


Logos of local authorities involved in CARO:

- Coventry City Council
- Health & Social Care
- Dún Laoghaire-Rathdown County Council
- Dublin City Council
- Dún Laoghaire-Rathdown County Council
- South Dublin County Council
- Waterford City and County Council



Cumann Lucht Bainistiochta Contae agus Cathrach
County and City Management Association



Rialta
Government of Ireland



Climate Action Regional Offices - CARO

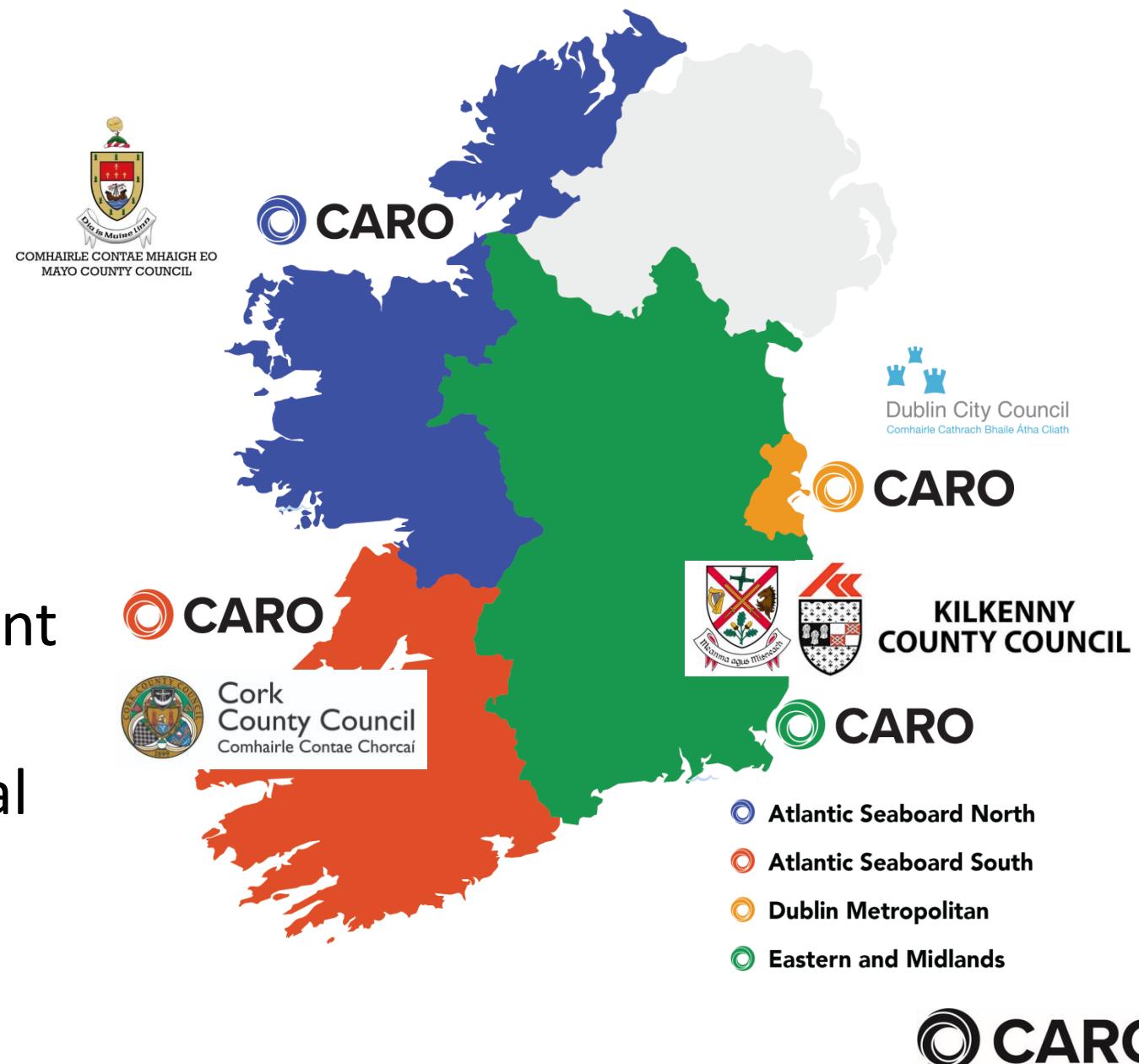
- 5 year funding from DCCAE

CARO Mandated to:

- **Build** on Experience & Expertise
- **Drive** Climate Action & Build Capacity within LA Sector
- **Coordinate** Engagement across Various Agencies and Government Departments
- **Translate** Sectoral Efforts to Local Level



Ríaltas na hÉireann
Government of Ireland



Governance

National

Regional

Local

Climate Action High Level Steering
Group
DCCAE

National Dialogue on Climate Action
Advisory Group (DCCAE)

CCMA
Environment Committee

National LA Climate Change Steering Group
Sligo CE, Lead Local Authorities CEOs(4+1)
Regional DOS, DCCAE, EPA, OPW, GSI, Met
Eireann

Climate Change
Advisory Council

National Adaptation
Steering Group
DCCAE + All sectors

National CARO Management Group
CARO DOS (4) & Coordinators,
DCCAE, Climate Ireland,
EPA(National Dialogue)

Atlantic Seaboard North
Regional Steering Group,
Mayo CC DOS, CARO Coordinator,
Northern and Western Regional
Assembly, Donegal CC, Mayo CC,
Galway CiC, Galway CoC

Atlantic Seaboard South
Regional Steering Group
Cork CoC DOS, CARO Coordinator,
Southern Regional Assembly,
Clare CC, Cork CiC, Cork CoC, Kerry CC,
Limerick C&CC

Eastern & Midlands
Regional Steering Group
Kildare DOS, CARO Coordinator,
Eastern Midlands Regional Assembly (EMRA),
Regional Reps (DOS): Kilkenny, Meath,
Monaghan, Offaly.

Dublin Metropolitan Area
Regional Steering Group
Dublin CiC Exec Mgr, CARO Coordinator,
Eastern Midlands Regional Assembly
(EMRA), Codema
Dublin CiC, DLR CC, Fingal CC, Sth
Dublin CC

Border Sub Region
Monaghan(Regional Rep)
Louth, Cavan, Leitrim

Midland Sub Region
Offaly (Regional Rep)
Westmeath, Laois, Longford,
Roscommon

Mid-East Sub Region
Meath (Regional Rep), Kildare,
Wicklow

South East Sub Region
Kilkenny(Regional Rep), Carlow,
Wexford, Tipperary, Waterford,

CARO – Work Programme 2019



1 Establish Regional Offices



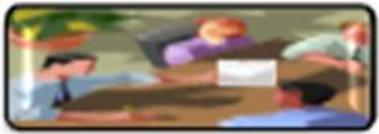
2 Local Authority Adaptation Strategies



3 Projects, Research and Regional Specialisms



4 Training and Education



5 Communication

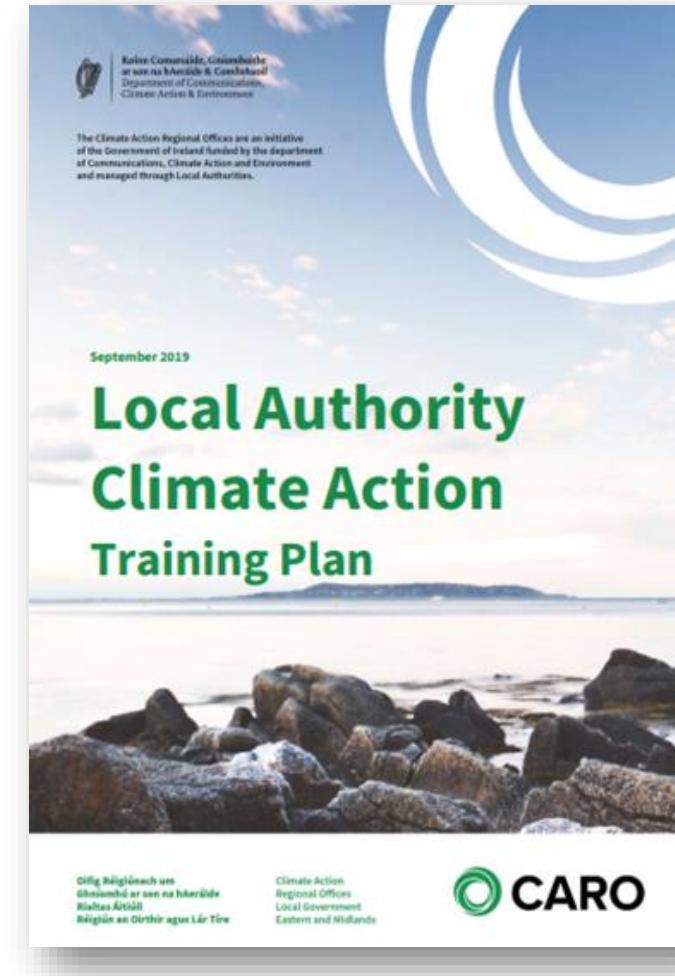


6 Mitigation

4

Training and Education

- Need to train and up-skill approx. **29,000 LA staff** and **1,000 Councillors**
- Climate Action **Training Plan**
- Links with **stakeholders** including Climate Ireland, SEAI, Met Éireann, EPA, IPA.
- Training in partnership with the **Environmental Services Training Group**
- **Pilots** to be undertaken Q2 2020.
- Training in additional technical areas i.e. spatial planning etc.



Climate Policy – Global to Local

International Conventions



United Nations
Framework Convention on
Climate Change

European Climate Directives



National Climate Policy



Sectoral Plans

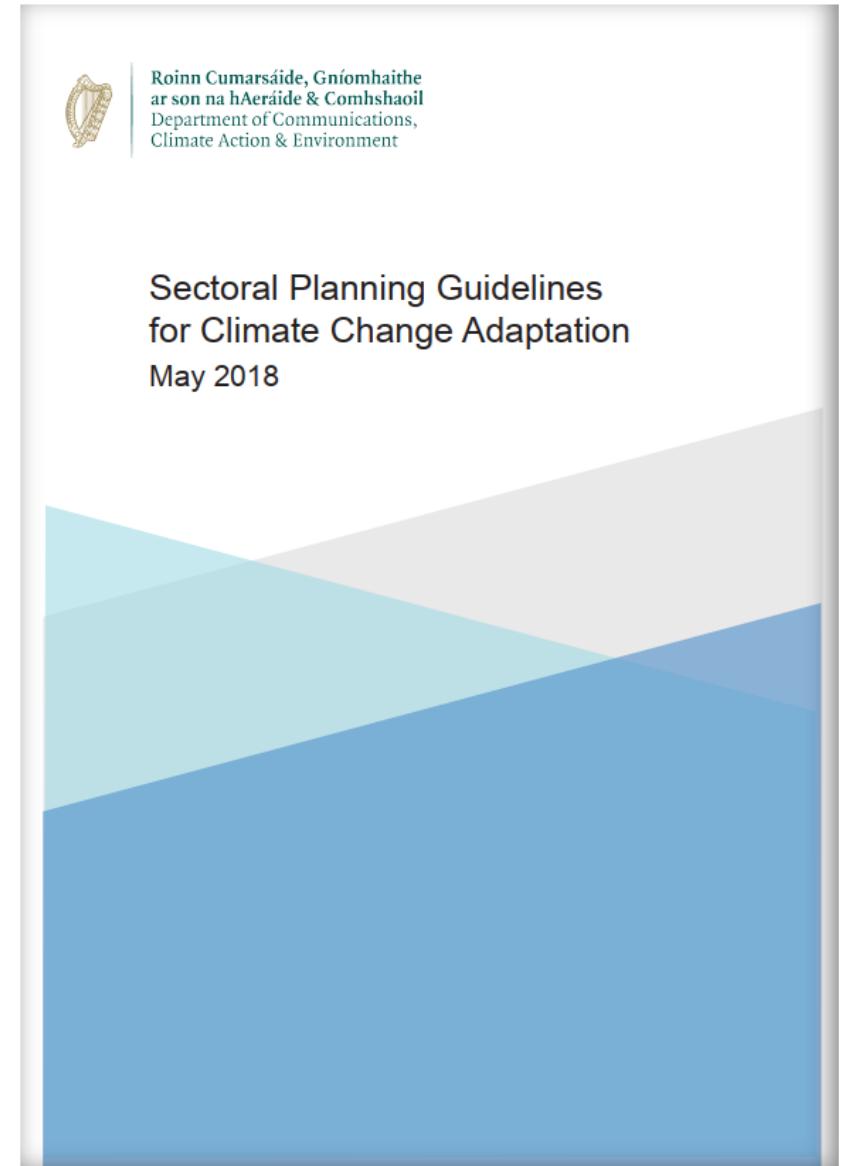


Local Authority
Climate Change Action Plans

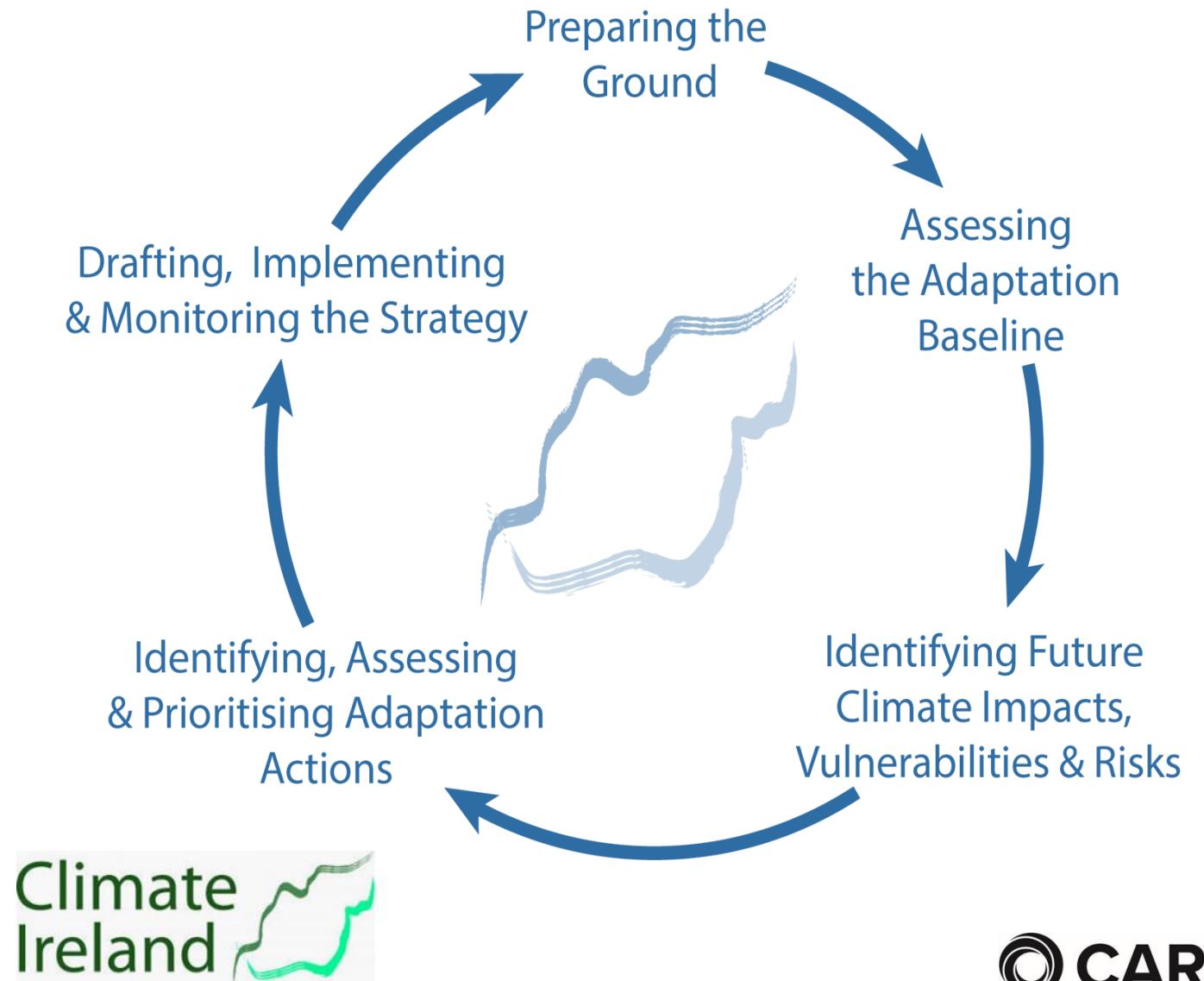


Sectoral Adaptation Plans – September 2019

- Agriculture, Forestry and Seafood
- Biodiversity
- Built and Archaeological Heritage
- Transport infrastructure
- Electricity and Gas Networks
- Communications Networks
- Flood Risk Management
- Water Quality and Water Services Infrastructure
- Health



LA Adaptation Plan Development - Methodology



HEADS OF CLIMATE ACTION (AMENDMENT) BILL 2019

HEADS

1. Definitions
2. National transition objective
3. National long term climate strategy
4. Climate action plan
5. Sectoral adaptation plan
6. Change of name of Climate Change Advisory Council
7. Membership of Climate Action Council and related matters
8. General functions of Climate Action Council
9. Annual review by, and annual report of, the Climate Action Council
10. Periodic review by Climate Action Council
11. Carbon budgets
12. Setting the carbon budget
13. Managing carbon budgets
14. Sectoral climate reporting
15. Role of Local Government
16. Sale of fossil fuel cars
17. Repeal of section 2 of the principal act
18. Consequential amendments to the principal act
19. Short title, collective citation and construction

HEAD 15

Role of Local Government

Provide that the following section is inserted after section X of the Principal Act:

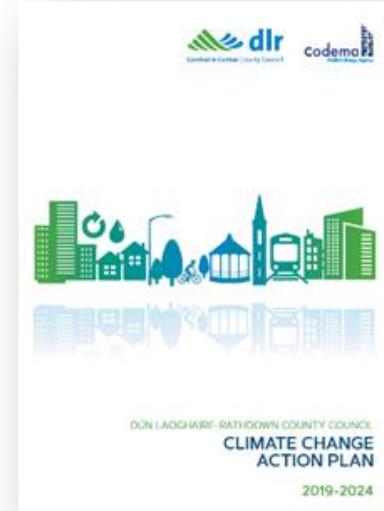
- (1) The Minister shall—
- a) in line with the planning cycle outlined for the Long Term Strategy, the National Adaptation Framework, sectoral adaptation plans, updating of the Climate Action Plan, and
 - b) not later than 18 months after the passing of this amendment, and
 - c) not less than once in every period of 5 years
- request all local authorities, to prepare climate action plans (in this Amendment referred to as a "local authority climate action plan") for the purpose of contributing to the national transition objective.
- (2) A local authority climate action plan prepared by each local authority shall contain mitigation and adaptation measures the local authority intends to adopt—
- a. that such mitigation and adaptation measures shall be consistent with
 - i. the National Long Term Strategy prepared under section 3
 - ii. the National Adaptation Framework prepared under section 5,
 - iii. sectoral adaptation plans prepared under section 6
 - iv. Climate Action Plan updated under section 4,
 - v. Matters referred to in Section 4(9), and
 - vi. Relevant policy directions, circulars, charters issued by the Minister for the purposes of achieving the National Transition Objective
 - b. that such mitigation and adaptation measures shall be reflected specifically within the development planning processes for the relevant local authority's administrative area, and
 - c. that such mitigation and adaptation measures may, where it is appropriate and cost effective to do so, involve the cooperation of two or more local authorities
- (3) Each local authority shall, within 18 months of the request referred to section (1), publish in such a manner the local authority considers appropriate, a draft "local authority climate action plan" that the local authority intends to make.

Dublin Climate Change Action Plans 2019-2024

- Dublin CCAPs in development since 2016 in conjunction with **Codema**
- Regional Strategy 2016
- Workshops across all Dublin LAs 2017/18
- Draft CCAPs Public Consultation Feb/March 2019
- Public Information Events
- **560** submissions to CCAPs
- **Sept 2019** – Finalised and submitted to Dept of Env.



www.dublinclimatechange.ie



Codema
Dublin's Energy Agency

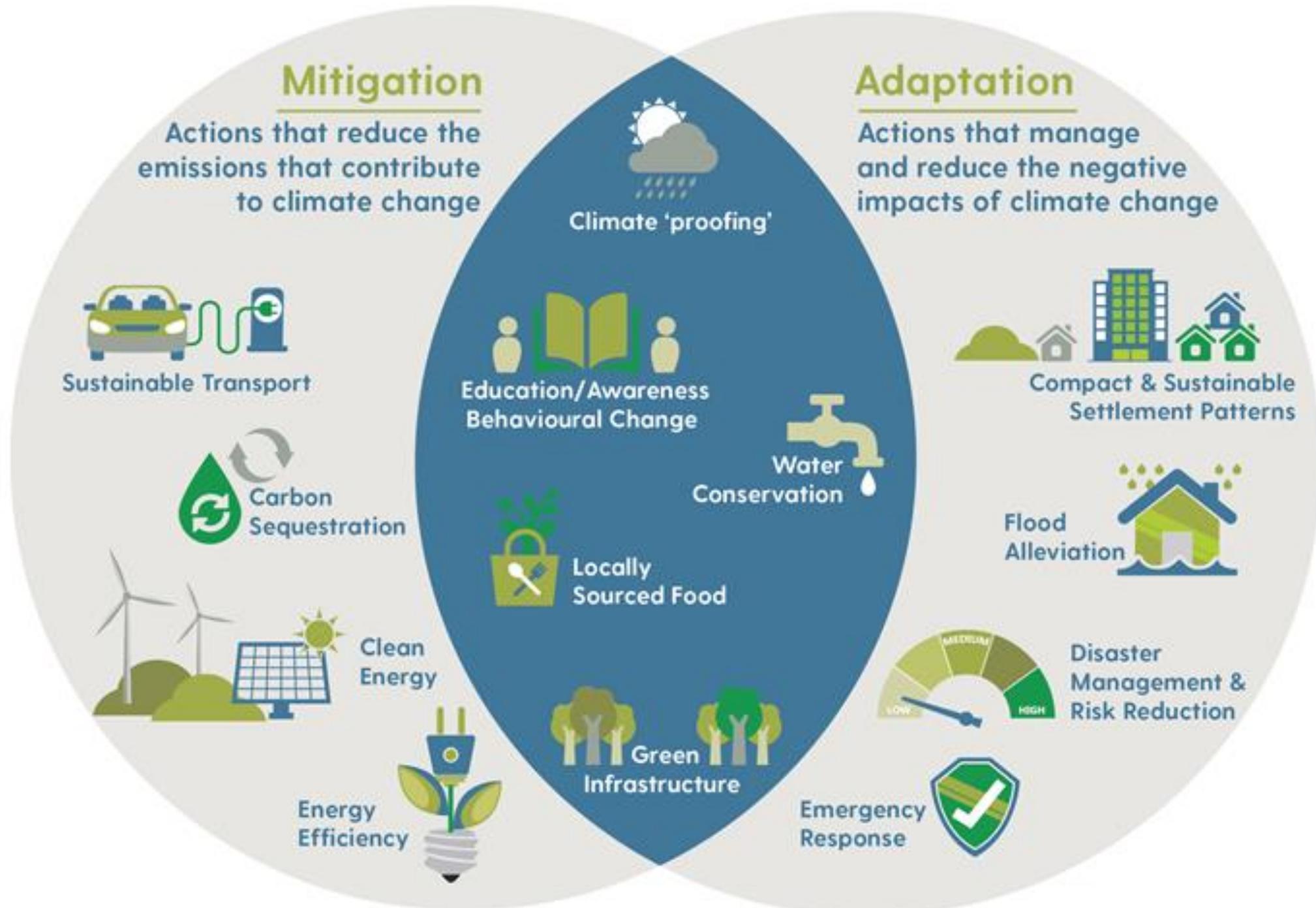


 CARO

Dublin Climate Change Action Plans - Video

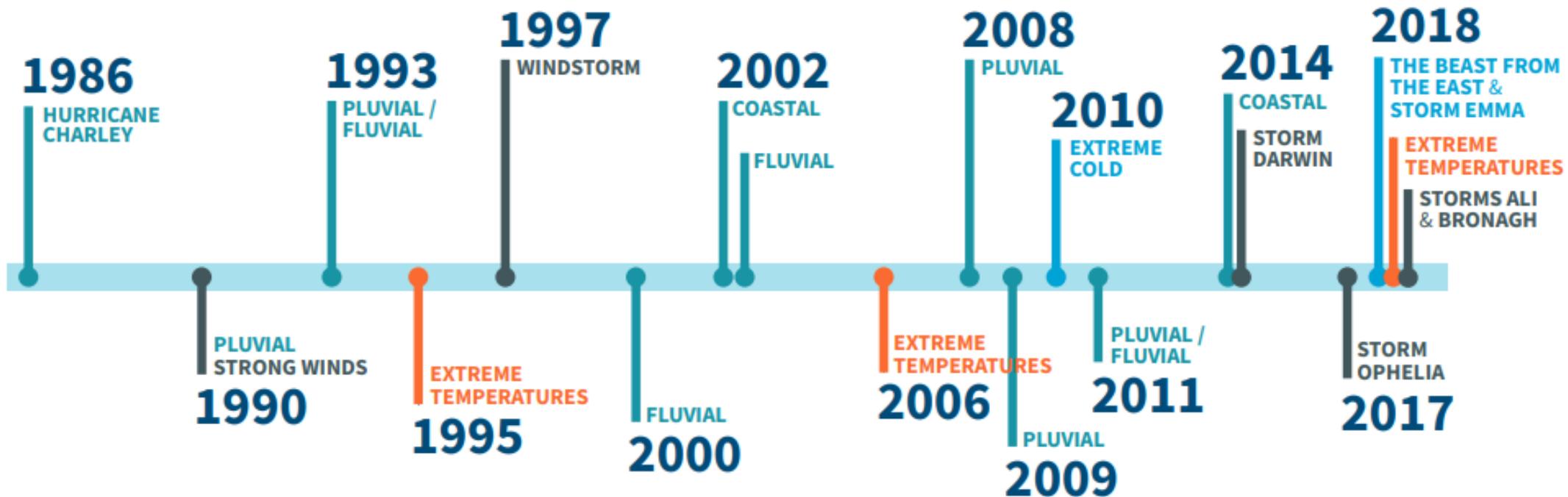






Adaptation Baseline

(Example: Dublin City Council)



Services for Extreme Events/Emergency Response

Examples

- Local Authority Internal services – e.g. Triton
- Met Éireann weather warnings
- Map Alerter – Event Notifications

TRITON Forecasting and Warning





The Irish Meteorological Service

Forecasts

Latest Reports

WEATHER WARNING ALERTING SERVICES

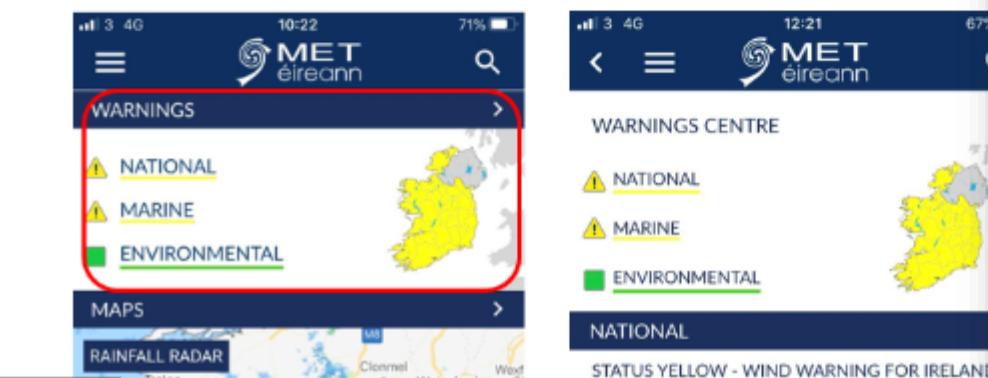
MET ÉIREANN PROVIDES TWO OPTIONAL WEATHER WARNING SERVICES

You can now receive push notifications and/or emails of Met Éireann weather warnings via Met Éireann website and app.

Push Notifications – on our App

You can subscribe to receive push notifications of county-based Weather Warnings on the app available in all app stores.

In the app tap the **Warnings** section, tap **My Warnings**, then tap **Add** – and select the required Type. You can set up as many subscriptions as you want.



Website – Sign Up for Warning Alert Emails / SMS(Red Warning only)

The second optional service allows you to sign up to receive Met Éireann weather warning alerts by email. Go to <https://www.met.ie/warnings> and click **MY WARNINGS LOGIN** under the Warnings map to register your profile. Then you can set up your chosen alerts by Location, Level and Type. You can set up as many email alerts as you want. You can also choose to register to receive Status Red weather warnings by SMS for your chosen counties.



Level: Orange

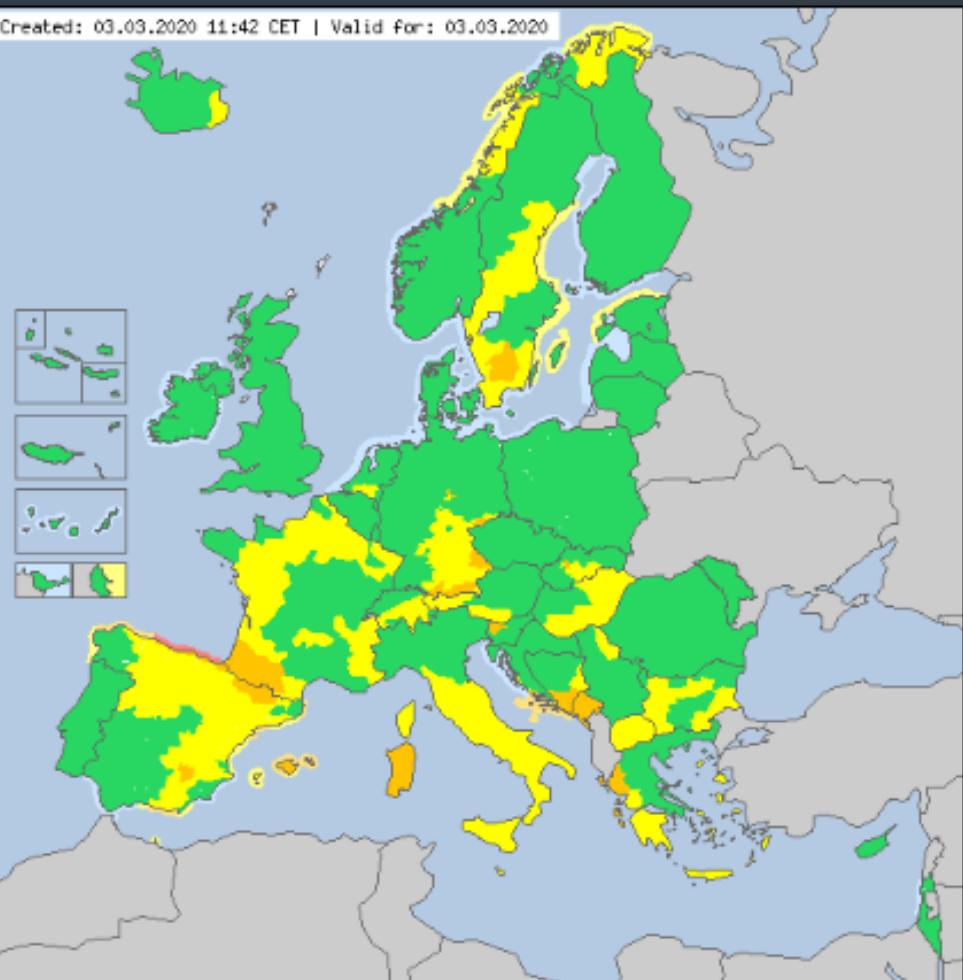
Type: Wind

Message: In advance of the arrival of Storm Ciara on Sunday, south to southwest winds on Saturday will reach mean speeds of 65-80km/h with gusts of up to 120 km/h.

[Start](#) | [News](#) | [About Meteoalarm](#) | [Help](#) | [Terms and Conditions](#) | [Links](#) | [Display Options](#)

» Europe:

Created: 03.03.2020 11:42 CET | Valid for: 03.03.2020



Weather warning

Awareness Reports - You can find detailed information about each report.

AT			
BA			
BE			
BG			
CH			
CY			
CZ			
DE			
DK			
EE			
ES			
FI			
FR			
GR			
HR			
HU			
IE			
IL			
IS			

awareness types: ▾

Display:

Caption:

https://www.meteoalarm.eu/?lang=en_UK

DUBLIN



15

5 °C

MARINE

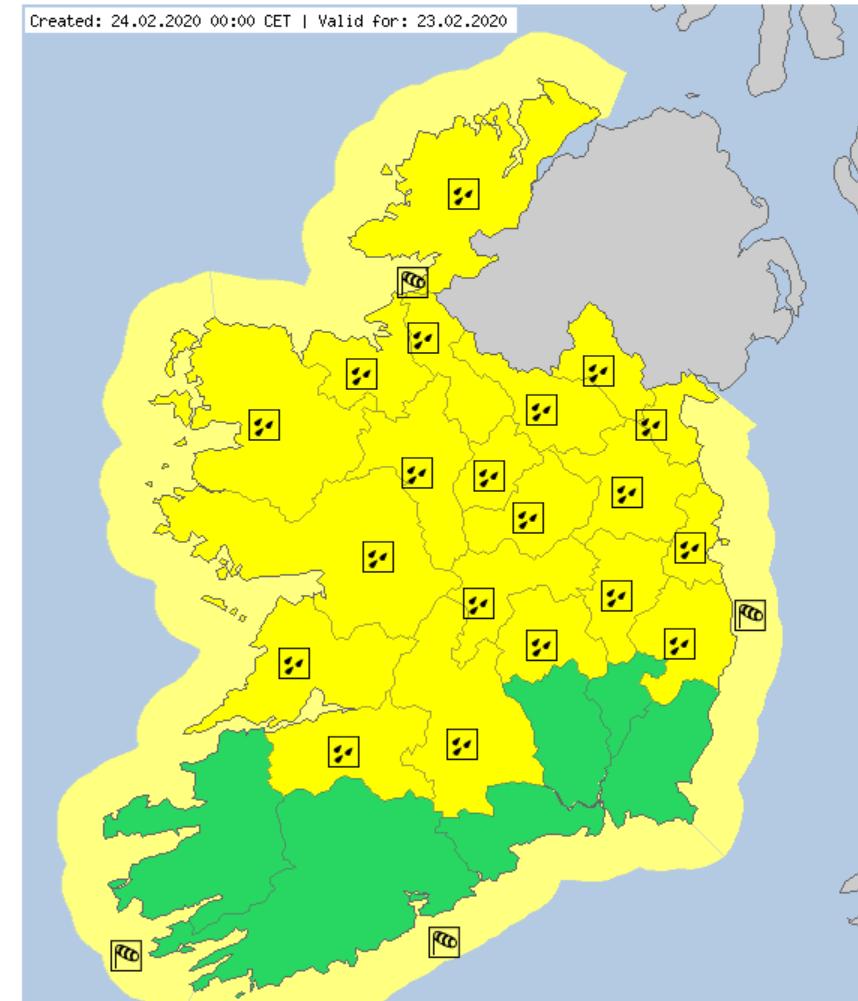
The Irish Meteorological Service

Forecasts

Latest Reports

METEOALARM - IRELAND

Created: 24.02.2020 00:00 CET | Valid for: 23.02.2020



Get your alerts on the free app:



[VIEW LIVE MAP](#) [LATEST](#) [COUNCILS](#) [ABOUT](#) [CREATE FREE ACCOUNT](#) [LOGIN](#)

LATEST COUNCIL NEWS:



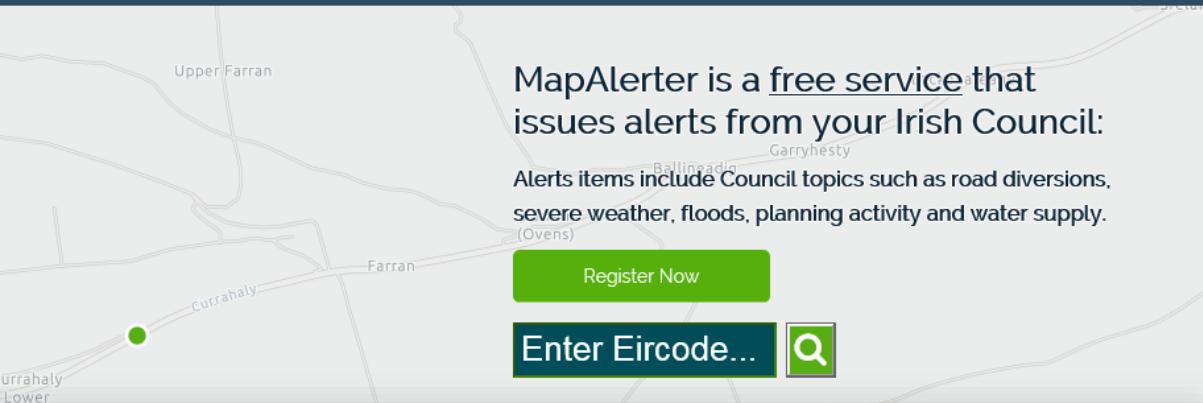
Road Alert: [N22 Resurfacing, Currahaly, Farran](#), issued by Cork County Council on Sun. 23/02



Road Alert: [Road closure](#), issued by Waterford City and County Council on Sun. 23/02



Road Alert: [All Donegal routes to be gritted from 9PM on Sun. 23/02](#), issued by Donegal County Council on Sun. 23/02



MapAlerter is a free service that issues alerts from your Irish Council:

Alerts items include Council topics such as road diversions, severe weather, floods, planning activity and water supply.

[Register Now](#)

[Enter Eircode...](#)

View alerts from these categories



Water



Roads



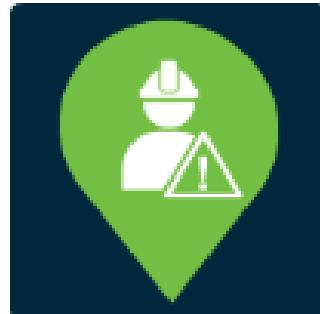
Community



Floods



Weather



Planning

Download the free app:



Climate Services and portals

Examples

- Climate Ireland Portal
- Flood Info.ie
- National Flood Forecasting Service
- Copernicus - EMS

Climate Ireland Portal



TIME TO ADAPT

Not sure where to start? Begin your exploration from here.



Get Started



Information & Data

Adaptation Strategy Explorer

Under Ireland's National Adaptation Framework a number of Government Departments are required to prepare sectoral adaptation plans in relation to the priority areas they are responsible for.



Explore Local and Sectoral
Strategies and Plans

<https://www.climateireland.ie/#/>



IRELAND'S CHANGING CLIMATE

Want to learn more about Ireland's Changing Climate? Dive in.



Observations



Projections



Hazards

ADAPTATION AT YOUR FINGERTIPS

Want to improve your understanding of adaptation? Explore our resources and discover our tools.



CLIMATE CHANGE
& ADAPTATION



TOOLS



RESOURCES

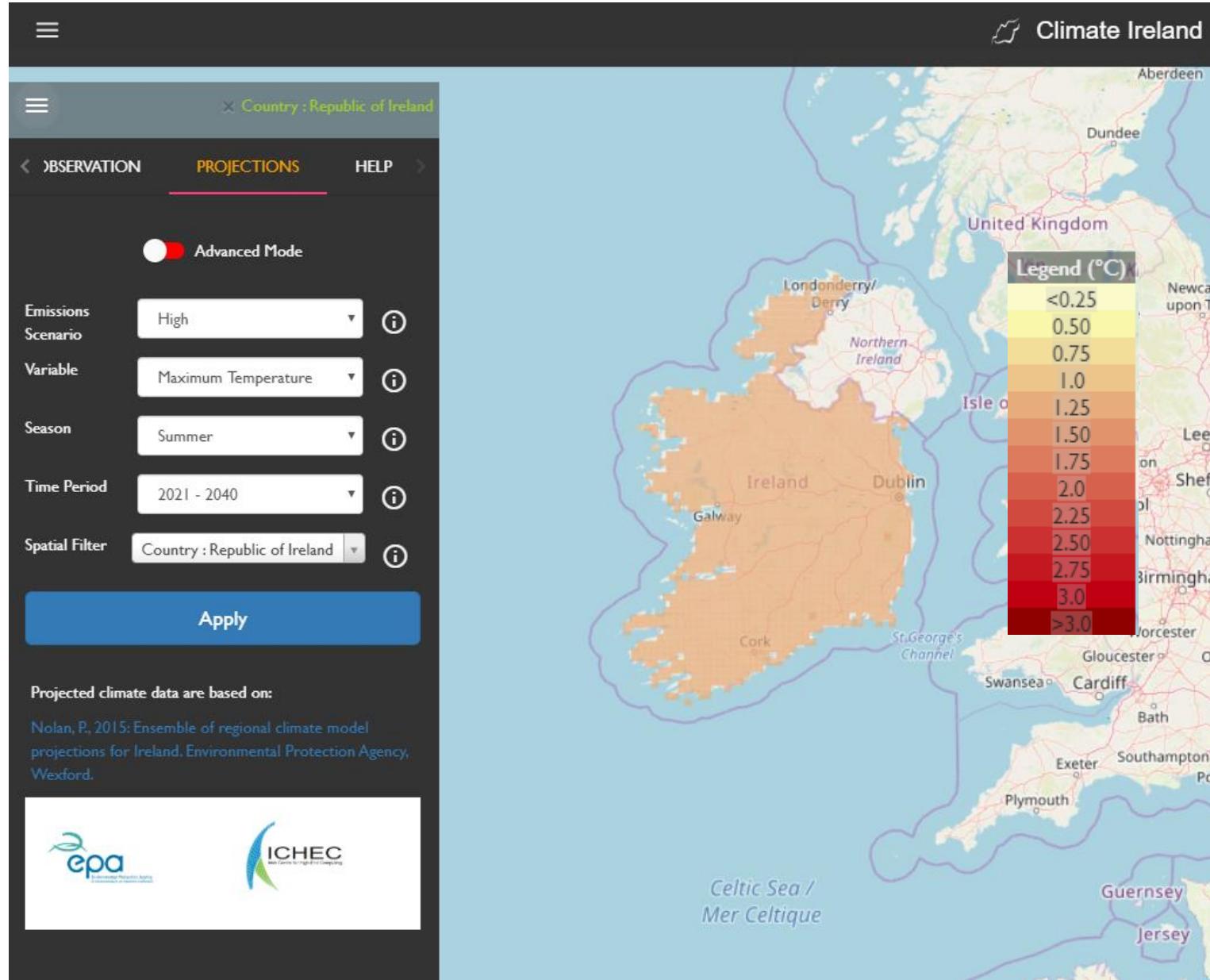
What, Why and How)

Tools support in the process of adapting
to climate change)

Resources help you in planning for
adaptation to climate change)

ARO

Climate Ireland – Example Climate Projections

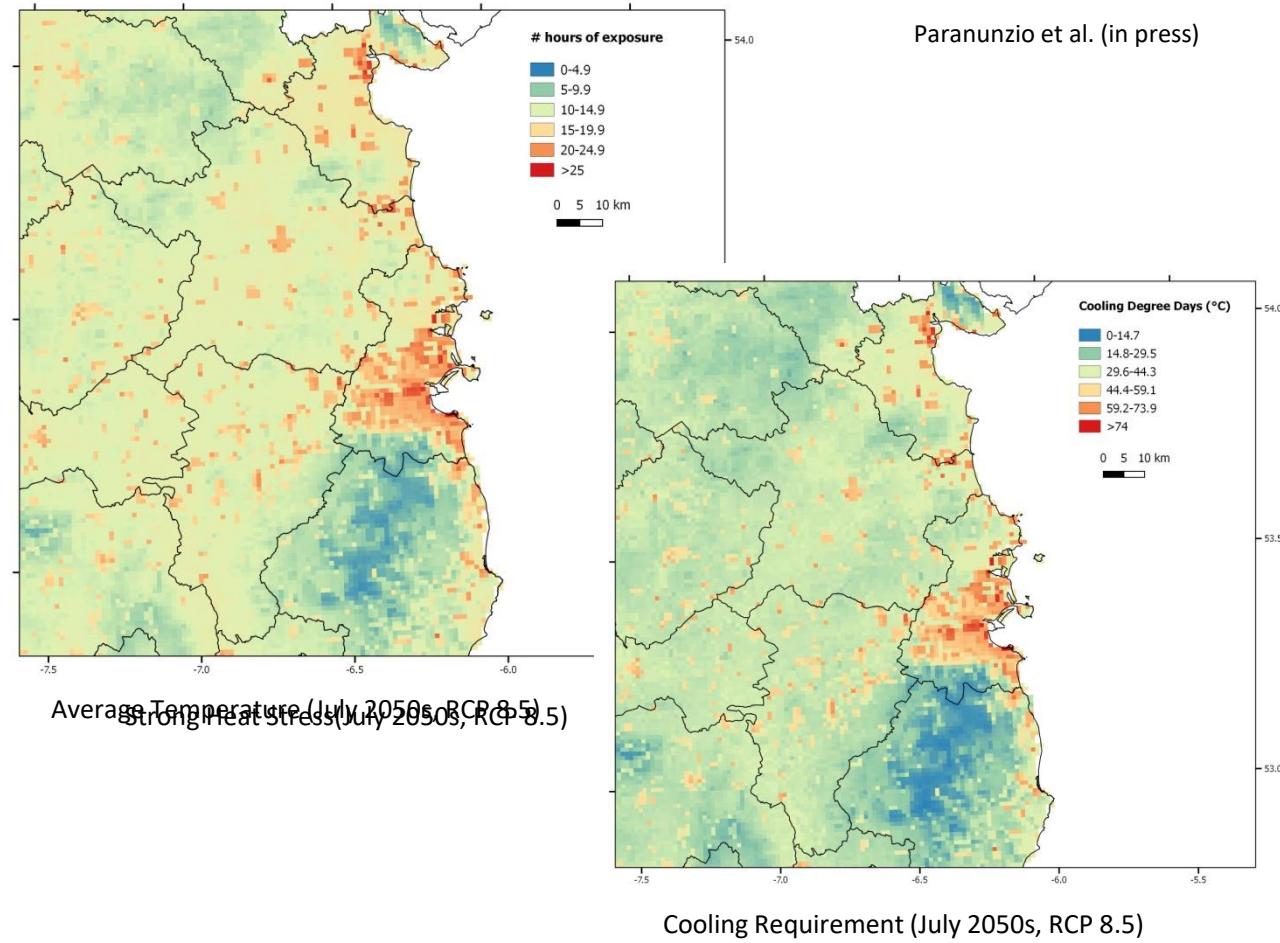




The Urban Effect, Heat Stress and Cooling



Climate
Ireland





OPW

Welcome to FloodInfo.ie

OPW's national flood information portal, providing location specific access to flood risk and flood management information.



[View Flood Plans Map](#)

Interactive map to view flood management information



[View Flood Maps](#)

Interactive map to view flood hazard and flood risk information



[View Drainage Map](#)

Interactive map to view drainage information



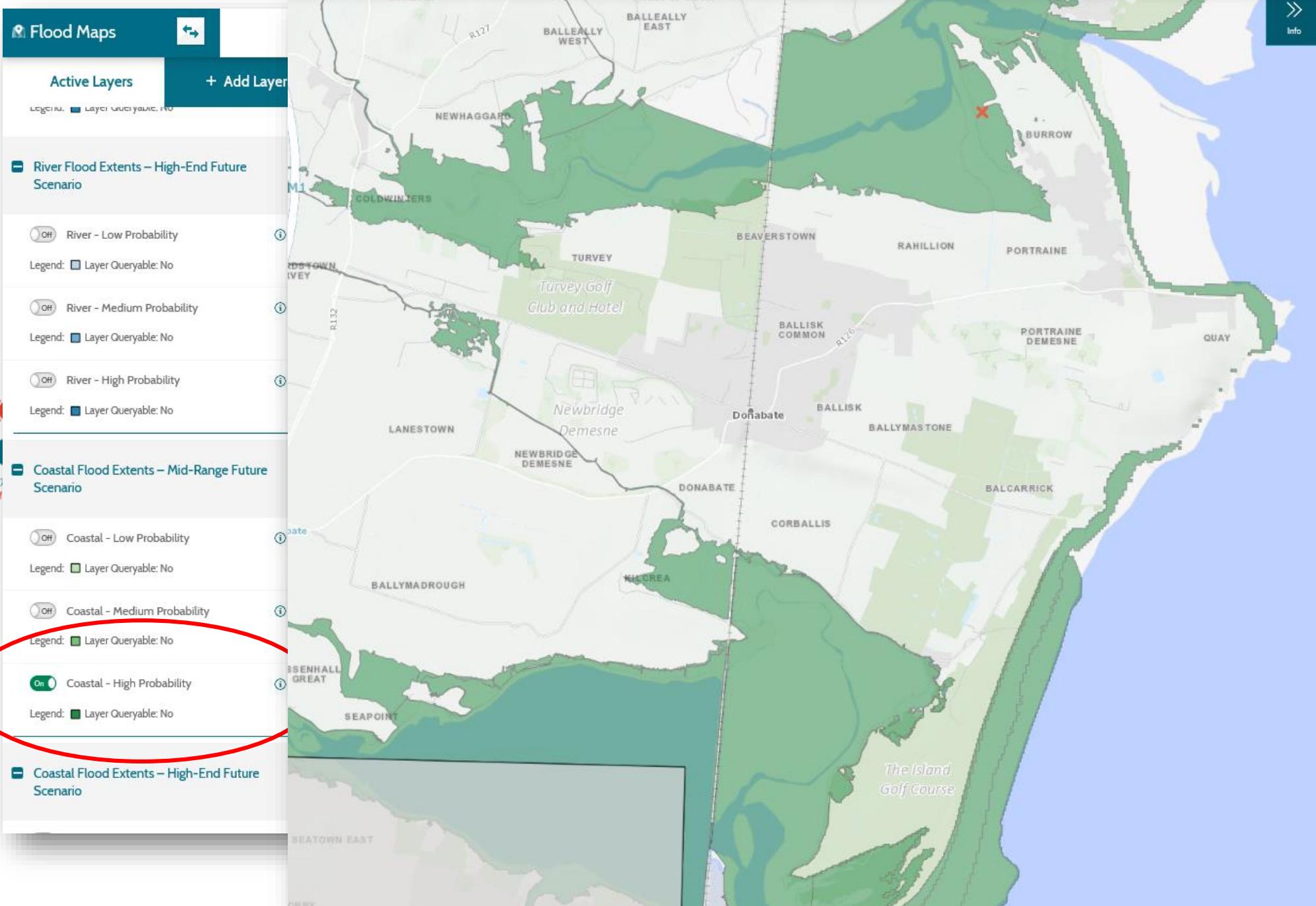
[View Coastal Map](#)

Interactive map to view coastal information



[Plan, Prepare Protect](#)

Website to help raise public awareness of the dangers of flooding and measures that can be taken to minimise the damage that can be caused by a flood event.





Active Layers

+ Add Layer



Layers



Tools

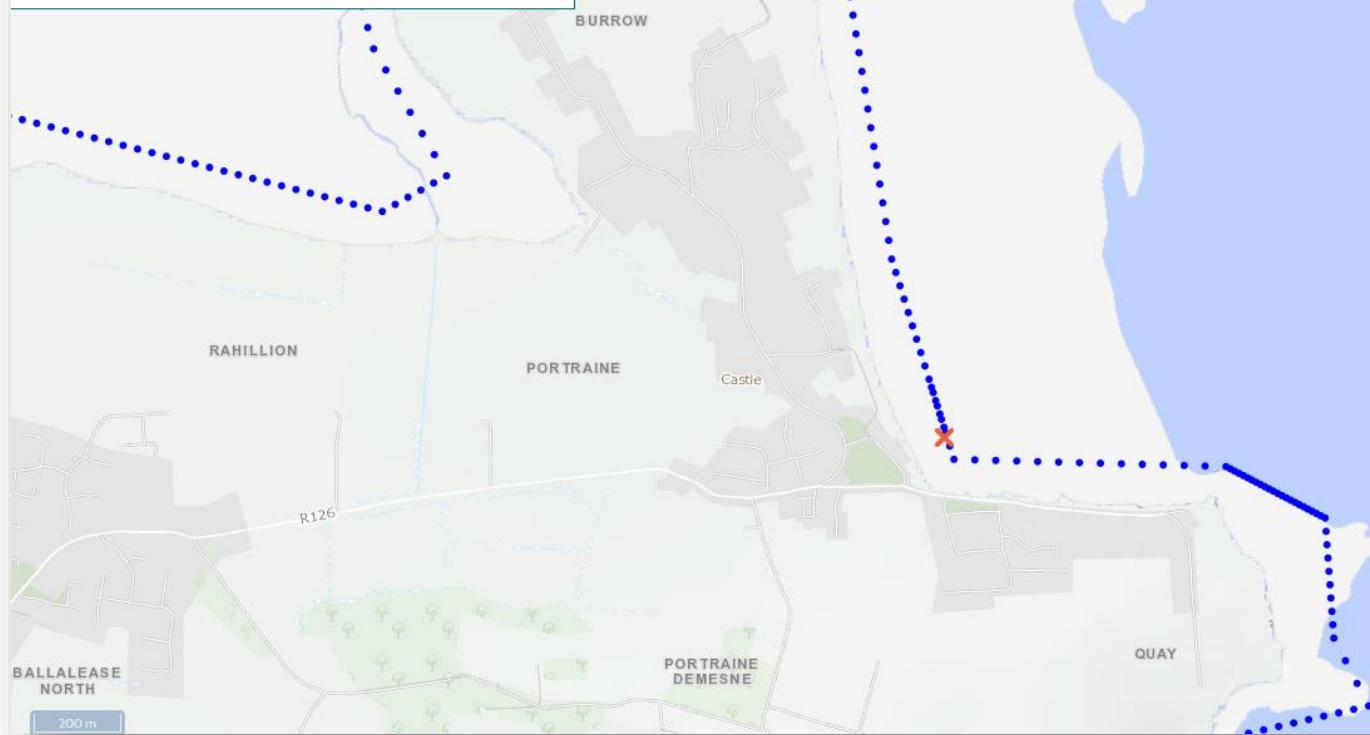


Search

Coast of Ireland Oblique Imagery Survey

Oblique Imagery Survey - 2003

Legend:



Info

Oblique Image



(click image to open in new tab)

X



National Flood Forecasting System

- As a response to flooding events in 2015/16, the Government approved the establishment of a new **Flood Forecasting and Warning Service**
- Currently, while Met Éireann can, with reasonable accuracy, predict heavy rain that might lead to flooding, it is not able to forecast the exact locations where the floods will occur
- Met Éireann is working with the **Office of Public Works (OPW)** to combine their expertise on forecasting and flooding to develop the Services





REVIEW OF HYDROLOGICAL MODELS

REVIEW OF HYDROLOGICAL MODELS AND INTEGRATOR SYSTEMS FOR OPERATIONAL FLUVIAL FLOOD FORECASTING IN IRELAND

Met Éireann, in collaboration with the Office of Public Works (OPW), is currently engaged in the establishment of a National Flood Forecasting and Warnings Service (NFFWS) to forecast for fluvial and coastal floods, following a Government decision in January 2016. To inform and support this task a range of existing available hydrological models and integrator systems are to be reviewed, developed and trialled for operational use.



National Flood Forecasting and Warning Service

- The FFS, will be an **extension to** Met Éireann's current weather forecasting activities.
- It will provide **daily forecasts** of the likelihood of flooding on a national basis and will issue **daily flood advisory statements** and, when necessary, extreme rainfall alerts to local authorities, the general public and other relevant stakeholders.
- The flood forecasting service will deal with flood forecasting from either **coastal or river (fluvial)** sources
- Trialling in mid to **late 2021....**



THE IRISH TIMES

Thu, Feb 27, 2020

NEWS SPORT BUSINESS OPINION LIFE & STYLE CULTURE

Environment > Climate Change | Heritage & Habitat

Ireland at risk of severe flooding from climate change

Finding comes from new study of records from 3,738 flood measurement stations across Europe over five decades

© Wed, Aug 28, 2019, 18:00

Kevin O'Sullivan Environment & Science Editor



Flooding along the banks of the river Shannon near Athlone in December 2015. File photograph: Brenda Fitzsimons/The Irish Times

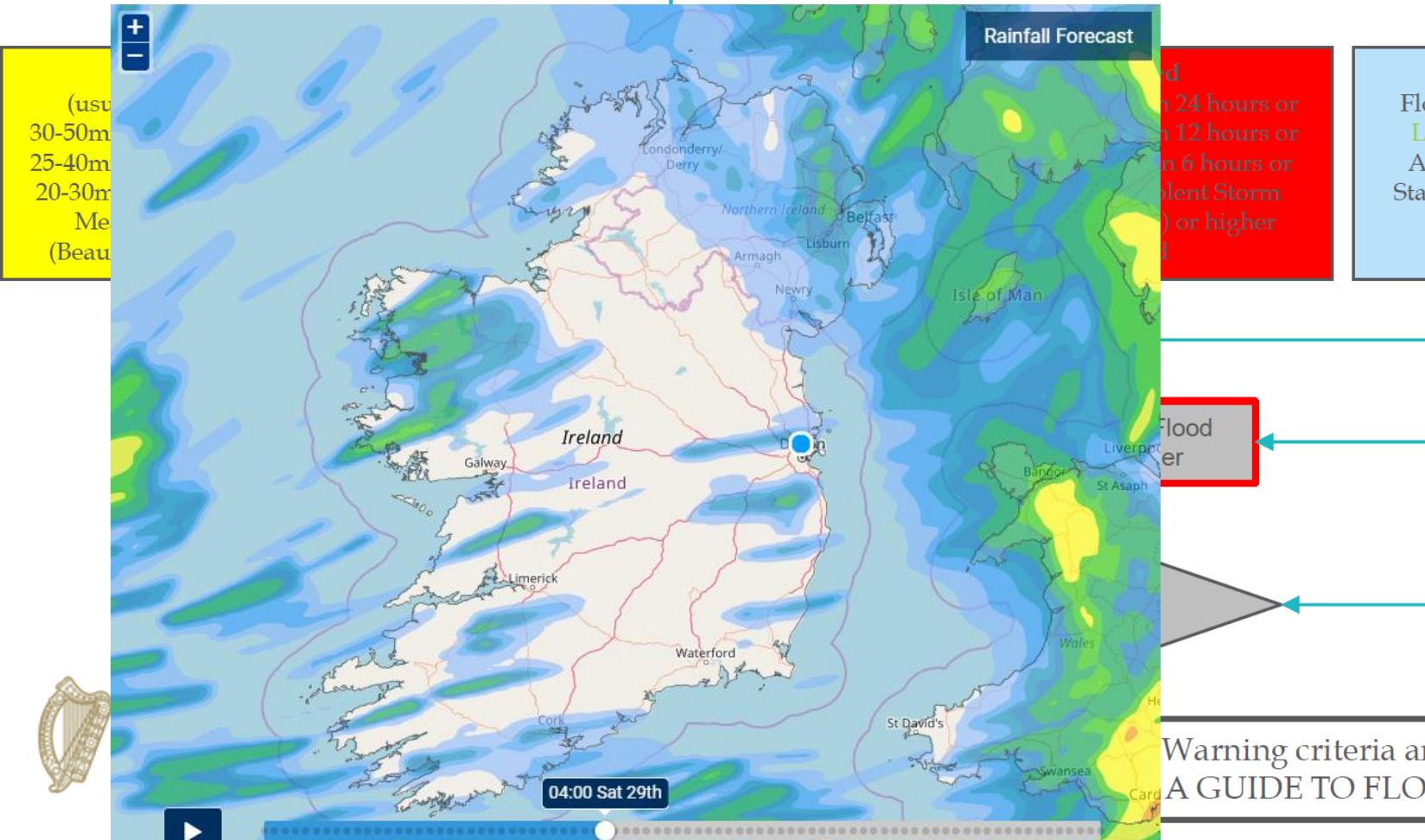
Ireland and other parts of northwestern Europe will bear the brunt of increasingly severe flooding caused by climate change, according to a new Europe-wide study.

The study, published on Wednesday evening in the journal Nature, analysed records from 3,738 flood measurement stations across Europe taken between 1960 and 2010.

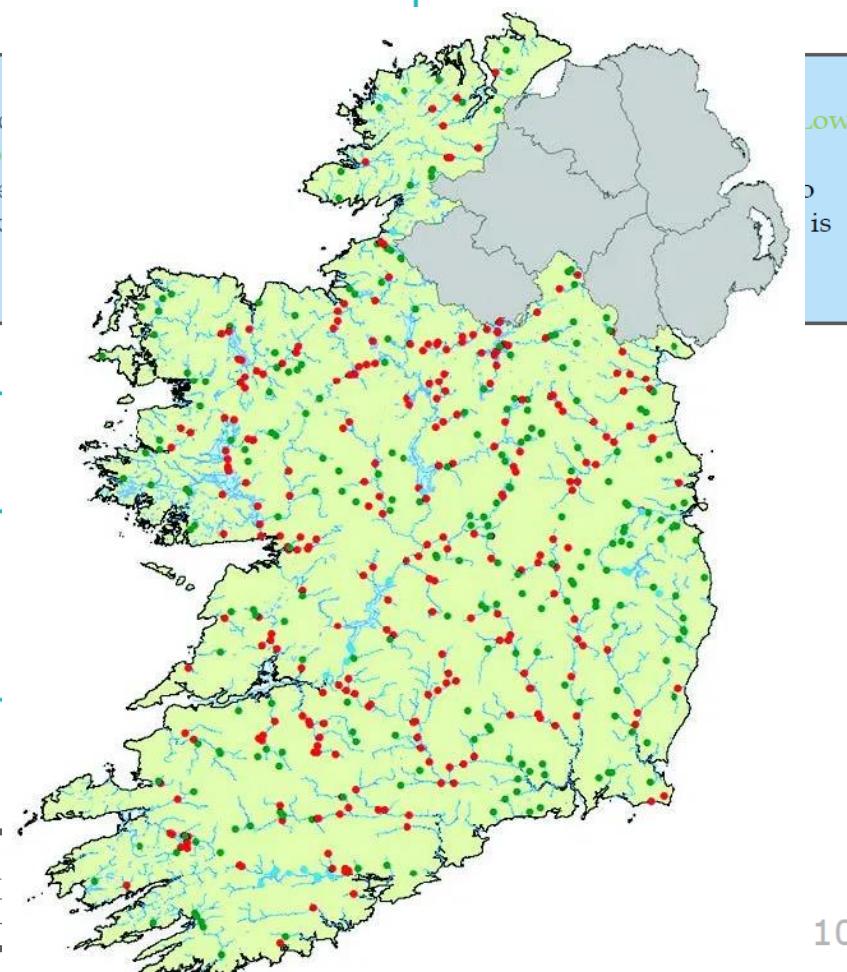


Proposed Amended Weather Warning criteria and Response Action Levels Flow Chart

Weather Warning issued by
Met Éireann (Forecast Division)

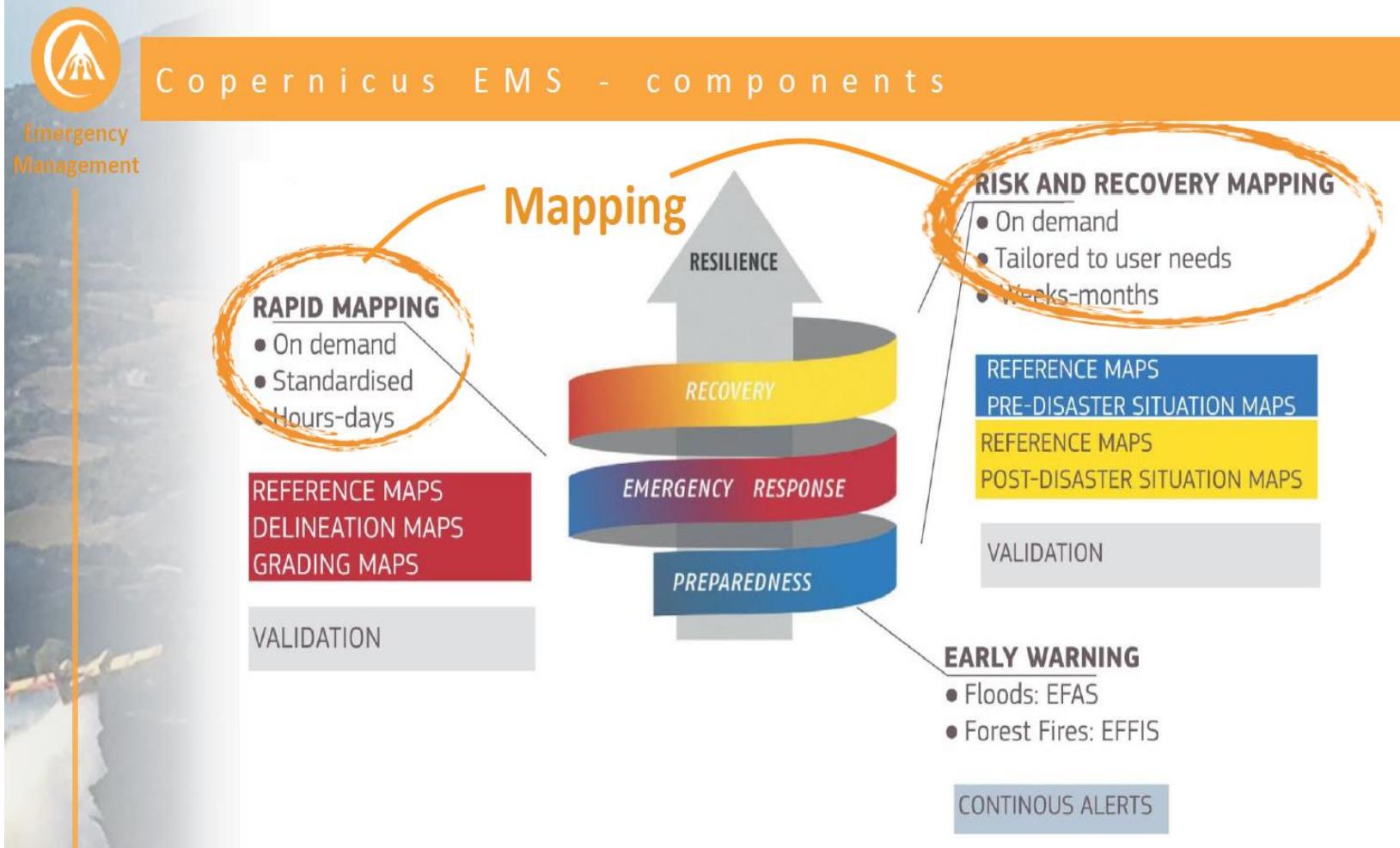


Flood Risk Alert issued by
Met Éireann (Flood Forecast Division)



Warning criteria and
A GUIDE TO FLOOD

Satellite /Copernicus Service Use



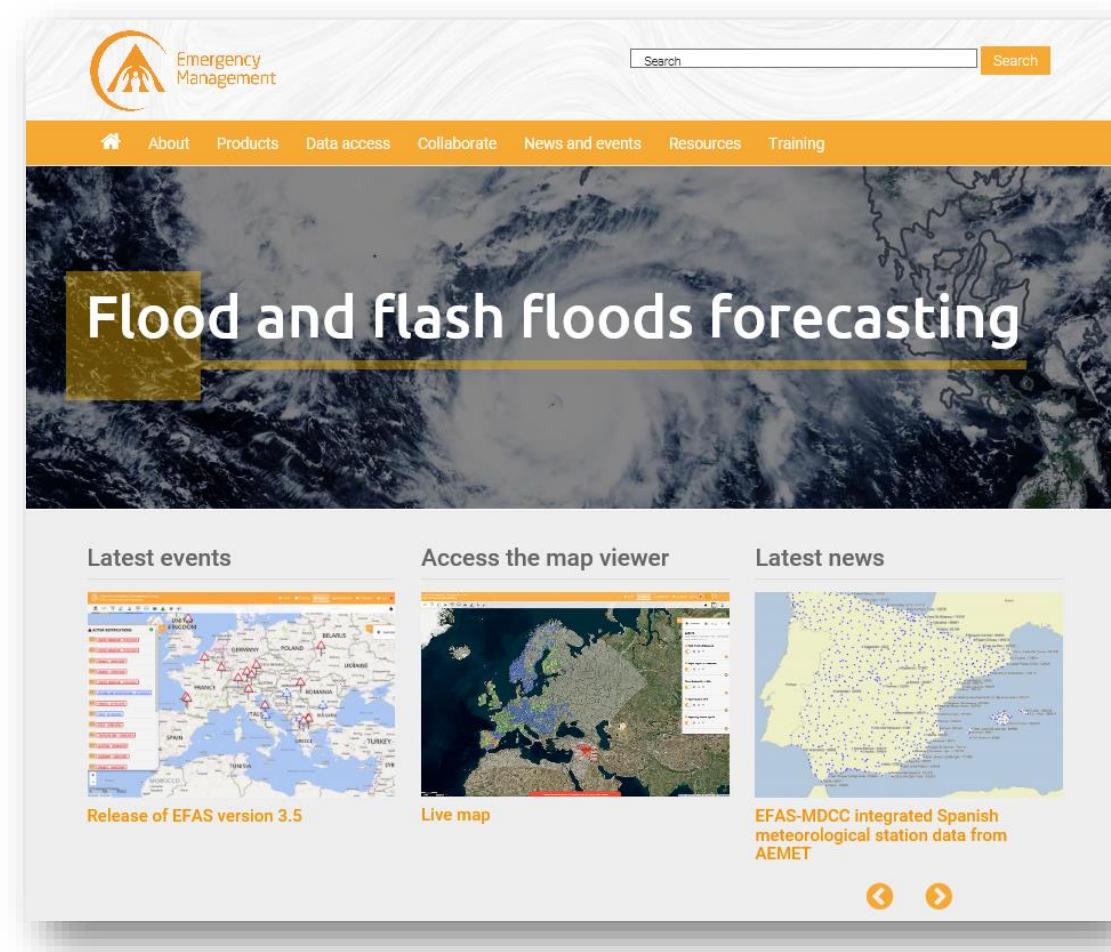
Copernicus – Emergency Management Services Use

European Forest Fire Information System - EFFIS



The screenshot shows the homepage of the European Forest Fire Information System (EFFIS). It features the Copernicus logo and the European Commission flag at the top left. The main header reads "COPERNICUS Emergency Management Service". Below the header, a breadcrumb navigation shows "European Commission > JRC EU Science Hub > DRM > Copernicus EMS > European Forest Fire Information System (EFFIS)". The main content area has a "Welcome to EFFIS" section. It explains that EFFIS supports services in charge of forest protection against fires in EU countries and provides updated and reliable information on wildland fires in Europe. It also mentions specific applications available through EFFIS, supported by a network of experts from 40 countries. A "Current Situation" section displays a map of Europe with fire risk levels. The footer contains links for "About EFFIS", "Reports and Publications", "Applications", "Partners", and "Contact Us".

European Flood Awareness System - EFAS



The screenshot shows the homepage of the European Flood Awareness System (EFAS). The header includes the "Emergency Management" logo and a search bar. The main banner features a satellite image of Europe with the text "Flood and flash floods forecasting". Below the banner, there are three main sections: "Latest events" showing a map of Europe with red triangles indicating flood events; "Access the map viewer" showing a live map of Europe; and "Latest news" showing a map of Spain with numerous blue dots representing meteorological stations. At the bottom, there are navigation arrows and a small text note about integrated Spanish meteorological station data from AEMET.

Thu, Feb 27, 2020

NEWS SPORT BUSINESS OPINION LIFE & STYLE CULTURE

Environment > Climate Change | Heritage & Habitat

Irish Rail may have to suspend Sligo line services due to floods

Flood-hit families in Co Clare call on Government to relocate them

about 5 hours ago | Updated: about 4 hours ago

Tim O'Brien, David Raleigh, Marese McDonagh

Video

Images



Local resident Joe Quinlivan says that repeated flooding in Springfield, Clonlara, Co Clare has rendered his house worthless. Video: David Raleigh

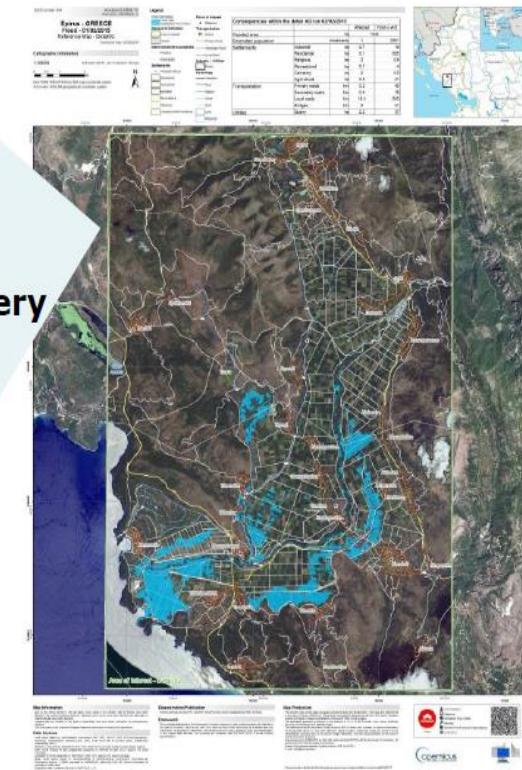
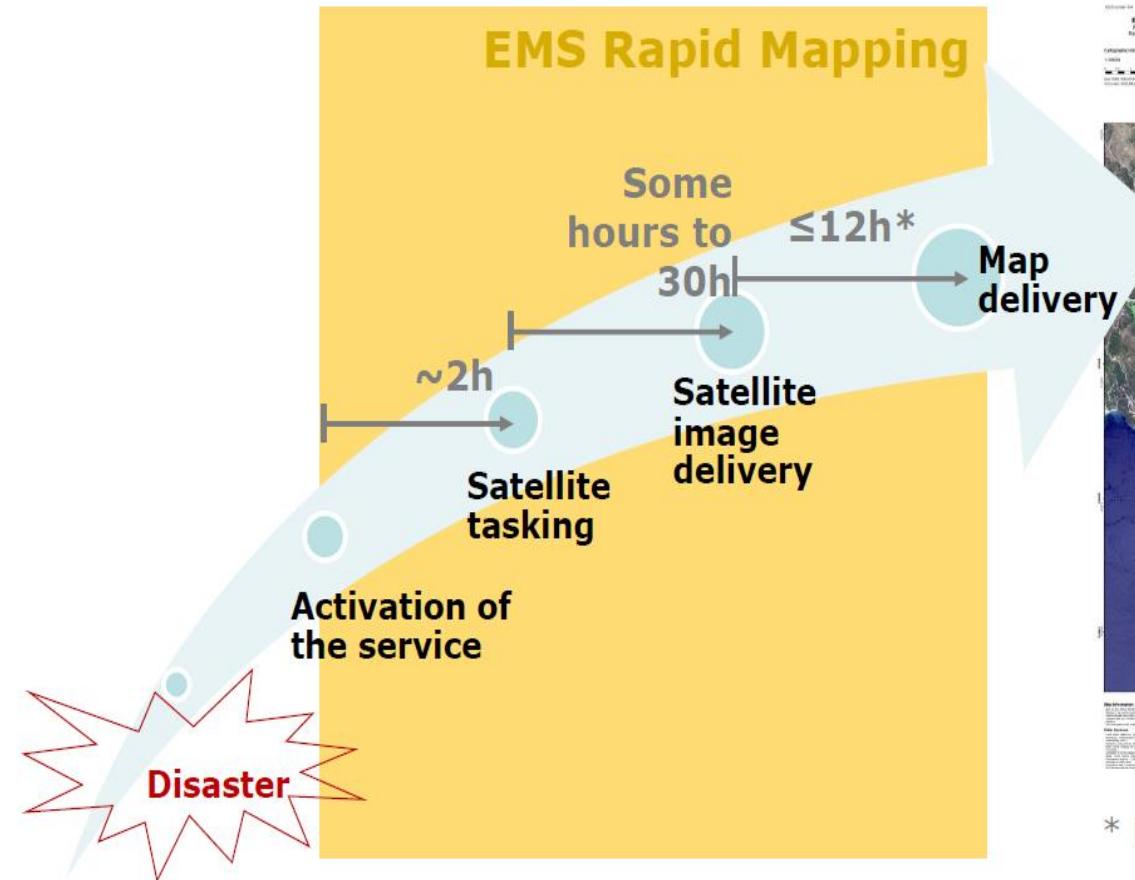
f Train services between Dublin and Sligo could be suspended unless flood waters in Co Leitrim decline, Iarnród Éireann has warned.

t Irish Rail has already spent significant amounts of money on raising the railway on low-lying stretches of the route between Drumod and Carrick on Shannon.

The area, which is south of the confluence of the Boyle and Shannon rivers, was severely flooded in 2009, flooded again in 2016 and again this month.

EMS Rapid Mapping for Flood Events

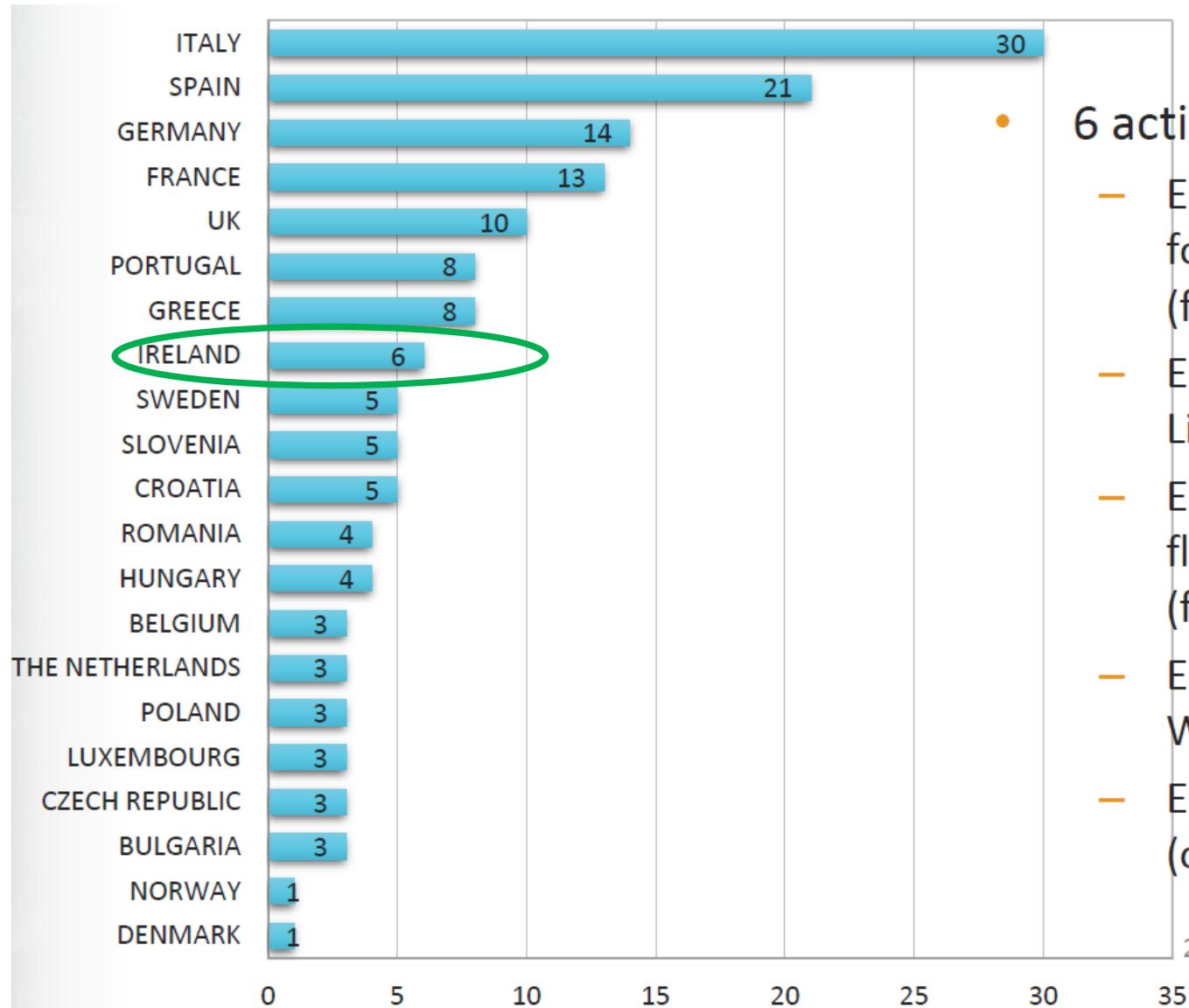
Typical Timeline



* Production time in service level 1



Copernicus EMS Rapid Mapping Activations



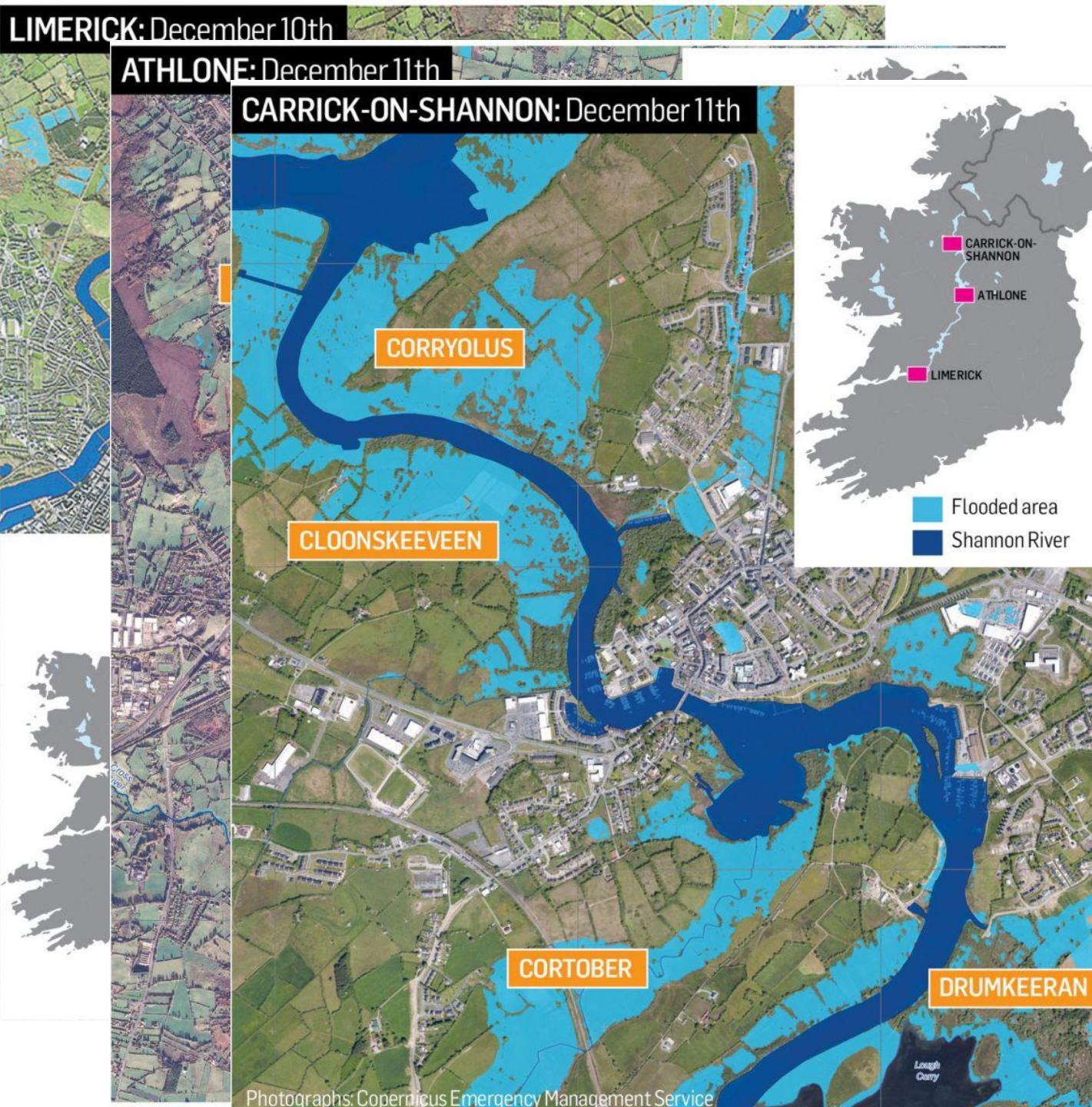
- 6 activations in Ireland

- EMSR077 – forest damages following violent storms (feb2014)
- EMSR149 – floods in Limerick/Athlone (apr2015)
- EMSR154 and EMSR156 – flood in Roscommon (feb/mar2016)
- EMSR231 – floods in North Western (aug2018)
- EMSR249 – Hurricane Ophelia (oct2017)

LIMERICK: December 10th

ATHLONE: December 11th

CARRICK-ON-SHANNON: December 11th



Photographs: Copernicus Emergency Management Service



Copernicus Ireland – ongoing and future

- Copernicus working with the Department of Housing, Planning & Local Government's GIS team to develop a way of utilising online GIS platform to allows users to create and share maps, data and applications.



Climate Services and portals

Examples

- **WIRE – Weather Impact REporting App**
- **SMART Gully Monitoring**

WIRE – Weather Impact REporting App

(*under development)

- Funded under Governments **Public sector Innovation Grant** in 2019
- Working Group formed with representation from **CAROs, Local Authorities GIS experts and Climate Ireland** to inform specification and implementation of the system



Comhairle Contae Mhaigh Eo
Mayo County Council



WIRE App - Mobile Data Collection Form

- LA staff to log **weather impacts** by category of event and what was impacted e.g. High Rainfall, surface water flooding, infrastructure, roads
- Accessed via **Mobile App, Desktop PC** or within browser on **mobile device**. Optional offline logging facilitated whereby users log data and upload at a later time.
- Location is logged by device **GPS** or by plotting location on an on-screen map
- **Photos captured**

The screenshot shows a mobile application interface for 'CARO Weather Impact REporting (WIRE) - Field Worker'. At the top, there are icons for battery level (84%), signal strength, and the current time (11:26). Below the header, the title 'CARO Weather Impact REporting (WIRE) - Field Worker' is displayed, along with a close button (X) and a menu icon (three horizontal lines).

Geolocation: *

Capturing event location is required. Location will default to your current device location; if different, please select via the map button.

53°51'N 9°18'W ± 20 m

Hazards/Climate Events: *

Select the applicable hazard or climate event present.

	<input type="radio"/> Rainfall (High)
	<input type="radio"/> Temperature (High)
	<input type="radio"/> Temperature (Low)
	<input type="radio"/> Strong Winds
	<input type="radio"/> Rainfall (Low)

A blue checkmark icon is located at the bottom right of the hazard selection area.

Draft layout

WIRE App - Screenshots

CARO Weather Impact REporting (WIRE) - Field Worker

Geolocation: *
Capturing event location is required. Location will default to your current device location; if different, please select via the map button.

53°51'N 9°18'W ± 20 m



Hazards/Climate Events: *
Select the applicable hazard or climate event present.

- Rainfall (High)
- Temperature (High)
- Temperature (Low)
- Strong Winds
- Rainfall (Low)
- Coastal Event
- Other

Impact Assessment:
Have any of the following been impacted?
List will expand on selection.

✓

CARO Weather Impact REporting (WIRE) - Field Worker

Hazards/Climate Events: *
Select the applicable hazard or climate event present.

- Rainfall (High)
- Temperature (High)
- Temperature (Low)
- Strong Winds
- Rainfall (Low)
- Coastal Event
- Other

Impact Assessment:
Have any of the following been impacted?
List will expand on selection.

✓

CARO Weather Impact REporting (WIRE) - Field Worker

Rainfall (Low) Impacts: *
Select all that apply.

- Drought
- Low River Flows and Water Levels
- Water Supply Restrictions
- Wild Fires
- Subsidence
- Other

Impact Assessment:
Have any of the following been impacted?
List will expand on selection.

✓

CARO Weather Impact REporting (WIRE) - Field Worker

Additional Information:

Image: *
Upload a photo of the site.

Image Two (Optional):

Image Three (Optional):

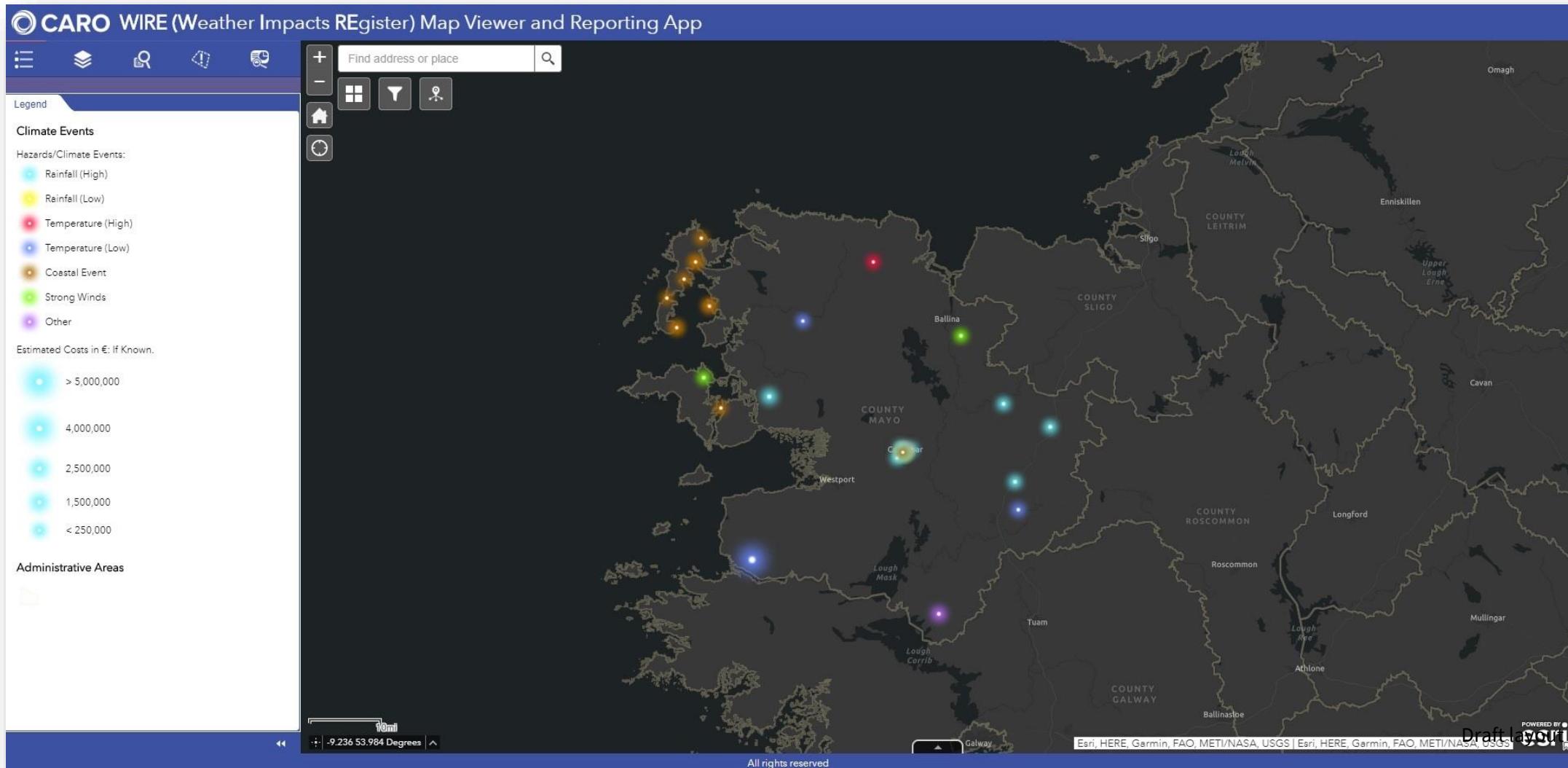
Notes:

✓

(* Under Development-Draft layouts)

WIRE App - Map Viewer

- View
- Filter
- Reports
- Spatial Analysis
- Export Data



WIRE App - Data Dashboard

CARO
Weather Impacts REgister
Data Dashboard

Select a date range...

31/01/2020

Select climate events by type...

- Any
- Coastal Event
- Rainfall (High)
- Temperature (High)
- Rainfall (Low)
- Temperature (Low)
- Other
- Strong Winds

Receptor Subsets with Impact - High

⚠ 22

Local Authority Selector
Scroll down for more

- CARLOW COUNTY COUNCIL
- CAVAN COUNTY COUNCIL
- CLARE COUNTY COUNCIL
- CORK CITY COUNCIL
- CORK COUNTY COUNCIL
- DONEGAL COUNTY COUNCIL
- DUBLIN CITY COUNCIL
- DUN LAOGHAIRE-RATHDOWN COUNTY COUNCIL

Climate Events by Month

Month	Temp. (High)	Temp. (Low)	Rainfall (High)	Rainfall (Low)	Other	Coastal Event	Total
Aug 19	1	0	0	0	0	0	1
Sep 19	0	0	1	0	0	0	1
Oct 19	0	0	1	0	0	0	1
Nov 19	1	2	1	1	1	0	7
Dec 19	1	2	2	8	0	0	13
Jan 2020	0	0	2	8	0	0	10

Climate Events over Time Chart Climate Events by Type Chart

Map of Ireland showing Climate Events

Map showing locations of climate events across Ireland, with markers indicating event types and severity. Labels include Ballina, Westport, and Lough Mask.

Climate Events
services and people impacts
Impact to Community Services: Not Recorded
Impact to Emergency Services: Not Recorded
Impact to Health and Safety: Not Recorded
Other Impacted Services and People: Damage to crops and livestock.
Impact to Other: High

Other Receptor Impacts
Other Receptor Impacted: Not Recorded
Impact to Other Receptor: N/A

Notes:
Not Recorded

Estimated Cost (€ Euros)
350,000.00

Recommendations for Further Action:
Water pumping systems required for diversion.

Attachments

[image1-1ef6bd2686e84d23892f2667be545369.JPG](#)

[Event List](#) [Event Details](#) [Cost Gauge](#)

WIRE App System Rollout

- **Full trial** in Mayo County Council by February/March
- **Initial trial** will be with LA staff but also functionality for public participation
- **Scalability** – the system components have been specially designed with scalability in mind. The system can be replicated in individual LA's, on a regional basis or as a national system for all LA's

The screenshot shows a mobile application interface for reporting weather impacts. At the top, there are standard phone status icons (signal, battery, time). The title bar reads "CARO Weather Impact Reporting (WIRE) - Field Worker". On the right are a close button (X), a signal strength icon, and a menu icon (three horizontal lines).

Geolocation: *
Capturing event location is required. Location will default to your current device location; if different, please select via the map button.

53°51'N 9°18'W ± 20 m

Hazards/Climate Events: *

Select the applicable hazard or climate event present.

	<input type="radio"/> Rainfall (High)
	<input type="radio"/> Temperature (High)
	<input type="radio"/> Temperature (Low)
	<input type="radio"/> Strong Winds
	<input type="radio"/> Rainfall (Low)

A blue checkmark icon is located in the bottom right corner of the hazard selection area.



Comhairle Contae Mhaigh Eo
Mayo County Council





NEW WAYS OF SOURCING INNOVATION

Working in partnership with Enterprise Ireland through the Small Business Innovation Research (SBIR) programme to find solutions for:

- ▶ CYCLING
- ▶ WAYFINDING
- ▶ LAST MILE DELIVERY
- ▶ BATHING WATER QUALITY
- ▶ UNHEARD VOICES
- ▶ FLOODING
- ▶ ILLEGAL DUMPING
- ▶ MOBILITY HUB
- ▶ IOT

€1.55m

INNOVATION
FUNDING



652

EXPRESSIONS
OF INTEREST



133

APPLICATIONS

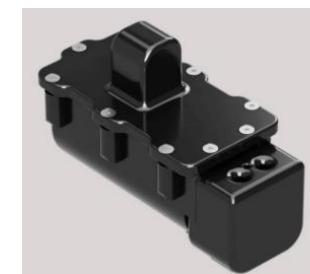
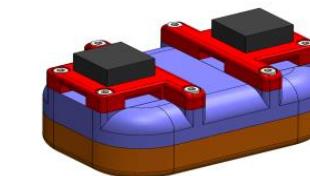


42

INNOVATION
CONTRACTS



Theme: Environment



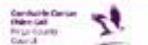
GULLY MONITORING
SEEKING SMART, LOW COST SOLUTIONS...

CHALLENGE:
REDUCING
FLOOD
RISK



**€200,000
IN FUNDING
AVAILABLE**

**APPLY HERE:
WWW.SMARTDUBLIN.IE**



Dublin's Smart City Testbed – Flooding Example

- The **Gullyspy** and **Telemonitron** were born out of the 2017 SBIR programme, where flooding due to drain clogs (from leaves, other debris) were happening around the city.
- There are **55,000** such gullies around Dublin city
- A simple mechanism sending a text message ‘ping’ to surface water team in Dublin City Council, that a flooding is about to happen, or happening at specific locations
- Currently **tralling 50 sensors** as part of Phase 2b of SBIR programme



Needs and opportunities....

- **Integration** – for emergency response and longer term adaptation planning
- More use of **Copernicus/satellite data** at local level
- **Alignment** and interaction with sectors
- **GIS data needs** and integration to county and city development plans
- **Training** and awareness on climate action and climate services
- **Science to policy** and practice – University 3rd level engagement
- **Technology innovation** and deployment
-



KE4CAP
Knowledge Exchange between
Climate Adaptation Platforms



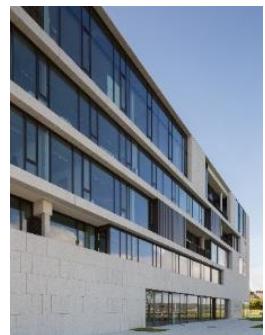
Go raibh maith agaibh

david.dodd@dublincity.ie



**Earth Systems and
Climate Change
Hub**

National Environmental Science Programme



KE4CAP

Knowledge Exchange between
Climate Adaptation Platforms

EU – Australia Bi-lateral Workshop
Melbourne 3rd – 5th March 2020



Mapping User Expectations to Current
Climate Adaptation Support

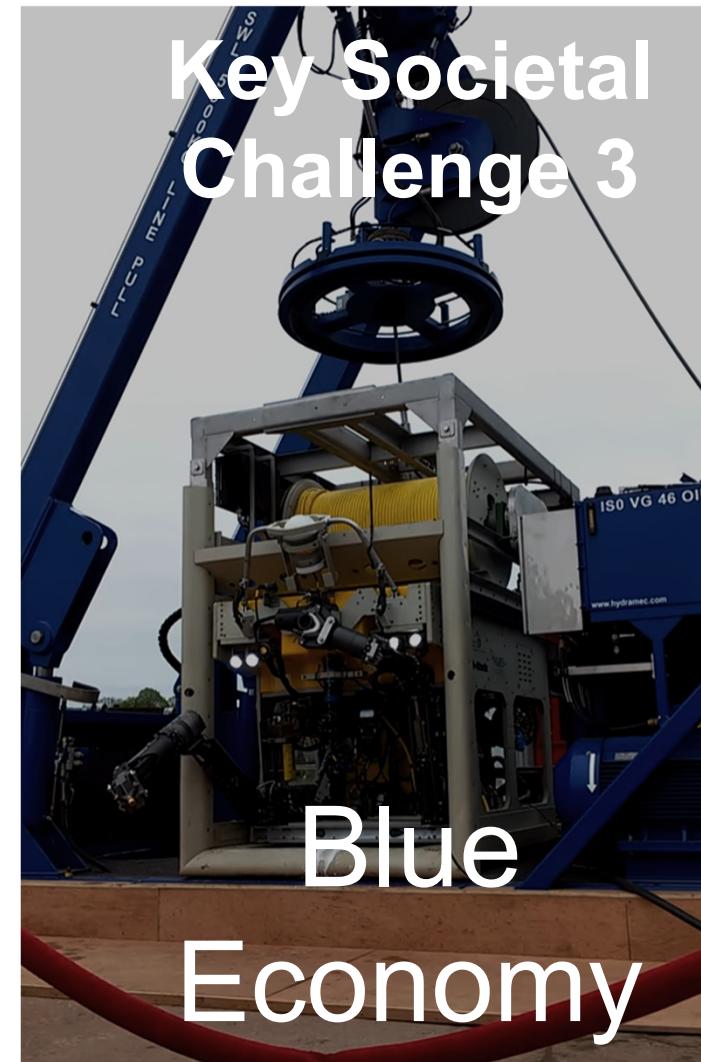


Key Societal Challenge 1

Energy
Transition

Key Societal Challenge 2

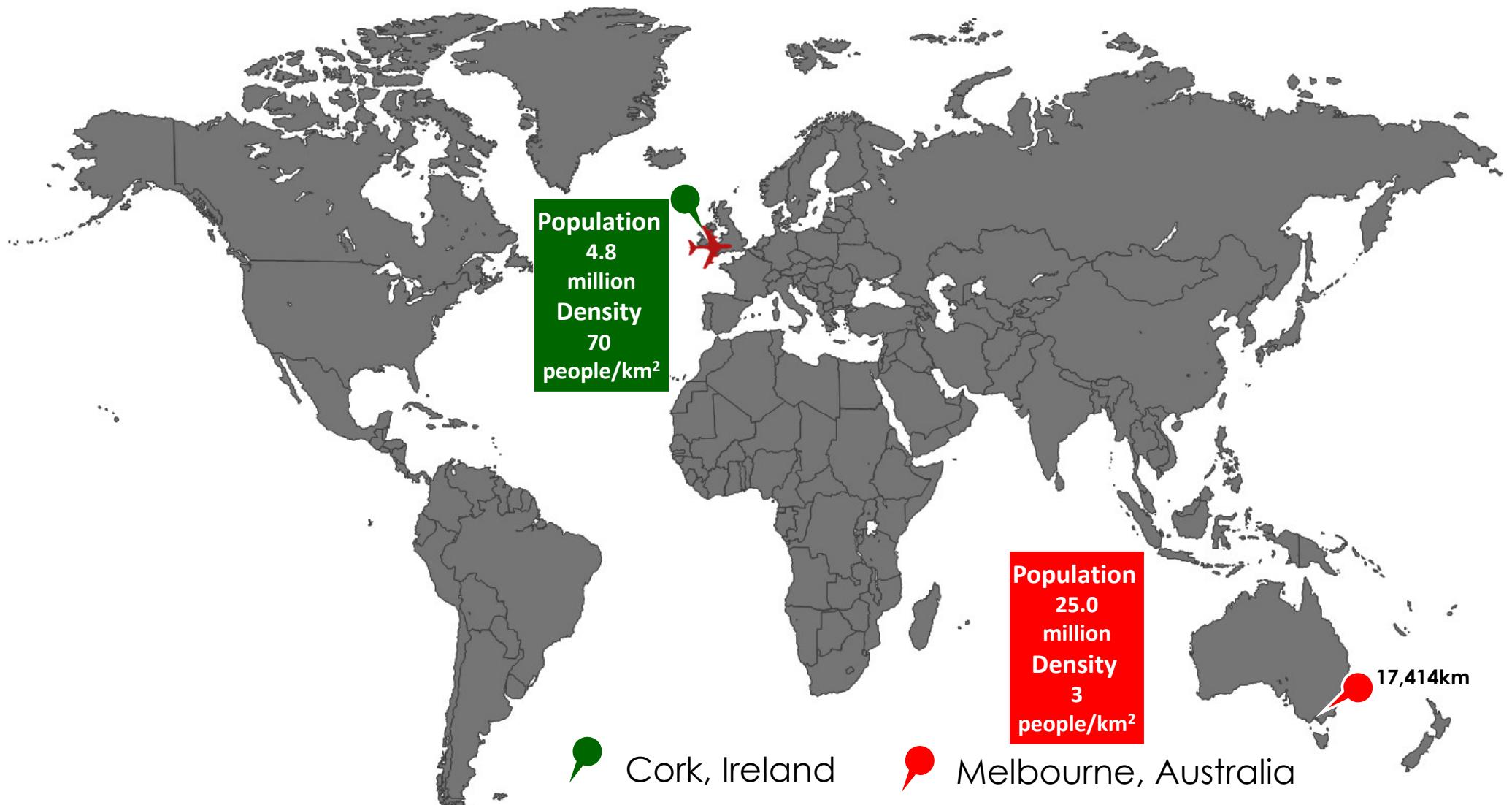
Climate
Action



Key Societal Challenge 3

Blue
Economy







Welcome to Climate Ireland

Climate Ireland provides informational support and advice to help organisations, sectors and government to adapt to the now inevitable consequences of climate change. This work involves:

- Enhancing knowledge and raising awareness
- The provision of information required for climate adaptation
- Facilitating decision-making for adaptation

What do you want to do?

Learn more about Climate Change, Explore Climate Information, Learn about Climate Adaptation, Examine the Sectoral Impacts

Latest News

December 2014

2014 EUROPE'S WARMEST YEAR ON RECORD

Irish scientists, based on observations, research and forecasts indicate that the annual average temperature in 2014 was 0.8 °C above the previous record of 2007.

For more news, click [here](#)



2011 ICIP Phase 1
System Design



2013 ICIP Phase 2
Local Authorities



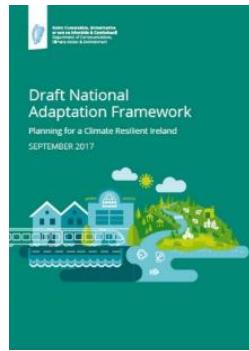
Roinn Cumarsáide, Gníomhaithe
ar son na hAeráide & Comhsaoil
Department of Communications,
Climate Action & Environment



2017 onwards
Operational Rollout



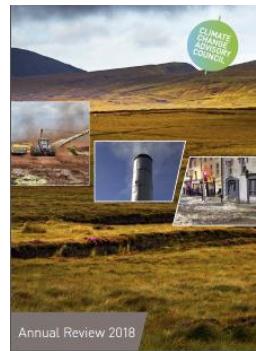
Draft National
Adaptation Framework
Planning for a Climate Resilient Ireland
SEPTEMBER 2017



2015 ICIP Phase 3
Sectoral



2018 Operational
Climate Ireland



National Adaptation
F

**CLIMATE
ACTION
PLAN
2019**

To Tackle Climate Breakdown



Climate
Ireland .ie TIME TO ADAPT



Roinn Cumarsáide, Gníomhaithe
ar son na hAeráide & Comhshaoil
Department of Communications,
Climate Action & Environment



TIME TO ADAPT

Participating Platforms

Scan the QR Codes and explore the different platforms



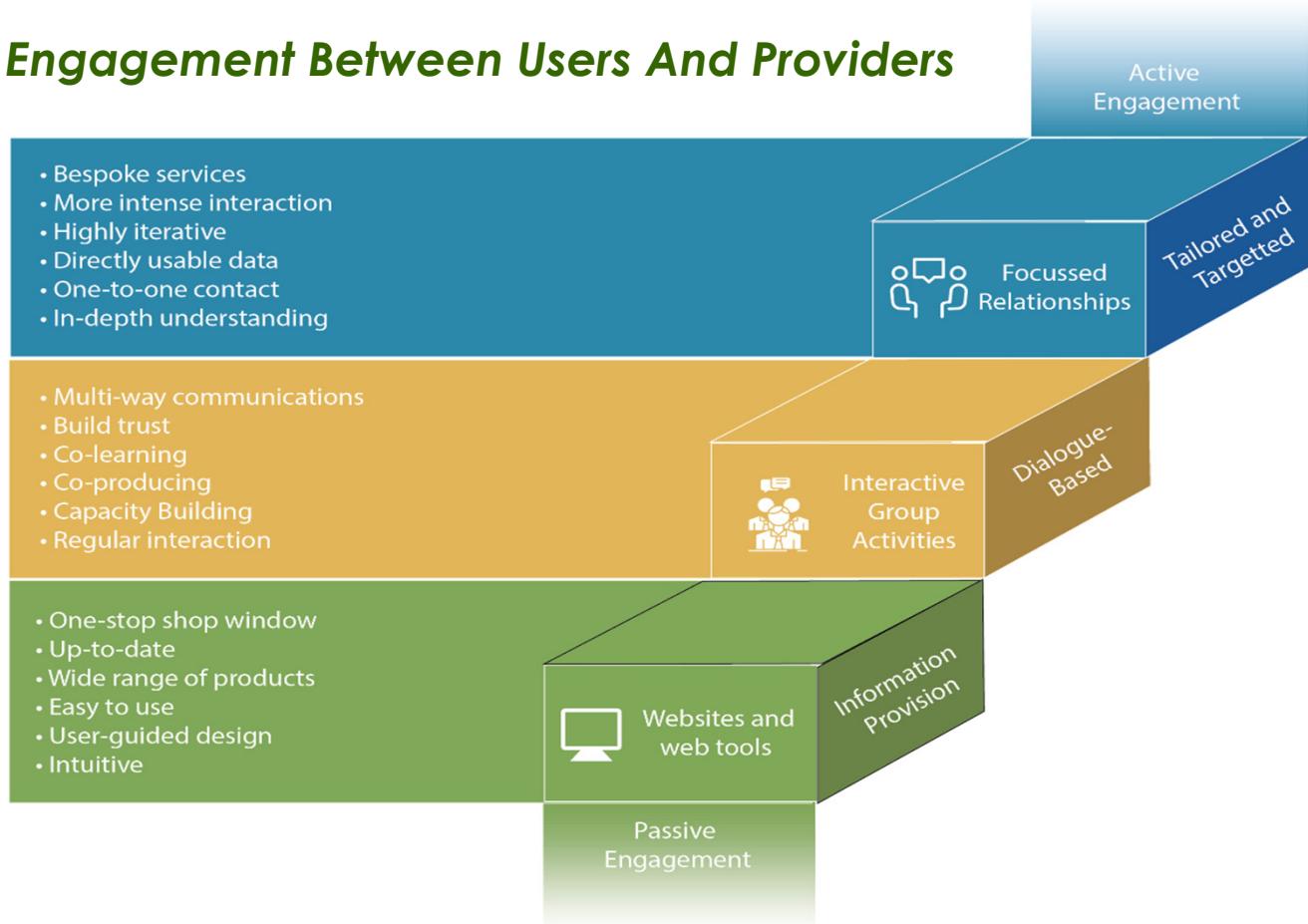
Engagement Between Users And Providers

Country / Region	Service	User Engagement Activity	Tailored	Dialogue
Canada	Canada's Climate Change Adaptation platform	<ul style="list-style-type: none"> Offline collaboration platform and plenary (Comprising Federal Regional Depts & Agencies, Provinces and Territories, National Indigenous Organisation, Private sector, professional & Non-profit) Tailored engagements on specific topics (e.g. Sustainable Finance) 		X
	Building Regional Adaptation Capacity and Expertise (BRACE)	<ul style="list-style-type: none"> Web platform (Practitioner Specific Online Training, Webinars, videos and case studies) Training Workshops Communities of Practice 	X	
	Canadian Centre for Climate Services	<ul style="list-style-type: none"> Range of web platforms to support different user groups – Getting Started to Expert (Climate Atlas, Climatedata.ca, PAVICs), Presentations, Webinars 		
		<ul style="list-style-type: none"> Professional services to support users (e.g. assessment to identify evolving user needs for northerners, Nunavut) Support Desk 	X	X
		<ul style="list-style-type: none"> Co-delivery of climate services incorporating expertise of regional climate organisations/consortia 	X	

Engagement Between Users And Providers

Country/Region	Service	User Engagement Activity	Tailored	Dialogue
Japan	A-PLAT	<ul style="list-style-type: none"> • Web platform (information, Guidance and Resources) • A-PLAT Development Working Group • Training Workshops (Local Government Officers) • Survey to identify and share good practices • Responses to Local Government Requests (e.g. system to visualise climate data by prefecture) • Project-based Support (LCACC) 	X	X
Netherlands	The Dutch National Knowledge Portal for Climate Adaptation	<ul style="list-style-type: none"> • Web platform (Information and resources) • Tailored Tools • Training Workshops • Communities of Practice (Online) 	X	X
Global	PreventionWeb (Knowledge Brokering for Disaster Risk Reduction)	<ul style="list-style-type: none"> • Web platform providing access to a knowledge base (Latest Research, good practices and lessons learned) ad Practical Guidance (e.g. Integrating Disaster Reduction) adopting a multi-channel approach • Community features (online workspaces) 	X	
	ClimateScan	<ul style="list-style-type: none"> • Web Platform • User Developed Content 		X

Engagement Between Users And Providers



- **Defining Adaptation Platforms**
- **Landscape of climate change adaptation**
- **Common language, datasets and interoperability**
- **Co-design, co-development and co-production**
- **Maintaining users/Interest**
- **Measuring the value of adaptation platforms/evaluation**
- **Resources, continuity and evolution**

Schematic diagram of the three broad categories of engagement between users and providers of climate services (Hewitt et al. 2017).

Engagement Between Users And Providers

Challenge	Articulation
Defining Adaptation Platforms	<p>There are a number of types of climate adaptation platforms with the definition of a climate adaptation platform/service depending on:</p> <ul style="list-style-type: none">• History of development – platforms have been developed to support national policy requirements (e.g. Climate Ireland), act as a resource of directory and provide tools developed for a specific user groups (e.g. model region programme);• Target Users – Platforms have been developed to meet the needs of specific users groups or a wide range of groups. National Adaptation Platforms want to reach everyone while others have developed customised services for specific user groups;• Means of delivery - Adaptation services can be include online but also associated capacity building training activities, or face-to-face dialogue• Service provision, knowledge provision, capacity building, translating of science for policy makers.
Increasing number of Adaptation Platforms	<ul style="list-style-type: none">• Increasing number of adaptation platforms associated with differing user requirements. It is useful to have different platforms – local, regional and national (different layers) but it is important to let users know which suit their needs best. Municipal autonomy is important and multiple level co-ordination is an issue;• Many adaptation platforms are targeted at specific user groups and with a narrow focus (e.g. policy makers). There is a requirement to develop a network to connect platforms to allow for a wider focus and with associated guidance, so users know where to look.

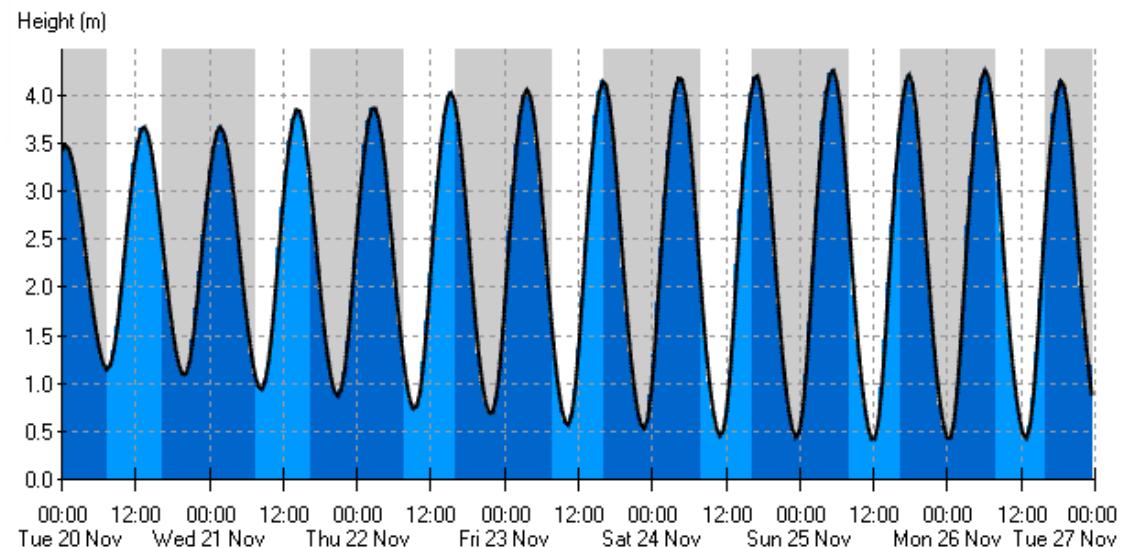
Engagement Between Users And Providers

Challenge	Articulation
Using a Common Language, Datasets and Interoperability	<ul style="list-style-type: none">• There is a requirement to develop a common ontology (CCA and DRR) which helps to organize information and adds value (transparency) for users;• Platforms need to pitched at the correct level for target audiences in accordance with their capacity;• There is a requirement for sectoral expertise when developing services for particular user groups. There is also a need to collaborate with and leverage specific user groups to disseminate information through existing user-focused information channels (e.g. through APIs);• There is a requirement for officially agreed datasets, with agreed standards and that are quality assured;• There is a requirement to work with user groups to understand their requirements in relation to spatial and temporal scale of information required. It is important to work with the user to help them understand available datasets.
Co-designing, Co-developing and Co-producing of CAPs	<ul style="list-style-type: none">• The process of co-design, co-development and co-production is a continuous process that is resource intensive for both providers and users;• Rather than three separate activities, co-design, co-development and co-production presents a continuum of user engagement and consultation;• These processes should aim to generate buy-in;• Citizen science can and should be considered as a part of a broader engagement activities.

Engagement Between Users And Providers

Challenge	Articulation
Maintaining Users	<ul style="list-style-type: none"> It is imperative to keep listening to users following initial consultations; It is important to show what happens to user inputs, show it has meaning for the development of strategies; Expectation management is important – let stakeholders know when and what can be delivered; Maintaining users is a resource intensive activity. It is important to know your audience – keep content attractive Reflecting users experience and activities on the CAP is important, e.g. through case studies; It is important to consider the different requirements of new versus existing users.
Measuring Value / Evaluation	<ul style="list-style-type: none"> Evaluation of CAPs is imperative in order to demonstrate a return on investment and develop a business case for continued and future development; It is difficult to demonstrate added value provided by CAPs, key considerations might include: <ul style="list-style-type: none"> What would have done if the guidance weren't there? What would have it cost us?; The fact people are considering climate change in their decision; Can satisfaction be rated through help desk; Number of references to platforms in adaptation strategies.
Ensuring Continuity, Evolution and Resources	<ul style="list-style-type: none"> To ensure continuity and evolutions of CAPs, it is important to establish a community of use; There is a requirement to understand and address political drivers; There is a need to understand and articulate business models.

Adaptation is a continuous process



Cork Harbour - Tidal Range ~ 4m

Good, bi-lateral communication is essential.....

Natural systems are complex but.....

User Expectation

Look and Feel:

1. Access Points (Tailored to audience);
2. Resources – Multimedia and graphics;
3. Interactive responsive – Discussion Forum, help desk.



Tailored and Responsive:

4. Provide cross sectoral coherence;
5. Information on current impacts and response;
6. Projections with Threshold values;
7. Infrastructure Data;
8. Economic Data;
9. Demographic Data;
10. Land Use Data;
11. The provision of integrated risk mapping;
12. Detailed case studies, not just best practice success stories.

Mapping User Expectation



EXPECTATIONS	GLOBAL [Global Partnership]	GLOBAL [Global Partnership]	JAPAN [Japan]	GLOBAL [Global Partnership]	ASIA-PACIFIC [Asia-Pacific]	AUSTRIA [Austria]	GLOBAL [Global Partnership]	GERMANY [Germany]	EUROPE [European Union]	IRELAND [Ireland]	GLOBAL [Global Partnership]	NETHERLANDS [Netherlands]	CANADA [Canada]
INTEGRATED RISK MAPPING [Ra, Vulnerability, Threats, Cascades]	●	●	●	●	●	●	●	●	●	●	●	●	●
CURRENT INDEXES / RESPONSES [D.A.R. / EMER. RESPONSE]	●	✓	●	●	●	●	●	●	●	●	●	●	●
DETAILED CASE STUDIES NOT JUST BEST PRACTICE BUT "SUCCESS STORIES"	●	●	●	●	●	✓	●	●	●	●	●	●	●
CROSS SECTORAL COORDINATION	●	●	●	●	●	●	●	●	●	●	●	●	●
DATA - INFRASTRUCTURE	●	●	●	●	●	●	●	●	●	●	●	✓	●
DATA - ECONOMIC	●	●	●	●	●	●	●	●	●	●	●	✓	●
DATA - DEMOGRAPHIC	●	●	●	●	●	●	●	●	●	●	●	●	●
DATA - LAND USE	●	●	●	●	●	●	●	●	●	●	●	●	●
PILOT PROJECTS LIVE (RAINFOREST + G.A. / THREATS)	●	●	●	●	●	●	●	●	●	●	●	●	✓
ACCESS POINTS [LINKAGE TO AUDIENCE]	●	●	●	●	●	●	●	●	●	●	●	●	●
MULTIMEDIA / INFOGRAHICS [No Resources]	●	●	●	●	●	●	●	●	●	●	●	●	●
INTERACTIVE / RESPONSIVE [DISC. Forum / Platform]	●	●	●	●	●	●	●	●	●	●	●	●	●

LEGEND:

- Does not meet expectations
- Does somewhat meet expectations
- Meets expectations

2nd International Climate Change Adaptation Platform Meeting - Climate Adaptation Service User Workshop: Expectations and Experience

UCC University College Cork, Ireland
 Environmental Research Institute
 MaREI Energy • Climate • Marine
 EPA Environmental Protection Agency
 Department of Communications, Climate Action & Environment

Mapping User Expectation

EXPECTATION \ PLATFORM	UNDRR	A-PLAT	AP-PLAT	Austria	WeADAPT	Klivo	ClimateADAPT	Climate Ireland	Climate Scan	Knowledge Portal for CCA	Canada
Access Points	●	●	●	●	●	●	●	●	●	●	●
Multimedia	●	●	●	●	●	●	●	●	●	●	●
Interactive responsive	●	●	●	●	●	●	●	●	●	●	●
Cross sectoral coherence	●	●	●	●	●	●	●	●	●	●	●
Current impacts/responses	●	●	●	●	●	●	●	●	●	●	●
Projections (thresholds)	●	●	●	●	●	●	●	●	●	●	●
Data - Infrastructure	●	●	●	●	●	●	●	●	●	●	●
Data - Economic	●	●	●	●	●	●	●	●	●	●	●
Data - Demographic	●	●	●	●	●	●	●	●	●	●	●
Date - Land use	●	●	●	●	●	●	●	●	●	●	●
Integrated risk mapping	●	●	●	●	●	●	●	●	●	●	●
Detailed case studies	●	●	●	●	●	●	●	●	●	●	●

Conclusion

- CAPs adopt a wide range of user engagement approaches from passive to active with the primary aim to ensure that information contained on CAPs is of relevance to the relevant user groups and to increase the reach of the CAPs;
- CAPs have generally adopted a co-design, co-development and co-evaluation approach to ensure platforms are user focussed. Furthermore, continuous engagement with users and other stakeholders is considered imperative to maintain and increase the volume of users of a platform
- The evaluation of adaptation platforms is also seen as essential in order to demonstrate the value added by CAP and to develop a business case for continuity, further development and evolution of CAPs.
- When users requirements are considered, it is essential that CAPs are tailored according to the specific needs of individual user groups. CAPs are providing climate projection information and at a range of spatial scales, however, tailoring of this information is required in order to make this information meaningful and usable.
- Users also expect CAPs to provide all the relevant climate and non-climate information for adaptation planning and highlight the importance of hosting a wide range of datasets to support this. Ideally, users require this information to be available within a risk mapping framework that accounts for and provides information on uncertainties pertaining to these data.



Thank you for your attention



<http://www.climateireland.ie>



j.gault@ucc.ie, b.odwyer@ucc.ie



[@ClimateIreland](https://twitter.com/ClimateIreland)



This event has been organised with the financial support of the European Union's Partnership Instrument. The opinions expressed are the sole responsibility of the speakers and do not necessarily reflect the views of the European Union.