



Met Éireann Strategic Plan 2024-2034

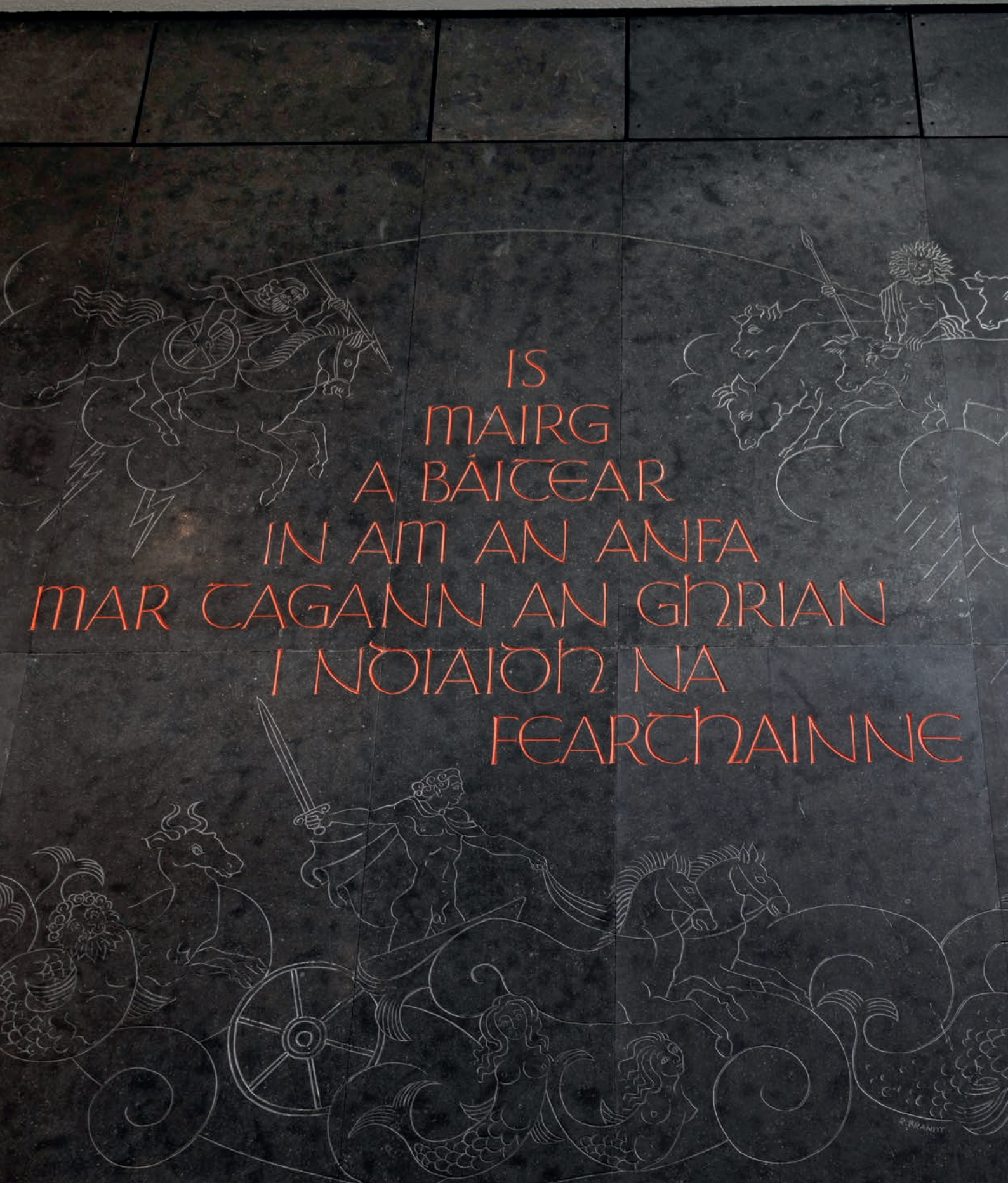
Ready for change - preparing Ireland for changing weather and climate



Helping Irish society to navigate
and respond to weather and climate risks



An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

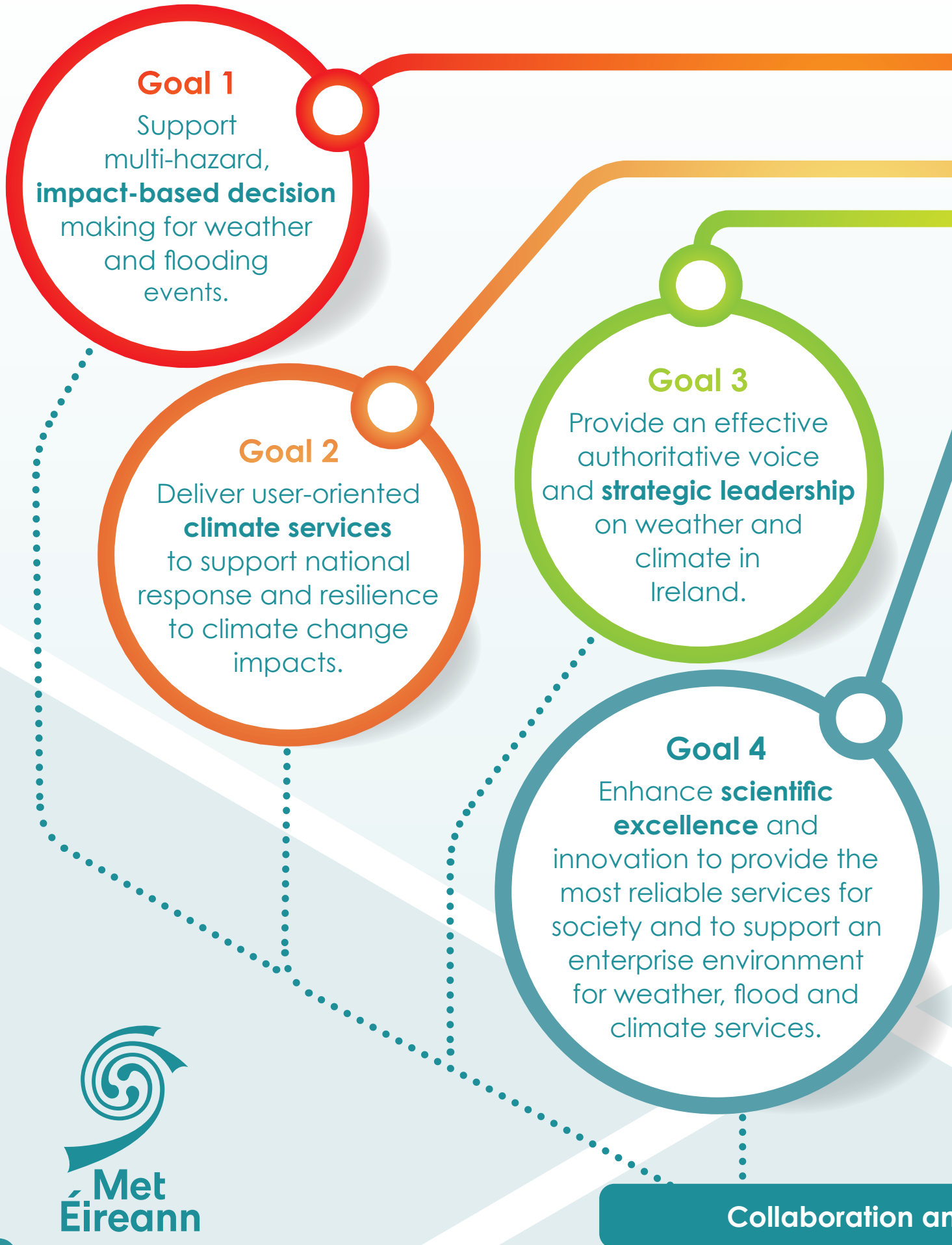


IS
MAIRG
A BÁITEAR
IN AM AN ANFA
MAR TAGANN AN GHRIAN
I NDAIDH NA
FEARTHAINNE

Mural in Met Éireann's Headquarters in Glasnevin, Dublin. Engraving designed by Ruth Brandt. Caption suggested by Dr. P.M. Austin Bourke, former Director of Met Éireann: "Is mairg a báitear in am an anfa mar tagann an ghrian i ndiaidh na fearthainne" is an old Irish proverb which can be translated as follows: "Pity the person who drowns during the storm for the sun always follows the rain."

Contents

Mission	3
Vision	3
Goals	3
Minister's Foreword	4
Director's Introduction	5
Introduction	7
Vision: Ready for Change	9
Goal 1 Support multi-hazard, impact-based decision making for weather and flooding events.	10
Goal 2 Deliver user-oriented climate services to support national response and resilience to climate change impacts.	13
Goal 3 Provide an effective authoritative voice and strategic leadership on weather and climate in Ireland.	15
Goal 4 Enhance scientific excellence and innovation to provide the most reliable services for society and to support an enterprise environment for weather, flood and climate services.	17
Goal 5 Augment our science-based technology and infrastructure to enable the provision of highest quality weather, flood and climate services.	19
Goal 6 Retain and grow a professional, highly skilled, and expert workforce with sustainability at the heart of how we work.	21
The Future	23
Collaboration and Partnerships	24
Implementation	25
Performance Evaluation	26
Glossary of Terms	27
Our International Network	28



Ready for Change

- preparing Ireland for
changing weather
and climate

Goal 5

Augment our science-based **technology and infrastructure** to enable the provision of highest quality weather, flood and climate services.

Goal 6

Retain and grow a professional, highly skilled, and **expert workforce** with sustainability at the heart of how we work.



Mission

Met Éireann, the national meteorological service, monitors, analyses and predicts Ireland's weather, climate and flooding. We do this to provide Irish society and decision-makers with world-class weather, climate, and flood services to protect life and property, and to promote wider societal and economic well-being.



Vision

Ready for Change - preparing Ireland for changing weather and climate.



Goals

- Goal 1** Support multi-hazard, **impact-based decision** making for weather and flooding events.
- Goal 2** Deliver user-oriented **climate services** to support national response and resilience to climate change impacts.
- Goal 3** Provide an effective authoritative voice and **strategic leadership** on weather and climate in Ireland.
- Goal 4** Enhance **scientific excellence** and innovation to provide the most reliable services for society and to support an enterprise environment for weather, flood and climate services.
- Goal 5** Augment our science-based **technology and infrastructure** to enable the provision of highest quality weather, flood and climate services.
- Goal 6** Retain and grow a professional, highly skilled, and **expert workforce** with sustainability at the heart of how we work.

Minister's Foreword

As Minister for Housing, Local Government and Heritage, I am delighted to introduce Met Éireann, Ireland Meteorological Service, Strategy 2024-2034. Met Éireann plays a key role in safeguarding our society, economy, and environment as it continues to deliver vital weather and climate services to Irish Society and support to emergency planning during extreme weather events.

Ireland faces many opportunities and challenges in understanding and responding to weather and climate impacts. To support the Irish Government in addressing these, Met Éireann's Strategy outlines our commitment to enhancing scientific excellence, providing reliable services, and fostering a resilient workforce.

The Strategy aims to support informed decisions by integrating impact-based approaches across hazards in the face of more frequent and extreme weather and flooding events. Met Éireann will continue to develop user-oriented climate services and provide leadership through the National Framework for Climate Services to bolster Ireland's resilience to climate change and support adaptive responses. As Ireland's trusted voice on weather and climate, a strong focus will be placed on continuing to provide scientific leadership, ensuring the highest quality services for Ireland.

Met Éireann's commitment to science-based technology and infrastructure will ensure the continued production of accurate forecasts, flood information and climate projections. A strong focus

will be placed on education in relation to the impacts of weather events and the appropriate actions to take to safeguard life and property.

The skilled and dedicated staff of Met Éireann are the backbone of the organisation and our greatest asset and there will be a continued focus on prioritising talent acquisition and development and fostering a culture of continued learning in a sustainable environment.

In conclusion, this Strategy charts a course toward a weather-resilient Ireland. I look forward to supporting Met Éireann as it embarks on this journey, working together, harnessing science, innovation, and collaboration to safeguard societal well-being.

*Darragh O'Brien, Minister for
Housing, Local Government
and Heritage* ▶





Director's Introduction

Weather is an integral part of our daily existence, woven into the fabric of our lives. We wake to its rhythms, plan our activities around it, and adapt to its changes.

Whether we face storms, floods, fog, icy conditions, heatwaves or benign summer showers, access to high-quality weather information is expected—a norm we often take for granted.

However, the changing climate adds complexity. Increased urbanisation amplifies vulnerability. Ireland, with its unique geography and coastal exposure, stands at the crossroads of weather's impact and changing climate patterns.

For over 88 years, The Irish National Meteorological Service, Met Éireann has provided reliable and best available

public weather information, forecasts, and warnings. But now, as extreme events become more severe and frequent, we must continue to rise to the challenge.

Beyond the immediate, our weather and climate strategy peers into the future, where rising sea levels threaten our coastal communities, where changing weather patterns challenge our farmers, and where the proper functioning of delicate ecosystems lie in the balance.

Over the next decade, our focus will be weather and climate resilience—equipping Ireland to be ready for shifting weather patterns to build robust scientific understanding of our changing weather and climate, safeguard lives and property and best equip our society and economy for such change.



Over the next decade, our focus will be weather and climate resilience - equipping Ireland to be ready for shifting weather patterns to build robust scientific understanding of our changing weather and climate, safeguard lives and property and best equip our society and economy for such change.

This document is a compass—a guide that anticipates service needs over the next decade, points at what is likely to be scientifically and technologically possible and outlines key outcome-oriented goals and objectives as milestones in the journey of supporting Ireland in becoming ready for changing weather and climate and their impacts. It is intended to provide a roadmap for Met Éireann to meet the opportunities and challenges of the coming years. In this way the Ready for Change strategy will serve as a wider, longer-term view to inform and enhance strategies and plans implemented on shorter timeframes through the Department of Housing, Planning and Local Government Statements of Strategy.

Our strategic plan is the result of a collaborative effort by our staff and Met Éireann management, in consultation with the wider Department, stakeholders and partners in the public, private and academic/research communities. It is closely aligned with the Programme for Government, the National Planning Framework, National climate action planning, National Development Plan, National Coastal Flood Forecasting Strategy, the National Adaptation Framework, the National Mitigation Plan, Impact 2030, the Strategy of European National Meteorological and Hydrological services, Sendai Framework for Disaster Risk Reduction 2016-2030, UN Decade of Ocean Science for Sustainable Development

and the WMO (World Meteorological Organisation) 2024-2027 strategic plan. It comprehensively incorporates and closely reflects stakeholder inputs and the latest strategic thinking of all key international meteorological and hydrological organisations.

Our commitment to working closely with our partners and stakeholders remains strong as we develop detailed implementation plans from this strategy. This will enable Met Éireann to become more capable, better equipped, and agile in our service delivery. By doing so, we will provide users with precise, timely, and actionable weather, flood, and climate information, aiding decision-making at all levels and fostering a safer, healthier, and more productive society and economy.





Introduction

As Ireland's National Meteorological Service, a line division of the Department of Housing, Local Government and Heritage, Met Éireann is maintained by the State under the Convention of the World Meteorological Organisation,

It is the public-service scientific organisation responsible to the Irish State for

- the collection and production of high-quality meteorological data;
- the communication of authoritative weather, climate services and flood forecasting to protect life and property, and to promote wider societal and economic wellbeing;
- conducting research into weather, hydrology, oceanography, and climate, to improve customer services and inform decision-making, as part of the broader research community;
- representing Ireland to the WMO (World Meteorological Organisation), ECMWF (European Centre for Medium-

Range Weather Forecasts), EUMETSAT (European Organisation for the Exploitation of Meteorological Satellite, Euro GOOS (European Global Ocean Observing System), EFAS (European Flood Awareness System), EUMETNET (European National Meteorological Services Network)

Met Éireann will continue to ensure that the public, key policy, and decision makers have the highest quality information, tools and knowledge needed to achieve best outcomes in the context of weather, climate, and flooding risks. We must do this to support citizen safety and to help secure our economy, energy, ecological network, infrastructure, and natural environment.

Met Éireann continues to embody a commitment to public service by delivering authoritative weather, flood forecasting and climate information that contributes to the nation's well-being and economic development. This strategy builds on the success already achieved by Met Éireann



as we work to support Ireland's weather and climate preparedness. In developing our strategic goals, we consulted all the stakeholders who depend on our scientific leadership and expertise in the fields of weather, climate, oceanography, and hydrology.

Earth's warming climate is having a strong influence on our weather patterns and natural ecosystems with an increasing number of high impact and severe weather events. Met Éireann sees the benefits that can be provided through collaboration and effective partnerships. We will continue to provide strategic leadership in the development of national capacity in the observation, prediction and knowledge of weather, climate, and flooding. As the trusted provider of weather, flood, and climate services we will continue to develop national weather, flood forecasting and climate capacity through the coordination of both National and European scientific programmes. We will translate scientific knowledge into impactful public services to support decision making during high impact weather and flood events and to prepare for a changing climate.

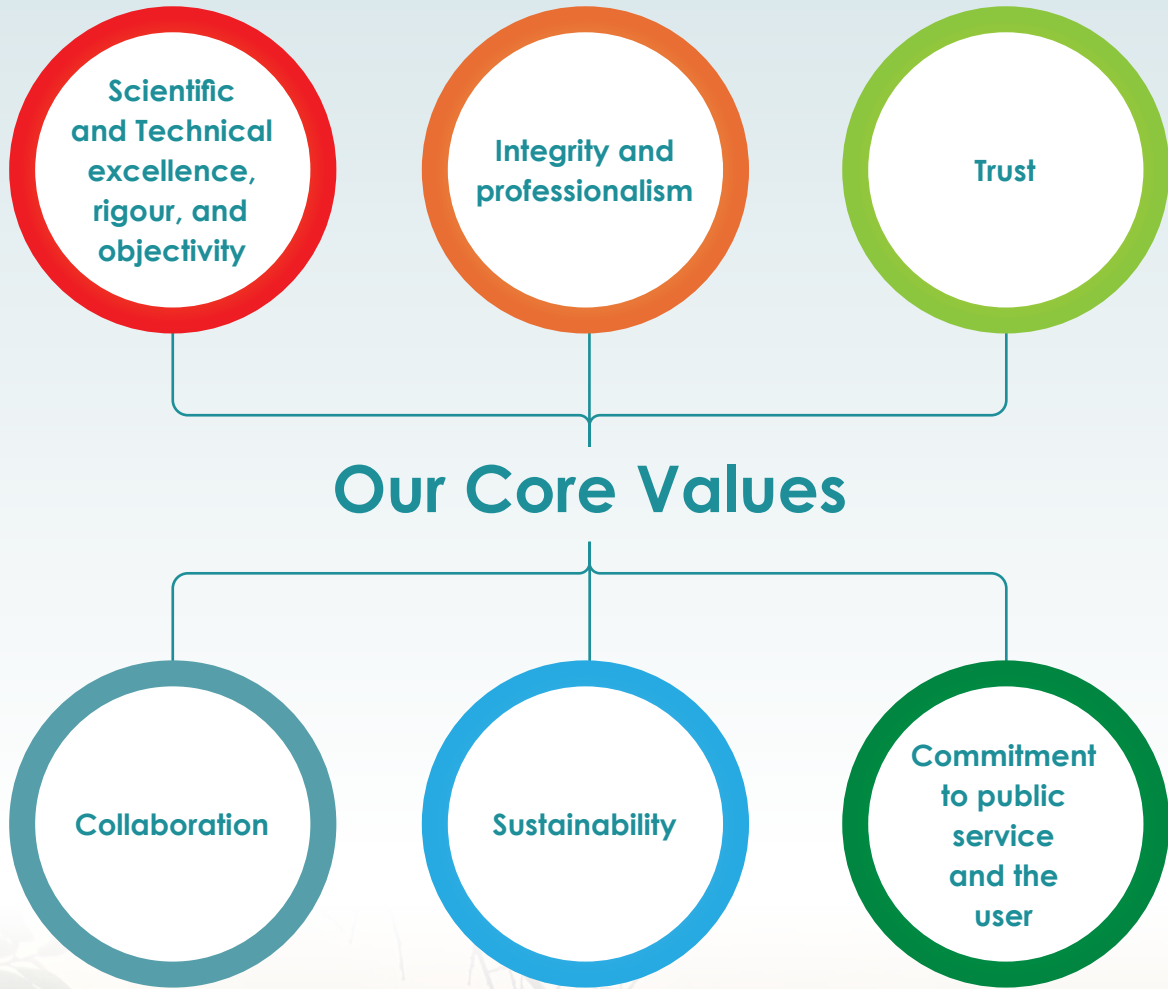
Excellent services can be further enhanced by leveraging emerging developments in the science of meteorology, hydrology, oceanography, technology, and

data services. Machine Learning (ML) and Artificial Intelligence (AI) provide opportunities to create state of the art tools and provide user-centred services. We will exploit advances in Machine Learning and AI, particularly through the new collaborations being established at European level and the new Met Éireann Professorship of Data Science for Weather, Hydrology, Oceanography and Climate to further improve the quality and delivery of our services.

We will optimise the reach, delivery and communication of relevant and actionable weather, climate, and flood information. We aim to ensure the full understanding of the weather, climate, and flood information we provide through outreach and engagement programmes that connect our services to our users. We will exploit the dialogue potential of all media channels including social media to grow the public science understanding.

This strategy is necessarily ambitious, and is underpinned by our greatest resource, our staff, to achieve our goals. We will do this by building on our culture of scientific excellence and technical expertise and ensuring that Met Éireann is recognised as a sustainable, highly effective, impactful, and attractive workplace for all our employees.





Vision: Ready for Change

The challenge – helping to prepare Ireland for changing weather and climate

For nearly nine decades, Met Éireann has been an authoritative scientific voice on weather and climate in Ireland. As a science and research-based organisation, it provides trusted information to the public, government, and key sectors such as aviation and agriculture. With its unique round-the-clock forecasting and monitoring operations, Met Éireann stands as an ever-present sentinel, delivering routine daily forecasts and timely warnings of impending severe weather.

Today, National Meteorological Services around the world, including Met Éireann, face several challenges in the provision of services to the public. Met Éireann's vision and the strategy to deliver this vision have been developed in response to these challenges, emphasising the need to be ready for change, changes in weather and climate and in the expertise and tools needed to provide the best possible service to the Irish public.

Technological disruption and scenarios associated with the possibilities of reaching critical climate thresholds present significant uncertainties for the future. Met Éireann must therefore stay agile and innovative in staying abreast of and contributing to breakthroughs in meteorological and climate science to effectively respond to such evolving scenarios.

The challenges Met Éireann faces over the coming decade will include the growing need to effectively communicate the impacts of **climate change** and how shifting weather patterns affect daily life, agriculture, infrastructure, and natural ecosystems. Being ready for change means improving climate prediction and flood forecasting, adopting best practice in and developing the use of AI and Machine Learning, enhancing weather model accuracy, and accounting for uncertainties to predict **future weather** patterns, extreme events, and long-term climate changes.

Climate Change

Climate change refers to large-scale, long-term changes in the earth's weather patterns or average temperature. An overwhelming scientific consensus maintains that current climate change is due primarily to the human use of fossil fuels, which releases carbon dioxide and other greenhouse gases into the air.

Future Weather

Weather is the day to day variation in atmospheric conditions. Climate is the average of weather, where extreme events have a theoretical boundary.

In a changed climate weather patterns and limits of extreme events all change. Future weather refers to the weather conditions and extremes which will occur in a changed climate.





As an island nation, rising sea levels threaten coastal communities, infrastructure, and ecosystems. Met Éireann needs to develop products and services to help society and decision-makers address these challenges. Being ready for change involves preparing our meteorological and hydro-meteorological infrastructure and products to better predict extremes including stronger storms, higher tides, bigger waves, more severe coastal flooding, coastal erosion, larger storm surges, and saltwater intrusion.

Enhancing preparedness for extreme weather events such as storms, floods, heatwaves, and other hazards through early warning systems will be essential. These systems will inform emergency response planning and public education, ensuring that Ireland is ready for the increased occurrence of high impact weather events.

Met Éireann's vision is to be *Ready for change - Preparing Ireland for Changing Weather and Climate* by helping Irish society to navigate and respond to weather and climate risks.

Weather-related Hazards

Events that occur naturally as a consequence of weather that may cause loss of life, injury or illness, social and economic disruption or environmental degradation. Examples include floods and coastal storm surges, drought, heatwaves and cold spells, landslides, wildfires, epidemics and the transport and dispersal of toxic substances or volcanic eruption material.

Goal
1

Support multi-hazard, impact-based decision making for weather and flooding events.



As climate change progresses, instances of high impact and extreme weather events will become more frequent resulting in challenging weather and flooding scenarios that can affect all sectors of society and our economy. It is therefore vital that societal needs are clearly understood and inform the development of weather and flood forecasting services.

Met Éireann will continue to improve the accuracy and reliability of the information that it provides to all stakeholders including the State, its citizens, industry, and academia through national and international collaborations. Developing new partnerships between Met Éireann and end users will help identify the expected impact of weather scenarios at a national, regional, and local level.

We will continue to develop multi-hazard, **impact-based** weather warning services and provide integrated weather and flood advisory information to assist key multi-sectoral decision makers, including those with emergency management responsibilities.

Impact-based forecast

A paradigm shift from a forecast of what the weather will be to what the weather will do or cause to happen. This alignment of forecast information with hazard vulnerability will make it easier to make decisions or take actions to mitigate the effects of high impact weather events.





Objective 1.1

Lead a partnership approach in growing impact-based early warning services.

What we will do:

- Strengthen existing stakeholder networks and develop new networks to share learning, information and knowledge focused on strengthening the use and effectiveness of impact-based services.
- Work with multi-agency partnerships at national and international level to share expertise and inform development of standardised, exemplary impact-based practices.
- Use social and behavioural science to understand how the users interpret and reacts to forecasts/warnings/advisories to shape the development of clear, consistent impact-based services and messaging.

Objective 1.2

Engage in focused research to develop and improve multi-hazard, impact-based weather, and flooding services.

What we will do:

- Enhance understanding of the regional and local impacts of weather and flooding hazards and vulnerabilities associated with extreme weather events.
- Exploit the potential of Machine Learning and Artificial Intelligence technologies to advance user-oriented impact-based meteorological and hydrological service development.
- Continue to improve the capability of weather and flood prediction models to provide high-quality localised information and support in advance of and during high impact weather events.

Objective 1.3

Deliver a high-quality national flood forecasting service.

What we will do:

- Enhance capacity to disseminate high-quality flood forecasts, guidance, and services to key users, to support the National Flood Forecasting and Warnings Service (NFFWS).
- Build inter-agency partnerships to further integrate and expand the national hydrometric monitoring capability maintained by partner bodies in support of national flood forecasting requirements.
- Continue to research and develop hydrological and oceanographic models tuned to specific local needs and decision-making requirements.
- Communicate flood information through multiple channels which deliver clear, standardised, and accessible flood information for Ireland.
- Working in partnership with hydrology and oceanography national and international organisations to share expertise and information for the development of flood forecasting in Ireland. Make impact-based forecasting standard practice in flood products and services.
- Exploit advances in AI and Machine Learning to improve the accuracy of our flood forecasts



Objective 1.4

Provide high quality, reliable relevant multi hazard impact-based weather forecasting services.

What we will do:

- Introduce more localised and personalised products and services.
- Disseminate weather products across multiple platforms and media formats.
- Make impact-based forecasting standard practice in weather products and services.
- Target predictive computational and science developments for high accuracy and localised forecast production.
- Exploit advances in AI and Machine Learning to improve the accuracy of our weather forecasts and warnings and to tailor these to user's needs.
- Continually monitor, evaluate, and review service performance to ensure quality and promote service development.
- Communicate weather forecasts through multiple channels which deliver clear, standardised, and accessible weather information for Ireland.
- Provide expert information on the status of Ireland's weather on an ongoing basis.

Outcomes

Met Éireann's goal to enhance support for impact-based decision making will lead to better societal preparedness and improved capacity for civil protection in the face of natural hazards. The research and development of multi-hazard, impact-based weather and flood forecasting services will enable stakeholders to make informed decisions when extreme weather is likely to occur. The development of these services will help to protect life and property. The services will also be localised and customised to meet the needs of the stakeholders. There will be better management of weather and flood related risks leading to the prevention of injuries and deaths; lower costs associated with damage to property and State infrastructure, and faster societal recovery from high impact events



Goal 2

Deliver user-oriented climate services to support national response and resilience to climate change impacts.



Met Éireann will enhance our climate services offerings to meet the rising demand for authoritative and standardised Irish climate information. By continuing to advance our partnerships with the national and international climate research/science community, we will develop verified information and up to date knowledge of the state of Ireland's climate.

We will partner with our climate service users to develop products and services using the latest climate information to support national climate resilience policy and planning, and to enable informed decision making under future uncertainty.

Objective 2.1

Produce state of the art climate information services for weather and climate in support of climate research, planning and action.

What we will do:

- Provide expert information on the status of Ireland's climate and publish definitive analysis of Ireland's climate on an ongoing basis.
- Deliver future weather and climate information using the latest developments in meteorological science to provide a range of seamless, local scale services including monthly and seasonal predictions, as well as longer-term climate projections for future weather and climate information.
- Provide demand driven user-oriented climate services, informing decision making through provision of sector-specific services, co-developed through collaboration to support climate policy, planning, risk management and action.
- Engage in focused research to provide the most up to date and relevant information to support climate policy, decision making and action.

Climate Services

The production and provision of high quality climate data and products to decision makers, supporting society at large, and facilitating the development and evaluation of adaptation and mitigation strategies.

Climate

Climate is the average of weather conditions over a long period of time, usually taken as 30 years. Long term averages of meteorological parameters such as rainfall, temperature and sunshine are sometimes referred to as 'normals'.



Objective 2.2

Deliver accessible and actionable climate information services across all sectors.

What we will do:

- Communicate climate information through multiple channels which deliver clear, standardised, and accessible past and future climate information for Ireland.
- Promote and support bespoke climate services through engagement with decision makers and providing them with expertise and tailored services to ensure that socioeconomic outcomes are enhanced by relevant climate information.
- Support the climate adaptation community by providing the latest climate projections for Ireland in accessible formats to help support Ireland's climate adaptation planning under future uncertainty and changing compound climate events.

Objective 2.3

Through collaboration with other expert organisations, coordinate the provision and enhancement of standardised national climate services.

What we will do:

- Coordinate the provision of national climate services through partnerships with national and international climate service and data providers, we will coordinate the provision of standardised climate services tailored for Ireland.
- Translate climate data into practical and actionable information for users and stakeholders, utilising the National Framework for Climate Services.

Outcomes

The availability and use of high quality, local and regional, climate information will lead to an improved understanding of how the Irish climate is changing, how it is likely to change into the future and the associated impacts of this. This knowledge will facilitate informed climate planning and action, leading to enhanced decision making in support of climate resilience.





Goal
3

Provide an effective authoritative voice and strategic leadership on weather and climate in Ireland.



In order to ensure preparedness for the impacts of extreme weather events in a changing climate, Met Éireann will maintain our authoritative voice on weather, flood forecasting and climate in Ireland, influence perspectives and grow our relevance and our trust with the public through the ongoing provision of high-quality support through our weather, flood and climate services for Ireland. We will achieve this through the ongoing development of our engagement with society, improving communication, engagement and reach with citizens.

The information and services we provide will be produced by our expert teams and be based on the most up to date scientific evidence and data. We will foster excellent outreach and engagement that connects our services to all our users, leveraging citizen-science, taking a whole-of-media approach, and exploiting the innovation potential of social media to enhance public understanding and broaden our reach.

Met Éireann will provide strategic leadership in the areas of meteorology, climate, hydrology, and oceanography to ensure the State's preparedness and capacity to adapt to, and mitigate the effects of, high impact and extreme weather events and of our changing climate.





Objective 3.1

Enhanced engagement with the scientific and technical research community and citizen scientists.

What we will do:

- Issue focused research calls to foster novel research and growth of national scientific and technical research capacity by addressing challenges of strategic importance relevant to extreme weather, hydrology, and the climate crisis.
- Target the exchange of knowledge and research through partnerships and secondments with academia, industry, and national and international organisations.
- Conduct engagement campaigns with communities and citizen scientists to raise awareness and understanding of weather, hydrology, oceanography and climate science and foster participation in monitoring and analysis of Ireland's weather and climate.

Objective 3.2

Effectively explain and communicate weather, flood forecasts and climate risk and uncertainty.

- Ensure the public receive the appropriate weather risk and uncertainty message and fully understand how to interpret it by promoting societal weather and climate preparedness through targeted user engagement workshops.
- Maintain and develop Met Éireann's strong presence across all media to communicate effectively to all demographics across all communication channels, modes, and platforms.
- Conduct focused social and behavioural research and analysis of user response to weather and climate events and information.
- Provide expert information on weather, climate, and floods for Ireland on an ongoing basis.

Objective 3.3

Enhance outreach, educational and promotion activities to support science-based understanding and services for weather, climate, and flooding in Ireland

What we will do:

- Provide enhanced educational resources to raise awareness and deepen understanding by the State, public and industry about the services and information provided by Met Éireann to support most effective utilisation of weather and climate data, leading to better outcomes in managing weather and climate impacts.
- Continue to increase access, relevance, reach and impact of information and services provided by Met Éireann across multiple platforms and channels.
- Foster a culture of weather, hydrology, and climate awareness through a broad range of direct public engagement, through creative arts, youth focused initiatives and outreach at national events, schools, colleges, and community level.
- Engage with the public and citizen scientists to leverage the potential of personal devices (e.g. phones) as a means to advance service design and delivery.

Objective 3.4

Enhance the Met Éireann service delivery model to anticipate and respond to the needs of Society in changing weather and climate.

What we will do:

- Build our service delivery around performance verification and the needs, feedback, and requirements of the user to provide the best possible outcome for society.
- Evaluate and monitor service outcomes and performance based on our commitment to high-quality services, conduct continual measurement, assessment, and improvement of performance.

Outcomes

Met Éireann will have verifiably maintained our trusted voice as the preferred provider of weather and flood forecasts along with climate services in Ireland across all age groups, and via a variety of information platforms. A comprehensive Communications Strategy to foster consistent, effective, and responsible communication across Met Éireann will be implemented and, we will have enhanced relationships with stakeholders. There will be evidence of increased awareness and understanding of the role and value of Met Éireann among key stakeholders and the public. We will have strengthened capacity and skills of staff to communicate effectively and efficiently with different audiences and media platforms.

Goal
4

Enhance scientific excellence and innovation to provide the most reliable services for society and to support an enterprise environment for weather, flooding, and climate services.



Met Éireann will deepen its scientific excellence by strengthening and broadening our research and innovation culture and exploiting the opportunities presented by AI/ML and other technological advances.

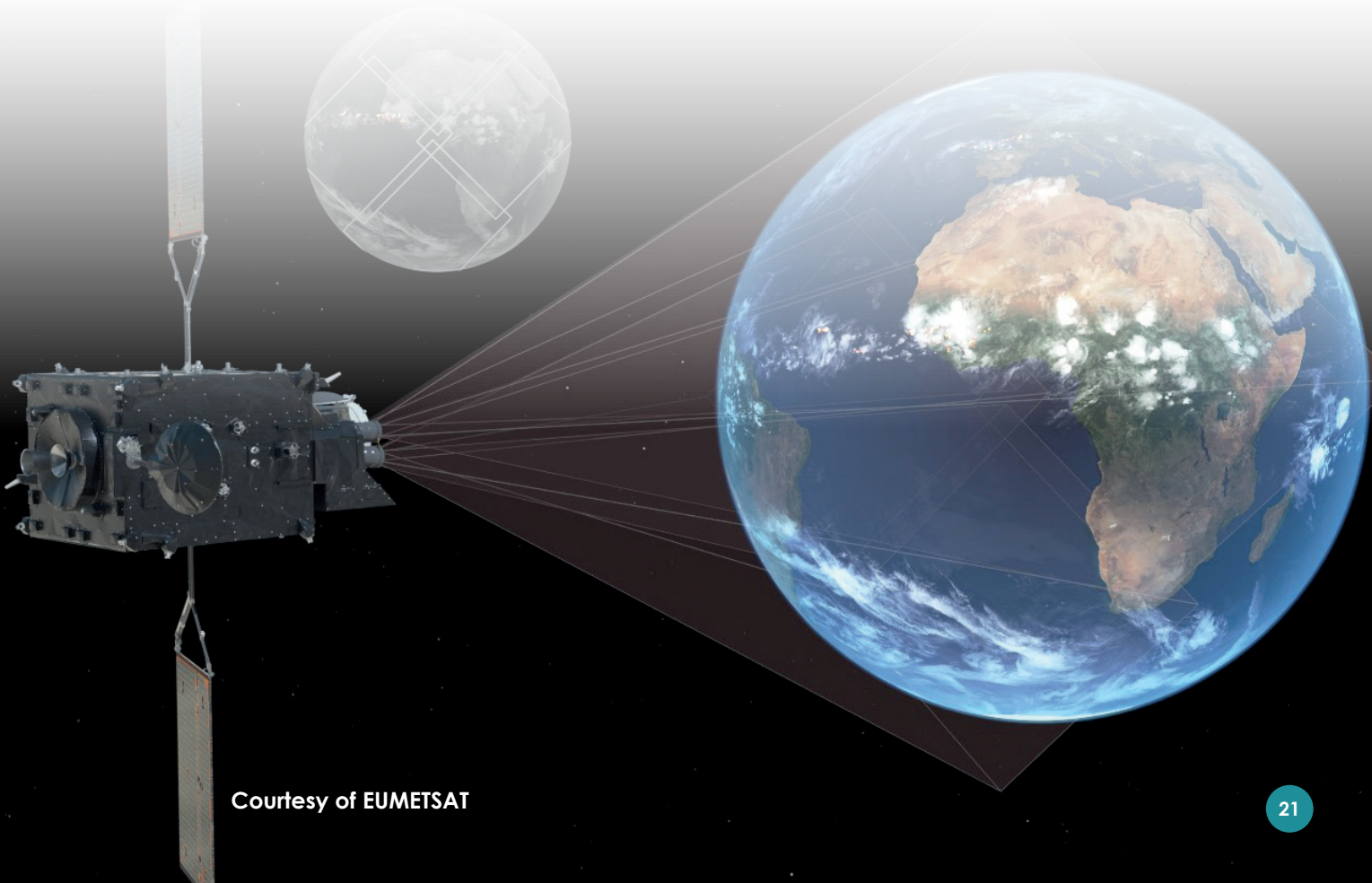
We will broaden our Research Programme, built on collaboration and cooperation with external entities. The continuous advances we make in our scientific programme will provide greater capacity for the development of more innovative, reliable, and accurate services.

Objective 4.1

Strengthen our scientific capacity through research partnerships and networks at both the national and international level.

What we will do:

- Establish a research partnership network and continue to foster national scientific and technical collaboration through our Weather Hydrology, Oceanography and Climate Research Programme.
- Expanding our collaboration with other National Meteorological and Hydrological Services and international organisations with common interests on focused research and development to build new predictive systems.



Courtesy of EUMETSAT



Objective 4.2

Strengthen Ireland's Earth System modelling and predictive capabilities.

What we will do:

- Enhance weather, flooding and climate model prediction capacity and ensure best available forecasts and simulations are available on all timescales.
- Expand our focused research on improving understanding of the North Atlantic climate processes and dynamics influencing the changing Irish climate.
- Employ robust evaluation and verification methods to provide evidence to demonstrate the return on our investments in science and services.

Objective 4.3

Provide optimum forecast support prior to and during high-impact weather events with the development of enhanced user-oriented tools and information.

What we will do:

- Exploit the latest data, techniques, and research to develop new user-oriented data services to underpin forecasts and warnings with upgraded and novel services based on the latest developments on satellite and weather radar data.
- Provide high quality nowcasting services through the latest data fusion techniques and tools to enhance forecasting skills and give expert advice during high-impact weather events.

Objective 4.4:

Develop AI and ML capabilities in research, operations, and services.

What we will do:

- Implement a 'AI/ML First' approach, across the full value-chain, for the development and delivery of high-quality information and data on weather, climate, and flooding services.
- Leverage the Met Éireann AI Professorship and develop research programmes to address current and emerging scientific and technical opportunities.
- Improve weather and climate prediction through the development of partnerships with technology companies and strengthen collaboration with international organisations at the forefront of AI/ML innovations and research to enhance our forecasting capabilities.

Artificial Intelligence (AI)

Artificial Intelligence refers to the development of computer systems that can perform tasks usually requiring human intelligence. These tasks include problem-solving, understanding natural language and recognising patterns.

Machine Learning (ML)

Machine Learning is a subset of AI that focuses specifically on the development of algorithms that allow computers to learn and improve from experience. Instead of being explicitly programmed to perform a task, ML algorithms use data to identify patterns and make decisions. In simple terms, AI is the broader concept of machines being able to carry out tasks in a "smart" way, while ML is a specific approach to achieving AI by letting machines learn from data.

Engage with the Irish Enterprise ecosystem to support an active and vibrant Irish Meteorological business environment.

What we will do:

- Enable optimised access to open weather, hydrological and climate data and contribute to its optimum use of open data.
- Support vibrant scientific meteorological, hydrological and climate enterprise community through public private partnership, open engagement, and collaboration with industry in areas of mutual interest.
- Put in place effective national governance and systems to manage meteorological and hydrological datasets, warning protocols, hazard protocols and developing areas of responsibility at a national level

Open Data

The provision of data and products for free use and reuse under an open license.

Outcomes

Improved scientific excellence achieved through focused research and development will enable enhanced support for decision making. This will lead to better societal preparedness and improved national capacity. With the implementation of advanced AI/ML based applications, high quality products and services will be made available across the full value chain.

Improved weather, flooding and climate services achieved through increased HPC capacity, improved observational data, and resilient, robust, and agile ICT (Information Communication Technology) services. Meteorological, Hydrological and climate research generating knowledge, new products, and new forms of industrial cooperation. Meteorology as a driving force for innovation contributing to competitiveness, growth, and job creation



Goal
5

Augment our science-based technology and infrastructure to enable the provision of highest quality weather, flood, and climate services.



In order to provide high-quality weather, flooding and climate services Met Éireann must ensure a robust, flexible, and resilient infrastructure. We will exploit new opportunities including making use of disruptive technologies to ensure that Ireland has a fit for purpose meteorological and hydrological infrastructure supported by secure and resilient ICT systems.

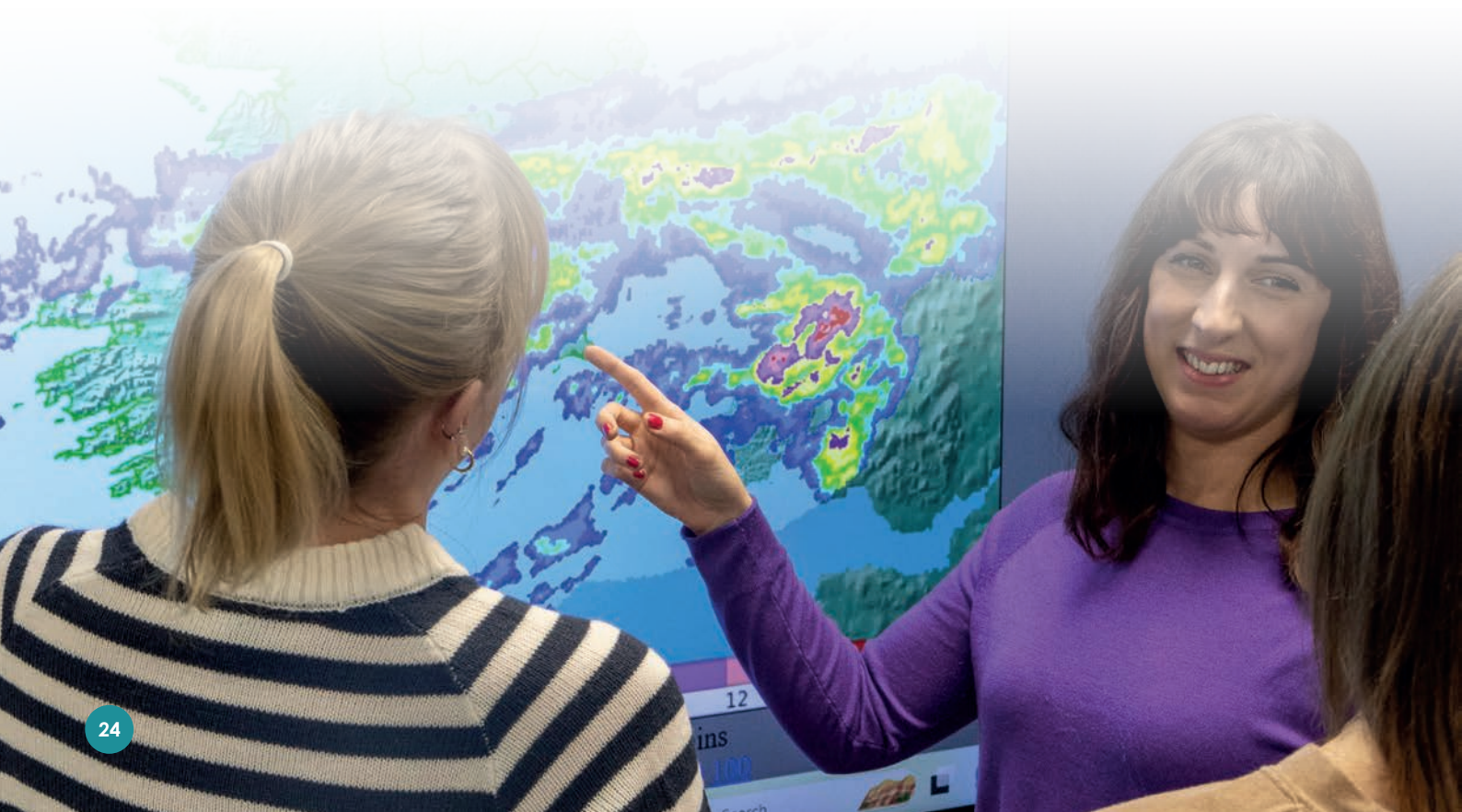
Met Éireann needs to maintain a capacity to anticipate and react to constantly evolving requirements. As technologies advance, observing networks will be upgraded and developed. ICT services will be effectively organised to meet increasing demands, among them the availability of observational data and the delivery of Open Data. Met Éireann must provide for the availability of sufficient high-performance computing (HPC) capacity to drive modelling and prediction improvements. An agile and flexible approach to systems development will underpin the delivery of services which meet society's needs

Objective 5.1

Strengthen the performance, adaptability, and cybersecurity of computing systems.

What we will do:

- Implement a cloud-first approach maximising cloud technology to optimise our ICT systems speed, resilience, security, and agility.
- Improve access to sustainable state-of-the-art computing architectures and high-performance computing to achieve modelling and prediction improvements.
- Establish a Central application development unit, hire a senior systems architect and assign process owners from the relevant divisions for all critical IT (Information Technology) application systems in their area and establish a cross divisional ICT review board.





Objective 5.2

Develop and expand Ireland's National Meteorological, Climatological, Hydrological and Ocean monitoring infrastructure.

What we will do:

- Expand the weather radar network, operational networks, and remote sensing technology in support of weather, climate and flood prediction and monitoring.
- Enhance observations coverage through quality assessment and use of third-party data, citizen science, IOT (Internet of Things) devices.
- Enhance the use of observations for nowcasting and impact-based forecasting and exploit Machine Learning & Artificial Intelligence to enhance observations processing.

Objective 5.3

Enhance the accessibility, useability and quality of data and products.

What we will do:

- Engage in a programme of continuous renewal and modernisation of our systems, facilities, and platforms.
- Maximise and curate the release of public sector data in free and open formats, providing authoritative datasets for meteorology and climate to our stakeholders.



Objective 5.4

Enhance weather, climate, hydrometric and coastal monitoring partnerships, and networks at both national and international levels.

What we will do:

- Support the enhancement of national monitoring networks through national partnerships. (e.g. GCOS-Ireland, GOOS, GAW, ICOS etc)
- Provide leadership at national and global level for international programmes to enhance and support monitoring programmes in a changing climate.
- Work in partnership with national coastal and hydrological bodies to enhance and expand existing networks for hydrological and coastal modelling
- Provide leadership and guidance for hydrological observations in Ireland

Outcomes

There will be improved weather, flooding and climate services achieved through enhanced observational data. Stakeholders needs will be met by improving observational networks, for example the enhancement of the national weather radar network A state-of-the-art computing architecture and HPC will be in place utilising cloud first technology. A robust citizen science engagement programme will be implemented.



Goal
6

Retain and grow a professional, highly skilled, and expert workforce with sustainability at the heart of how we work.



The pace of scientific and technological change and the range of priorities facing Met Éireann requires the support of an expert, professional and motivated workforce. We will continue to strengthen our internal capacity by developing our staff to ensure that they are supported with focused continuous professional development, training, and technology.

Our workspaces will focus on sustainability, and we will exploit the opportunities provided by technology to ensure an attractive and high performing working environment is available to all. This will enable Met Éireann to become more capable, resilient, and agile in the delivery of our services.

Objective 6.1

Attract and retain qualified, motivated, and diverse employees.

What we will do

- Manage an efficient and effective recruitment process to attract and hire the best talent for Met Éireann.
- Promote diversity, equality and inclusion, foster creativity and innovation and incorporate multiple perspectives into the management and decision-making process.
- Participate in third level institution roadshows to showcase Met Éireann as an attractive STEM employer.
- Enhance employee engagement and satisfaction through recognition, and feedback initiatives.
- Engage with the third level sector to explore potential for weather and climate educational and employment opportunities in Ireland.
- Enhance employee well-being by fostering a holistic approach that addresses physical and mental health.
- Support employees to engage in volunteer/charity initiatives.





Objective 6.2

Maintain high standards of service and performance in Met Éireann.

What we will do

- Embed a learning and development culture to maximise the personal and professional development opportunities for our staff.
- Provide continuous professional development opportunities to enable staff to grow and perform to the best of their abilities leading to high rates of job satisfaction and continued exceptional individual and organisational performance.
- Optimise our organisational structures and corporate support processes to maximise agile delivery of weather, climate, and flooding services.
- Implement a quality management system across Met Éireann which will support effective organisational change.
- Facilitate opportunities for staff to engage in research activities and exchange programmes.

Objective 6.3

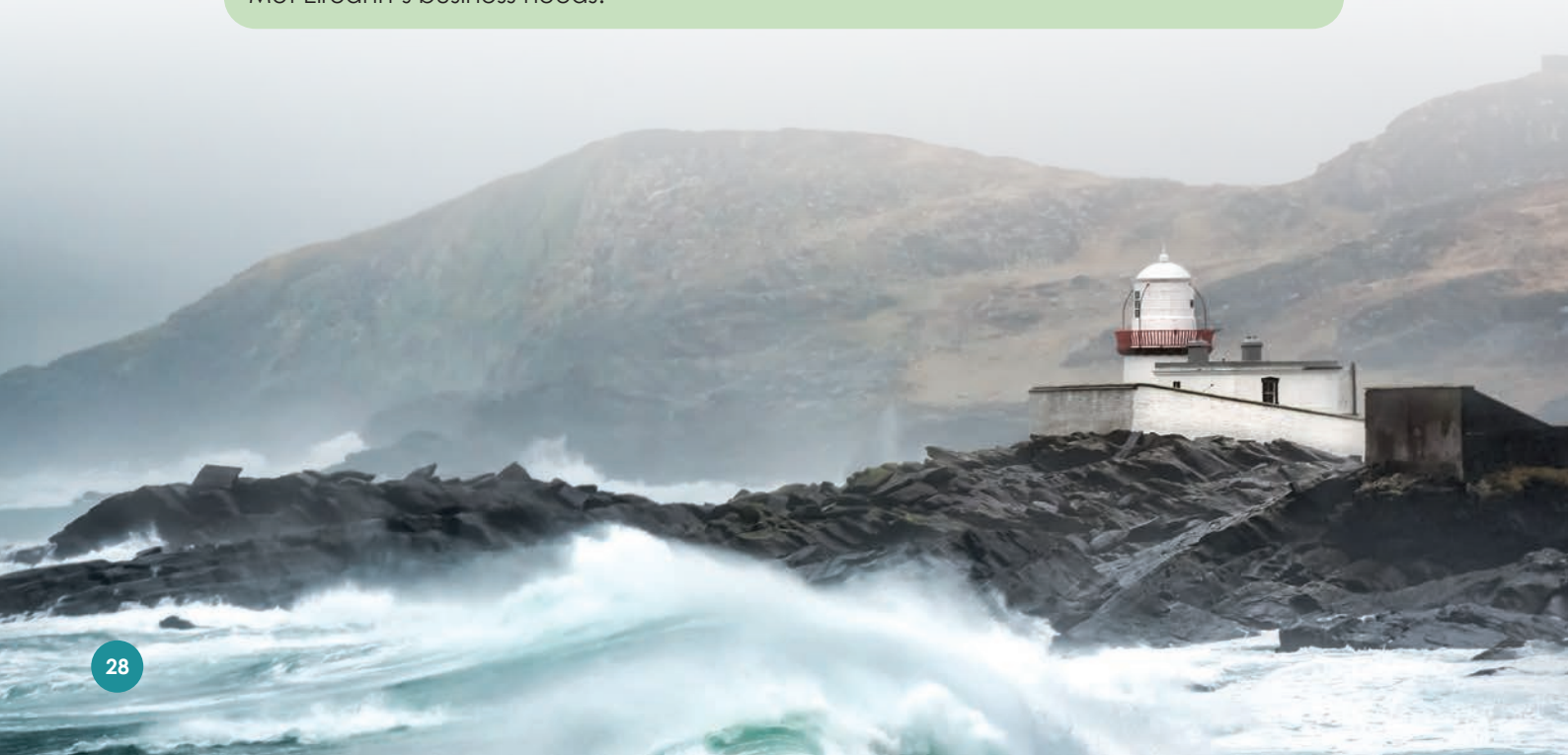
Provide suitable and accessible facilities for employees.

What we will do

- Operate a high-performance multi-site working environment.
- Provide staff with the necessary facilities that will ensure long-term success and sustainability.
- Promote well-being in the workplace and prioritise staff physical and mental wellness
- Use a net zero carbon approach to work towards carbon neutrality.

Outcomes

Met Éireann will be recognised as an attractive workplace with an energetic, highly skilled professional workforce and high levels of staff retention. There will be a Continuous Professional Development Programme in place. Our weather, flooding and climate services and scientific research activities will be recognised as being conducted to a high quality both nationally and internationally. Our facilities will support staff and meet Met Éireann's business needs.



The Future

National Meteorological Services are evolving beyond their traditional roles of weather forecasting and climate monitoring. They now play a crucial role in providing climate services, disaster risk reduction, flood forecasting and environmental protection. As Ireland's climate change impacts become more pronounced, Met Éireann will need to enhance our capabilities in climate modelling, climate services and multi-hazard early warning systems.

The National Framework for Climate Services will facilitate collaboration between providers and users. Advances in technologies, such as high-performance computing, AI and earth Observation satellites will be utilised to improve numerical weather prediction and flood forecasting

models leading to more accurate forecasts, helping society prepare for extreme weather events. Our real-time data sharing will enhance data dissemination.

The Met Éireann Professorship will lead a programme in AI and ML to produce next generation applications to weather and climate services.

In summary, the future of Met Éireann involves embracing new roles, leveraging technology, providing multi-hazard impact-based weather and flood forecasting, providing climate services, delivering flood forecasting services, promoting resilience, and fostering national and international collaboration.



Collaboration and Partnerships

Over the next ten years, key partnerships will enable Met Éireann to fulfil its duties and ambitions, both at national and at international levels. Resource mobilisation through third party co-funded projects will play an increasingly significant role when tackling these and other new challenges.

These key partners will span a diverse range:

- Researchers and academia
 - to develop greater knowledge and understanding in the underlying science;
- National and international agencies
 - to keep up with scientific best practice and improve our capacity as an organisation;
- Civil protection, public health, environmental protection, and media
 - to ensure that the benefits of scientific knowledge are fully realised for civil society;
- Weather-dependent economic sectors such as aviation, fisheries, agriculture, finance, and construction
 - to contribute positively to sustainable national economic development.
- Industry and enterprise
 - to foster the introduction of innovative technologies and services for commercial exploitation.



Implementation

Successful delivery of our ambition will require the continuing active involvement and engagement of the everyone in Met Éireann. This Strategic plan provides a vision for the future direction for our organisation.

Over the next ten years, each part of Met Éireann will be required to produce a succession of 3-year implementation plans with associated targets aligned to this Strategy. The outputs of each of these operational plans will be reviewed on an annual basis by Met Éireann's Management Committee.

This is a living document; we will remain sensitive to changes in our operating environment throughout the period of the Strategic plan, responding to new opportunities and adapting as required.

Met Éireann's Director will oversee an annual review of the Strategic Plan, and formally report on progress to the Management Board of the Department of Housing, Planning and Local Government





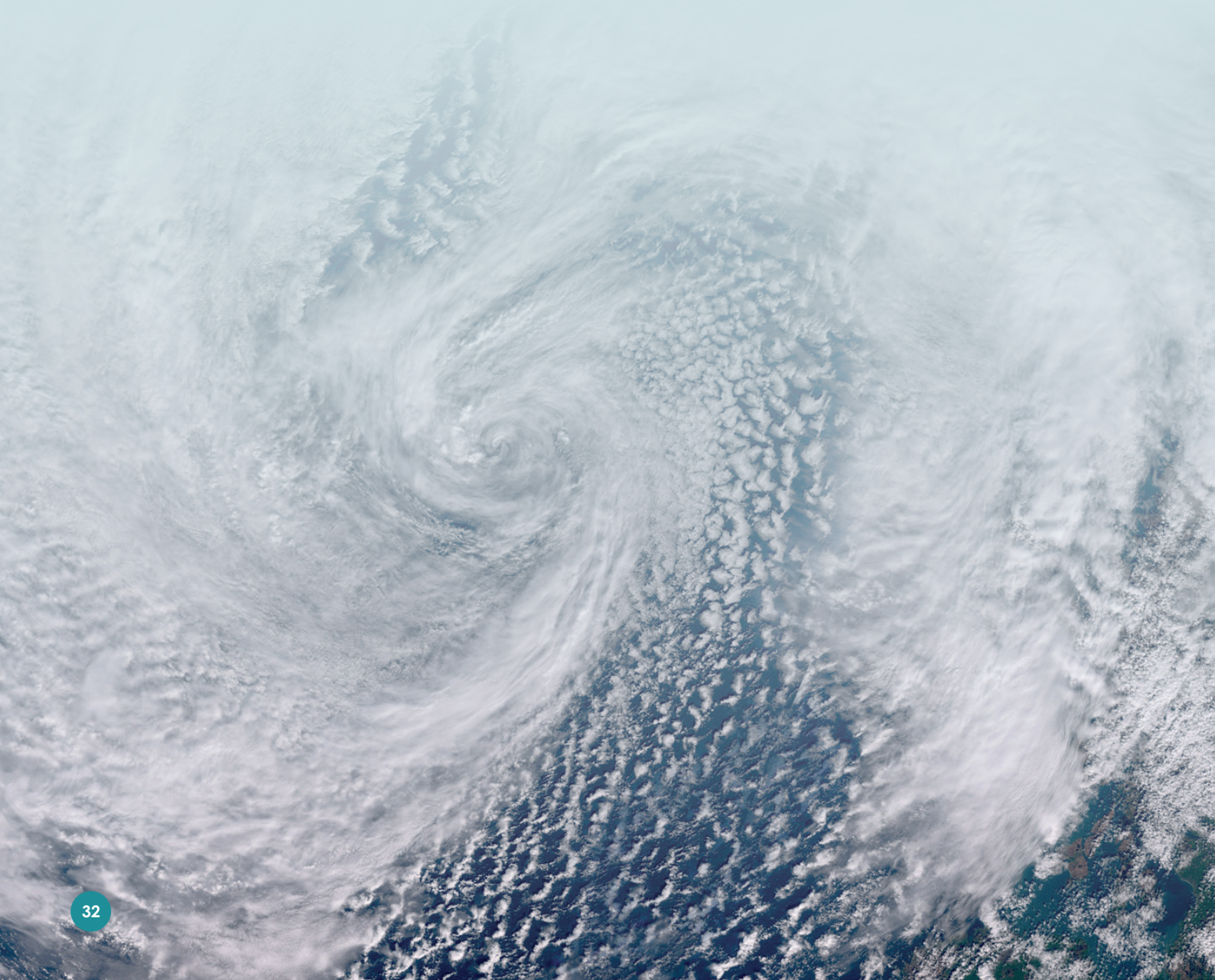
Performance Evaluation

Met Éireann is committed to evaluate and report performance in objective and meaningful terms. Key performance metrics (e.g. forecast warning lead times, accuracies) augmented by periodic measures of satisfaction in key groups (e.g. emergency managers) will be evaluated while comprehensive and meaningful measures of the products and services provided will be developed.

In addition, the indicators of success highlighted above express a desired societal outcome that depends not only on Met Éireann outputs, but also an effective societal use of, and response to these outputs. Performance evaluation based

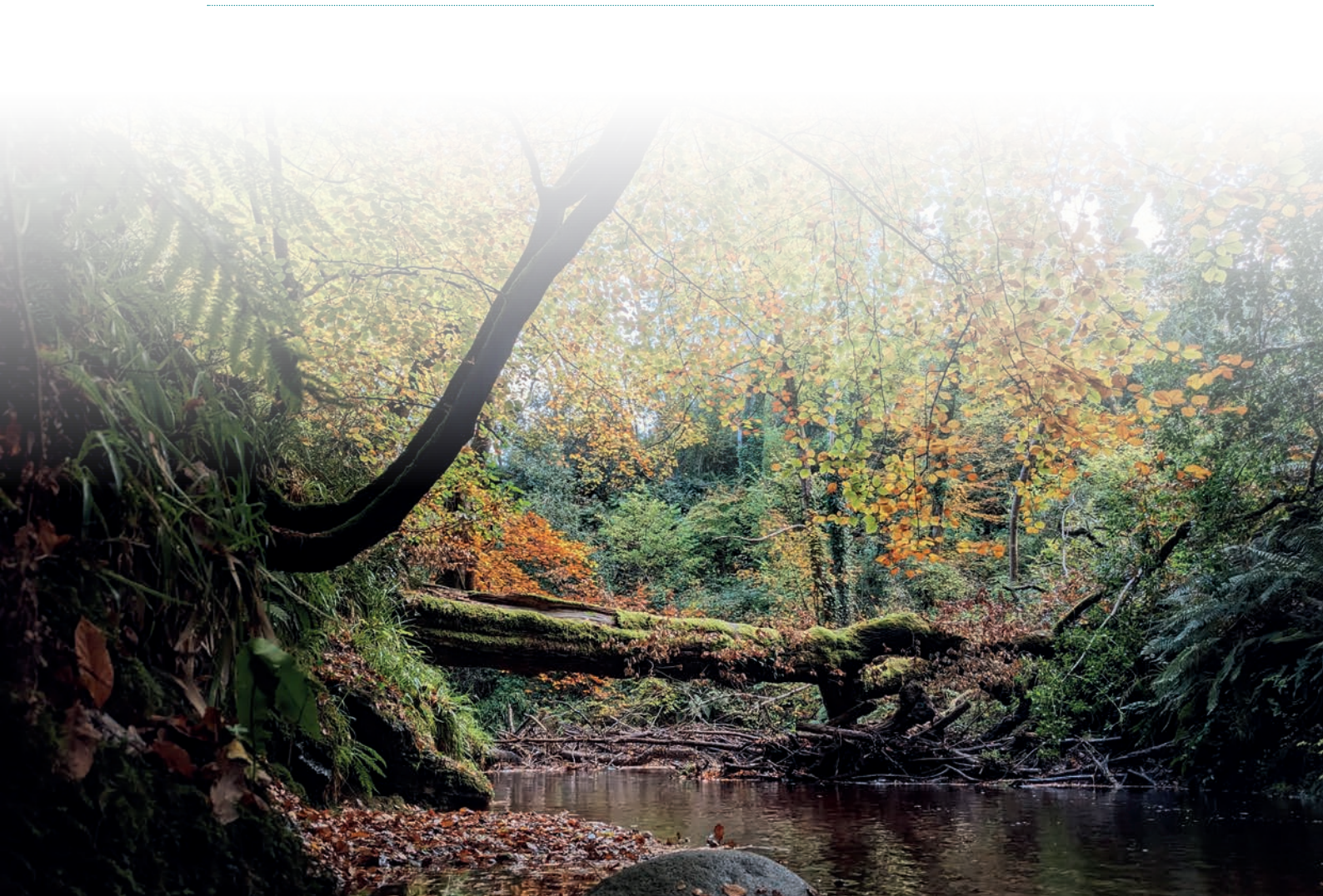
on outcomes is more challenging, but also more meaningful — it seeks to find out how and to what extent Met Éireann products and services create value for society in terms of economic efficiency, economic output and improved public safety. Progress in measuring such outcomes will significantly depend on collaborative engagement with economic and other social science research and tools.

Met Éireann will use the indicators of success as a starting point to develop a detailed plan for how to define, baseline, and track more specific societal measures and targets.



Glossary of Terms

ECMWF	European Centre for Medium Range Weather Forecasts
EFAS	European Flood Awareness System
EUMETNET	European National Meteorological Services Network - a grouping of European National Meteorological Services that provides a framework to organise co-operative programmes between its Members.
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
Euro GOOS	European Global Ocean Observing System
HPC	High-performance computing - the use of super computers and parallel processing techniques for solving complex computational problems such as climate and weather forecast models.
ICT	Information and Communication Technology
NWP	Numerical Weather Prediction - Using mathematical models to simulate and predict the state of the atmosphere in the future and guide weather forecasts and warnings
NFFWS	National Flood Forecasting and Warnings Service
STEM	Science, Technology, Engineering and Mathematics
WMO	World Meteorological Organisation





Our International Network



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