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European Civil Protection and Humanitarian Aid Operations

Early Warning and Information Systems

What is it?

The EU's early warning and information systems help the Emergency Response Coordination Centre monitor hazards and events worldwide. Examples of hazards that the Centre monitors are earthquakes and tsunamis, tropical cyclones, volcanoes, droughts, floods, and forest fires.

Detailed scientific information on emergencies increases the safety and protection of EU citizens. The EU's monitoring tools also complement information available to Member States and help their emergency services channel response whenever needed.

Why is this important?

Extreme weather or human-induced hazards, such as industrial accidents, can cause a disaster anytime, anywhere. However, proper planning, monitoring and early warning can reduce their damage.

Sometimes they even prevent their effects from turning into large-scale emergencies or crises. With the EU's early warning and information systems, Member States have more efficient and resilient emergency response systems in place.

Early warning and information systems are an important cornerstone of the EU's strategy to protect people living in Europe and globally. They minimise the impact of a disaster, linking the pre-disaster and response phases.

When disasters occur, alerting the population and emergency services is a priority and needs to be as fast as possible to save lives, protect jobs, and preserve the environment. Continuous monitoring and early warnings help better anticipate risks and warn the population in a potentially hazardous area.

How are we helping?

The EU supports its Member States in the assessment of hazards by complementing their national early warning and information systems in real-time. These tools contribute to early analysis and actions through early warnings.

Alerts allow the Emergency Response Coordination Centre to provide a comprehensive early assessment. It also enables early action within the framework of EU civil protection inside the EU and worldwide.

Close cooperation with various research institutes facilitates the development of disaster forecasting and disaster management tools for both natural and human-induced hazards:

- Global Disaster Alert and Coordination System: provides alerts and estimates impacts of earthquakes, tsunamis, tropical cyclones, floods, volcanos, and droughts worldwide.
- European and Global Flood Awareness Systems: give notifications on floods up to 15 days in advance in Europe and worldwide.
- European and Global Forest Fire Information Systems: forecast dangerous weather conditions up to 10 days ahead and provide near-real-time information on active fires and burnt areas. The systems analyse the severity and risk that each forest fire poses for the local population and the environment. This allows informed decisions on the deployment of the rescEU firefighting capacity.
- European and Global Drought Observatories: give information on droughts risks in Europe and worldwide, including meteorological indicators, soil moisture anomalies, vegetation stress and river low flows.

These early warning and information systems are part of the EU's Copernicus programme.

Through the Copernicus emergency management service, the Emergency Response Coordination Centre can also produce different satellite images. The aim is to monitor events from space before they happen and assess their impact once they have hit an area.

The Copernicus satellite is essential when deployments under the EU Civil Protection Mechanism take place.

In addition, a system of 24 Galileo satellites and ground stations provide geographic positioning information to Member States to broadcast alert messages.

As part of its European Scientific Partnerships initiative, the European Commission has established the European Natural Hazard Scientific Partnership. It offers 24/7 monitoring and scientific advice.

The partnership covers earthquakes, tsunamis, severe weather, floods, volcanoes, and forest fires both at European and global levels. It will be expanded to cover human-induced hazards in the future.

The EU also cooperates with other organisations such as UNESCO's Intergovernmental Oceanographic Commission. An agreement with the European Mediterranean Seismological Centre has allowed earthquake detection in the Mediterranean area to be considerably quicker and more accurate.

Supporting public warning systems across the EU

EU early warning tools complement national public warning systems.

To that end, the EU works closely together with Member States in establishing and further developing their national public warning systems. The aim is to protect citizens from disasters.

The EU is working with all Member States to put systems in place to reach and alert people affected by a natural or human-induced hazard.

Facts & figures

Early warning systems save lives, protect livelihoods and the environment.

The EU's specialised early warning systems monitor hazards in the EU and globally.

For greatest protection the EU is part of a network of scientific organisations and cooperates closely with all Member States.