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Building Resilience: How EU-Funded Projects Are Helping Prevent Floods

Key policies: *European Green Deal, EU Water Framework Directive, Horizon Europe Program, Nature-based solutions research policy, EU Adaptation Strategy, EU Biodiversity Strategy for 2030, European Disaster Risk Management*

As Europe faces an increasing number of water-related disasters like devastating floods, the EU is taking decisive action to bolster resilience and adaptation to the climate crisis. These efforts include funding innovative research and solutions under Horizon Europe, managed by the European Research Executive Agency (REA), and aligning them with key EU policies such as the European Green Deal, the Water Framework Directive, and the Climate Adaptation Strategy.

Climate Change and Escalating Flood Risks

Recent torrential rainfall across Europe, such as the floods in Spain's Valencia region in late 2024, have caused immense damage, claiming over 200 lives. Scientists link these extreme weather events to global warming, which has led to rising temperatures and heavier precipitation. With Europe warming at nearly twice the global rate since the 1980s, such disasters are likely to become more frequent and intense.

Nature-Based Solutions: Working with Nature

Nature-based solutions (NbS) are becoming critical in the fight against water-related disasters. The **OPERANDUM** project has focused on reducing hydro-meteorological risks in rural and natural territories through open-air laboratories. These labs co-designed and tested NbS while creating a platform for policymakers, businesses, scientists, and citizens to implement these strategies.

Similarly, the **RECONNECT** project has improved frameworks for implementing large-scale NbS in rural areas, demonstrating their potential to mitigate risks and bolster resilience. These efforts align with the **Nature-Based Solutions Framework** and support the **European Green Deal's** goal of sustainable and cost-effective environmental strategies.

Leveraging Earth Observation

Accurate, real-time data is essential for disaster prevention, and the **e-shape** project has developed a prototype for a near-real-time flood monitoring and early warning system. By combining data from Copernicus satellites, weather stations, and citizen science contributions, the system enhances predictions of high-impact weather events, including floods and storms, aiding urban areas and local communities. This work supports the **EU Climate Adaptation Strategy**, which emphasizes the importance of data-driven tools for disaster risk reduction.

Restoring Rivers for Flood Prevention

Rivers, essential for ecosystems and human activities, are increasingly threatened by fragmentation caused by dams and weirs, which can exacerbate flood risks. The **AMBER** project has pioneered adaptive management strategies to restore stream connectivity, reducing hazards and improving the ecological status of European rivers. These efforts directly align with the **EU**

Water Framework Directive, which seeks to achieve "good ecological status" for Europe's water bodies.

Engaging Communities in Climate Action

Citizen involvement is critical to fostering sustainable development and resilience. The **I-CHANGE** project operates living labs to educate and engage communities on climate science, encouraging behavioral shifts to reduce human contributions to climate change and extreme weather events. This aligns with the EU's commitment under the **Climate Adaptation Strategy** to involve citizens in climate action.

Enhancing Early Warning Systems

Extreme weather events demand better early warning systems, and the **MEDEWSA** project is answering the call with cutting-edge tools like artificial intelligence to improve forecasting across the Mediterranean, Africa, and Europe. Meanwhile, the **HuT** project brings together scientists, policymakers, and communities to address multiple climate-induced disasters, including floods, droughts, and storms. These initiatives align with **EU disaster risk reduction policies** to improve resilience through advanced tools and community engagement.

Harnessing Social Media and Crowdsourcing

The EU-funded **LINKS** project aims to strengthen disaster resilience by exploring how social media and crowdsourcing can improve crisis management. By developing learning materials on integrating these technologies, the project bridges the gap between technological advancements and societal needs during disasters. This aligns with the EU's focus on integrating modern technology into disaster risk management strategies.

Steering Europe to Calmer Waters

Guided by robust policies like the **European Green Deal**, the **Water Framework Directive**, and the **Climate Adaptation Strategy**, these EU-funded projects are creating a safer and more resilient Europe. By combining cutting-edge technology, nature-based solutions, and active citizen participation, Europe is better equipped to face the challenges of a changing climate and protect its people and ecosystems.

For more information on these policies and initiatives, visit [Horizon Europe Projects](#).

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