13.3.3 University participates in co-operative planning for climate change disasters, that may include the displacement of people both within a country and across borders, working with government

As a leading coastal institution along the Mediterranean, Alexandria University occupies a critical position in addressing climate risks, sea-level rise, and coastal vulnerability. Recognizing that climate extremes trigger human movement, the University works directly with local governance, national Egyptian ministries (including the Ministry of Environment and Ministry of Water Resources and Irrigation), and regional stakeholders to develop integrated response strategies, policy framework models, and long-term climate change adaptation measures.

Climate change is increasing the risk of natural disasters in coastal cities, particularly through sea-level rise, coastal erosion, extreme rainfall, flooding and increasing temperatures. Alexandria is particularly vulnerable because of its Mediterranean coastal location, high population density, industrial development and exposure to coastal hazards. Severe climate-related disasters can damage residential areas, infrastructure, transportation networks, water supplies and essential public services. In extreme situations, these impacts may force people to leave their homes temporarily or permanently.

Population displacement may occur within Egypt, particularly from vulnerable coastal and low-lying areas to safer locations. More severe regional climate disasters may also contribute to cross-border displacement and migration pressures. Alexandria University can contribute to climate disaster preparedness through scientific research, risk assessment, early-warning development, emergency planning and cooperation with local and national government institutions.

The Alexandria Green City Action Plan (GCAP), published in January 2025, represents an important framework for cooperation between Alexandria Governorate, technical institutions and other stakeholders. The plan was developed under the European Bank for Reconstruction and Development (EBRD) Green Cities Programme. Alexandria University is identified as a key knowledge partner for climate-change and land-use actions.

The plan addresses:

1. Climate-risk assessment.
2. Coastal flooding and sea-level rise.
3. Extreme rainfall and urban flooding.
4. Early-warning systems.
5. Emergency preparedness.
6. Vulnerable populations.
7. Sustainable infrastructure.
8. Climate adaptation and resilience.

Early Warning System and Local Preparedness Plan

One of the most relevant actions is CR3, which proposes updating Alexandria's existing local preparedness plan to address climate-related hazards.
The proposed activities include:

- Reviewing existing emergency-management plans.
- Identifying gaps in climate-risk preparedness.
- Assessing the needs of vulnerable populations.
- Strengthening communication channels.
- Coordinating with the Egyptian Meteorological Department.
- Assessing requirements for a multi-hazard early-warning system.
- Improving local emergency response.

Alexandria Governorate, the Egyptian Meteorological Department and Alexandria University are identified as implementation partners. The action specifically emphasizes accessible communication for persons with disabilities, women, older people and other vulnerable groups.

Cooperative Planning for Climate-Related Disasters and Displacement

Climate-related disasters can result in temporary evacuation, loss of housing, economic disruption and population displacement.
For Alexandria, the most relevant potential displacement scenarios include:

- **Coastal Flooding and Sea-Level Rise**

Rising sea levels and coastal flooding may affect residential areas, infrastructure, commercial activities and essential services.
Potential consequences include:

- Damage to homes and buildings.
- Temporary evacuation of vulnerable neighbourhoods.
- Loss of livelihoods.
- Disruption of transportation and public services.
- Relocation from highly exposed coastal areas.

The Green City Action Plan addresses coastal protection and improved urban resilience.

- **Extreme Rainfall and Urban Flooding**

Heavy rainfall can overwhelm drainage systems and affect low-lying neighbourhoods.
Preparedness measures should include:

- Flood-risk mapping.
- Emergency evacuation planning.
- Safe temporary accommodation.
- Public warning communication.
- Protection of hospitals and essential facilities.
- Coordination between local authorities and emergency services.

- **Heatwaves and Water Scarcity**

Increasing temperatures and water shortages may affect vulnerable communities, particularly older people, children and low-income households.

Potential responses include:

- Heatwave awareness programmes.
- Public health preparedness.
- Water-resource management.
- Emergency assistance for vulnerable households.
- Climate-resilient infrastructure.

- **Internal Population Displacement**

Internal displacement refers to people being forced to leave their homes but remaining within the borders of their own country.

In Alexandria, severe coastal flooding or other climate-related disasters could require temporary relocation of residents to safer areas.

Potential planning contributions from Alexandria University include:

- Scientific identification of vulnerable neighbourhoods.
- Population vulnerability assessments.
- Mapping of evacuation routes.
- Research on the availability of essential services.
- Assessment of temporary accommodation requirements.
- Studies of the social and economic effects of displacement.

- **Cross-Border Displacement and Migration**

Severe climate disasters in neighbouring or other countries may increase migration and humanitarian pressures.

Cross-border displacement involves people moving from one country to another.

Potential planning considerations include:

- Cooperation with national migration and humanitarian authorities.
- Protection of vulnerable displaced populations.
- Access to healthcare, education and water.
- Coordination with international humanitarian organizations.
- Assessment of environmental and social pressures on host communities.

Evidence limitation: The reviewed Alexandria University and Governorate documentation does not establish a specific university-led cross-border refugee relocation programme. Cross-border displacement is therefore included as a relevant disaster-planning consideration, not as an already implemented university project.

Consortium for Alexandria – Government and International Cooperation (2026)

On 24–26 March 2026, the United Nations Office for Disaster Risk Reduction (UNDRR), in cooperation with the Egyptian Cabinet and Alexandria Governorate, launched the Consortium for Alexandria.

The launch brought together more than 60 participants representing:

- National and local government.
- United Nations organizations.

- International and local partners.
- Diplomatic missions.
- Technical experts.
- Specialists and other stakeholders.

The consortium aims to strengthen Alexandria's resilience against climate change and natural disasters.

The discussions addressed:

- Rising sea levels.
- Increased rainfall and storms.
- Flooding and coastal hazards.
- Risk-analysis mapping.
- Early-warning systems.
- Infrastructure resilience.
- Scientific research.
- Community preparedness.
- Public participation.

The consortium provides a cooperative platform for bringing together government, technical institutions, civil society and international partners. It is relevant to Alexandria University's role as a scientific and knowledge partner.

Flow and Foresight – Alexandria University, 18 April 2025



Alexandria University President and Faculty of Engineering representatives. Deputy Governor of Alexandria attended. Climate change, coastal flooding and marine disaster risks. International cooperation with University of Toulon and Barcelona supercomputing Centre.

Alexandria University – Crisis and Disaster Management Unit, 17 November 2025



University faculty members and students. Risk identification and prevention. Emergency preparedness and safety awareness.

Alexandria University – Community Service and Environmental Development Council, 19 November 2025



University leadership and faculty representatives. Risk assessment and crisis-management planning. Safety policies and training initiatives.

Alexandria University – Towards a Safe Environment Initiative, 19 November 2025



University professors and student representatives. Civil-society participation. Environmental protection and community safety.

Advanced Disaster Modeling & Risk Assessment

- Data-Driven Analysis: Utilizing remote sensing, GIS tools, and advanced climate models, university researchers conduct continuous monitoring and simulation of sea-level rise, extreme storm surges, and coastal erosion along Alexandria's coast.
- Vulnerability Mapping: Researchers perform comprehensive risk assessment to identify high-risk zones where extreme weather events—such as severe floods or coastal inundation—could force the displacement of local populations both regionally and across national borders.
- Integrated Indicators: Empirical measurement and quantitative data analysis assess environmental stress factors, including saltwater intrusion into coastal groundwater, degradation of soil quality, and impact on agricultural crops (e.g., Zea mays, rice).

Governmental Policy & Strategic Response Protocols

- Joint Decision Making: Through institutional social interaction and formal advisory committees, Alexandria University collaborates with government bodies to shape Egyptian environmental policy and regional emergency management frameworks.
- Displacement & Migration Planning: University legal, urban planning, and social research teams work alongside government agencies to formulate policy recommendations regarding internal human displacement and cross-border climate migration under SDG 13 – Climate Action.
- Resilience & Infrastructure Adaptation: Academic teams evaluate coastal residence characteristics and urban infrastructure to advise municipal authorities on resilient

building designs, protective breakwaters, and sustainable water supply management during extreme events.

Resource Security, Infrastructure & Environmental Protection

- Water & Energy Resilience: To support communities during climate disruptions, joint projects focus on protecting municipal water resources (lakes, rivers, wetlands) and securing reliable energy utilization.
- Clean Energy Integration: The University promotes regional energy transition by integrating decentralized renewable energy (such as solar energy, solar power, and wind power) to ensure uninterrupted power for emergency shelters, health facilities, and critical buildings.
- Ecosystem-Based Adaptation: University agricultural and biological scientists work with local communities to restore coastal greens, manage land cover, and protect local biodiversity and native species, creating natural buffers against climate disasters.