



## **SDG 9 industry, innovation and infrastructure**

### **Valencia and the Turia River – From Disaster to Resilience**

#### **Abstract**

Valencia, Spain's third-largest city, provides an instructive example of how urban disasters can serve as catalysts for long-term resilience and innovation. The city's experience with catastrophic flooding in 1957 and its ambitious response through the Plan Sur (South Plan) illustrates how civil engineering, community activism, and adaptive urban planning can reshape a city's future. At the same time, new challenges, such as the 2025 floods, highlight that resilience is not a final state but a continuous process of adaptation.

#### **Before and after the 1957 Flood**

Valencia is Spain's third-largest city and home to one of the busiest ports in the Mediterranean. For centuries, the Turia River cut through the city – until disaster struck. In October 1957, the Turia River overflowed after record rainfall, leading to one of Valencia's deadliest natural disasters. Approximately 80 people lost their lives, thousands were displaced, and critical urban infrastructure was destroyed (Olcina Cantos & Rico Amorós 2007). The event revealed both the inadequacy of flood defences and the urgency of a systemic response.

The Spanish government launched the Plan Sur in the 1960s, one of the largest civil engineering projects of its time in the country. The plan involved the permanent diversion of the Turia River 12 kilometres south of the city, the construction of a new artificial channel, levees, and bridges, and the rerouting of key transportation infrastructure (García & Jiménez 2019). This ambitious intervention significantly reduced the risk of catastrophic flooding in the urban core.

Yet the diverted river left behind a vast, empty riverbed cutting through the city. The government initially proposed building a major highway, reflecting mid-20th century urban planning priorities. However, citizens mobilised against this proposal, arguing for the creation of a green space that could serve public, cultural, and ecological purposes (Ajuntament de València 2023). Their activism shaped the eventual transformation of the Turia riverbed into a continuous public park: the Turia Gardens.

## **The Turia Gardens and Long-Term Urban Transformation**

The decision to transform the old riverbed into a public park has had far-reaching consequences. Stretching over nine kilometres, the Turia Gardens today represent one of Europe's most successful examples of urban ecological infrastructure (Sánchez & Salazar 2021). The park provides multiple benefits:

- **Environmental resilience:** Green zones absorb stormwater, help mitigate the urban heat island effect, and serve as ecological corridors.
- **Public health and recreation:** Sports fields, playgrounds, and trails encourage active lifestyles and improve quality of life.
- **Cultural identity:** Iconic developments like the City of Arts and Sciences have become international landmarks, boosting Valencia's reputation in tourism and creative industries (Bélanger & Arroyo 2016).
- **Sustainable mobility:** Extensive bike lanes and pedestrian paths connect neighbourhoods, offering alternatives to car-based transport.

The Turia Gardens thus represent not only a response to disaster but also a reimagining of urban space as a driver of sustainability, culture, and inclusive growth. As scholars have noted, Valencia demonstrates how cities can turn ecological risks into opportunities for innovation (García & Jiménez 2019).

## **Flooding in 2025: A New Stress Test**

Despite its celebrated success, Valencia has not eliminated flood risks altogether. In 2025, the city experienced extreme rainfall that again tested its defences. While the diverted Turia channel successfully prevented catastrophic flooding similar to that of 1957, the storm overwhelmed drainage systems, leading to localised street flooding, transportation disruptions, and economic damages.

These events underscored the reality that resilience is not static. Climate change has altered rainfall patterns in the Mediterranean, increasing both the intensity and frequency of extreme precipitation events (IPCC 2021). The 2025 floods pushed policymakers and engineers in Valencia to consider further adaptations:



- Smart infrastructure: Implementation of real-time monitoring systems and mobile early-warning applications for citizens.
- Stormwater management: Construction of underground reservoirs and expansion of green-blue infrastructure to absorb runoff.
- Multi-purpose corridors: Reimagining the Turia Gardens not only as recreational space but also as part of the city's stormwater retention system (Ajuntament de València 2023).

This moment highlighted that even highly successful infrastructure projects must evolve to meet emerging climate realities.

### **Links to SDG 9: Industry, Innovation, and Infrastructure**

The Plan Sur and subsequent urban transformations align closely with SDG 9, which emphasises resilient infrastructure, sustainable industrialisation, and innovation (United Nations 2015). Valencia's case illustrates this through:

1. Resilient Infrastructure: The diverted river and integrated green corridor protect the city against floods while adding multifunctional value.
2. Mobility and Connectivity: Active transport options promote sustainable urban mobility, reducing dependence on private vehicles.
3. Innovation and Culture: The City of Arts and Sciences has positioned Valencia as a hub for research, education, and tourism.
4. Industry and Logistics: The Port of Valencia, one of the busiest in the Mediterranean, connects the city to global trade. Infrastructure improvements around the Turia corridor increase the city's attractiveness for businesses and skilled talent (Port Authority of Valencia 2022).

### **Lessons and Ongoing Challenges**

Valencia's journey offers several key lessons for cities worldwide:

- Resilience is iterative: The 2025 floods demonstrate that climate adaptation requires continuous updates. Infrastructure must be designed to be flexible and upgradeable rather than as permanent solutions (IPCC 2021).



- Community involvement is critical: Without citizen activism, Valencia might have lost the opportunity to create one of Europe's most iconic urban parks.
- Trade-offs remain: Expanding logistics and port activities generates jobs but also poses environmental risks, including air pollution, and land-use conflicts (Sánchez & Salazar 2021).
- Balancing tourism and residents' needs: Cultural landmarks attract millions of visitors but can also increase pressure on housing, transport, and local resources.

Ultimately, Valencia shows that resilience is as much about governance, community, and innovation as it is about engineering.

### Questions

1. How did the Plan Sur transform Valencia's vulnerability into an opportunity for urban renewal?
2. What role did citizen activism play in shaping the Turia Gardens?
3. In what ways does the Turia Gardens project contribute to SDG 9 (Industry, Innovation, and Infrastructure)?
4. How did the 2025 floods reveal gaps in Valencia's resilience strategy?
5. What types of infrastructure investments should Valencia prioritise to adapt to future climate risks?
6. How can Valencia balance economic growth (tourism, logistics) with environmental sustainability and community well-being?

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