

Climate Resilience and Coastal Brownfield Redevelopment

RESEARCH FROM THE FIELD



Figure 1: conceptual image of the Water City Project, upon completion

Coastal brownfields and climate resilience

The following is a brief summary of the work undertaken by Fernandes et al. (2018). Their publication focuses on the systematization of frameworks for evaluating the climate resilience of coastal brownfields projects globally. The plans for the Water City Project, a waterfront brownfields redevelopment initiative in Almada, Portugal are observed critically using three systems as defined by the authors.

The authors argue for a systemic approach to observing waterfront brownfield redevelopment. This would represent a pragmatic framework with which future projects can integrate climate resilience tools into their planning and development.

Key words:
Waterfront | Brownfield Redevelopment |
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Preparing Waterfront Brownfields Redevelopment for Climate Change: the Water City Project, Almada (Portugal)

Summary by Frederico Palacios

Brownfield regeneration poses unique challenges to cities around the world; climate change and sea-level rise (SLR) make the regeneration of waterfront sites increasingly complex. Some metropolitan regions have begun implementing policies and programs based on their climate vulnerabilities. These have included the implementation of policies for waterfront districts. As climate change generates strain on coastal areas, waterfront brownfield regeneration offers an opportunity to incorporate climate change resilience into the physical planning and design of new uses.

Linking Brownfield Regeneration and Climate Change

Various models have been put forth in an effort to create a framework for sustainable brownfield redevelopment, each identifying key elements. An environmental dimension is widely recognized as being of high relevance. This is of increased importance as climate change may expose new sources of contamination and/or generate a risk to land use through SLR. Given the industrial heritage of many urban waterfronts, a climate change resilience approach should be incorporated into any coastal brownfields redevelopment project.

This piece of work seeks to systematize best practices for climate change adaptation, and subsequently observe the degree to which these frameworks are implemented in one coastal brownfield redevelopment case study. A first framework suggests that projects can be observed through the lens of climate change adaptive spatial planning. In this instance, the success of a project is measured based on the integration of climate resilience interventions throughout the planning process. A second systematization is the Davioud approach of planning tools which are grouped as follows: pro-active interventions, regulatory interventions and strategic coordination. Successful brownfield regeneration projects seeking to incorporate climate resiliency into their framework can make use of a variety of tools from any combination of the above categories. A third and final approach system-atizes coastal climate change adaptation techniques, specifically those relating to SLR. These include interventions that promote a planned retreat, accommodation and/or protection of new landforms and build environments from sea level rise.

Case Study: Water City Project

This paper examines the 115 hectare Water City Project in Portugal by making use of the three approaches as systematized. This proposed development is multipurpose in nature and is meant to be integrated within the wider Lisbon Metropolitan Area. The authors observe not only the measures proposed to increase the project's resilience to SLR, but also the methods used by the development team to estimate the potential SLR. The project planning undertook several SLR model scenarios, incorporating the most extreme SLR outcome into the final design and planning. This informs the land uses that have been approved for the project site.



Figure 2: the Almada Nascente Urbanization Plan, source: Fernandes et al.

Key Findings

Based on the first system suggested by the authors, the Water City Project is of note, given that long-term SLR was integral into the design of the project. Using the second system, the authors suggest that most climate resilience interventions for this project are regulatory interventions, in that they are rooted in legal and regulatory bodies of work. When observed through the lens of the third system, the Waterfront City Project appears to combine accommodate and protect options by accommodating some current uses and protecting for potential flooding and other SLR-related events.

Recommendations

The authors maintain that the Waterfront City Project is an interesting example of how brownfield regeneration projects can integrate climate change resilience into their design. Furthermore, they see a potential benefit in comparative analyses between similar projects in an effort to further systematize the adaptations and approaches being used globally. These efforts would yield a reference framework tool for climate change resilience and coastal brownfield regeneration.

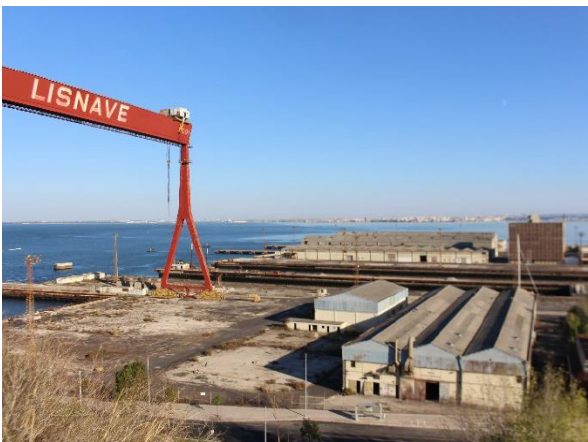


Figure 3: view of existing port uses in the brownfields area, source: Fernandes et al.

References

Fernandes, A., de Sousa, J. F., Brito, S. S., Neves, B., & Vicente, T. (2018). Preparing Waterfront Brownfields Redevelopment for Climate Change: the Water City Project, Almada (Portugal). *Journal of Coastal Research*, 85, 1531–1535. <https://doi.org/10.2112/si85-307.1>