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# APPLYING SPANISH EXPERIENCES IN CLIMATE ADAPTATION TO THE BRAZILIAN CONTEXT

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## INTRODUCTION & AIM

Climate change has intensified urban impacts worldwide, disproportionately affecting cities in developing countries where social vulnerability, institutional fragility (Di Giulio et al. 2025), and financial constraints are more pronounced, as is the case in Brazil (Fig. 1).

Source: https://g1.globo.com/go/goias/noticia/2020/04/22/rio-meia-ponte-transborda-inunda-casas-e-um-campo-de-pesquisa-da-embrapa-em-goias.ghtml

Source: https://www.em.com.br/emfoco/2025/12/09/calor-fora-do-normal-no-sudeste-em-2025-ja-pressiona-saude-e-energia/

Fig. 1 - The most vulnerable populations are suffering the effects of extreme rainfall (A) and heat waves (B) in Brazilian cities

This study examines Spain's experience with climate change adaptation at the local level, and discusses how its strategies can be realistically adapted to the Brazilian context, taking into account governance challenges and limited financial capacity.

## METHOD

The research combines a review of national, regional, and local climate adaptation policies in Spain and Brazil, with technical visits to Spanish cities (including Barcelona, Madrid, Seville, Málaga, Córdoba, Granada, and Zaragoza) and others in Europe (Fig. 2), to identify and document climate change adaptation strategies.

The aim was to assess, on the ground, the effectiveness of these strategies and the appropriateness of their implementation given the realities of Brazil—particularly the financial realities.

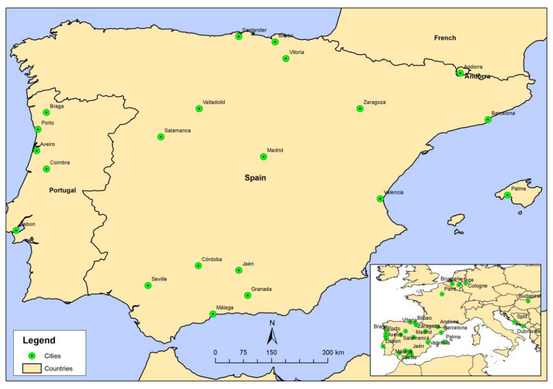


Fig. 2 - Cities visited. Source: author

## RESULTS & DISCUSSION

Spain stands out for its structured, multilevel climate governance, supported by a national adaptation plan, strong regional climate legislation, and well-defined municipal strategies. In contrast, Brazil faces fragmented governance, weak coordination across government levels, uneven municipal capacity, and persistent difficulties in mobilizing financial resources (Nascimento and Martín-Vide, 2024)

## RESULTS & DISCUSSION

Several Spanish adaptation strategies show high potential for application in Brazilian cities, particularly because of their relatively low cost and scalability (Nascimento and Martín-Vide, 2026). These includes: a) climate shelters, to protect vulnerable populations during heatwaves and extreme weather; b) drainage systems and infiltration gardens, to reduce flood risks, and ; c) shading structures and public water points, to mitigate urban heat island effect and episodes of low relative humidity - Fig. 3. When adapted to local realities, such measures can be integrated into existing infrastructure, implemented gradually, and subsidized by federal budgets.


Fig. 3 - urban adaptation strategies observed in Spanish cities
Source: author

## CONCLUSION

The Spanish experience demonstrates that effective climate adaptation does not depend solely on high levels of investment, but on coordinated governance, citizen participation, and context-sensitive planning. For Brazil, adapting these strategies represents a concrete opportunity to advance urban resilience, provided they are aligned with local vulnerabilities, supported by political commitment, and complemented by accessible financing and international cooperation.

## FUTURE WORK / REFERENCES

Di Giulio, GM et al (2025) Advancing adaptation of highly heterogeneous urban contexts for improved distributive climate justice: an analysis of specific and generic adaptive capacities of Brazilian cities. Sustainable Cities and Society 130, 106665. https://doi.org/10.1016/j.scs.2025.106665

Nascimento DTF, Martín-Vide, J (2025). Climate Governance in Perspective: a Comparison between Brazilian and Spanish Climate Adaptation and Mitigation Policies. In: Magalhães, DTD'Avila; Thomaz, LF; Oliveira, MF. (Org.). European Union and Brazil: innovative and sustainable strategies for cooperation. Marília: Faculdade de Filosofia e Ciências.

scimento DTF, Martín-Vide, J (2026). A experiência espanhola em adaptação climática. Revista Brasileira de Geografia, 70(1), 105-125.