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# Are Spanish local adaptation policies likely to be successfully implemented and sustained in the long-term? We assess their legitimacy, scientific, policy and economic credibility

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**Abstract:** Credibility is critical to help allocate public funding and private investments, as well as for implementing, mainstreaming and catalysing climate policy. In this context, we define credibility as the likelihood of local adaptation plans being successfully implemented and sustained in the long-term. We test an adaptation policy credibility assessment framework previously developed by the authors in 11 Spanish cities, a representative sample to assess diversity of a highly decentralised country. We examine the credibility of local adaptation policies based on three key components: policy and economic credibility, scientific credibility and legitimacy. Within these three components, we measure a set of 53 metrics that address issues related to resources, reliability, institutional support, public and private support, creation of usable knowledge, monitoring, evaluation & reporting, adaptive management and legitimacy. We analyse and discuss the results and identify main gaps and opportunities for future local adaptation policy making in Spain.

**Keywords:** local climate adaptation policy; adaptation tracking; climate resilience; Spain; adaptation planning.

*1. Introduction*

Cities are responsible for 70%-80% of global GHG emissions (Dhakal, 2010) and at the same time they will experience a large share of climate change impacts. Urban areas concentrate half of the world population and most of its critical infrastructures and economic activities (Revi et al., 2014). In the last decade, cities worldwide have been adopting climate policies, but the Paris Agreement in 2015 represented a major milestone for non-state climate action, as for the first time the role of cities and other non-state actors was explicitly recognised and encouraged.

In Europe, two thirds of the cities have already adopted a mitigation or an adaptation plan. A review of climate plans in 885 European cities found that the size of the city, the adhesion to international climate initiatives and the existence of national regulation are the most influential factors in the promotion of climate planning (Reckien et al., 2018). The geographical distribution of these plans is unbalanced, as most are developed in central and northern Europe. Also, more adaptation plans are being implemented recently, but there is a bias towards mitigation plans: 43% of cities have adaptation (26%) or joint (17%) plans, versus 66% with mitigation plans. In Spain, urban climate action started later than in other European countries and the role of international networks was again found to be determinant (Olazabal et al., 2014). While the existence of climate adaptation plans has been used as a proxy for measuring progress towards adaptation, there is an increasing need to understand if and how these policies are being developed (Araos et al., 2016).

In this context, the credibility of those policies planned by cities becomes a key issue for implementing, mainstreaming and catalysing climate policy. Following Olazabal et al. (2017), we understand credibility as the likelihood of local adaptation plans being successfully implemented and sustained in the long term. The aim of this work is to analyse to what extent Spanish main capital cities are making progress on planning for adaptation and how credible these adaptation policies are.

*2. Data and methods*

We have screened the urban adaptation landscape in Spain and out of 52 capital cities, 11 climate change adaptation plans, formally labelled as such, were identified (see cities in Figure 1). Nine plans have been developed in the last 3 years and were mainly driven by the commitment of the Covenant of Mayors for Climate and Energy.

To evaluate the adaptation policy process in these 11 cities, we have applied the methodological framework developed by Olazabal et al. (2017), which has been tested in four frontrunner cities (Durban, Copenhagen, Quito and Vancouver) (under review). Following a semi-structured literature review, this framework identified three key areas to be assessed: the (i) **political and economic credibility** is evaluated based on the *resources* mobilised in and for the creation and implementation of the adaptation plan; *past performance* and assigned responsibilities; and *institutional, public and private support*.

The (ii) **scientific and learning credibility** looks at how *useful knowledge* is used or produced to feed the impact, vulnerability and risk assessments. *Monitoring, evaluation and reporting (MER)* processes have also been identified as critical for assessing the progress of the plan in line with its

objectives, a key step for *adaptive management*. Finally, (iii) **legitimacy** deals with good governance practices, evaluating the *transparency* of the planning process, if *stakeholders and civil society* have been involved and how *equity and justice* have been addressed, accounting for those most vulnerable or exposed to climate change impacts.

*3. Credibility of Spanish urban climate change adaptation plans*

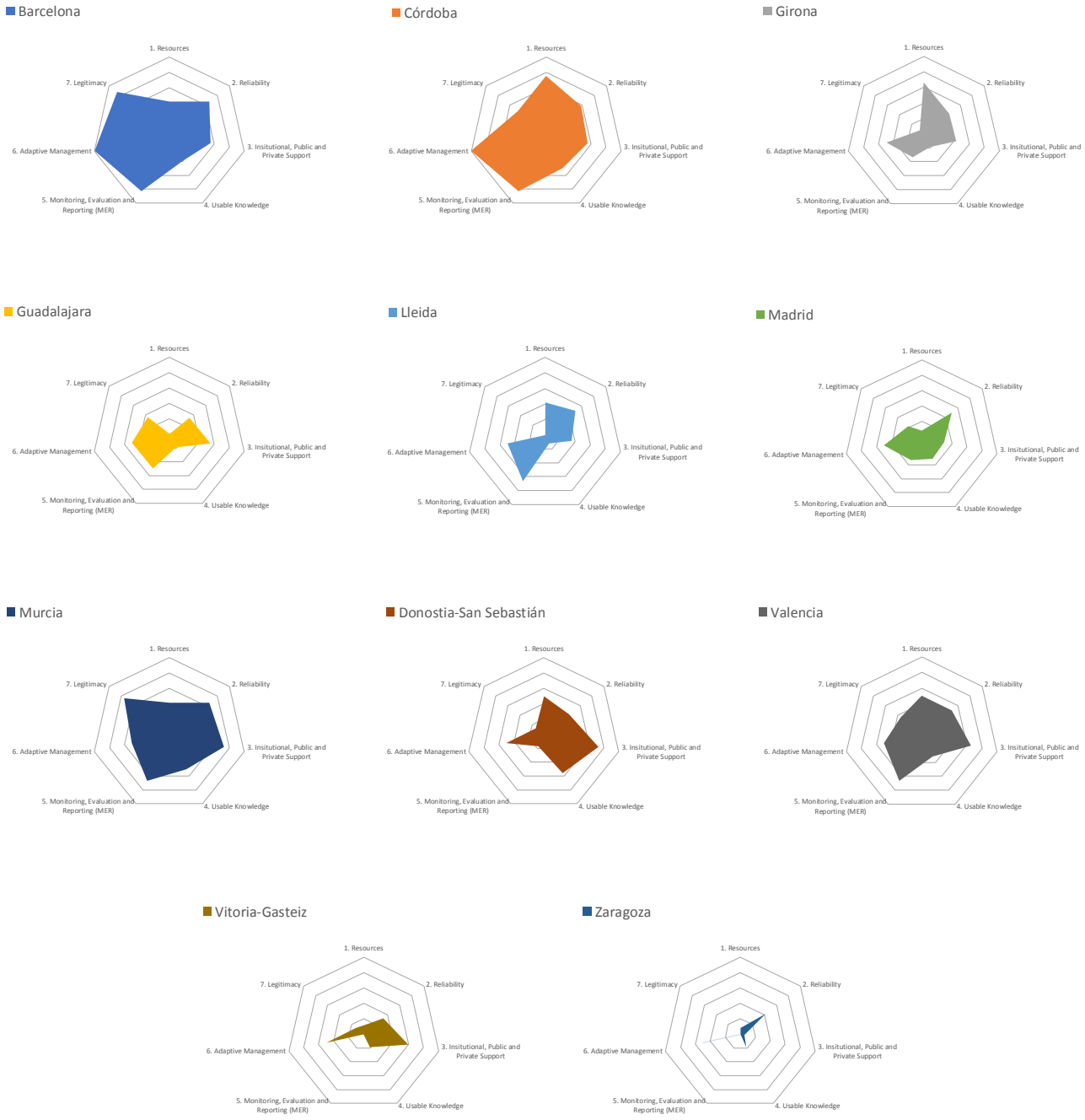
The results of our assessment show that Spanish adaptation plans perform best in the policy and economic major area. The cities show a good evaluation in relation to network memberships (aligned with Olazabal et al. 2014), prioritisation and timing and public opinion, while indicators of funding, legislation, leadership and support should be strengthened, which could be improved, for example, by including specific resource commitments to ensure the plan's implementation. The low scoring for legislation and regulation indicates that adaptation is being planned through soft forms of governance, with little legally-binding commitments. The lack of higher-level regulation could also explain why only 21% of provincial capitals have a plan to adapt to climate change. With regards to the institutional public and private support, there is much room to larger support of public bodies and participation of private agents, both in the preparation and implementation of the plans.

With regards to the scientific and technical area, all cities show a high understanding of uncertainty, as all of them have developed a risk assessment. Even though the analysis does not delve into the contents of these risk assessments, our screening shows there is room for improvement. MER processes are normally not well reflected in local climate plans (e.g. Guyadeen et al. 2018), and especially in adaptation plans (Araos et al. 2016). In Spanish cities, however, this indicator presents good performance, showing the increasing importance that cities are giving to it. Learning mechanisms are also important in this context, and two cities present an excellent evaluation (Barcelona and Córdoba). The indicator measuring the performance on impacts and vulnerability assessment also works fairly well, explained by the fact that all the analysed plans, to a greater or lesser extent, are based on a prior vulnerability analysis.

Finally, legitimacy is the area with the lowest performance, and within this area the indicator addressing equity and justice, which shows the need to pay more attention to the most vulnerable population. Transparency and dialogue in the elaboration of the plans should also be improved and while there are some good examples of engaging with stakeholders and society (e.g. Barcelona or Murcia), often neither communities nor social advocacy groups are involved in the definition of the adaptation strategies.

Looking at each of the plans individually (Figure 1), there are three cities that present good performance, with scores of or above 30 over 53, in line with pioneer cities such as Vancouver or Copenhagen (Olazabal et al., under review); these are Barcelona, Córdoba and Murcia. Barcelona's Climate Plan is excellent in relation to adaptive management, and legitimacy is also a strong component. Barcelona and Cordoba both have dynamic plans that can be adjusted with the outputs of the MER system and they foresee the creation of a coordination body for monitoring implementation.

**Figure 1. (a)** Results of the credibility assessment in 11 Spanish cities with adaptation plans. The credibility index is shown calculated per component.




(b) Source: own elaboration.

Seven cities present scores between 10 and 30 over 53, revealing that there are several components that should be improved or strengthened. These are Valencia, Donostia-San Sebastián, Girona, Lleida Guadalajara, Madrid and Vitoria. Donostia-San Sebastián presents a very detailed vulnerability assessment at neighbourhood scale, while Murcia uses multicriteria analysis for the selection of the measures. In the case of Madrid, the Plan is a quite comprehensive document addressing climate change and air quality, where adaptation is only mentioned in a subsection and contains strategic guidelines. Despite a very succinct framework planning for adaptation, the city is developing advanced adaptation programmes, such as the Madrid + Natural that are considered a reference at national and European

level. That is, to some extent, also the case of Vitoria, whose adaptation plan is basically a vulnerability assessment. At the same time, the city has implemented internationally recognised nature-related projects that are not explicitly contained in any adaptation policy document and have not thus, been taken into account in this study. This gap between adaptation reporting and adaptation action had already been found before when assessing local adaptation plans (Araos et al., 2016). In the studied sample, Zaragoza presents the lower score (<10 over 53), probably explained by the fact that this strategy-level policy document was approved in 2010, at a very early stage of adaptation planning worldwide. This definitively shows the importance of reviewing and updating the planning in the light of new information.

*4. Conclusions*

Planning for climate change adaptation in Spanish cities is still in its early stages. Cities have accelerated their action in the last few years, but there is still a long way to go. The results of the credibility assessment show that, despite the efforts of the 11 cities, adaptation plans should be improved in many aspects, such as financial support and budget allocation in the implementation phase. National and especially regional governments could play a major role to support capital cities and smaller urban areas by offering advice and technical and financial support, as well as enforcing regulations to promote adaptation planning in cities. Moreover, further action to ensure transparency and dialogue in the planning process is critical, not only to improve climate governance, but also to increase the acceptability and legitimacy of urban action on adaptation. Finally, equity and justice considerations need to be incorporated into adaptation plans as a means to ensure that the policies respond to the needs of the most vulnerable as well. However, it should be noted that the plans analysed are diverse and some of them characterised for being strategic (e.g. Madrid). This influences final scores as detailed plans score better in credibility, which is, on the other hand, reasonable.

The methodological framework applied in this work provides a flexible and easy-to apply tool to evaluate the credibility of adaptation planning processes, but it can also be used as an ex-ante evaluation tool. Observe that no prioritisation or weighting method has been used in the development of the final credibility index score (i.e. 53 is calculated by adding the metrics); there is room, therefore, for cities to prioritise indicators responding to their contextual needs. In any of the cases, the use of this tool can contribute to reduce political and economic inconsistencies, increase efficiency and learning rates, and increase the legitimacy of the plans. The credibility index may become a useful indicator to improve decision-making, efforts targeting, funds allocation, transfer of best practices and, ultimately, science and adaptation practice. Furthermore, it can prove useful to private entities and public higher-level governments willing to measure the progress of cities on adaptation, providing a method to systematically track progress towards adaptation, identify best practices and allocate funding and investments.

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**Conflict of Interest**

The authors declare no conflict of interest.

**No references for the short papers but hyperlinks within the text**