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# Regreening and depaving actions in large coastal cities to improve sea water quality : is it possible in Montpellier?

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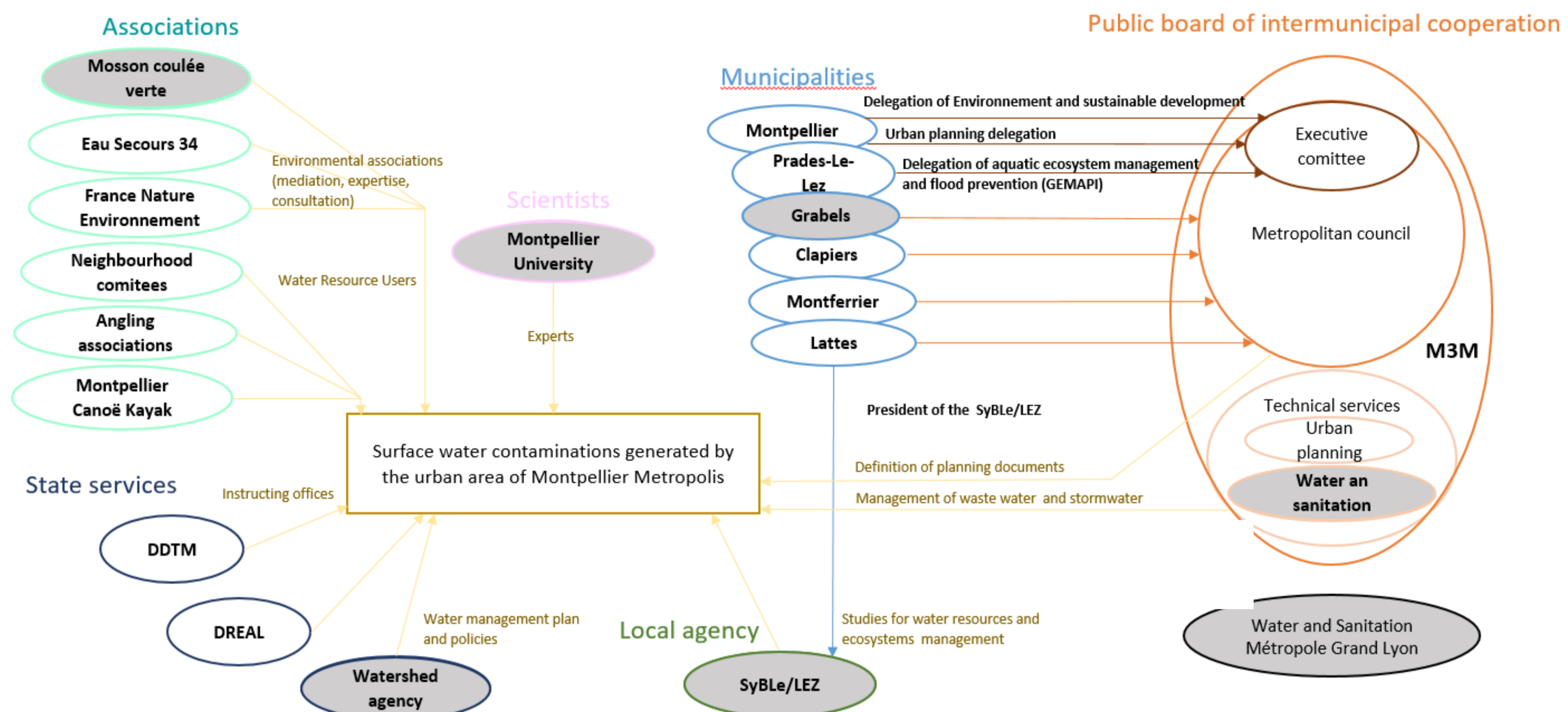
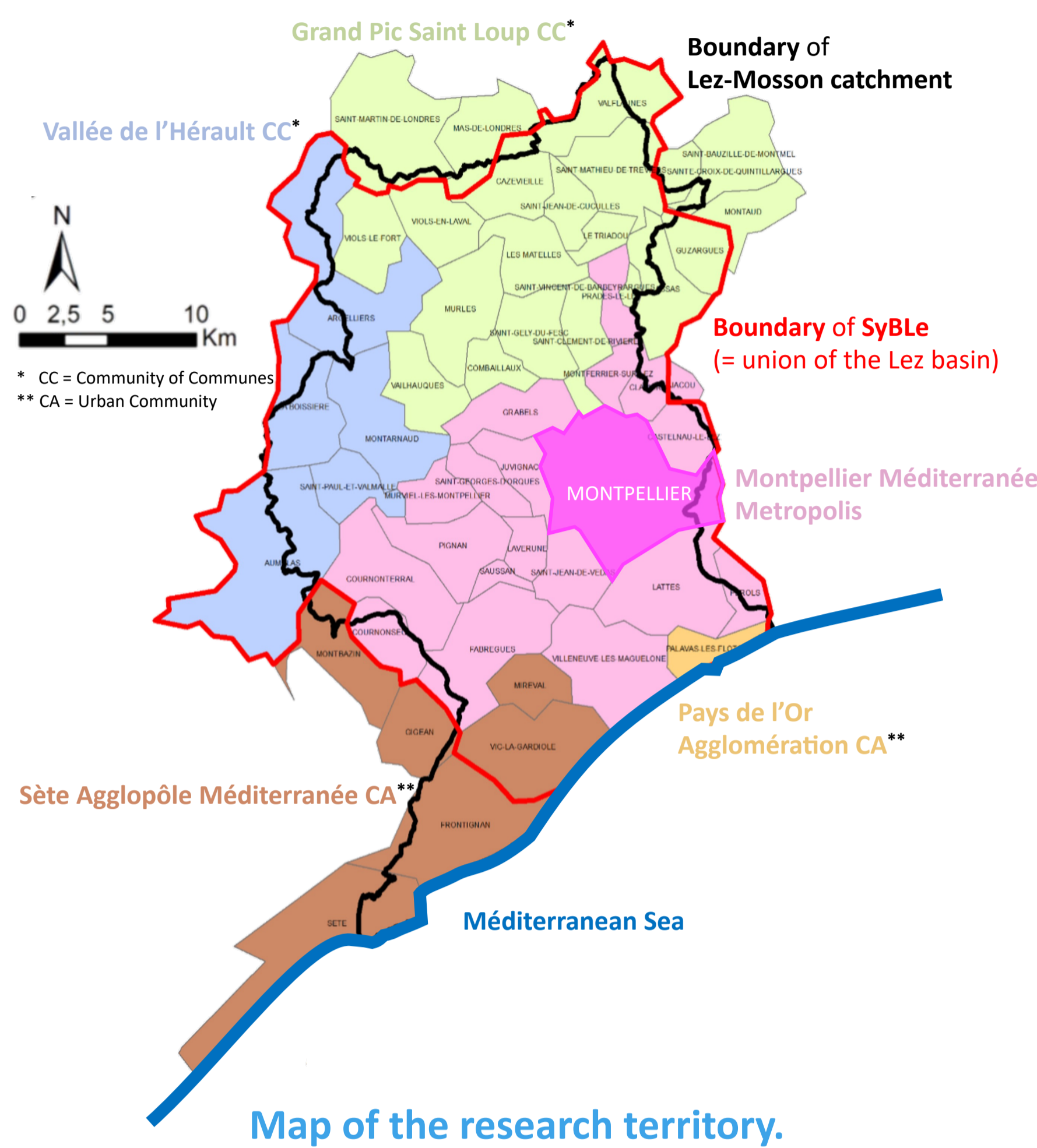
## INTRODUCTION

The quality of sea water is under risk due to continental discharges, in particular during rainy episodes. When large urban cities are located at sea, their impervious soils control the volume and quality of rainfall runoff.

What strategy for managing coastal urban zones may limit the risk? Is it possible to think about "depaving" the cities?

## METHODOLOGY

- 24 semi-structured interviews (May 2018 to July 2019; approximately 55 min.)
- interviewees = see below
- interview guide in 3 parts: urban planning and water management; perception of urban stormwater pollution; strategies of "depaving" of the urban environment.
- discussion group (duration 3 hours) for the collective analysis of the results of the interviews.



List of interviewees with their relation to the issue to be addressed. The actors outlined in grey took part in the focus group (Source: Rio 2020)

## RESULTS

### Concerns about floods come first, water quality is not an issue

- = Floods are a key point in water management, for all the interviewees, but State agents recognize the problem "quality of rainwater" important for the coastal zone;
- = The levees along the Lez river and the construction of retention basins in urban zones are the main cited management measures;
- = Flood management does not appear to have links with water quality management for the all interviewees.
- = the by-pass of effluents at the treatment plant is cited as the primary cause of rainwater pollution; the role of network overflows is rarely mentioned;
- = macro waste and garbage are seen as an important factor in decreasing water quality; = apart from pesticides, other micropollutants are ignored.

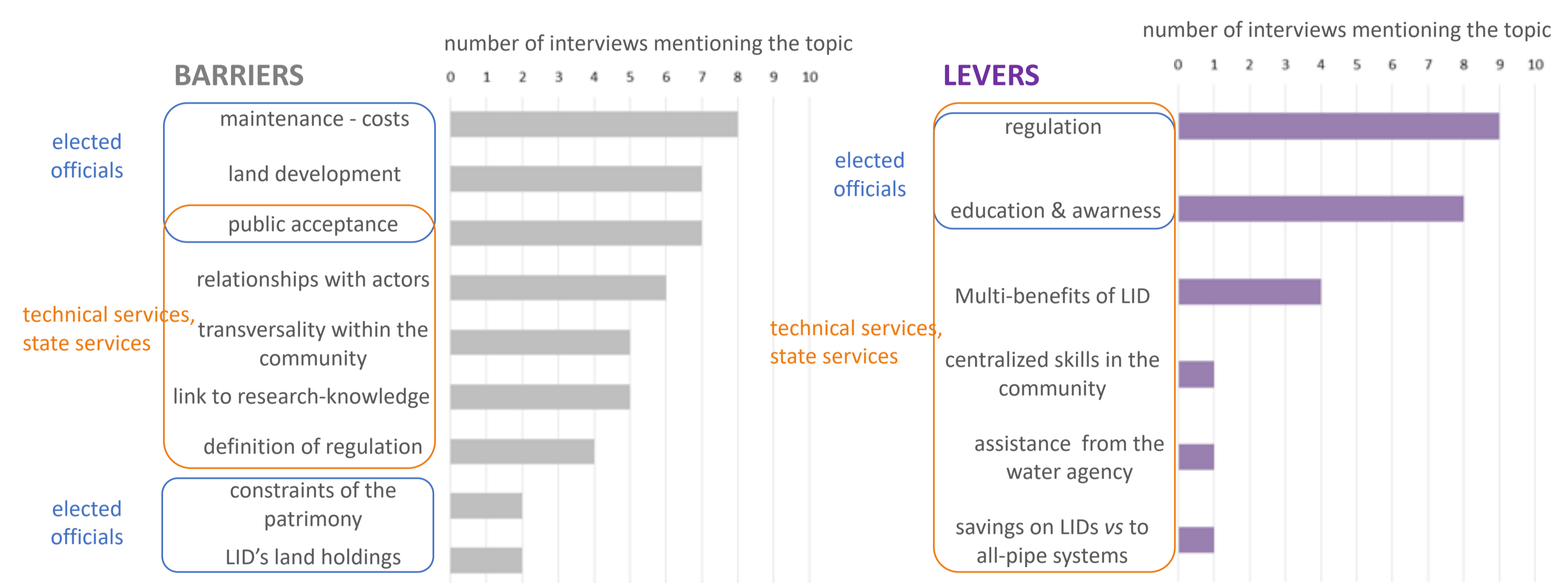
### Mandatory compensation and regreening actions are often mixed

- = "Depaving" actions are mentioned as an objective in the SCOT of Montpellier Metropolis, but some interviewees admit not knowing it in detail;
- = Some interviewees confuse "depaving" measures with compensatory measures (so-called alternative techniques, as retention basins);
- = Retention basins are the most frequently cited actions;
- = Green techniques (swales, rain gardens) are less cited;
- = Permeable technics for roads, parking lots or schoolyard are not well known by the Elected Officials.

### Housing the new residents is a strong constraint (Figure 4)

- = For all interviewees, the cost of "depaving" actions and green technics is a major obstacle;
- = But the barriers differ between the categories of actors:
  - the urban development and lack of public acceptance, from the point of view of the elected officials;
  - the absence of dialogue between the various technical services of the communities and the absence of active partnership with local academic research, from the point of view of State services and technical services;
- = State regulations and education are seen as major levers.

### Barriers and levers for the development of alternative techniques in interviews.



## CONCLUSION

In Montpellier, under the effects of local cultures (or due to common belief), the issue of rainwater quality struggles to emerge, because the risk of flooding is a priority due to the Mediterranean climate.

Heavy rainwater management techniques - retention basin e.g. - are well known as regulatory measures during urban development operations. Yet the implementation of "depaving" measures - rain garden e.g. - is not envisaged to reduce the already existing impervious areas.

The cost is one of the major barriers to "depaving" of the Montpellier urban area. The maintenance of green technics is also seen as difficult due to the complex organisation of technical services of Montpellier area.

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