

Low density urban-touristic development and water consumption in private gardens: findings in the Mediterranean coast

Elena Domene^{1,2}, Xavier Garcia^{3,4}, Albert Llausàs^{2,3}, Álvaro Morote⁵, Josep Padullés³

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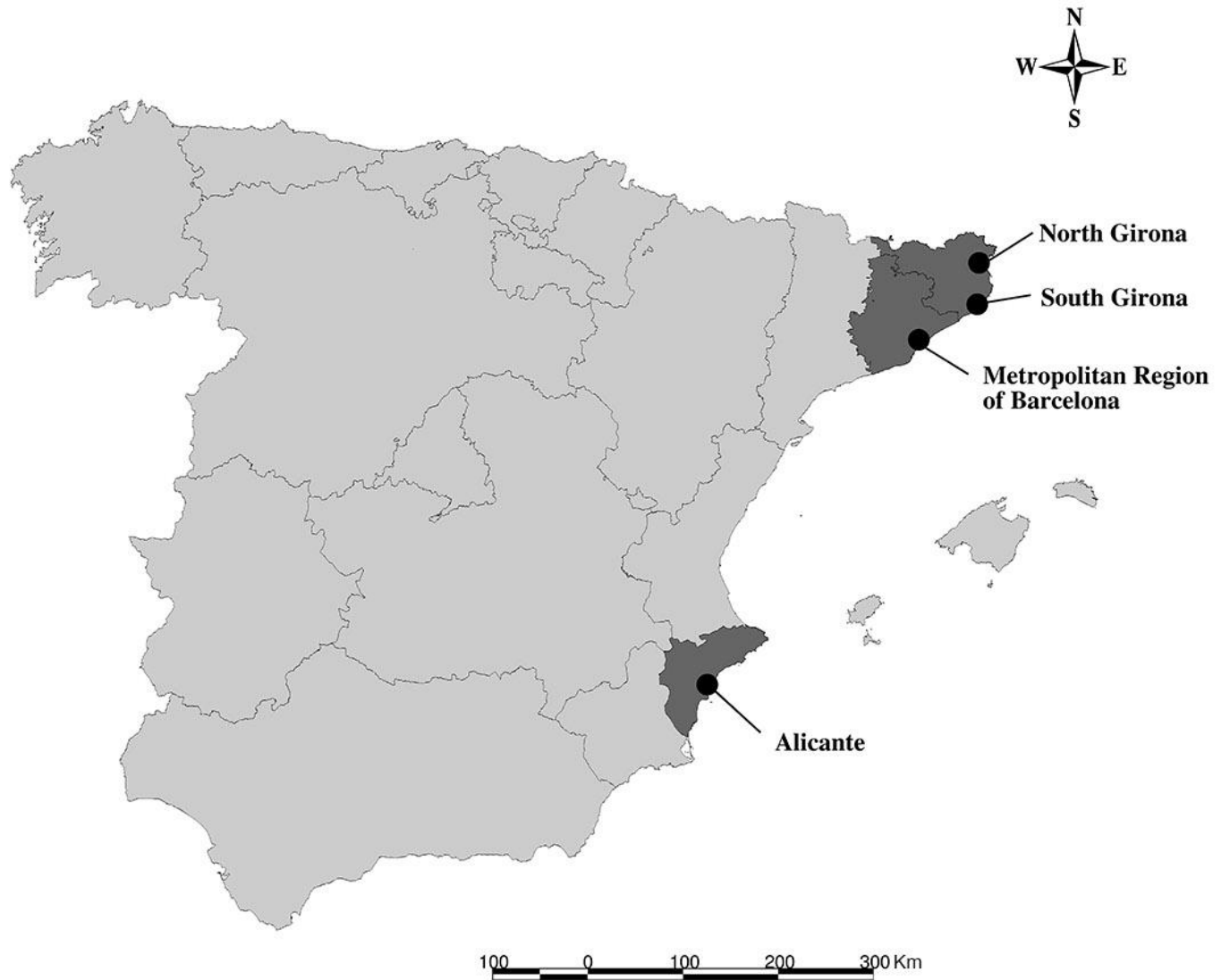


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Introduction



Study area(s)



Methods

1- Random sample of dwellings in urban-touristic developments:

Alicante	122
Barcelona	120
South Girona	240
North Girona	258

2- Survey

- Outdoors area + plant species + density = WUCOLS
- Demographic profile, socio-economic profile, irrigation habits, behaviour, perception, maintenance and design, etc.

3- Land cover change

Aerial photography + GIS

Statistics

PCA, Regression,
Clustering, ANOVA,
GLMM...

Results and discussion

1- Spatial-structural

- ✓ In Alicante single homes with swimming pools dominate and other areas where community gardens and shared pools are the norm.
- ✓ Swimming-pools are particularly abundant in **Alicante**, where **67%** of the surveyed households have access to one. This percentage is considerably higher than those reported in the two study locations of **Girona (48-59%)** and the **MRB (21%)**.

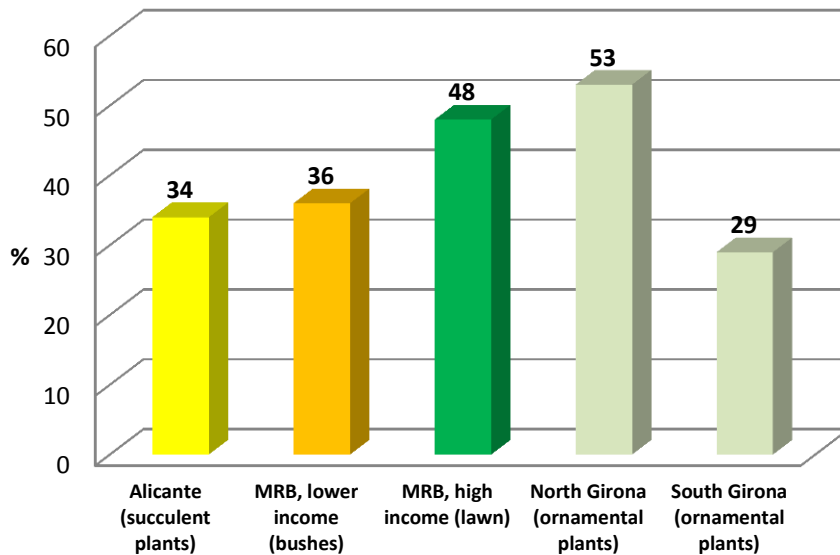


Results and discussion

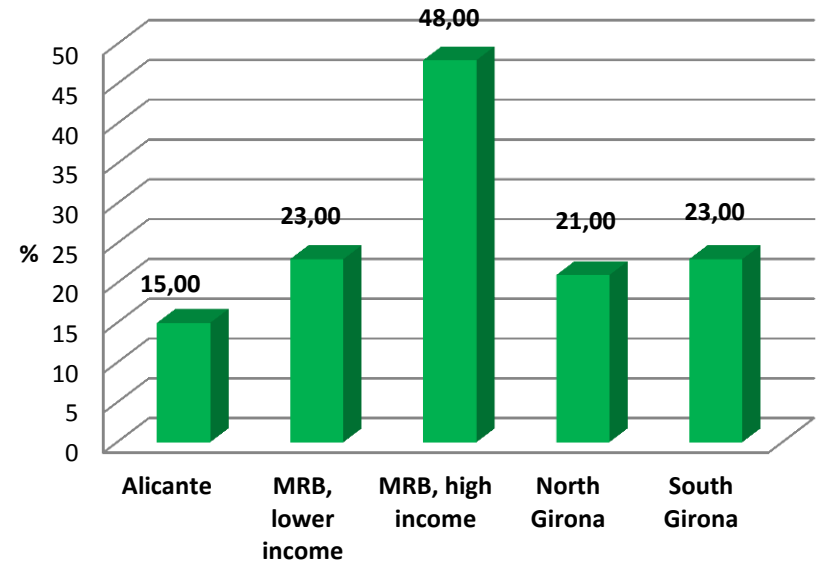
1- Spatial-structural

✓ In the **MRB**, the area devoted to the garden as a proportion of the total area of the household varies between the **43.6%** in households belonging to the **higher income group** and **31.9%** for those in the **lower income group**.

✓ The average proportion of plot surface occupied by garden is largest in the driest region, that of **Alicante (41%)**, whereas the smallest is recorded in North Girona (**32%**).



Main plant species



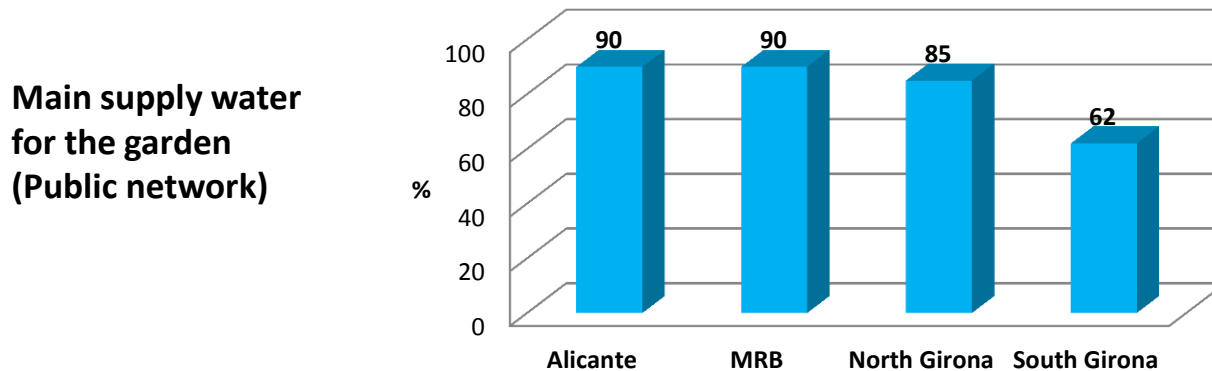
Percentage of lawn

Results and discussion

1- Spatial-structural

✓ Rainwater tanks are used – often concurrently with other sources – in a remarkable number of dwellings in **South Girona (25% of cases)** when compared to the other study areas (5-7%).

✓ Moreover, in the **MRB private wells** are used for garden irrigation in **20% of low-income residences**.



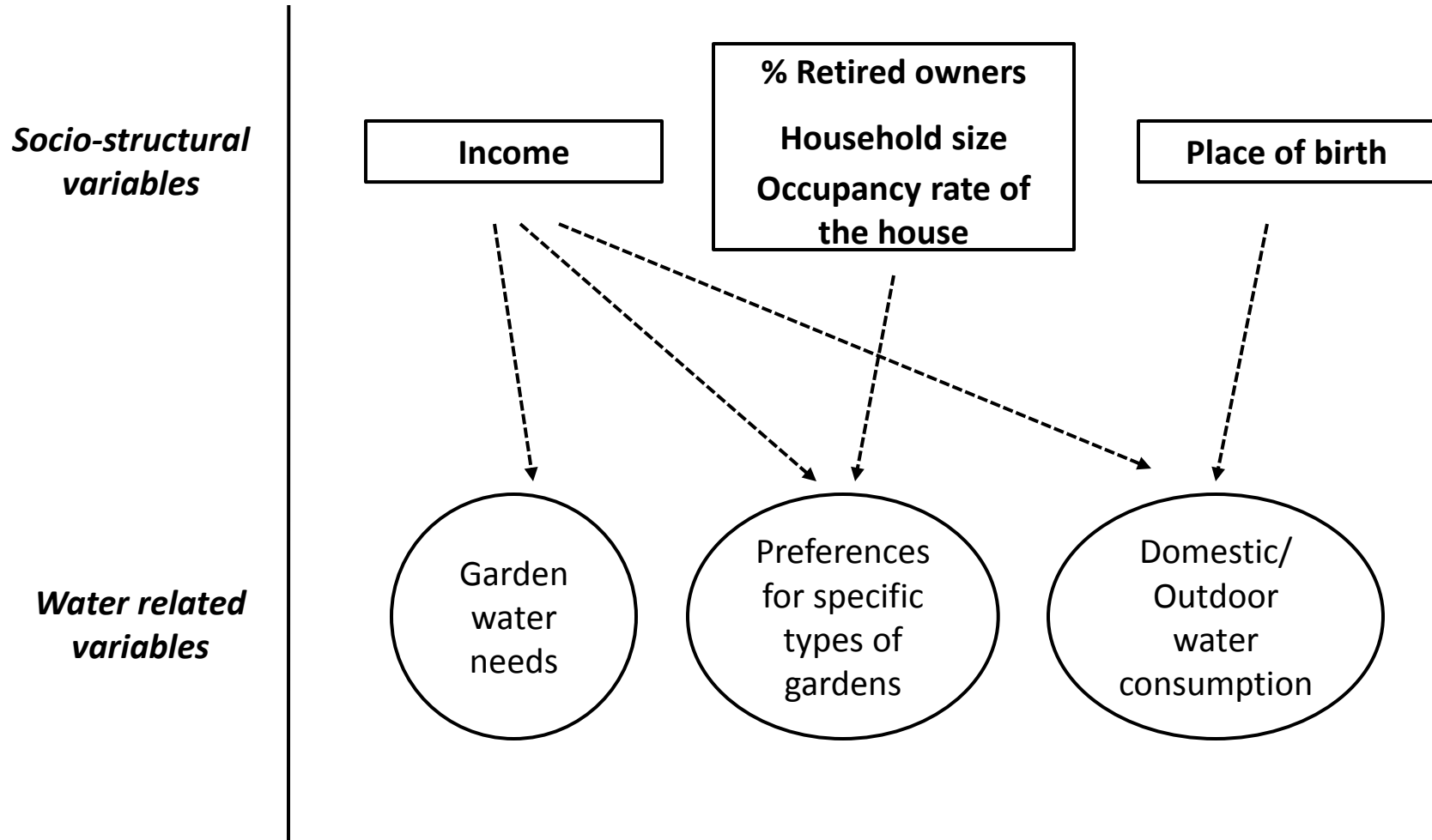
✓ The use of a hose as an irrigation system is the most common method, employed in over **60% of the surveyed households**.

✓ Nonetheless, in the two locations in **Girona** and in the **MRB**, more than **44% of lawn gardens** are irrigated with **sprinkler systems**.

✓ An increasing use of **drip irrigation** systems associated with lawn and tree areas have been detected in **Alicante** dwellings.

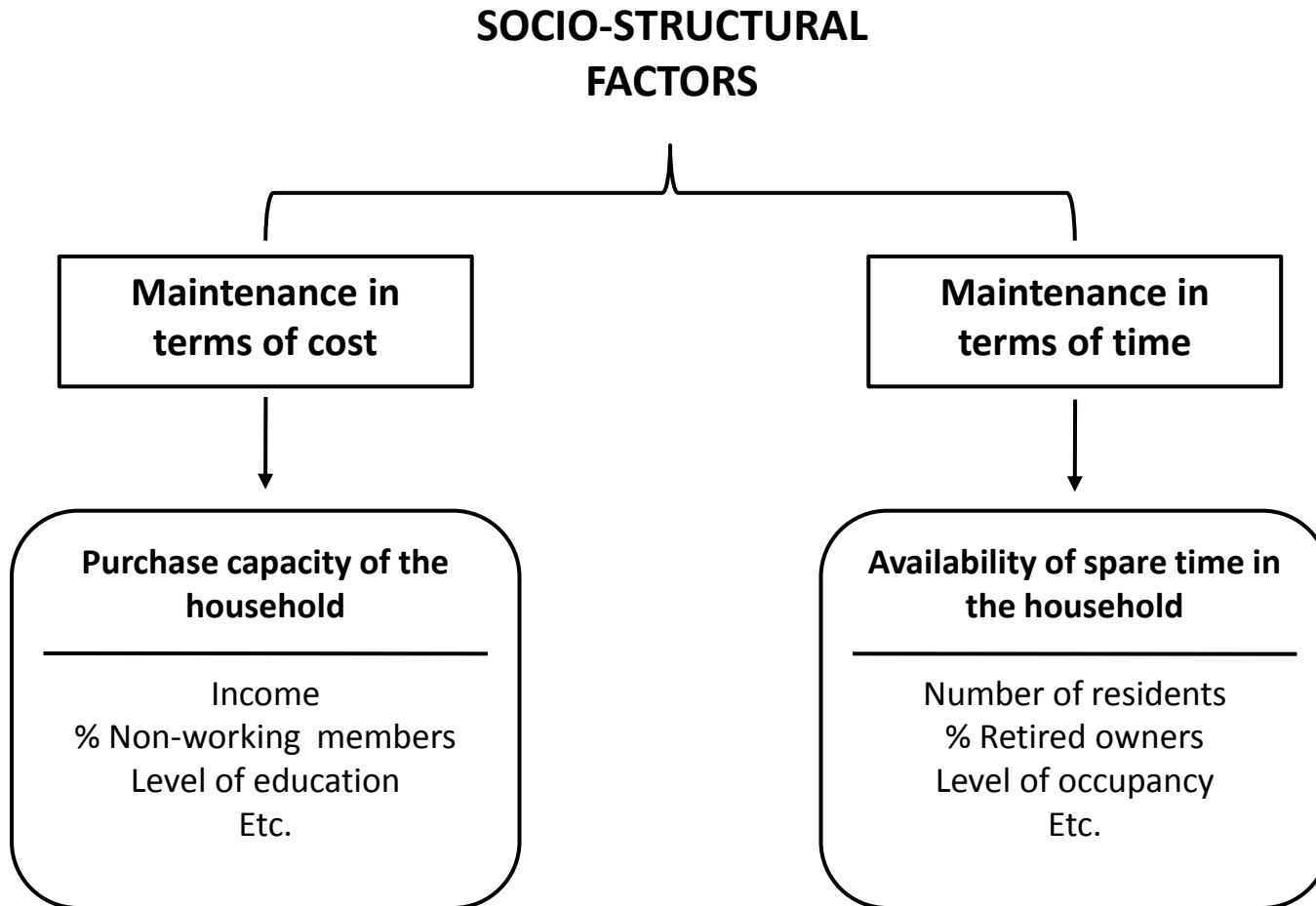
Results and discussion

2- Social-structural



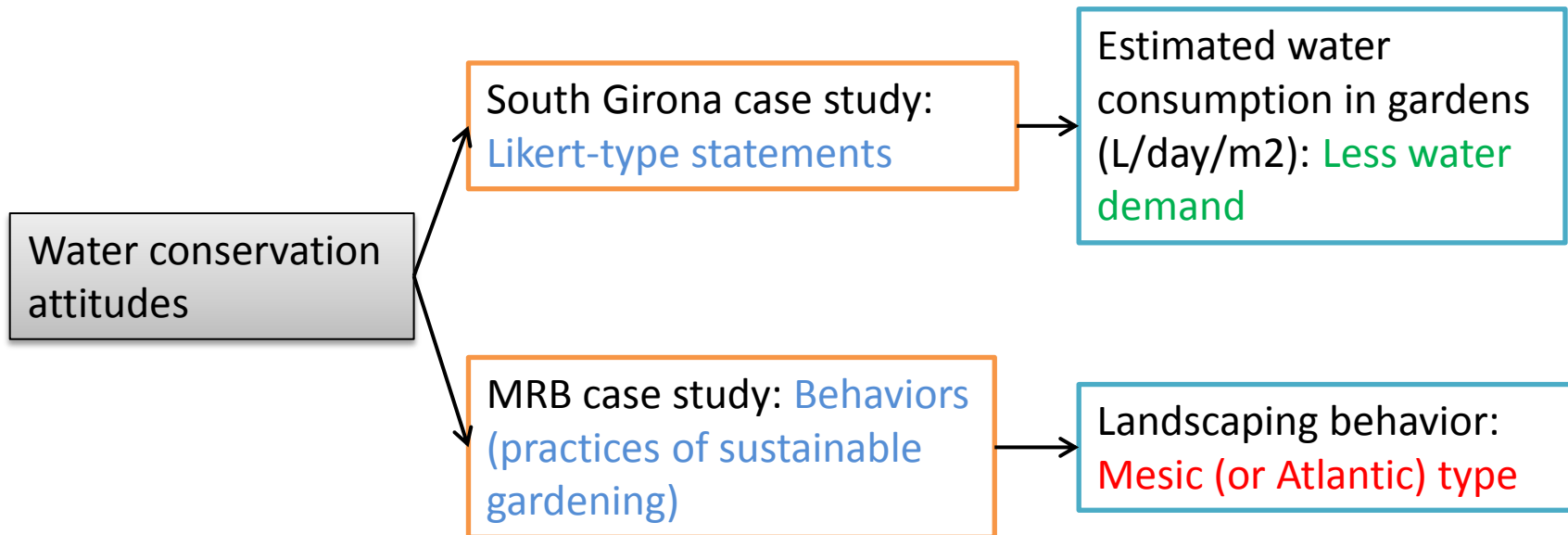
Results and discussion

2- Social-structural



Results and discussion

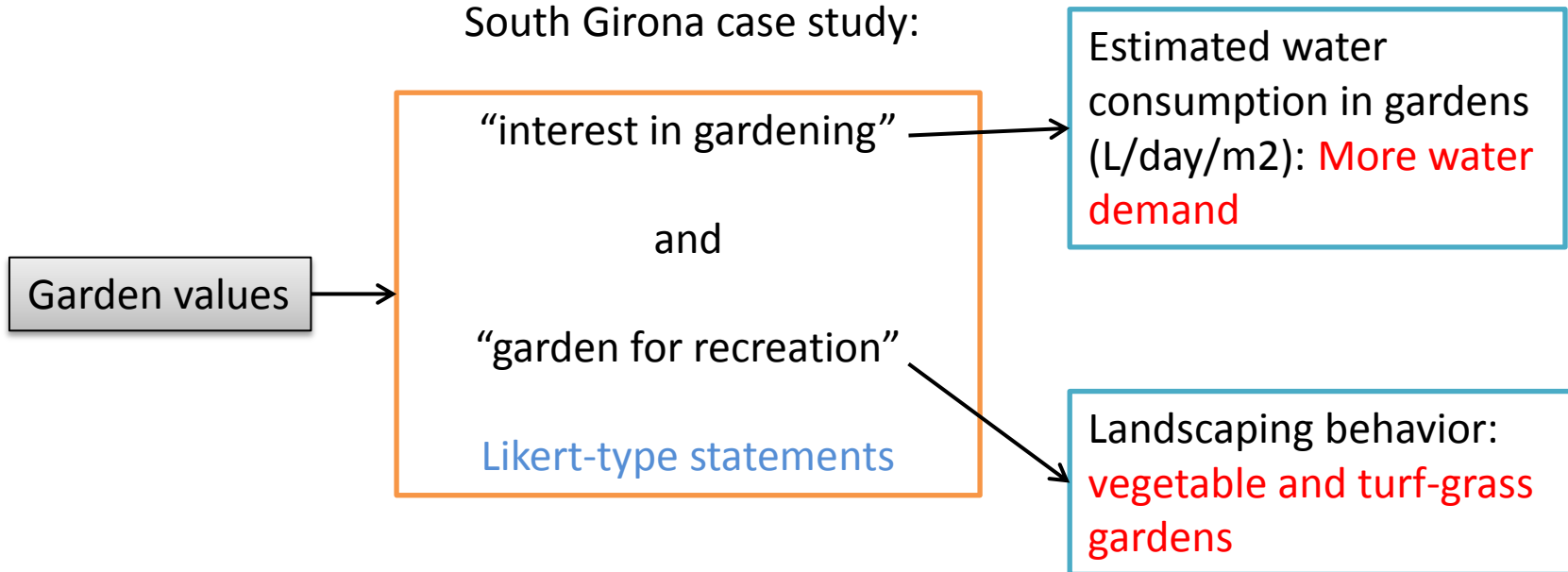
3- Cultural and psychological



Results and discussion

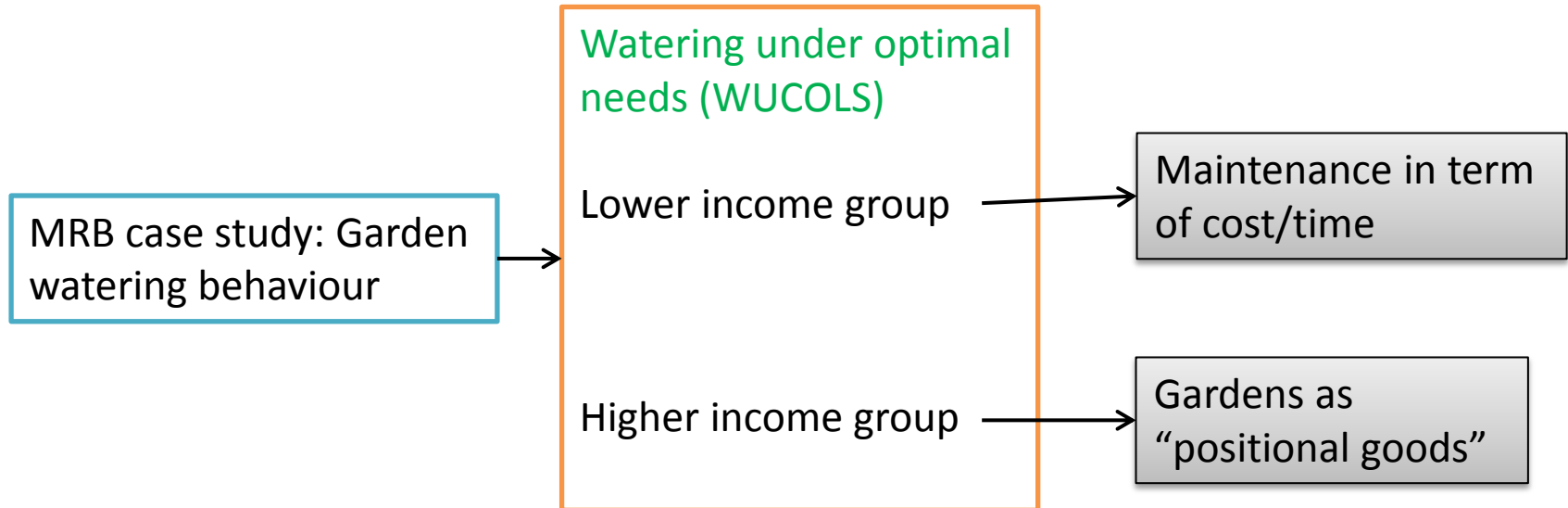
3- Cultural and psychological

South Girona case study:



Results and discussion

3- Cultural and psychological



Conclusion

- In spite of differences in the study cases, plenty of **evidence** has been found supporting the existence **of several factors** influencing outdoor water consumption in these areas

- Critical influence of the **urban model**:

 - Atlantic gardens

 - Swimming pools

 - Relative lack of efficient irrigation/alternative sources

- Practices and designs are heavily influenced by maintenance **costs and time** availability



Sociodemographic and income **profiles** are important **to design effective policies**

- **Attitudinal and behavioural variables** influence but...

lush gardens to gain
social distinction
and prestige



environmental
concerns

Thank you!

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