

Demystifying the Modelling of Water in Computable General Equilibrium Models: A Systematic Review

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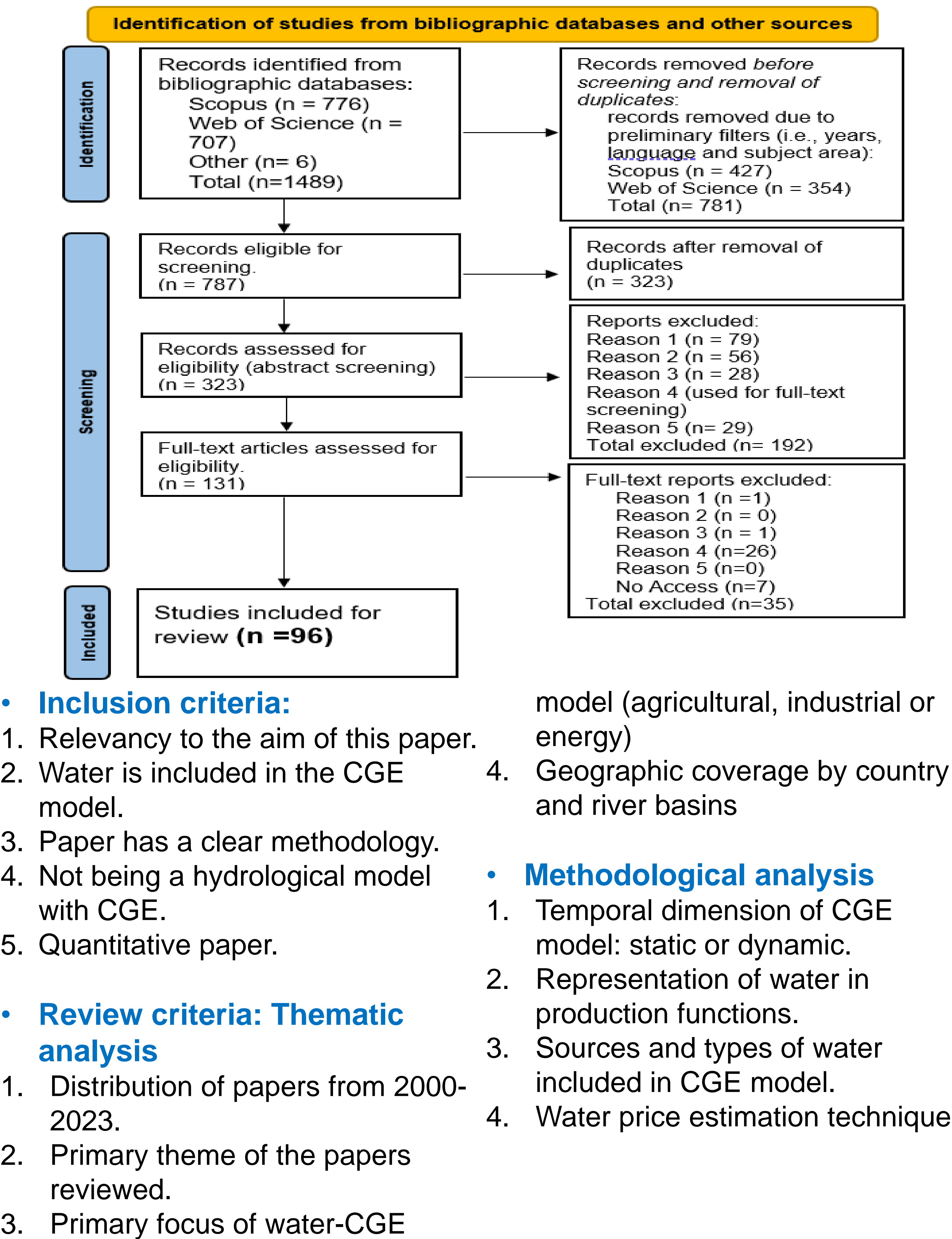


Introduction

- Computable General Equilibrium (CGE) models are a class of economic models that can incorporate water resources to allow for a complete assessment of the interconnection between water and the economy.
- The applications of the models demonstrate that there are different methodological ways to incorporate water in CGE models.
- This paper conducts a systematic reviews to present the main differences in water modelling, by examining the methodological and thematic aspects of existing applications to identify the strengths, weaknesses, and areas for further research.

Methodology of Systematic Review

Figure 1: Methodological steps of the systematic review process based on PRISMA structure



Results of Thematic Analysis

A. Primary theme of reviewed studies

- The majority of studies focused on examining the impact of water policies, including economic impacts of construction of dams.
- A large number of studies addressed water pricing and taxation using CGE for its ability to allow for price and quantity adjustments.

B. Geographic coverage by country of the studies reviewed

- Very few studies were conducted in Northern and Western Europe .
- no studies have been found for the Gulf region and Eastern Europe.

Figure 2: A comparison of the reviewed studies by their main research theme.

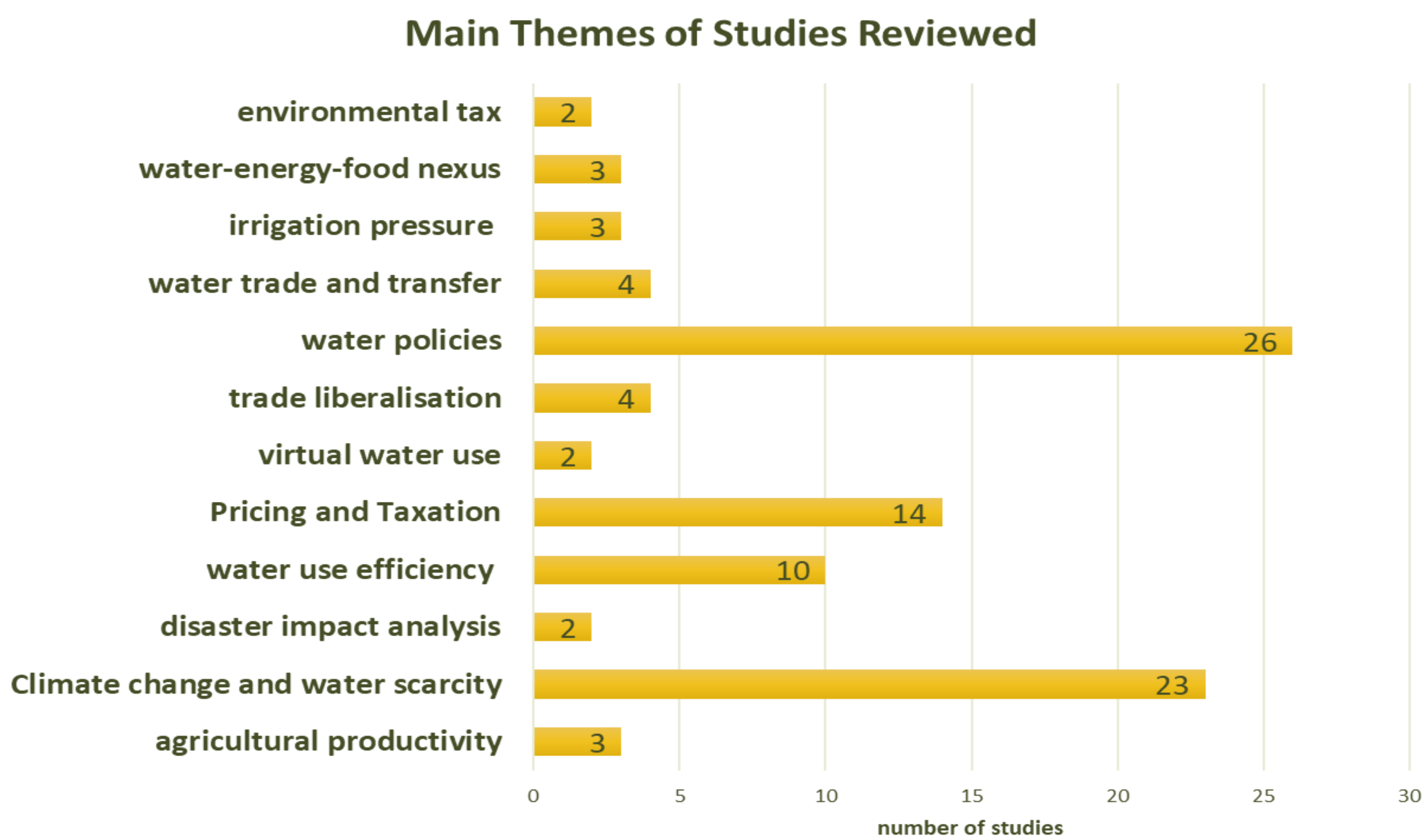
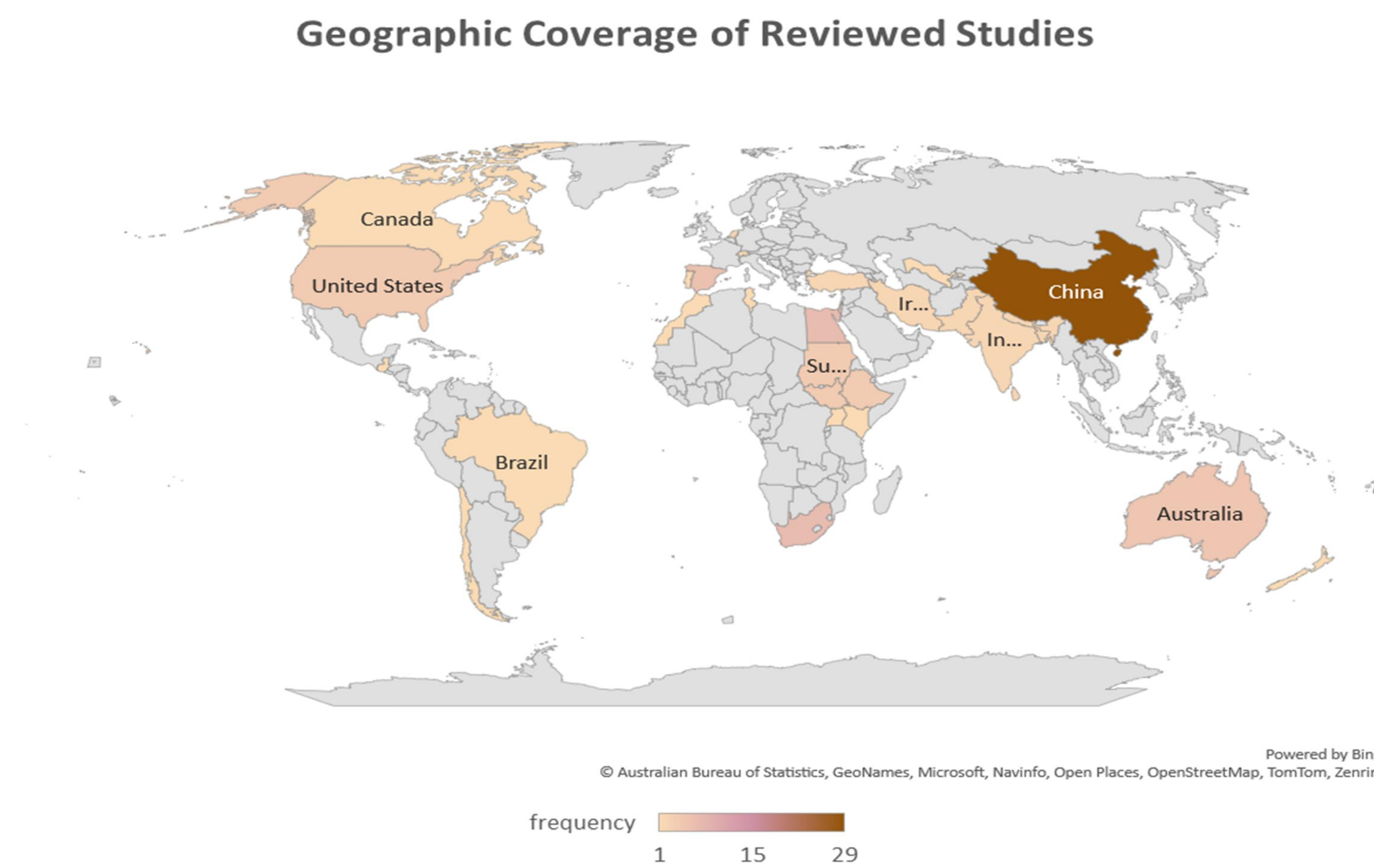


Figure 3: The distribution of the reviewed studies by their case study country.



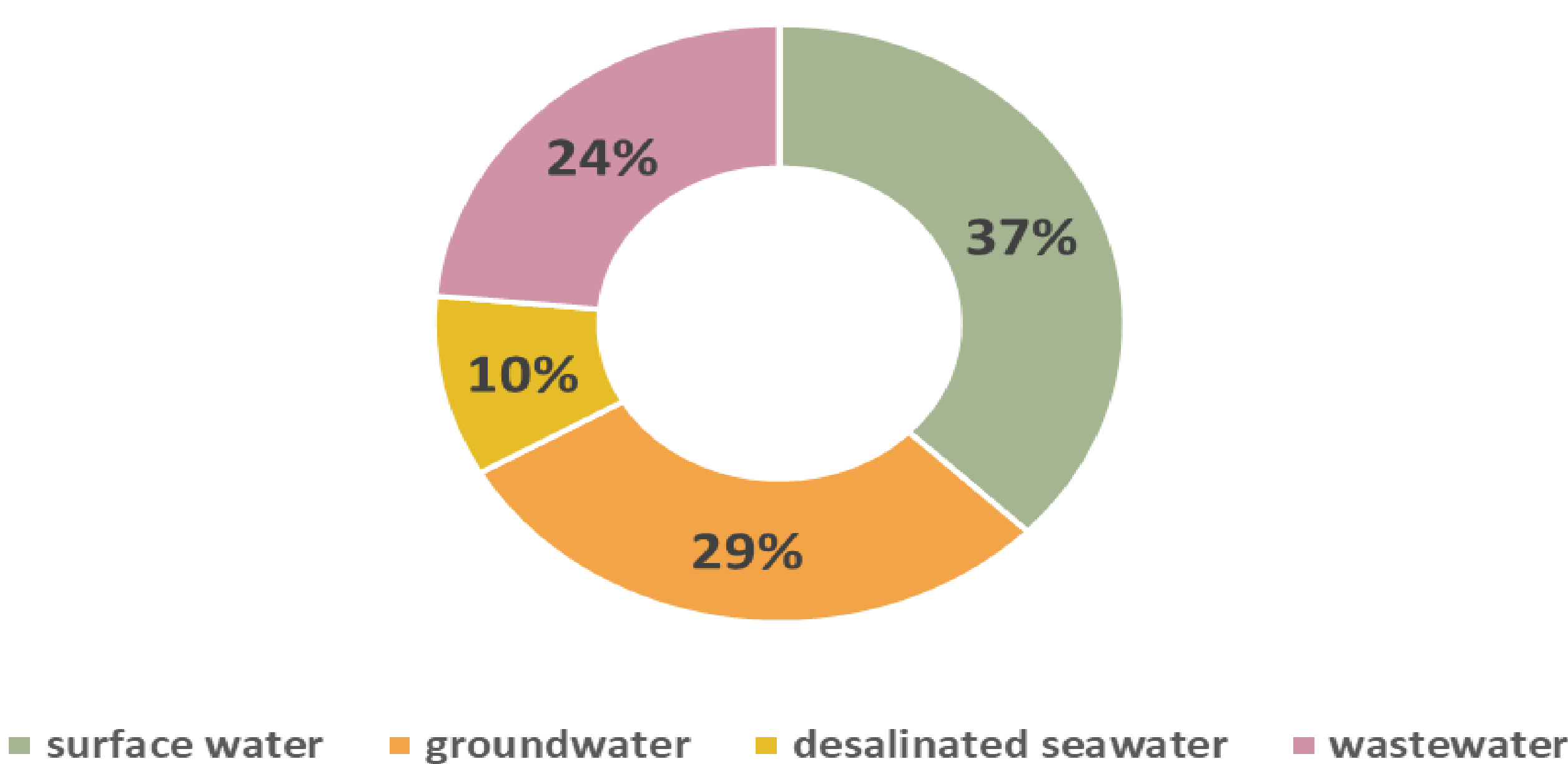
Results of Methodological Analysis

A. Sources of water included in CGE models

- Most studies covered surface and ground water as a source in their models, but relatively fewer studies considered wastewater.
- The least explored source of water is desalinated seawater.

Figure 4: share of water sources included in water-CGE models reviewed

Sources of Water Included in Water-CGE Models of Studies Reviewed



Conclusions and Perspectives for Future Research

- There is an emerging literature on the relationship between water and energy production in CGE models that will benefit from future research.
- Improvement in the availability and quality of water consumption data by industries, and by water source is required for a more realistic representation of water in CGE models.