

# Integrated water resources management: New water & economic evaluation tools - application to Spain

P. Martínez-Santos<sup>2,3</sup>, Maite M. Aldaya<sup>1,2,3</sup>, M.R. Llamas<sup>2,3</sup> S. Díaz Alcaide<sup>2,3</sup>

<sup>1</sup>United Nations Environment Programme; <sup>2</sup>Universidad Complutense de Madrid, Spain; <sup>3</sup>Water Observatory, Botín Foundation, Spain

## ABSTRACT

The concept of integrated water resources management (IWRM) has gradually gained recognition over the last decades.

This is largely because IWRM advocates a coordinated to balance social and economic needs with care for nature.

Nevertheless, IWRM is both controversial and elusive in practice. Not the least of its shortcomings is the fact that many decisions pertaining to water are made outside the sphere of water planning. Based on the Spanish experience, this poster examines the role of the water footprint and virtual water trade on Spain's water policy. Our analysis highlights the importance of green water and the fact that most of the water is used to produce low-income crops. Within this context, we argue that water footprint and virtual water analyses can be useful to underpin IWRM practices.

### The water footprint concept



### Virtual water trade (VWT)



Spain is the driest country in the EU

When Spain imports a product instead of producing it domestically Spain is saving its own water, which can be used for other purposes

Every time Spain imports one shipload of wheat, Spain is importing one-thousand shiploads of water

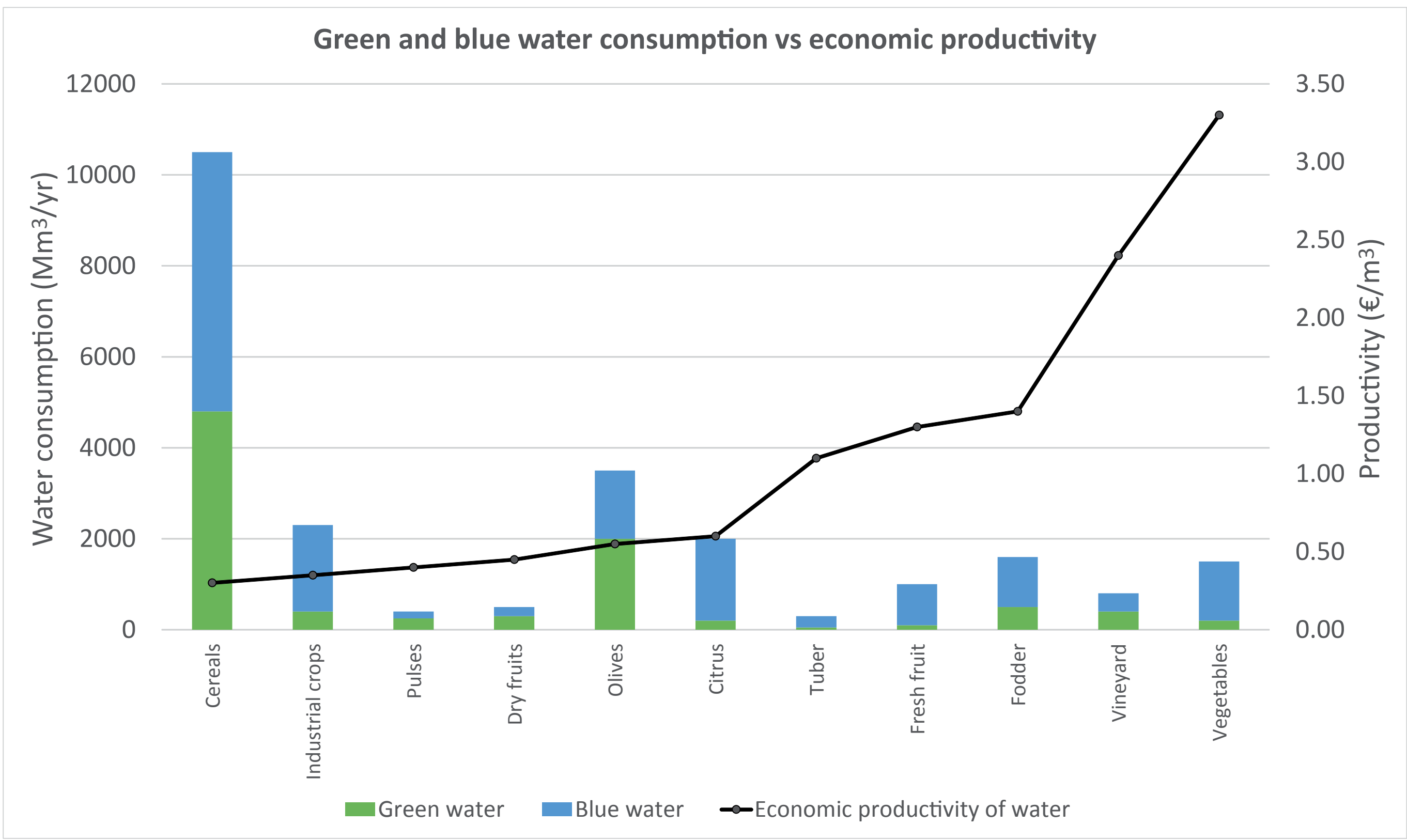
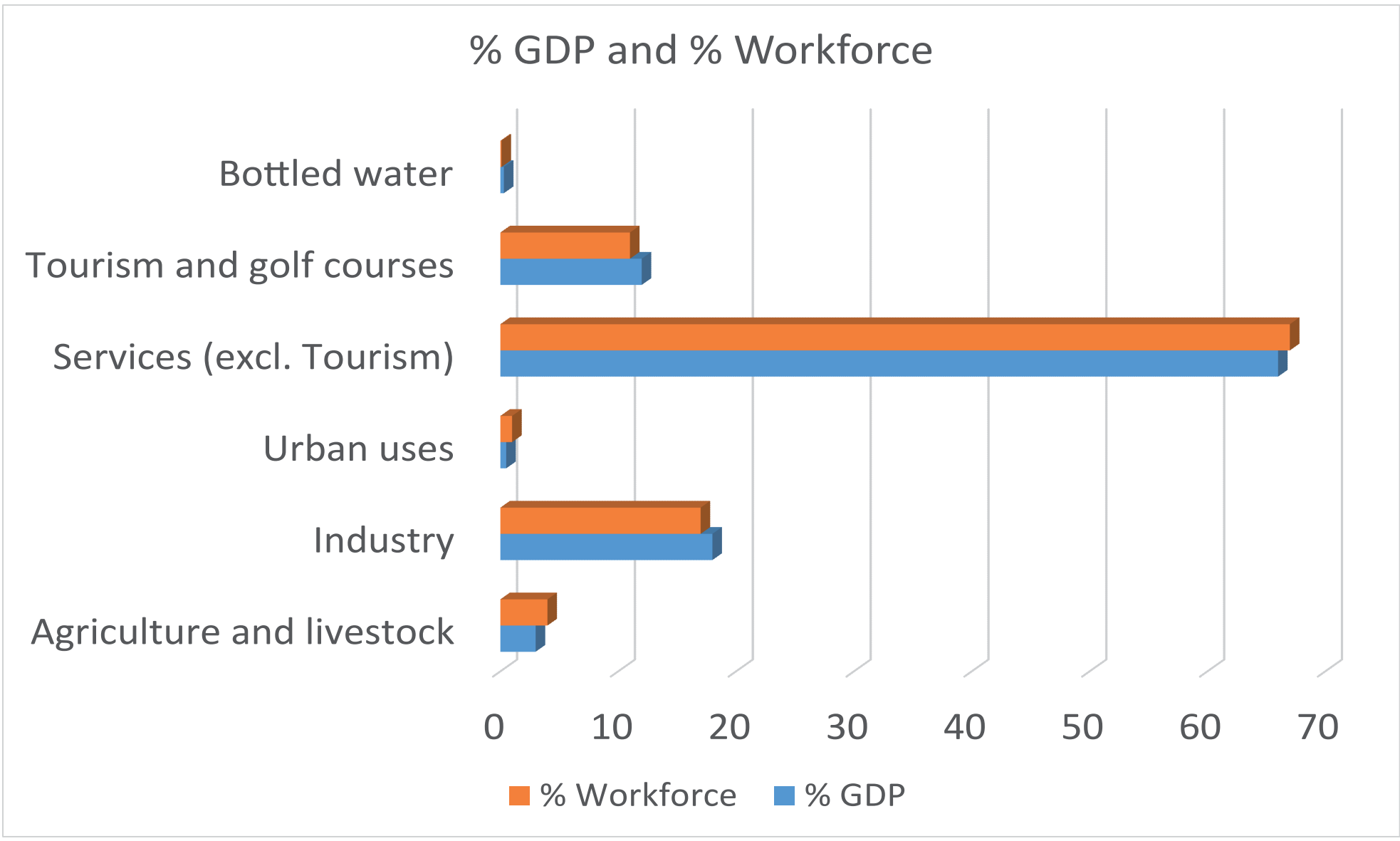
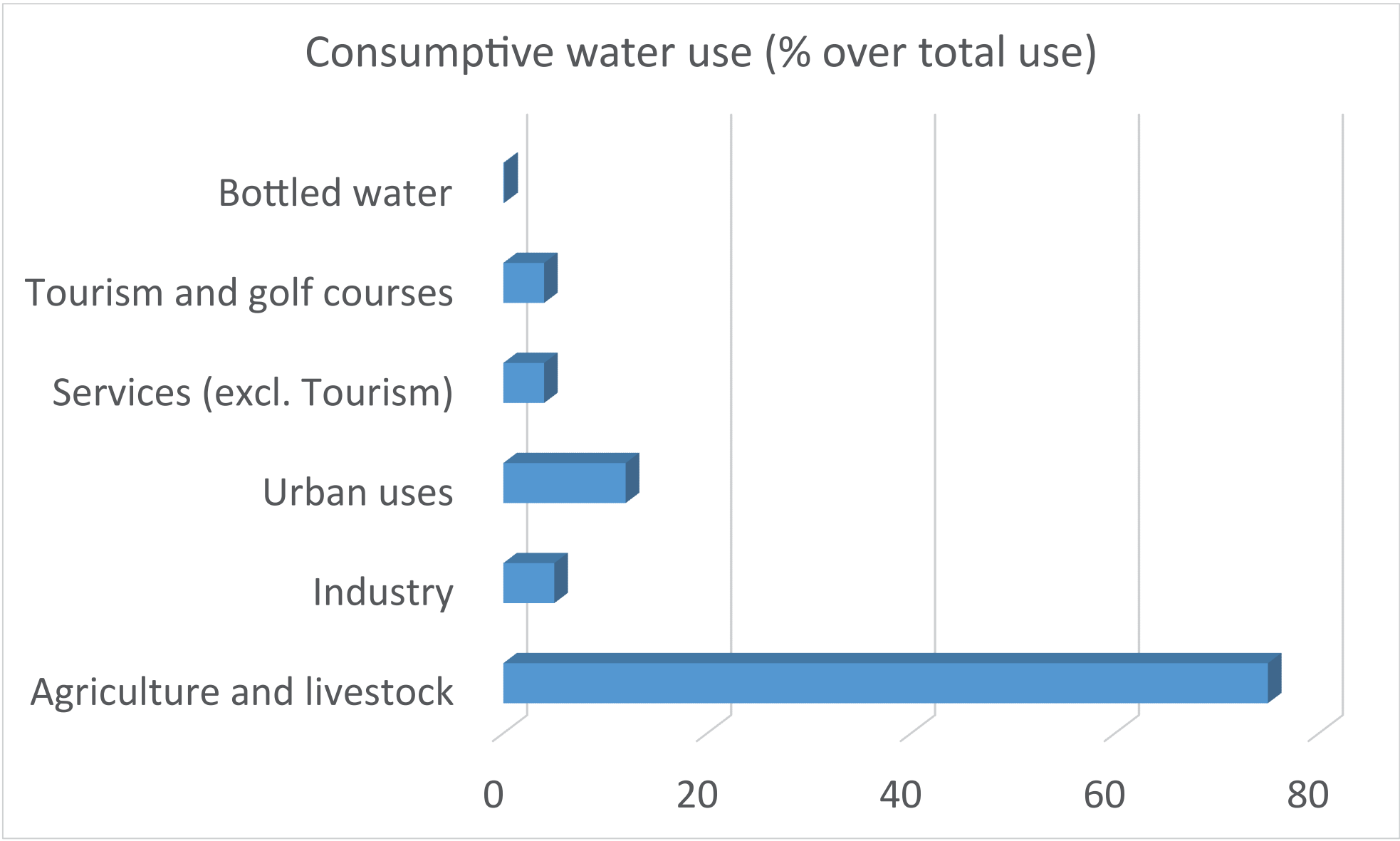
Food production accounts for 92% of the global water uses

Rainfed agriculture in wet countries (green water) plays a major role in VWT



“Food trade could play a balancing role in the global water cycle by re-assigning water uses indirectly”

## Water uses, related economic values and employment in Spain



Spain is a semiarid country where most of the water is used to produce low-income crops in water-stressed basins

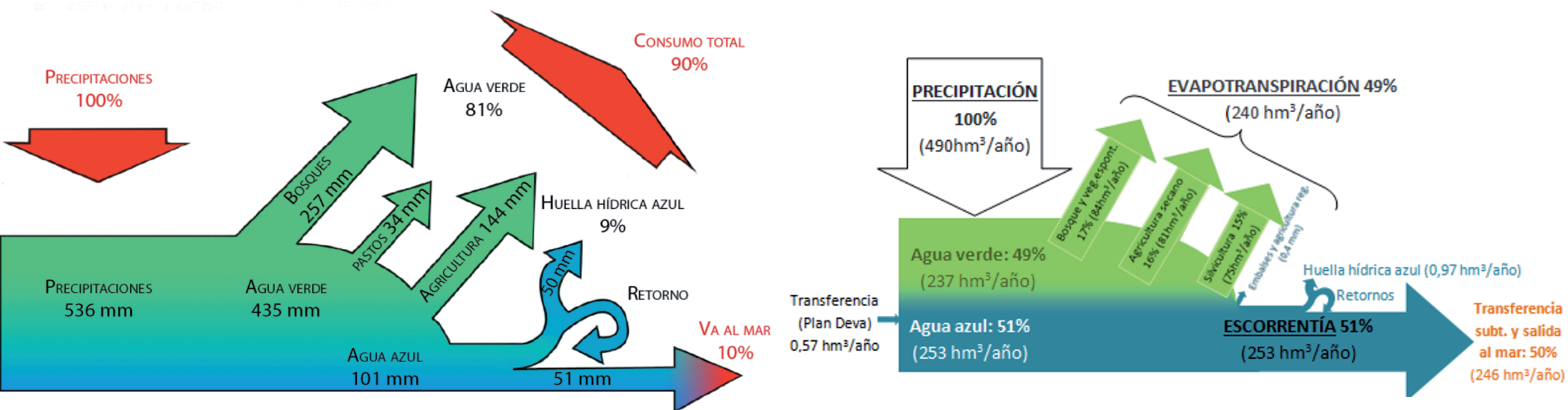
There is room to reallocate some of the blue water resources to cater for dry spells and care for nature, replacing a part of the low-income production with imports

Agricultural policy plays an essential role in water policy. Win-win solutions need to be sought in order to bring farmers on board

Water footprints and virtual water trade are only one part of the equation, and mostly pertain to water accounting: other aspects such as intangible values are also important

In order to achieve a more IWRM is very relevant to move beyond the volumetric water accounting and assess the socio-economic and environmental impacts of water use

### Green and blue water balance in the Guadalquivir & Nansa basins



### References

Aldaya MM, Llamas MR (2012). El agua en España: Bases para un pacto de futuro. Fundación Botín, Madrid, 93p.

Aldaya MM, Martínez-Santos P, Llamas MR (2009). Incorporating the water footprint and virtual water into policy: reflections from the Mancha Occidental region, Spain. Water Resources Management 24(5):941-958

Díaz Alcaide S, Martínez-Santos P (2012). Huella hidrológica de la Cuenca del Nansa. Mesa de Revitalización de la Cuenca del Nansa. Powerpoint Presentation, Santander.

Garrido A, Llamas MR, Varela-Ortega C, Novo P, Rodríguez-Casado R, Aldaya MM (2010). Water Footprint and Virtual Water Trade in Spain: Policy Implications. Springer, New York.

Martínez-Santos P, Aldaya MM, Llamas MR (2013). Integrated Water Resources Management: state of the art and the way forward. In: Martínez-Santos et al (eds). Integrater Water Resources Management in the 21st Century: Revisiting the paradigm. CRC Press-Taylor & Francis, London, 331 p.

Mekonnen MM, Hoekstra AY (2011). National water footprint accounts: the green, blue and grey water footprint of production and consumption, Value of Water Research Report Series No.50, UNESCO-IHE.