

## ABSTRACT

### **Biding ESG to water and territorial Governance: Geospatial analytics and AI approaches towards effective development and Nations growth**

Vale M.J. <sup>1</sup>

<sup>1</sup> Direção Geral do Território- DGT, Ministério da Coesão Territorial, (Directorate General for Territorial Development, Ministry of Territorial Cohesion). email: mvale@dgterritorio.pt

email: mvale@dgterritorio.pt

Water is crucial for nations development and growth. It is essential population health, and food production, as for industry and energy production, tourism and recreation; Understanding water availability, in terms of quantity and quality, over time and space. Bering in mind the 17 ODS, proposed by the United Nations associated with sustainable development accomplishment worldwide, is easy to understand the role of water. Water is, for the purpose of the presented work, mainly considered within ODS 6, Clean water and sanitation for all, it is also integrated, mainly considering the oceans perspective, in ODS 14-life bellow water. Nevertheless, a deeper look let us envisioned the water relation with all the others, from food or energy production to promoting health, or reducing poverty and inequalities.

Being so , to understand the evolution of water governance over time and space is crucial to promote justice and good development strategies worldwide.

The present study presents the most recent achievements concerning water management and drinking water protection and water supply, within the watershed scale, integrated with spatial land uses distribution and analysing territorial water-based dependencies, along with existing and optional planning transformation within future plans options and investments (TerAgua 2024).

This pilot pilot explores different data integration tools and data analytics to better address water, namely drinking water, efficient management, preservation and governance using AI and geospatial analytic tools. It is build within digital collaborative environments, in order to evaluate the water related extent of ESG accomplishment so far. Beyond presenting the state of the art, this geospatial platform presents the potential of geodata sets as of analytical tools and IA, to address ESG revision and improvement exploring time and space. It presents combined water balance evolution and explores its alignment with different proposes for land use transformation, within different socio-economic development alternatives.

The results are presented as aggregated data- traditional indicators- as using desegregated analysis as an innovative approach to ESG accomplishment evaluation, and thus contributing to a better understatement of UN accomplished goals for the years to come.

The results can support private and public institutions, and the nations purpose of accomplishing regulations without compromising the financial essential perspective and support, allowing to align investments and maximize returns, increasing level and quality of life, facing each particular nations or regional constraints, for present as for future generations worldwide.

**KEY WORDS:** Governance, water, Territorial planning, AI, Data analytics.