



# The Water, Energy and Food Nexus In Algeria

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## Abstract

It is hard enough to manage water to imagine how difficult it is to try to combine water with other parameters like energy, food, land, environment and Algeria is part of so many countries that have always managed their resources separately without taking into account the interactivity and the complexity of relationships between its sectors.

Algeria like all other countries, try to achieve sustainable development goals and it makes good progress in this area since she is ranked 1st among the Arab countries which have exceeded two-thirds of the way to achieve the SDGs (Luomi, 2019)

Nevertheless, Algeria is still working to satisfy the population with water of quality and quantity, in addition to a source of energy and to ensure food security.

It is in this context that we will conduct our research, in order to find the ideal balance between water, energy and food, and analyze the interface that exists between these sectors using systems thinking that allows to study the whole system rather than parts. The involvement of the stakeholders in this research will give another insight into the management methods of these different sources, and why not find solutions in this context.

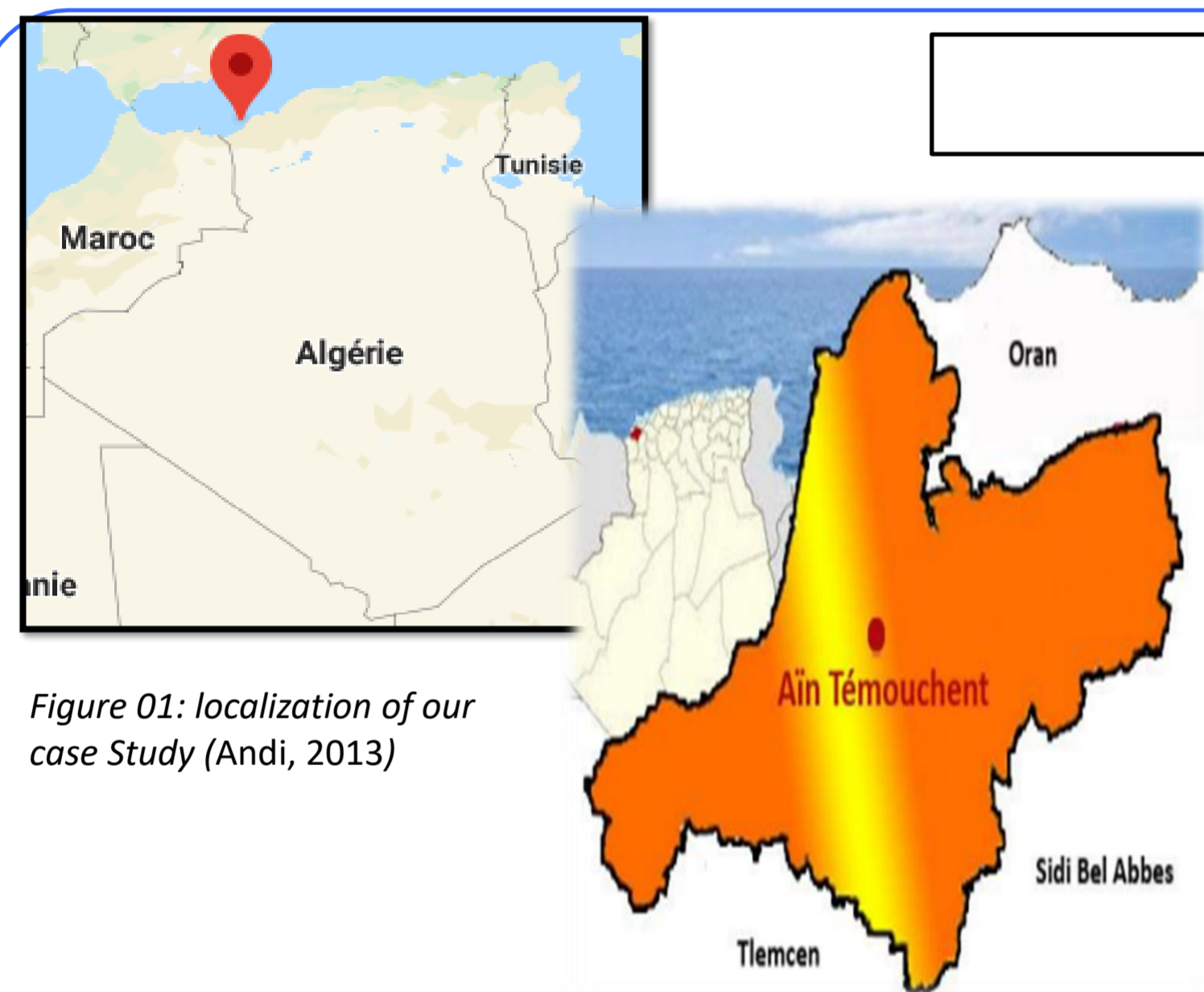


Figure 01: localization of our case Study (Andi, 2013)

## CASE OF STUDY

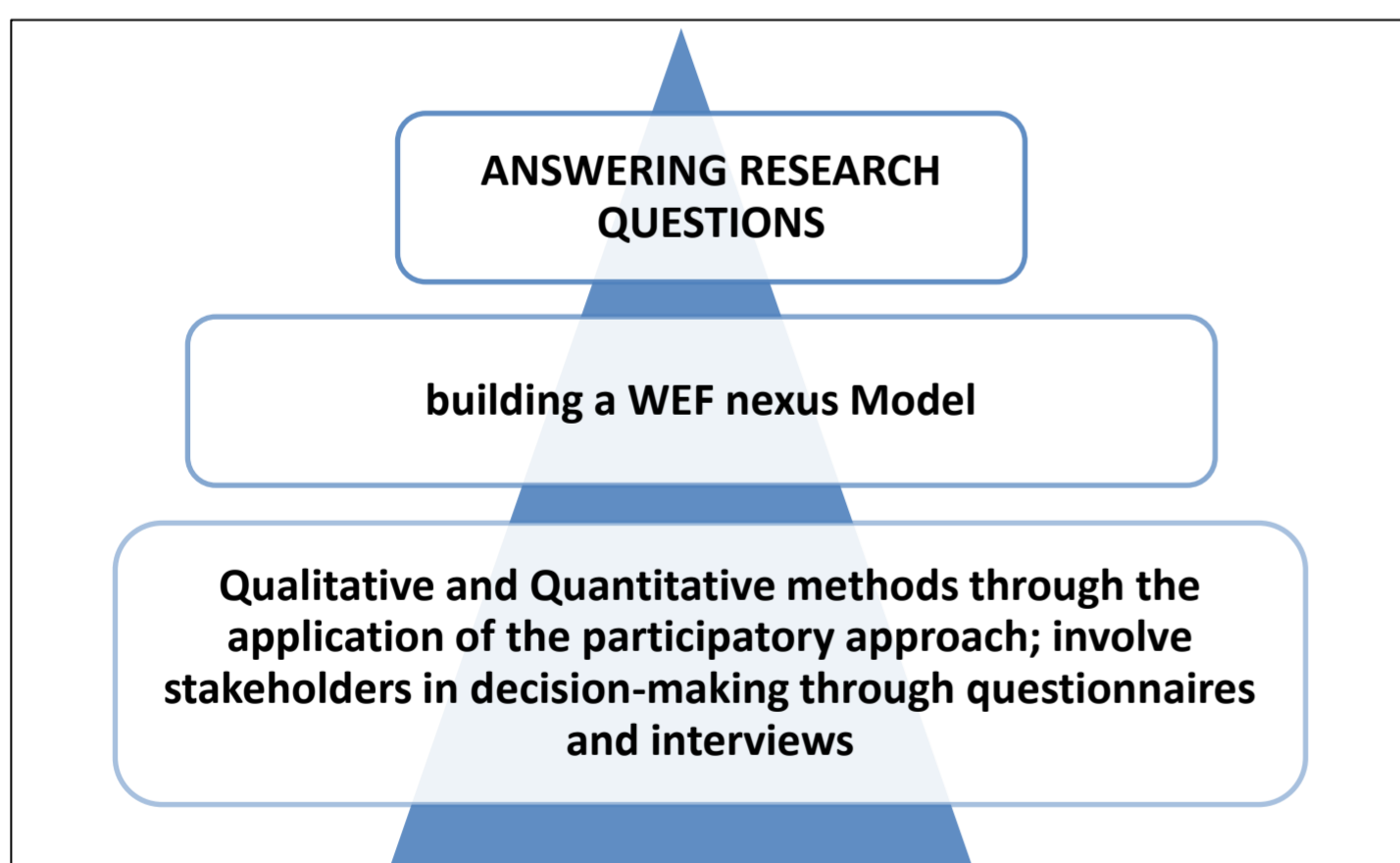
Ain-Temouchent, an agricultural town that consumes a lot of water, in addition to the scarcity of water resources experienced in the western region of the country, accompanied by a severe period of drought; the most recent one in 2019 where precipitation was estimated around 237mm, where averages of 31, 60,61,35,50mm were recorded during the months of September, October, November, December and January respectively, which prompted the officials concerned to declare part of the Ain-Temouchent region a disaster zone.

In order to alleviate the water shortage in the region, the state has resorted to seawater desalination with the establishment of a reverse osmosis desalination plant (Benisaf Water Company) with a capacity of production of 200,000m<sup>3</sup> / day.

## Research Questions

- 01
  - What are the current trends on the nexus on the global level? and what is the current state of these resources at the national level?
  - How is the nexus perceived by the different stakeholders?
- 02
  - What is the most appropriate tool to assess the nexus in our study area?
  - How to apply a model that integrates water-energy-food into our study area?

## METHODOLOGY



## WHY DO WE NEED SYSTEMS THINKING ?

The approach taken by the specialists consists in considering each element as an interdependent system, without studying the shared interface with other elements, but the application of the systemic approach in the study of our system makes it possible to better understand the complexity of all subsystems. (Bekkouche 2016)

Systems Thinking methods can offer valuable contributions to nexus research, which helps to capture the complexity of interrelations and interactions among water, energy and food systems (Tamee et al.2017)

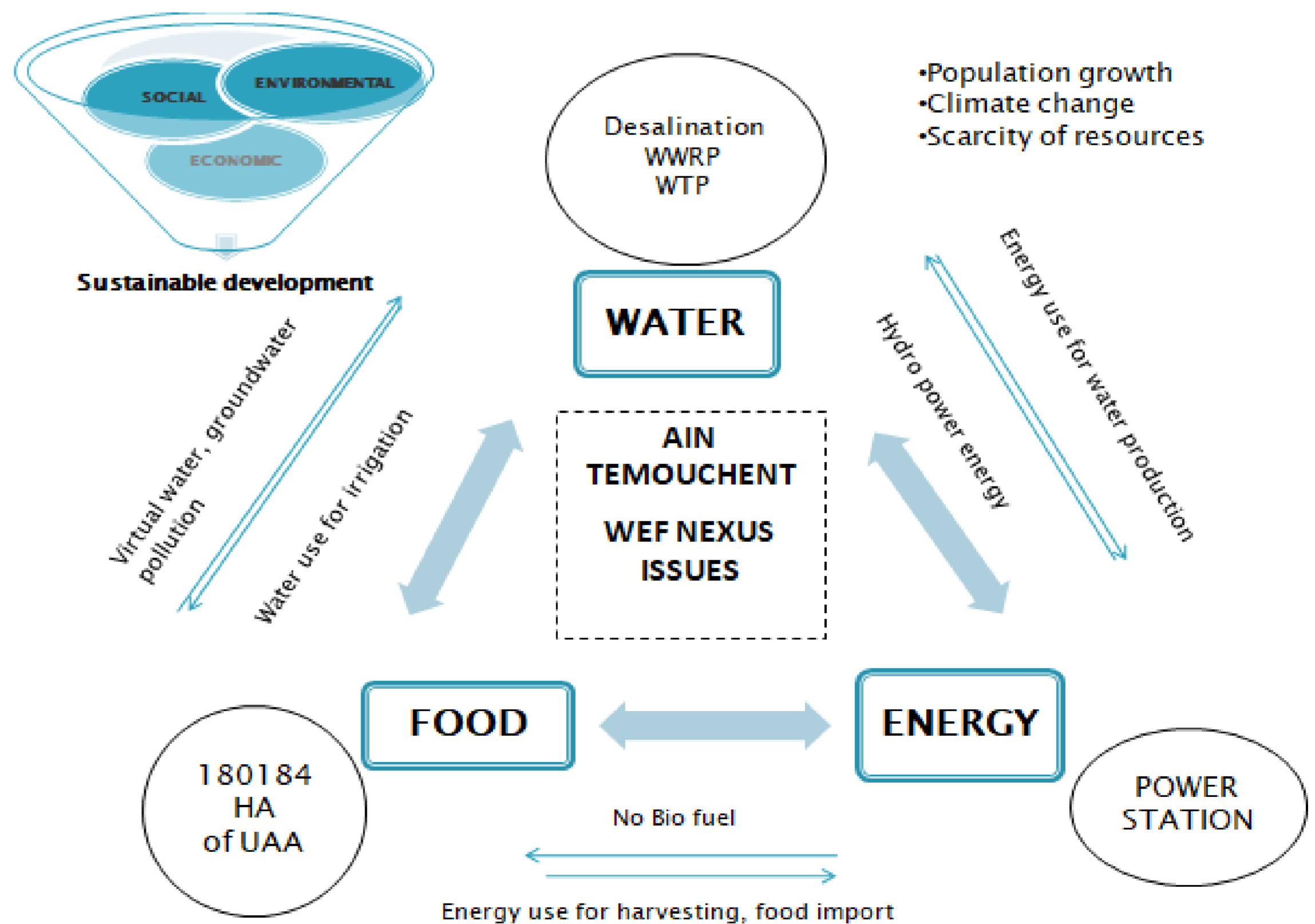


Figure 02: AIN TEMOUCHENT WEF Nexus Issues (Authors)

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