

Title of the project:	
Supporting desirables futures through Games and simulations in the Apulia (Italy) region	
Assignment no.: 24.15	Internal/external: Both
Head graduation committee: Maarten Krol, PhD (UT) – not confirmed	Daily advisor: Marcela Brugnach, PhD (UT) Raffaele Giordano, PhD (IRSA-CNR)
Name(s) of participating companies or institutes:	Start of the project:
<ol style="list-style-type: none"> 1. University of Twente 2. IRSA-CNR (Istituto di Ricerca sulle Acque –Consiglio Nazionale delle Ricerche) 	October-November 2015
Short description and objective of the project:	
<p>The work proposed here, is part of an ongoing collaboration between IRSA, Italy, and the UT, where the effects of ambiguities associated with the management of ground water abstractions in the region of Apulia, Italy, has been investigated. The Apulia region is a peninsular territory covering about 20,000 km², with more than the 76% of the total area devoted to agricultural activity. The extensive use of water for agriculture over the centuries had transformed it in a typical example of groundwater overexploitation.</p> <p>During the first stages of this research, we have: 1. identified the differences in perspectives actors hold regarding the management of water for agriculture and 2. explored the effects of these differences (ambiguity) in the ground water system. We found out that while at first sight, differences in perceptions and framing among actors seem not to be significant, their effect become apparent through the actions actors perform. Actors behave in ways that are commensurate with what they believe is important and with what they expect other will do. In our analysis of ambiguity we found out that the lack of alignment between what an actor is expected to do and what the actor really does can have a major impact in the dynamics of the system, bringing it to undesirable states. It is through interactions that these differences become important. Our analysis revealed three different feedbacks loops that emerged under different constraint. While these dynamics are difficult to be avoided, they can be counteracted when they are recognized by the actors themselves, since being aware of their effect already changes the way in which actors relate to each other and act.</p> <p>In our next research phase and building on these findings, we want to identify the changes that could to be exerted in the system so more acceptable dynamics emerge in the short, medium and long term.</p> <p>To this end, here we plan a combination of Future Search conferences and games to determine a future common vision. In these conferences the different actors will come together to determine</p>	

the future they want for the region. The MSc thesis will consist in supporting this process through the development of a game in a multi-agent environment, that in combination with existing hydrological models, can help evaluate the different alternatives actors imagine. Concretely, the proposed thesis will entail the adaptation of existing hydrological models and the design of a game that can be adapted to test strategies for testing different futures. The Msc students must be familiar with programming and model development and used, and be willing to be part of a team of water specialists and computer scientists and be willing to spend some time in the Apulia.

For more information please contact M Brugnach at m.brugnach@utwente.nl

Supervisors:

UT: Marcela Brugnach

IRSA: Raffaele Giordano.