STAKEHOLDERS, MULTI-FUNCTIONALITY, AND GOVERNANCE: HOW TO MANAGE COMPETING WATER USES AND IMPROVE DECISION-MAKING PROCESSES IN THREE SOUTHERN EUROPEAN IRRIGATION SYSTEMS

ACTEURS, MULTIFUNCTIONNALITÉ ET LA GOVERNANCE: COMMENT GÉRER LES USAGES CONCURRENTES DE L'EAU ET AMÉLIORER LES PROCESSUS DÉCISIONNELS DANS TROIS SYSTÈMES D'IRRIGATION DU SUD DE L'EUROPE

[1] Sandra Ricart Casadevall

ABSTRACT

There is definitely a need for developing and promoting improved water governance in multi-functional irrigation systems, especially in view of increasing uncertainty in the availability of water resources, the plurality of perspectives and interests related to rural development, and environmental protection demands. The goals of this paper are to highlight: 1) the debate on irrigation management based on an analysis of its multi-functional role, 2) the promotion of the territorial management of irrigation in order to improve good governance between competing water uses, and 3) the dominant stakeholders' discourses and profiles in three multi-functional irrigation systems (the Segarra-Garrigues system, in Spain; the Neste system, in France; and the Muzza system, in Italy). Stakeholder analysis is applied in combination with a new graphical tool to evaluate the confronted points of view between stakeholder's profiles, named Territorial Irrigation Management Approach (TIMA).

RÉSUMÉ

Il ya certainement un besoin pour le développement et la promotion d'une meilleure gouvernance de l'eau dans les systèmes d'irrigation multi-fonctionnelles, en particulier en vue d'accroître l'incertitude sur la disponibilité des ressources en eau, la pluralité des points de vue et les intérêts liés au développement rural, et les exigences de protection de l'environnement. Les objectifs de cette communication sont à souligner: 1) le débat sur la gestion de l'irrigation basée sur une analyse de son rôle multi-fonctionnel, 2) la promotion de la gestion territoriale de l'irrigation afin d'améliorer la bonne gouvernance entre les usages de l'eau en compétition, et 3) les discours et les profils des parties prenants dans trois systèmes multi-fonctionnels d'irrigation (le système Segarra-Garrigues, en Espagne; le système Neste, en France, et le système Muzza, en Italie). L'analyse des parties prenantes est appliqué en combinaison avec un nouvel outil graphique pour évaluer les points d'confrontés de vue entre les profils des acteurs, l'approche de gestion territoriale de l'irrigation (AGTI).

Keywords: multi-functionality; irrigation systems; governance; stakeholders; TIMA; Europe

[1] *[PhD on Experimental Sciences and Sustainability (Geography)],[Universitat de Girona], [Plaça Ferrater Mora 1, Girona, Spain], [sandra.ricart@udg.edu]*

1. Introduction

Land-water nexus is essential for food production, rural development, landscape conservation, and environment preservation (Mata, 2008). That is, a duality exists between the generation of private goods and public functions (Randall, 2002). In this sense, multi-functional agriculture produces goods both private (i.e. food, raw materials, and tourism) and public, which are divided into social concerns (i.e., the viability of disadvantaged rural areas, combating rural depopulation, and protecting cultural and heritage values) and environmental (i.e., the protection of landscapes, the promotion of biodiversity, and the reduction of soil erosion (Potter and Tilzey, 2005; Morgan et al. 2010). Even with the diversity of approaches that encompass the multi-functional character of agriculture and irrigation, this concept expands into three competing dimensions. First, there is the dimension related to organic food production, the promotion of local products, and the limitation of intermediaries in food distribution systems. Secondly, there is the dimension concerning the conventional relationship between farming and rural areas, a concept which is extended to activities related to rural tourism (Nilsson, 2002), and others that focus on landscape and heritage management as a core value within the rural matrix (Garrod et al., 2006). Finally, multi-functionality is the dimension related to mitigating the environmental impacts of agricultural practices on rural capital (Brunstad et al., 2005).

Historically, water resources and agriculture professionals sought to solve challenges raised by water use in agriculture by using a technocratic approach (Luyet et al., 2012). Nowadays, the environmental debate has become more holistic, calling for active stakeholders participation (Allan, 2005; Pahl-Wostl et al., 2008) and an integrative approach to water resources management that takes into account the complex relationships between technologies, institutions, cultures and practices (Giordano and Shah, 2014). This shift from a technocratic ‘‘top-down’’ to a more integrated ‘‘bottom-up’’ approach is also based on the increased awareness that today’s water problems are complex, requiring integrated solutions and a legitimate planning process. In this sense, different stakeholders have different interests and different normative frameworks related to ideas of water efficiency, land use, environmental externalities, or social legitimacy in decision-making processes (Boelens and Vos, 2012). According to this, in recent years, most published studies conclude that – compared to those processes in which the inclusion of stakeholders is minimal–, there is a higher probability of success if management is based on collaborative initiatives with broad representation and inclusion of interests, attitudes and the opinions of those who are directly or indirectly affected (Bidwell and Ryan, 2006). The aim is to reaffirm the idea that, given the need to address the inherent complexity involved in managing natural resources, the decision-making processes should focus on the promotion of participation and the inclusion of society’s demands (Moore, 2013; Rap and Wester, 2013). As a way to define the relationships between conflicting points of view, social networks are progressively gaining greater attention as tools for promoting the management of natural resources with an adaptive approach (Fish et al., 2010).

2. The Territorial Irrigation Management Approach (TIMA)

The analysis of territorial irrigation management focuses on what has been identified as the “geography of actors” or “social geography”, that is, the analysis of territorial structures resulting from the conflicting discourses between the diversity of stakeholders involved in managing a natural resource such as water and, by extension, its impact on the dynamics of irrigation (Bryson, 2004; Pahl-Wostl, 2007). Other authors such as Armitage (2005) and Bodin and Crona (2009) have analysed the territory through the prism of “environmental geography”, i.e., the study of the interactions between nature and society under a dual purpose: understanding the social behaviours that affect the management of natural resources and understanding how the dynamic of the territory can interact with social demands. Consequently, this attention to the territorial aspects has led most of studies on natural resources management to conclude that if initiatives incorporate a wide range of stakeholder interests, attitudes and opinions, they are more likely to succeed than those where participation is less relevant (Lienert et al., 2013; Jonas et al., 2014). In this context, the promotion of irrigation management with a territorial nature incorporates the social demands (represented by the civil society platforms) into the traditional scheme of irrigation management, which is composed by public and private services (administration, agencies, companies) in concert with the rural community (farm unions and irrigators’ syndicates). This proposition, named Territorial Irrigation Management Approach (TIMA), has to be able to adapt purposefully to the inherent complexity of the duality between natural resources availability and society demands. With this approach, the modelling of the territorial management of irrigation aims –through space and time– to find commonality among all the conflicting discourses over a multi-functional irrigation system. In addition, it aims to provide new knowledge regarding key and interacting issues for defining and promoting agreements among all the key stakeholders, from 1) the identification and characterisation of each discourse expressed by the stakeholders involved in managing one irrigation system, to 2) the analysis of the affinity and/or conflicting relationships among them, to 3) their graphical representation in a dynamic matrix (Figure 1). This will consequently result in reconciling stereotypical views through, existing social learning, identifying latent and permanent disputes, promoting an action plan according to civil participation, and managing differences in a positive attitude.

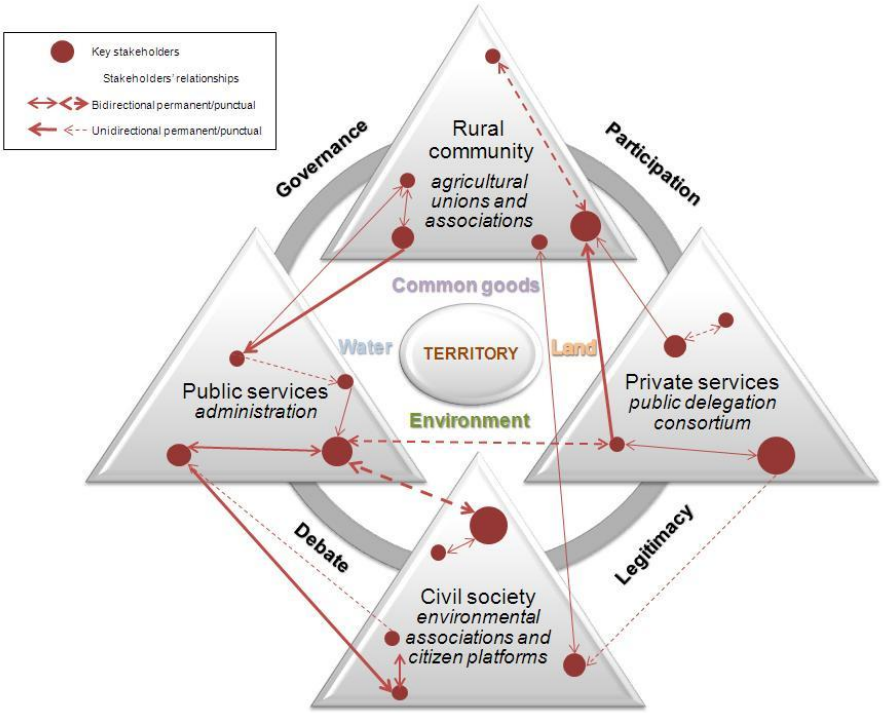

Figure 1. TIMA graphical scheme

2.1 Data collection and methods

The application of the Stakeholder analysis approach has allowed the identification of stakeholders in each multi-functional irrigated system, the nature of their participation and their discourses and demands, and the willingness to establish a strategy that can minimize the uncertainty of a participatory process. We adopted a semi-structured interview schedule that focused on factual information gathering, while giving stakeholders an opportunity to raise issues of their choosing and develop conversations about points which they thought particularly important (Carr et al., 2011).

2.2 Stakeholders

The term stakeholder is defined as 'any group of people −organised or not− who share a common interest or stake in a particular issue or system'. Selection of representative stakeholder groups within the community is a difficult task. A broad range of stakeholder groups (in our study we use a classification on public and private services, rural community, and civil society) is involved in irrigation. The pre-selection of the stakeholder groups was carried out through an extensive literature review and an expert group meeting (Bodin and Crona, 2009; Gallego-Ayala and Juízo 2014). In order to first gauge stakeholders perceptions and attitudes about irrigation management and governance, a small but representative sample of stakeholders involved in each multi-functional irrigated system were identified and organized according to four interest groups, with the goal of including the potential multiple points of view and interests that cover the whole stakeholder spectrum regarding its management (Dewulf et al., 2005): public services (public administration and service delegation), private services (land and water consortiums or associations), rural community (rural syndicates and professional organisations), and civil society (environmental associations and social platforms).

2.3 Semi-structured interviews and digital questionnaires

In accordance with Carr et al. (2011), the semi-structured interview schedule focused on gathering factual information to provide stakeholders an opportunity to raise issues of their choosing and develop a conversation about points which they thought were particularly important. The face-to-face structured interviews were conducted in March 2012 and 2013. Each interview was between one and three hours in duration. The results were analysed using the software Atlas.ti® 7 to create and define a codification system (30 new codes) for characterizing the selected quotes from the interviews. The quotes are also organized into four family codes (Water, Irrigation, Agric-Env, and Governance) as a representation of issues under debate. Once the interview was complete, each stakeholder received a closed questionnaire generated by the Survio® platform as a tool for complementing the interview results. This allowed us to obtain structured information about their local perceptions, attitudes and preferences in the management of Neste irrigation canal. The response rate in a mailed questionnaire is usually very low, but our case can be considered a success because all 11 stakeholders answered it. The 16 test questions of the questionnaire were organized into three sections: a) intrinsic characterization of the

stakeholder and their involvement in the Neste irrigation system; b) evaluation of the (non) affinities between competing demands; c) ability to establish alliances to define an agreement for promoting or improving the decision-making process in the management of the irrigation canal. We carried out a quantitative analysis of the responses to the structured questionnaire in order to statistically show the degree of (dis) agreement between stakeholders' discourses, especially for the five-point Likert-scale options in some questions. Both data collection tools (the interview and questionnaire) have allowed us to obtain a direct assessment of every stakeholder involved in the case studies; and, on the other hand, they have provided new knowledge about issues that have remained in the background in most of the published material.

3. The case studies: the Segarra-Garrigues system, the Neste systems, and the Muzza system

Many Southern European countries have vast experience in the use of scarce and degraded natural resources, such as water and land (Garcia-Ruiz et al., 2011). The European rural mosaic is based on a combination of traditional irrigation systems – areas with extensive agrarian dynamism – and modernised or new irrigation projects – that were promoted under the criteria of water efficiency and food security. Countries like Spain, France and Italy largely symbolise the domain of water resources in any economic activity that is able to structure the territory. In such contexts, hydraulic constructions have played a central role in the attempt to *dominate* water resources, where the agrarian plains have played a key role in developing irrigation (Ertsen, 2006). In consequence, the construction of dams and irrigation canals has placed the management of natural resources above all productive, rural development and demands for ecosystem conservation (Kaika, 2006).

3.1 The Segarra-Garrigues system

Conceived in the mid-nineteenth century and designed in the mid-1990s, its construction would not start until 2002. At 85 km in length from the Rialb reservoir to the L'Albagés Dam, this irrigation canal brings together a total of 70,150 hectares, affecting 73 municipalities across six counties: La Noguera, La Segarra, L'Urgell, Pla d'Urgell, Garrigues and Segrià. Its legitimacy was influenced by the debate on water availability and the priority of use, the economic viability of the infrastructure, an existing conflict of interests between irrigators and environmentalists –which motivated a significant reduction in the irrigated potential surface – and the social mobilisation around the uses of the canal (Ricart et al., 2013). The factor that differentiates this irrigation canal from the other two irrigation systems is, precisely, the social mobilization it has generated since its launch, which is remarkable in two respects. On the one hand, there is the environmental nature of the mobilisation, which was driven by conservational organisations and endorsed by the declaration of Special Protection Areas (for birds protection and conservation). On the other hand, there is the social nature of the mobilisation, which is reflected in the signing of the Manifest de Vallbona – an agreement to defend the irrigation canal as a tool for integrating the diversity of interests – productive, environmental and cultural – recognized by the Lleida society.

3.2 The Neste system

Opened in 1862, this 29 km irrigated canal carries the water within the Neste system by gravity from the Neste River – a tributary of the Garonne River – to the valley of Sarrancolin. It is a hydraulic complex of seventeen rivers that are artificially interconnected in order to overcome periods of water shortage. In addition to its agricultural function, this canal plays a strategic role in promoting environmental services (Ricart and Clarimont, 2013). Since its inception, this project has had a multifunctional use: drainage, irrigation, navigation, hydroelectric power and urban use. While consumptive use of water will not be changed significantly over time, it is important to note the increasing of significance of the non-consumptive water uses associated with the canal, such as ecological flow and hydroelectric use (Allaya and Rucheton, 2008). In this sense, the current debate is about whether or not there is a need to build a reservoir in Charlas to increase the availability of water required by agricultural production in the area.

3.3 The Muzza system

Located in the heart of the Lombard plain, the Muzza canal is major work of hydraulic engineering that has shaped the Lodigiano territory. Designed in 1220 as a derivation of the Adda River near Paullo, this canal runs 61 miles through 69 municipalities and distributes water through four secondary canals. Promoted to improve agronomic conditions in the valley by draining groundwater and the modernisation of the traditional irrigation systems, both functions remain priorities with the passage of time but share the limelight with other economic functions – such as the production of hydropower and thermal energy – and with social services – such as area for recreation and environmental education. This multi-functionality will be managed from the integration of water demands and water users in a participatory framework structured by the Consorzio dell'Adda and the Consorzio Bonifica Muzza Bassa Lodigiana. With its role as mediator between the competing water uses in conflict, the first manages the priority of water use between irrigation demands and the hydroelectric power industry, while the second manages the priority of water use (consumptive or not) between all the water interests of the valley, depending on the needs of the territory and according to the season.

Since 2003, both agencies have contributed to the proposition of the Patto per l'Acqua (Water agreement), signed in 2007 as a response to episodes of extreme drought occurred in the Lombardy plain.

4. Main results

The discourses characterized in the three irrigation systems have revealed the conceptual diversity of the concerns that underlie the postulates of the stakeholders (Figure 2). In this regard, the existing discourses in each multi-functional irrigated system agree on the importance of water for rural development and its key role in the future development of the agricultural practices. Being in the Muzza system, this recognition is more noticeable. The conceptual analysis also highlights the role of conflict management in the Segarra-Garrigues system as opposed to the participation and the discussion that exists in the Neste and Muzza systems. Both irrigated systems also share concerns about the pollution of soil and water, while in the Segarra-Garrigues interest in safeguarding the ecological flow of the Segre River becomes relevant.

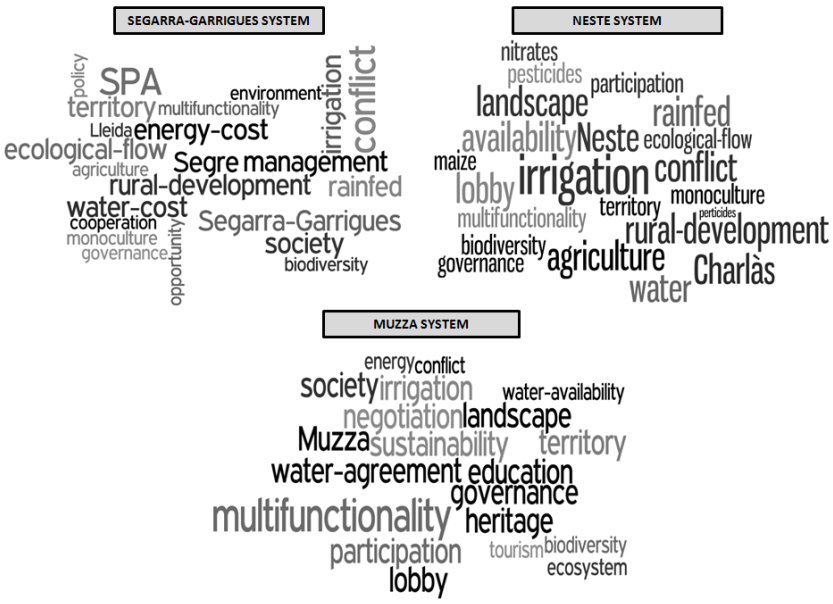

Figure 2. Conceptualization of the irrigation systems' discourses

The analysis of the Segarra-Garrigues system is based on the performance of the semi-structured interview and the digital questionnaire sent to a total of 17 representative stakeholders. They have posted a total of 411 quotes, of which 171 were provided by civil society associations, 126 by the rural community, 83 by public services, and 31 by private services. The following quotes symbolize some of the greater topics that generate debate (or conflict) in the Segarra-Garrigues system management:

"The fact that people do not adhere to irrigation because they cannot pay for water suggests that the canal is a political rather than territorial project" [Agència Catalana de l'Aigua – public services].
"Water is culture, is industry, is food, is influence, is power… is everything. Water is a strategic element in our land where droughts abound" [Comunitat de Regants del Segarra-Garrigues – private services].
"It is not imperative to stop irrigating a number of hectares to protect some birds that are already protected at the national level. The same birds that serve as an excuse to justify that we cannot irrigate with the Segarra-Garrigues canal are in the neighbouring Urgell canal…" [Institut Agrícola Català de Sant Isidre – rural community].
"We understand people… most of them have been waiting for water over one hundred and fifty years… but there has been no political will to explain to people that, unfortunately, the project cannot be completed and it is necessary to find alternatives for the agricultural activity" [Sociedad Española de Ornitología/BirdLife – civil society].

The analysis of the Neste system is based on the performance of the semi-structured interview and the digital questionnaire sent to a total of 10 representative stakeholders. They have posted a total of 203 quotes, of which 80 were provided by private services, 48 by the rural community, 43 by civil society, and 32 by public services. The following quotes symbolize some of the greater topics that generate debate (or conflict) in the Neste system management:

"The Neste system is a simple system where there is water available, [along with] socioeconomic demands and ecological flow… the hardest thing is to gather people around a table to discuss it" [Chambre Départementale d'Agriculture Hautes-Pyrénées – public services].

"Farmers have already accepted the existence of environmental factors that must be taken into account, and they are primarily interested in ensuring their implementation on farms" [Syndicat d'Irrigation des Coteaux de Gascogne – private services].
"There are people who want to irrigate and improve the profitability of their farm, but cannot do it because the environmental pressure is very strong and limits all options for irrigation" [Coordination Rurale Hautes-Pyrénées – rural community].
"For us, water is a common heritage while for both the agricultural sector and the energy sector it is just a business" [France Nature Environnement – civil society].

Finally, the analysis of the Muzza system is based on the performance of the semi-structured interview and the digital questionnaire send to a total of 15 representative stakeholders. They have posted a total of 209 quotes, of which 67 were provided by public services, 48 by the rural community, 48 by civil society, and 46 by private services. The following quotes symbolize some of the greater topics that generate debate (or conflict) in the Muzza system management:

"For many people, irrigators are those who consume and waste water instead of seeing the function of returning water to the soil, drainage management, and landscape conservation" [Regione Lombardia, Agricoltura – public services].
"In managing the Muzza canal, there will always be someone who does not have a global view about water resources and those who defend their interests above the common good" [Consorzio dell'Adda – private services].
"The agricultural sector is not a lobby, although part of the environmental sector believes that agriculture is the source of all water problems" [Confederazione Generale dell'Agricoltura Italiana Lombardia – rural community].
"The main problem of the water management model at the national level is the diversity of involved stakeholders who have some type of responsibility" [WWF Lombardia – civil society].

5. Discussion

It is increasingly obvious that, in order to face the complexity of water resource management conflicts and challenges, technical approaches are not enough. By basing irrigation management on stakeholder involvement it can provide a context for improving the relationship between competing water uses and holistic demands. With particular consideration toward water and irrigation management, the current trend in natural resources management calls for an integrated approach that considers all sectors, that encourages social learning in order to improve sustainability in managing the commons, and in which stakeholders can actively participate in the decision-making processes. To that end, considerable effort has been made in recent years to develop integrated participative tools, policies, and approaches to improve the territorial knowledge of multifunctional systems. In this paper we present an approach to recognizing and mapping the relevance of selected topics linked to irrigation management and future challenges for water, food production and environmental protection. The TIMA (Territorial Irrigation Management Analysis) approach is based on the qualitative analysis methods and the results of its application can be used by the relevant authorities to customize their interventions by knowing beforehand in a well-structured form which are the different stakeholder priorities. In this way, they can establish more effective avenues of communication. For example, one means would be to promote social learning in order to cope with new challenges related to water uses in the river basin context (water availability and energy nexus, environmental flow, food security, rural development, or recreational and educational activities). This could generate useful information in prioritizing and developing joint river basin management plans, in particular by basing them on irrigation challenges and by promoting measures and policies that focus on improving governance in decision-making processes. In addition, it will be useful to encourage further research on the ability to model irrigation systems that combine consumptive and non consumptive water uses, as well as social and environmental demands. This would help overcome some limitations of the TIMA. In this regard, subsequent studies should go deeper into the use of quantitative analysis to clarify the qualitative values expressed in interviews and questionnaires, in order to ultimately improve their graphical representation. This improvement is essential in extending and comparing the application of TIMA to other irrigation systems in Southern Europe.

REFERENCES

Allan, J.A. 2005. Water in the Environment / Socio-Economic Development Discourse: Sustainability, Changing Management Paradigms and Policy Responses in a Global System. Government and Opposition 40(2): 181-199.
Allaya, M. and Rucheton, G. 2008. L'agriculture, l'agroalimentaire, la pêche et le développement rural en France. Options méditerranéennes 61: 317-347.
Armitage, D. 2005. Adaptive capacity and community-based natural resource management. Environmental Management 35(6): 703-715.
Bidwell, R.D., Ryan, C.M. 2006. Collaborative partnership design: The implications of organizational affiliation for watershed partnerships. Society and Natural Resources 19(9): 827-843.
Bodin, Ö., Crona, B.I., 2009. The role of social networks in natural resource governance: what relational patterns make a difference?. Global Environmental Change 19: 366-374.
Boelens, R., Vos, J., 2012. The danger of naturalizing water policy concepts: Water productivity and efficiency discourses from field irrigation to virtual water trade. Agricultural Water Management 108: 16-26.
Brunstad, R.J., Gaasland, I., Vardal, E. 2005. Multifunctionality of agriculture: an inquiry into the complementary between landscape preservation and food security. European Review of Agricultural Economics 32(4): 469-488.

Bryson, J.M. 2004. What to do when stakeholders matter. Stakeholder identification and analysis techniques. Public Management Reviews 6(1): 21-53.
Carr, G.; Potter, R.B., Nortcliff, S. 2011. Water reuse for irrigation in Jordan: Perceptions of water quality among farmers. Agricultural Water Management 98: 847-854.
Dewulf, A., Craps, M., Bouwen, R., Taillieu, T., Pahl-Wostl, C., 2005. Integrated management of natural resources: Dealing with ambiguous issues, multiple actors and diverging frames. Water, Science and Technology 52: 115-124.
Ertsen, M.W. 2006. Colonial irrigation: Myths of emptiness. Landscape Research 31(2): 146-167.
Fish, R.D., Ioris, A., Watson, N.M. 2010. Integrating water and agricultural management: collaborative governance for a complex policy problem. Science of the Total Environment 408: 5623-5630.
Gallego-Ayala, J. and Juízo, D. 2014. Integrating stakeholders' preferences into water resources management planning in the Incomati River Basin. Water Resources Management 28: 527-540.
Garcia-Ruiz, JM., López-Moreno, J.I., Vicente Serrano, S.M., Lasanta Martínez, T., Beguería, S. 2011. Mediterranean water resources in a global change scenario. Earth-Science Reviews 105: 121-139.
Garrod, B., Wornell, R., Youell, R. 2006. Re-conceptualising rural resources as countryside capital: The case of rural tourism. Journal of Rural Studies 22: 177-128.
Giordano, M., Shah, T. 2014. From IWRM back to integrated water resources management. International Journal of Water Resources Development 30(3), pp. 364-376.
Jonas, K., Glenna, L.L, Weltzien, E., 2014. Assessing participatory processes and outcomes in agricultural research for development from participants' perspectives. Journal of Rural Studies 35: 91-100.
Kaika, M. 2006. Dams as Symbols of Modernization: the Urbanization of Nature Between Geographical Imagination and Materiality. Annals, Association of American Geographers 96: 276-301.
Lienert, J., Schnetzer, F., Ingold, K., 2013. Stakeholder analysis combined with social network analysis provides fine-grained insights into water infrastructure planning processes. Journal of Environmental Management 125: 134-148.
Luyet, V., Schlaepfer, R. Parlange, M.B., Buttler, A., 2012. A framework to implement stakeholder participation in environmental projects. Journal of Environmental Management 111: 213-219.
Mata, R. 2008. El paisaje, patrimonio y recurso para el desarrollo territorial sostenible. Conocimiento y acción pública. ARBOR, Ciencia, Pensamiento y Cultura 729: 155-172.
Moore, M-l. 2013. Perspectives of complexity in water governance: Local experiences of global trends. Water Alternatives 6(3): 487-505.
Morgan, S.Ll., Marsden, T., Miele, M., Morley, A., 2010. Agricultural multifunctionality and farmers' entrepreneurial skills: A study of Tuscan and Welsh farmers. Journal of Rural Studies 26: 116-129.
Nilsson, P.A. 2002. Staying on farms. An ideological background. Annals of Tourism Research 29(1): 7-24.
Pahl-Wostl, C. 2007. Transitions towards adaptive management of water facing climate and global change. Water Resources Management 21: 49-62.
Pahl-Wostl, C., Tàbara, D., Bouwen, R., Craps, M., Dewulf, M., Mostert, E., Ridder, D., Taillieu, T., 2008. The importance of social learning and culture for sustainable water management. Ecological Economics 64: 484-495.
Potter, C., Tilzey, M. 2005. Agricultural policy discourses in the European post-Fordist transition: neoliberalism, neomercantilism and multifunctionality. Progress in Human Geography 29(5): 581-600.
Rap, E., Wester, P. 2013. The practices and politics of making policy: Irrigation management transfer in Mexico. Water Alternatives 6(3): 506-531.
Ricart, S., Clarimont, S. 2013. De la gouvernance appliquée à la gestion de l'irrigation: le cas du canal de la Neste (Hautes-Pyrénées). Sud-Ouest Européе 35: 69-84.
Ricart, S., Ribas, A., Pavón, D. 2013. La participación en la gestión del regadío como mecanismo para afrontar el conflicto territorial: algunos ejemplos de ámbito sur-europeo. Méditerranée 120: 73-86.