

Decentralization: Resolve or Hide the Problem?

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ABSTRACT

Governance of common resources such as water calls for rethinking structure, legal frameworks and property rights. In order to promote the decentralization of water governance, Water User Associations (WUAs) were created in many countries, such as India and Turkey, to operate and maintain irrigation systems as well as take over the responsibility of water distribution among water users. Despite progress in these activities, the efficacy of WUAs in terms of securing water rights for all water users has received criticism in some studies.

By looking at the different power dynamics and thus inequalities, this paper assesses the performance of WUAs in Urfa province in Turkey. This includes a closer look at institutional arrangement of WUAs in effectively managing the irrigation systems and protecting water user's access rights. The result of this study is used to explore the underlying problems associated with WUAs in promoting sustainable water governance in terms of equitable water access and allocation.

This paper argues that due to asymmetric power relations in these regions, securing equal water access and allocation is unlikely to be achievable. In other words, in the absence of a fair process of decision-making, WUAs will fail to achieve the intended benefits of decentralization policies. This raises the need to critically assess the premise of structural reforms in the water sector and a careful consideration of the water governance practices in different contexts where inequalities are evident.

Keywords: *Decentralization; Water User Association; Turkey ; Power Dynamics*

1. INTRODUCTION

The concept of decentralization has been widely used in the context of governance of common resources in the last couple of decades. Embracing a variety of concepts, decentralization is a process that has occurred in the last couple of decades in many countries around the world to transfer the authority for public functions from the central government to intermediate and local government (World Bank, 2001). Considered as way of reducing the role of the state in general, one of the rationales behind decentralization is to make government more responsive and efficient in providing public services (i.e. electricity and water supply) by fragmenting the responsibility to lower levels of government and in smaller market areas (Bardhan, 2002). In addition, decentralization is viewed as a way of ensuring local cultural and political autonomy by diffusing social and political tensions at different scales and levels of government (ibid).

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In understanding and analyzing the process of decentralization, one should make a distinction between different types of decentralization since they have diverse characteristics and policy implications. These types include fiscal, administrative and political decentralization (World Bank, 2001, Bardhan, 2002, Schneider, 2003). In fiscal and market decentralization process, the emphasis is on the benefits of reducing state's power in favor of local government due to relatively lower transaction costs and better information access (Bardhan, 2002). Fiscal and market decentralization in some international organizations sometimes is used as synonym for privatization (ibid).

Administrative decentralization can take place in three forms, namely, deconcentration, delegation, and devolution. Considered as the weakest form of administrative decentralization, deconcentration is a shift of staff, equipment and budgetary resources from central government officials in the capital city to the units such as regional and district offices (Bardhan, 2002, Schneider, 2003). In delegation form, the responsibility and resources for implementing specific tasks and administration of public functions is transferred to semi-autonomous organizations such as NGO, public agency or a state or private enterprise (ibid). Through devolution process, local governments such as municipalities acquire the power of autonomous initiative to exercise authority over clearly and legally recognized spatial boundaries (ibid).

The political dimension of decentralization is often associated with the devolution of political decision-making power to citizens or their elected representatives, and it is different from just an administrative delegation of function to local units of government (Bardhan, 2002, Agrawal and Ribot, 1999). Political decentralization, also called as democratic decentralization, take places through inclusive participation of actors or institutions, which are accountable to the population in their jurisdiction, in decision-making processes (ibid). This requires constitutional reforms as well as development of political parties especially at local level (ibid). Electoral components are considered as the most valid indicators among other political functions in this form of decentralization (Schneider, 2003).

By focusing on the process of political decentralization, this paper investigates the implementation of participatory irrigation management (PIM) and more specifically the role of water user associations in current water governance practices. Despite water user associations' anticipated outcomes such as transparency, democratization and better accountability, this paper argues that WUAs are not efficient in fulfilling these goals and securing water rights for all water users in every case. By using the case of WUAs in Urfa province in Turkey it is argued that these associations exacerbate the asymmetric power dynamics in which are embedded in land ownership, gender and ethnic relations in the region. The study also draws attention to similar stories particularly in the state of Andhra Pradesh in India. The aim of this study is to raise awareness to the inequalities associated with WUAs and challenge the mainstream idea of WUA is the best way to provide sustainable water governance.

2. DECENTRALIZATION OF IRRIGATION: PIM and WUAs

Followed by the idea of decentralization, Participatory Irrigation Management (PIM) refers to the participation and involvement of irrigation users at all levels and aspects of management of the irrigation system (Groenfeldt, 2000, WWAP, 2009). Promoted by the World Bank in early 90s, PIM had been carried out in many countries to actively engage farmers in making decisions about both physical designs, e.g. operation and maintenance of irrigation systems, and institutional designs, e.g. what type of institutions and organizations should be in place (ibid). The implementation of PIM varies in different countries. In some countries such as Indonesia and Philippines, the programme has been implemented gradually and the system transformation has occurred only if water users agree (Swain and Das, 2008, WWAP, 2009). By contrast and as referred to the *big bang* approach, in countries such as Turkey, Mexico or the state of Andhra Pradesh in India, PIM has been implemented rapidly over thousands of hectares and adopted by the formation of thousands of Water User Associations (WUA) (ibid). Once established, WUAs are expected to empower users to operate and maintain the irrigation system as well as allocate and distribute water in the region. The establishment of WUAs is crucial to operationalize PIM since it is structured according to the rationale of decentralization which is to increase efficiency and productivity and improve accountability.

For example, Andhra Pradesh introduced Management of Irrigation System Act in 1996/7, followed by introduction of PIM, as one of the most revolutionary legislation made by government in the country (Svendsen, M., Huppert, 2003, Saravanan et al., 2009). The policy reforms included the creation of farmer-government partnerships in irrigation operations and maintenance, consolidation of irrigation management transfer, new cost recovery methods, expenditure prioritization and capacity building for state agencies and WUAs (Svendsen, M., Huppert, 2003, WWAP, 2009).

In another instance of rapid transfer of irrigation management, in Turkey, government with support of the World Bank has mandated transfer of large-scale irrigation systems to locally controlled organization through implementation of PIM since 1993 (ibid). As the result of this process, management responsibility of 1,350,000 hectares of irrigated land was transferred to WUAs by 1997 and 87% of irrigation project transferred by 2007 (WWAP, 2009).

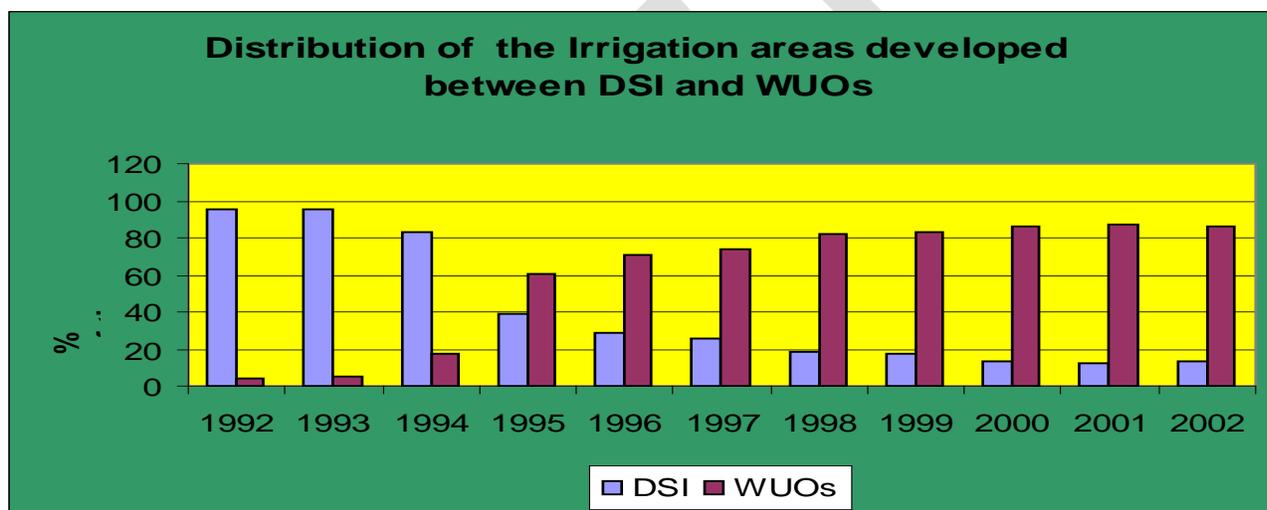
In the following section, based on secondary data material, the case of WUAs in Turkey's Urfa province is analyzed. By highlighting the underlying issues associated with implementation of PIM and formation of WUAs, we focus on the challenges of participation in the process of political decentralization.

3. THE CASE STUDY OF URFA PROVINCE, TURKEY

3.1 Origins of Decentralization in the Turkish Water Sector

The neoliberal reforms during late 1980s promoting decentralization affected the water governance in Turkey various ways. The participatory irrigation management (PIM) was implemented in 1986 as a part of a prerequisite condition for a loan allocation of World Bank (Burak 1999; Svendsen and Nott 1999). According to that, the operational and maintenance responsibilities of the General Directory of State Hydraulic Affairs (DSI) were distributed to other bodies such as municipalities (domestic and industry water supply), Water User Organizations (irrigation), private sector (irrigation, ground and spring water as well as irrigation) and irrigation cooperatives. Although the DSI had the policy of transferring duties to local administrations since early 1960s, until 1993 the activity of transfer was very slow and inefficient (Svendsen and Nott 1999) (see Table 1).

Table 1. Distribution of the Irrigation areas developed between DSI and WUOs.



Source: DSI, Report on Irrigation

Moreover with the assistance of World Bank, DSI staffs were trained in other parts of the world such as Mexico in order to learn from their model and experiences. The transfer of irrigation accelerated after 1993 when DSI shifted their programme from limited transfer of small-scale schemes to larger ones with the World Bank's support (Burak 1999). As one DSI employee stated (Kadirbeyoglu 2008,91);

There have been major changes in Turkey following 12 September (1980 military coup). The concept of the state was debated again. They said state should shrink and this process started with the service sector. The budgets were cut. We started nation-wide trainings in 1993 and measured whether we could transfer large-scale projects or not. It was decided that we could. ...While we were planning in this manner the process accelerated and transfers took place everywhere. In 1993 we transferred 10,000 hectares. In

1994, 200,000 hectares and in 1995, 700,000 hectares were transferred. Normally we were expecting to reach this amount by the year 2000.

After the implementation of participatory irrigation management (PIM), Turkey has various types of water user organizations (WUOs) (see table 2). As it is argued by Selmin Burak (1999), among these organizations, the best model of transfer is the water user associations. Approximately 90% of the area has been transferred to water user associations.

Table 2. Water User Organizations

Water User Organizations (WUOs)				
Name of the Organization	Unit	Unit Rate (%)	Area (ha)	AreaRate (%)
Village Authority	225	28.9	38,061	2.0
Municipality	143	18.3	58,348	3.1
WUAs	330	42.4	1,685,529	90.6
ICs	77	9.9	77,999	4.2
Other	4	0.5	1,032	0.1
TOTAL	779	100.0	1,860,969	100.0

Source: DSI, Report on Irrigation

Outcomes of decentralization through WUAs greatly vary due to the different social, economic and political contexts within Turkey. Although there are many examples of successful performances of WUAs in various provinces of Turkey, different variables like power dynamics, gender relations and level of education have impacts on the efficiency of WUAs performances (Kadirbeyoglu, 2008). In order to show these impacts, we choose the province of Urfa as a case study since inequalities exist significantly in the region.

3.2 The Case of Urfa

The province of Urfa (officially known as Sanliurfa) is located in the Southeast Anatolia Region of Turkey (Figure 1). It is also at the center of the Turkey`s multi-dam regional development project known as GAP (Guneysdogu Anadolu Projesi).



Figure 1 Urfa, Southeast Anatolia, Turkey

According to the Turkish Statistical Institute's database from 2009, the population of Urfa is 1.613.737. Population growth rate is 30.9 percent which is high compare to the average of Turkey 14.9 percent. On the other hand the average size of a household in the province is 6.87 whereas the average of Turkey is 4.5 (Pirili and Barbaros 2008). Moreover, economic structure of the province is highly dominated by agriculture. The data from Turkish Statistical Institute (TUIK) and a report by Pirili and Barbaros (2008) show that agriculture constitutes the 43 percent of regions' GDP whereas share of industry is only 11 percent. Moreover, products like cotton and wheat are the main sources of export in this agriculture intensive economy. Inequalities related with landownership, social and gender issues are also worth to point out in portraying the context of Urfa.

3.2.1 Landownership

According to the research carried out by Aksit and Akcay (1997, 526-527), there are various types of village structures in the region where Urfa is situated. The dominant structure in the region is the large landownership of one leader (Agha) which is known as Asiret system. The asiret system functions in the community through blood relation and birth determines one's status in the system (Kadirbeyoglu, 2008, 112). Carkoglu and Eder (2005) argue that asiret structure led to underdevelopment of the region because the land ownership is concentrated in the hands of the few. Therefore, it is important to emphasize the land distribution issues since they crucially affect the power relations in the province.

Table 3. Size of Landholding and Income (percent of households)/ Urfa Plain

Size of landholding (hectares)	Sharecroppers	Landowners	Percent of Total
No land	97	0	56
0-4	3	21	10
4-10	0	24	10
10-20	0	28	12
20-40	0	16	7
40+	0	11	5
% of total	58	42	100

Source: Adopted from Kudat and Bayram (2000, 275)

According to the land distribution within the zone of WUAs in Urfa, farmers who own more than 40 hectares constitute only the 5 percent of the total households. However, 56 percent of the households have no land and 39 percent of the households own less than 40 hectares. Combined with patriarchal relations, asiret structure is one of the important factors affecting the dynamics behind the land ownership in the region. As Kudat and Bayram (2000, 275) argue, in most of the cases, official ownership of land belongs to the family elders and “local traditions favor the oldest son to assume the management of the inherited land”. Moreover, the unequal distribution of land in the region lead to unequal distribution of income between sharecroppers and landowners as Table 4 demonstrates:

Table 4. Annual household income from crops and income per capita (U.S Dollars)

Household type	Household Size	Income from crops	1997per capita income
Sharecroppers	6.2	2469	165
Landowners	7.3	8769	543

Source: Kudat and Bayram (2000, 280)

As it is seen above tables, sharecroppers constitute the significant part of the households in Urfa and compare to the landowners they have far less income per capita. These substantial differences between landowners and landless as well as small land owners have to be taken into consideration when assessing the performance of WUAs in the region.

3.2.2 Social Diversity

Owing to the fact that Urfa is situated in the most diverse part of Anatolia, it hosts many different ethnic, language and religious groups. Social diversity has a moderate impact in the performance of the WUAs regarding the issues of participation. According to the survey that Kudat and Bayram 2000 conducted, households were asked which languages they are speaking among family members other than Turkish. In the rural parts of Urfa, 90 percent of the households were Arabic speaking, about 8 percent spoke Kurdish and 2 percent spoke only Turkish (p, 265). Furthermore, there are differences between men and women, according to the survey, majority of the rural women speak only one language mostly Arabic (Ibid,266). Since spoken language in WUAs is Turkish, many people are excluded from actively taking part in these associations. In other words, linguistic diversity is an important factor given the representativeness of certain groups since language determines how 'participatory' the participation is.

3.2.3 Gender Inequity

Gender inequality is articulated in various forms in Urfa and Southeast Anatolia Region. Due to the dominant patriarchal relations, few women possess her own property. Although Turkish Civil Code guarantees that women can get equal shares of land, women tend to favor their brothers in the issues of inheritance since certain patriarchal relations are internalized by women themselves. As Kudat and Bayram (2000,272) states; "land is the main instrument in building wealth in the area and it is also obvious that partition and control practices favor males". Gender biased practices have also emerged around the issues of irrigation management and access to water. As Harris (2002, 755; 2006; Aksit and Akcay 1997) pointed out 84 percent of male heads of households believed that irrigation training for women is unnecessary although most of the agricultural labor-intensive tasks are performed by women. Education level is also another variable that indicates the gender inequality in the region. Based on Kudat and Bayram's report in 2000, illiteracy rate of women is higher than men although in younger generations education gap is getting closer.

3.3 Water User Associations in Urfa

Water user associations govern the majority of the decentralized irrigation in Urfa. It is argued that WUAs are the most preferred institution in the process of decentralization in Turkey since approximately 90 percent of the land was transferred to WUAs whereas the governance of only 10 percent of the land was distributed to other entities like village and municipality councils (Kadirbeyoglu, 2008, 90). There are two reasons that made WUAs most favorite institution; first, they are considered more efficient since they are operated in the existing authority structure by the management of local authorities instead of newly elected representatives. Therefore, such an institution did not challenge the central state power dramatically (Ibid, 93). Second, they are expected to provide more horizontal networks among water users in the region where vertical, kinship type networks are dominant (Ibid; Harris 2005,186). As it is also argued, WUAs provides a more democratic environment regarding the governance of resources. As the

Director of DSI Operation and Maintenance Department indicated (Kadirbeyoglu, 2008, 109);

(...)The WUA personnel are not appointed from the centre. It creates employment. It is managed by a council. The farmers select the councilors. These were the multiple aspects of self-organization and self-management. We have, thus, provided a democratic opening.

Do water user associations necessarily lead to more democratic and efficient water governance system in Urfa? As it is demonstrated above, there are significant implications of inequalities in terms of equal access to decision making and water in the context of irrigation in Urfa (Ibid).

4. DECENTRALIZATION: HIDE OR RESOLVE THE PROBLEMS?

4.1 Asymmetries in the information access

The asymmetry of information and power in taking leadership positions are some of the problematic issues associated with the process of democratic decentralization is (Ul Hassan, 2010). Regarding information asymmetries, the policies and programs in several cases are not translated in the local languages or the access to information has been limited. As a result, the poor farmers with lower access to information disadvantage in taking leadership positions. For example in the case of Andhra Pradesh, water users in several cases, have a little knowledge about the PIM program, benefits, functions, duties and responsibilities of WUAs (Swain and Das, 2008).

In some cases, access to information may not be the only problem. In the context of Urfa, linguistic diversity is one of the key factors that determines who can actually use the given information. As mentioned before, in Urfa, people might have an access to information but the information given is in Turkish although the majority of the people does not speak Turkish. Discourses on whether farmers have adequate knowledge about irrigation and water practices have to be analyzed in a multicultural understanding. In this matter, gender and ethnic identity become significant since in most cases women have a high rate of illiteracy and ethnic communities don't speak the official language.

4.2 Power dynamics in the election processes

According to Harris (2006,194) different axes of power (gender, landholdings and asiret) which have been present for many years, are now articulated in the emerging water institutions such as WUAs. Given power asymmetries among WUA members, there is an enormous social cost in mobilizing ordinary members of WUAs against local elite, particularly in most developing countries with a pattern of hierarchical societies. While many of farmers are reluctant to engage in the process of WUAs formation, the local

elites take advantage of taking the key responsibilities in WUA. As mentioned before, in the case of Urfa, local community leaders (aghas) exercise their power over other farmers by using the mechanisms of WUAs.

Moreover, local power networks like kinship and tribal relations do prevent water users to act independently and as right-bearing individuals. For instance, as Kadirbeyoglu 2008 stated in her research, according to the law, farmers supposed to elect their councilors within the irrigation zone of WUA. However, in practice, elections don't take place since it previously led to conflict and tensions. Instead, now village headmen appoint councilors and they are usually selected from the large land owners (asiret leaders) or their children or agents (Ibid).

Another example is the differential treatment of farmers by WUAs regarding the fee collection. On one hand, WUAs executive committee members pay less amount of fee or sometimes even have free access to water. On the other hand, small farmers and poor are being oppressed if they don't have affinity with the influential water users that controls WUAs regarding the issues of fee payments and access to water (Kadirbeyoglu, 2008, 119-121). A quote by small farmer demonstrates this situation: "Who would listen to us? Only when we have guns would they listen to us" (Ibid, 120). Therefore, unequal distribution of land in the region and tribal relations defines the relations of power which naturally affect the representativeness thus the performance of WUAs.

Moreover, certain hidden forms of power, such as the impact of families also hinders water users to fight for their rights. As one of the water users stated; "I wanted to press charges against the WUA because our field has become barren due to their negligence, but they didn't allow me" (Kadirbeyoglu, 2008, 135). In Urfa, individuals live in extended families that are responsible with each others' actions, in other words, families function as a single unit which often take collective decisions. Such a structure prevents individuals to act on their own, thus the democratic and transparent function of any community governance such as WUAs. This explains the reason behind re-election of same WUAs chairmen over time with no replacement. The same pattern is identical in the case of Andhra Pradesh wherein the first elected general assembly of WUAs has remained quite intact (UI Hassan, 2010).

4.4 A process of participation or legitimation of exclusion?

It would be naive to expect that WUAs will function regardless of inequalities. However, the main goal of water user associations is to provide a space where all users could participate and take responsibilities of the management of water resources. In the cases of Turkey and Andhra Pradesh wherein the big-bang approach was adopted by formation of thousands WUAs over a relatively short time, devolution of resource control has remained a social and political issue reinforcing the unequal status quo (Mollinga et al., 2001, Swain and Das, 2008). For example in case of Andhra Pradesh, presidents of WUAs could be elected by consensus and a majority of members (i.e. tenants as well as owners) could recall a president. However, in 30 to 40 percent of WUAs, the old

irrigation department contractors became the presidents (UI Hassan, 2010). Therefore, water allocation and distribution to WUAs has remained in the hands of irrigation department staff.

In Urfa, the legal structure of WUAs excludes significant part of the population from participation. For instance, sharecroppers constitute the majority of households in Urfa but they are not represented in WUAs due to the fact that landholding is a requirement to be representative or to vote in user groups. Such legislative framework not only excludes sharecroppers but also enforces unequal gender relations since few women have formal title to land (Harris, 2006). As many argue (Kadirbeyoglu 2008, Harris 2002, 2006), WUAs remain as male spaces since almost no women could participate due to various reasons such as illiteracy, patriarchal relations, landlessness. Thus, it is naive to expect women involvement in WUAs without providing necessary tools and education to enable them to fulfill new responsibilities (Lahiri-Dutt 2003).

5. CONCLUDING REMARKS

In this paper we explored the process of political (democratic) decentralization promoted in the irrigation systems by implementation of participatory irrigation management programs and creation of water user associations. Focusing on the big approaches utilized by countries such as Turkey or the state of Andhra Pradesh in India, we examined the impending factors of democratic process of PIM programs including the role of WUAs.

We argued that WUAs are often strengthening the inequalities and undemocratic governance instead of avoiding them. As Harris (2006,194) puts it; water user groups “create new patterns of inequality in relation to access, prestige, and power associated with the management of water as a critical resource”. Therefore, it is extremely important to analyze the social, political and economic contexts before implementing the policies of decentralization.

By drawing attention to similar impedance in the process of PIM movement, we discussed that democratic decentralization will not be successfully achieved unless the state devolve significant power and resources to local government and water users at the lower levels.

6. REFERENCES

- Agrawal, A. and J. C. Ribot. 1999. Accountability in decentralization: a framework with South Asian and West African cases. *The Journal of Developing Areas* 33: 473–502
- Akşit, B and A. Akcay 1997. Sociocultural Aspects of Irrigation Practices in Southeastern Turkey. *Water Resources Development*. 13(4):523-540

- Bardhan, P. 2002. Decentralization of Governance and Development. *Journal of Economic Perspectives* 16 (4):185-205
- Burak, S. 1999. Participatory Irrigation Management Activities and Water User Organizations Involvement in Turkey in MSDC Water Demand Management- Success Story-Turkey, Plan Bleu. Rapport 3.
- Çarkoğlu, A. and M. Eder. 2001. Domestic Concerns and the Water Conflict over the Euphrates-Tigris River Basin. *Middle Eastern Studies* 36(1):41-71
- Carkoglu, A., and M. Eder. 2005. Developmentalism alla Turca: The Southeastern Anatolia Development Project (GAP). In *Environmentalism in Turkey: Between Democracy and Development?*, ed. F. Adaman and M. Arsel. Aldershot: Ashgate.
- Harris, L. 2002. Water and Conflict Geographies of the Southeastern Anatolia Project. *Society and Natural Resources*. 15(8):743-759
- Harris, L. 2005. Negotiating inequalities: democracy, gender, and the politics of difference in water user groups of Southeastern Turkey, in *Environmentalism in Turkey: Between democracy and Development?* Eds F Adaman, M Arsel, Aldershot: Ashgate.
- Harris, L. 2006. Irrigation, gender, and social geographies of the changing waterscapes of southern Anatolia. *Environment and Planning D: Society and Space* 24:187-213
- Harris, L. 2008. Water Rich, Resource Poor: Intersections of Gender, Poverty, and Vulnerability in Newly Irrigated Areas of Southeastern Turkey, *World Development*. 36(12): 2643-2662
- Kadirbeyoglu, Z. 2008. Decentralization and Democratization: The Case of Water User Associations in Turkey. *PhD Dissertation*. Bogazici University.
- Lahiri-Dutt, K. 2003. Reflections on Water: Gender and governance in Indian Development. *Development Bulletin* 63: 50-4
- Manor, J. 2006. Renewing the Debate on Decentralization. *Commonwealth & Comparative Politics* 44(3): 283-289
- Mollinga, P.P., R. Doraiswamy and K. Engbersen. 2001. The implementation of participatory irrigation management in Andhra Pradesh, India *International Journal on Water*, 1(3/4): 360-379
- Pirili, U.M. and F. Barbaros 2008. Regional Development in Sanliurfa Province, the Center of South Eastern Anatolian Project (GAP): Key Sector Analysis presented in the Proceedings of the International Conference on Emerging Economic Issues in a Globalizing World. <http://eco.ieu.edu.tr/wp-content/proceedings/2008/0803.pdf>

Reddy, V. R. and P.P. Reddy. 2002. Water institutions: Is formalisation the answer? (A study of water user associations in Andhra Pradesh). *Indian Journal of Agricultural Economics* 57(3): 519–534

Robinson, M. 2007. The Politics of Successful Governance Reforms: Lessons of Design and Implementation. *Commonwealth & Comparative Politics* 45(4): 521-548

Saravanan, V. S., G.T. McDonald, and P.P. Mollinga. 2009. Critical review of Integrated Water Resources Management: Moving beyond polarised discourse. *Natural Resources Forum* 33:76-86.

Schneider, A. 2003. Decentralization: Conceptualization and Measurement. *Studies in Comparative International Development* 38(3) : 32-57

State Hydraulic Affairs (DSI) 2010. The Report on Agriculture.
<http://www.dsi.gov.tr/hizmet/tarim.htm>.

Svendsen, M. and G. Nott 1999. Irrigation Management Transfer in Turkey: Process and Outcomes” in EDI Participatory Irrigation Management Case Studies Series. Available at http://files.inpim.org/Documents/sve_turk.pdf .

Svendsen, M. and W. Huppert. 2003. Maintenance under institutional reform in Andhra Pradesh. *Irrigation and Drainage Systems*, 17: 23–46

Swain, M. and D.K. Das. 2008. Participatory irrigation management in India: implementations and gaps. *Journal of Developments in Sustainable Agriculture* 3: 28–39

TUIK, Turkish Statistical Bureau. 2009. Population Census.
www.tuik.gov.tr/IcerikGetir.do?istab_id

World Bank, 2001. Decentralization: What, Why and Where. *The World Bank Group*.<http://www1.worldbank.org/publicsector/decentralization/what.htm>

WWAP, World Water Assessment Programme. 2009. The United Nations World Water Development Report 3: Water in a Changing World. Paris: UNESCO Publishing, and London: Earthscan.
http://www.unesco.org/water/wwap/wwdr/wwdr3/pdf/WWDR3_Water_in_a_Changing_World.pdf