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Abstract

Little attention has been devoted to the role of social networks and property rights in infrastructural projects. We use the Chotiari water reservoir project data from Pakistan, to explore the social network of actors on land use and property right violation, which create a dissimilar power distribution and significant land use conflicts. Results indicate that public officials with their alien stakeholders have pressurised the local population to displace, where institutional inconsistency towards justice has led them to mistrust and project opposition. In Pakistan, the non-existence of a national resettlement policy is germinating land use conflicts and human and property rights violations since five decades. Therefore, attention to such conflicts, their resolution and prevention are important for research and policy development.

JEL Classification: D74, L14, P26, H54

Keywords: Land use conflicts, social networks, property rights, dams, reservoirs

1. Introduction

Infrastructural development settings have a great importance in developing countries because they can enhance the living standard of the local population and help them to have access to scarce resources like water or education (Barron et al. 2004; Kim 2006; Shah 1992). But at the same time, some of these projects have interrupted millions of lives, due to their poor level of concentration and inconsideration of the need of local actors (UNEP 2004). Mostly, the projects are being initiated in rural settings, where indigenous people stand to lose their resources if the project alters their livelihood support. Therefore,

the need for such projects must be severely assessed, and the compensation of local population will only be possible if they prove ownership of damages by the project.

It is commonly understood that in these rural areas, most of the indigenous people share common-pool resources (CPR), associated with a lack of social justice and recognised rights (Ostrom 1990). Recently, this issue has started to occupy a key position in social and political research, linked with the need to solve the conflicts related to land use exclusion and competition. The increasing interest for the rights of local populations nowadays gives birth to reflections about the actual foundations of infrastructure projects, and to the legitimacy of the opposition of local stakeholders when they are not associated with the decision. Additionally, there is a rising concern about the question of good local or territorial governance as a source of economic development of the states and the regions (Torre and Traversac 2011), as well as a virtuous way to promote land use conflict resolution.

The existing approaches—from literature—emphasise that not all governments have been successful in project implementation (Ostrom and Nagendra 2006). And nowadays, one has to admit that the construction of infrastructural projects is sometimes associated with tensions and confrontations between the groups of actual and outside actors (Awakul and Ogunlana 2002). Currently, in the developing countries, most of the projects are facing oppositions, which maybe due to partial advice with local population or violation of their land acquisition and compensation rights before initiation of the project.

This action research has been carried out on the case of the Chotiari water reservoir project in Pakistan, because it sheds light on the limits of some infrastructure settings and on the damage caused to local inhabitants. The Chotiari project is one of the large infrastructural projects which is facing opposition in the country. In order to understand the factors of conflict on land use for the large infrastructural project, there is a need to examine the relationship network of actors at various scales and positions as well as the immunity of social justice for the locally displaced population.

Moreover, through this article we try to explore the irresponsible treatment of stakeholders to local population. In addition, we investigate the basic information about the situation and their consequences, which provoked oppositions over Chotiari land. Further, the following sub-sections give insights into the research design for data collection and the main findings of the case in detail. However, in this article, we highlight the dynamics of social networks that are induced by changes from a conflict analysis process. By drawing the assumptions of functional analysis of confrontations, we identify the networks of actors while opposing and favouring the project, that is, outside stakeholders and local inhabitants. This analytical framework opens up many questions about the nature and economics of network legitimacy with respect to the property rights and the use of actor's power, which have so far been partially addressed.

Moreover, the findings will be helpful in bridging the gap between farm-land use and the behaviour of the actors causing oppositions on resource use. Our approach is essentially empirical and is based on our experiences about the Chotiari water reservoir construction in Pakistan. The principle findings are grounded on qualitative and quantitative exploitations of two sources of proxy data on the conflict: the daily press and the opinions of experts in the study area.

In the first part of the article, we illustrate evidences from our case study regarding the causes and consequences of the project. The next part emphasises the portraits of social network relations, which are drawn on the basis of manifestations and the positions of stakeholders in order to bring out the actual picture of the network legitimacy in response to land use conflicts. Besides that, we also disclose the factors of conflicts and their contributions to the conflict. Finally, we compare the theory of land acquisition and the types of properties usually selected for the infrastructural projects with that of our findings.

1.1 Outline of the Case Study Area and Actors Involved

The case of the Chotiari water reservoir project from Pakistan (see Figure 1) has been selected for the representative character of land use conflicts related to water infrastructure settings. The project has been designed and implemented to increase the storage capacity of existing lakes; it was aimed to irrigate 0.12 million hectares of virgin land in the south-eastern districts of the country, which is inflated over entitled and un-entitled lands of 18,000 hectares (Nauman et al. 2001). The Chotiari reservoir area was characterised by socio-economic, geographical and/or environmental importance. It comprised small lakes, swamps, irrigation channels and agricultural lands, providing an ecological richness in the region (WWF 2008), and also supported grazing, fishing and a range of agricultural activities.

Generally, water reservoirs have been a part of human evaluation, history and development, if they are built with the intention to improve the human quality of life, and vice versa. But the confrontations over the construction of big reservoirs/dams have grown into intense policy debates in numerous

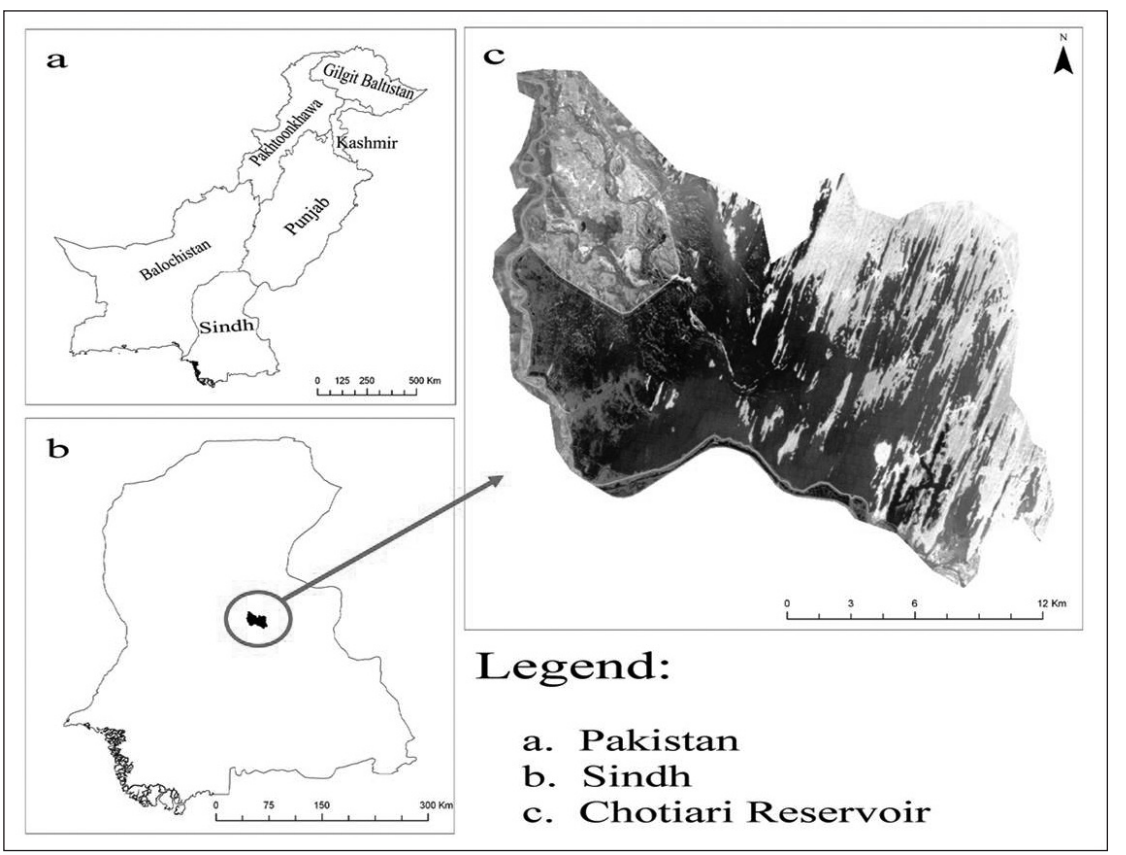

Figure 1. Location of the Chotiari Water Reservoir

Source: Developed by the authors.
Note: Map not to scale.

countries around the world during the last decades (UNEP 2004). The Chotiari reservoir project has created opposition between the local economic actors (fishermen, agriculturists, livestock-herders and others) and the stakeholders from public administration, which represent national and provincial departments. The administration often came up with very different political positions and bureaucratic approaches; thus, all this made the task of pulling off this project more complicated. Moreover, the Chotiari wetland area has also been attracted by a series of lobbies with very diverse interests, that is, landlords, politicians, hunting groups, etc. However, the local actors lead to defend the livelihood and environmental values of the local populations of the wetlands by opposing the planning proposal.

Therefore, the characteristics of Chotiari water reservoir make this area interesting, particularly for the study of land use conflict phenomena. For example, since the construction period, the opposition was drawn by displaced families to stop the construction and to assist or compensate people before displacement (Magsi 2012). Moreover, some voluntary organisations also supported their cause and suggested to the public authorities to suspend the project until there was a proper feasible study. The protest continued from time to time, but the authorities constructed and inaugurated the project in February 2003.

2. Methods: Data Collection

In order to fulfil the objectives of this study, data were collected through various sources. Primarily, structured interviews were conducted with selected experts of administrators (water and irrigation sector), researchers and legal experts, private organisations, for their opinion on this issue during field visits of the affectees of the Chotiari reservoir (see Table 1). Besides that, a few affected family heads have also been interviewed, in order to extract first-hand information and to compare this with the views of other selected experts.

These interviews were conducted with semi-planned questionnaires, where some questions were omitted in order to be asked according to the expert's position, situation and experiences, because not all experts belonged to the same professional backgrounds. These expert opinion interviews have been conducted in order to collect data on the main variables, that is, (a) the pre-conflict situation of the area and position of the actors, (b) the behavioural approaches of institutions towards land acquisition and the compensation process, and (c) the consequences of the reservoir project.

Table 1. Experts of Diverse Backgrounds

Categories	Interviewees
Private organisations (NGOs and journalists)	10
Researchers and legal experts	9
Administration (water and irrigation sector)	7
Affected family heads and landlords	6
Total	32

Source: Developed by the authors.
Note: Expert opinion survey conducted in November and December 2010.

Secondary sources of data are considered more reliable and helpful in highlighting cross-checked facts about the study. This secondary information was gathered through regional and national dailies, in order to extract a true picture of the tension and conflict situations and their causes and consequences. Although this data collection technique is not very commonly applied, it is an imperative source in land use conflict analysis in order to understand the public voice on pre-, during and post-conflict situations (Awakul and Ogunlana 2002; Mc-Carthy et al. 1996; Rucht and Neihardt 1999; Torre et al. 2010). Because of lack of digital libraries or online access to regional dailies, therefore, the offices of selected regional news press have been personally visited as well as papers were collected from the offices of the local community-based organisations (CBOs). The news published in national dailies were collected by directly downloading from their sites. The review for deep analysis of conflicts in these newspapers was conducted in the library of SAD-APT, INRA AgroParisTech. During the analysis, special care has been taken to avoid unreliable information. Moreover, additional secondary data for the study have been collected by analysing published material from various public and private organisations. By gathering the two sources (interviews and daily press), we hoped to be able to collect nice information and to avoid too many biases in the data selection.

3. Findings

3.1 Principle Controversies

The results from the case study provide the phenomenon of the controversies during construction period. Therefore, such restlessness encouraged local journalists to demonstrate their issues as well as opened ground for many researchers to play a vital part in the conflict resolution (see Figure 2). In fact, more than 80 per cent of the articles (of the total number of published news/articles on this issue) reflected that there has been significant wrong-doing associated with the land acquisitions, compensation and resettlement plans.

For this study, we have selected 10 regional dailies out of 21 (which are published in local languages) and 6 out of 30 national dailies (in Urdu and English languages) from 1997–2011 (see Appendix I). The newspapers have been selected on the basis of their reliability in terms of their news publishing through first-hand information and easy accessibility in the far-flung areas of the province. The news/articles were selected from regional or national dailies through a pre-defined criterion.[1] Moreover, we have entered only a single selected entry for each date, when the same information has sometimes been published by all the newspapers on the same date. Furthermore, the articles have been categorised as (a) origins of the situation/conflict, (b) modes of actions and (c) consequences (economic, social or environmental) of the project.

The daily press indicated various groups of evocative thematic titles: 'Respect Our Traditional Activities', 'Save Our Natural Resources', 'To Stop Displacing Local People', 'To Stop Dam Construction', etc. This reflects the fact that activities of the local population were highly dependent on this area. Analyses of these titles show the strong link between natural and traditional activities. This reflection of our case study helps to explain the process of conflict in the region. Besides this, there are also suggestions for other economic activities: 'to promote tourism', 'to protect wetlands[2] as a national park', 'to protect natural life', etc., which could combine all natural economic systems and could create employment opportunities for the local communities with a positive image. Thus, the area could serve as a profitable asset towards regional development.

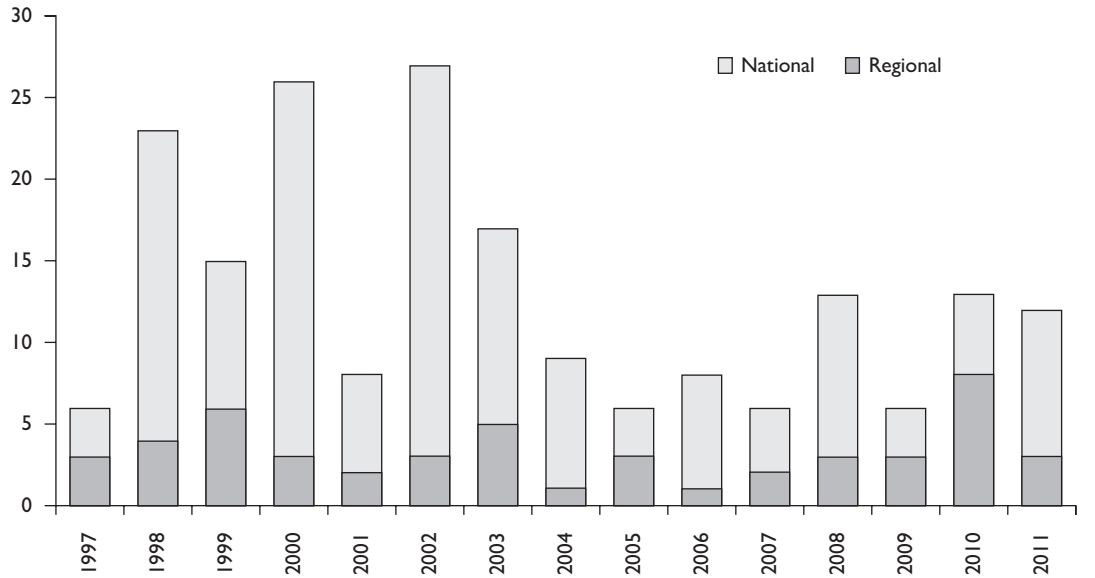

Figure 2. Number of Articles Published in the Press about the Chotiari Case

Source: Authors' calculations based on daily regional and national press (1997–2011).

On the other hand, during the construction period, several mission teams were sent by the World Bank and other donor agencies to monitor the construction and rehabilitation schemes, when they found out about the use of low quality material and mismanagement in compensation-related schemes (Abro 2001). At the same time, tensions were raised among seven communities of the Chotiari wetland area when public officials pressurised the local population to leave their ancestral properties and to move out, without any proper relocation relief. According to a majority of experts, the families which lived in the area for many generations had been forced to vacate their lands. Even though tensions increased in the area, mitigation measures were not designed to counterbalance the adverse socio-economic and environmental effects. However, both the experts as well as the daily press emphasised the involvement of local politicians and big landlords, because they had their hidden interests, maybe of fishing contracts after the reservoir construction or of dispossessing the local population of their ownership rights for favouritism, etc. Therefore, the principle tensions and controversies have been highlighted in Table 2.

3.2 Consequences of the Chotiari Reservoir Project

It is obvious that any development-related project has consequences—positive as well as negative. Here, we want to disclose the consequences (either positive or negative) of the Chotiari project highlighted by the daily press as well as by experts in the study area (see Figure 3, categories A, B and C; consequences categorised as D are based on discussions with laymen[3] for their observations on the conflicts and consequences of the project, which are not highlighted by the other sources).

Table 2. Principle Controversies and Oppositions

Confrontations on…	…between...	
Construction (top–down decision and corruption)	World Bank and donor agencies	Planning authorities
Compensation (land acquisition, displacement, unemployment and violence)	Planning authorities and police	Local communities
Injustice (negligence from courts, misuse of power and ethnic disputes)	Administrative courts, landlords/ feudal and local politicians	Local CBOs
Natural resource (deforestation, seepage and water-logging)	Authorities and local communities	Local communities

Source: Authors' realisation based on expert opinions, field and literature survey.
Note: CBOs = community-based organisations.

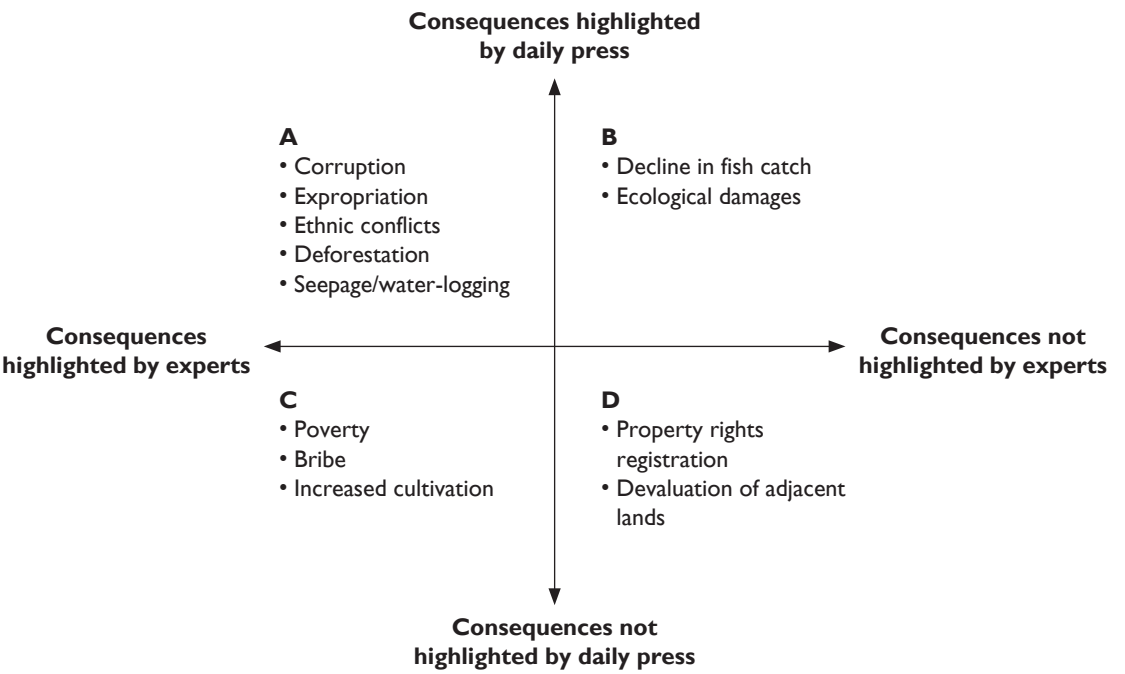

Figure 3. Consequences: By the Daily Press, Experts and Personal Observations

Source: Authors' extraction based on expert opinions, daily press (1997–2011) and layman observations during the field survey.

In socio-economic terms, in Pakistan most of the people belong to the lower class and live in rural areas, where agriculture, livestock keeping and fishing are considered the main sources of income. According to a recent survey, the expenditure of rural people on basic amenities has increased by more than 10 per cent (in the last five years), where they have received no additional income that has caused

more insecurity in the country (Government of Pakistan 2010). On the contrary, if those people are dispossessed and their lands have either been used for some development projects or spoiled due to water-logging[4] and seepage, it will ultimately cause poverty. In the case of the Chotiari water reservoir, the water-logging/seepage is directly associated with the increase in the water level, which has not only damaged adjacent lands but also devalued the surrounding lands.

3.3 The Network Dynamics of the Stakeholders

Network dynamics deals with the analysis of relational structures where actors (individuals, associations, businesses, the government, etc.) are defined and studied by the ties they have developed with each other. In this section, we focus on social network dynamics in the Chotiari area in order to reveal the way stakeholders of the land use created a dissimilar social power distribution, and how their relations have shaped oppositions and conflicts in the region. We want to identify the dynamics at work during the long process of conflicts, and to pinpoint the main actors in opposition and their strategic behaviours.

3.3.1 Social Networks of Local Actors

A social network provides different forms of interactions between people, actors or stakeholders, etc. Notions on such networks of individuals or groups have been widely provided by sociologists, psychologists, anthropologists and/or geographers since the 1970s (see, for example, Cadoret 2006; Granovetter 1973; Grossetti 1992; Scott 1991; Saint-Charles 2001; Wasserman and Faust 1994). Social network analysis defines the central aim of actors in which they are connected for the range of disparate activities to other actors, where their relations can vary in nature and types of activities, that is, power exchange, friendship, etc. (Forsé and Langlois 1997). Social network analysis provides the methods for the analysis of structures toward relational aspects of those structures (Scott 1991). The graphical representation of social networks can help in visualising and formalising qualitative relationships between actors (Cadoret 2006), where the first step is to identify the actors and their relations (Saint-Charles 2001). In this regard, we present the pattern of thought based on the daily press, expert opinions and interviews of affected households in the study area. Thus, the graphical representation in Figure 4 is developed to highlight the social interactions of different actors before the announcement of the Chotiari project.

Figure 4 unveils how local populations of the Chotiari wetlands were locally connected with each other (left) and the outside stakeholders (right) before the setting up of the reservoir. The local population comprised of fishermen, farmers, herders and other actors, who carried out their economic activities on the agricultural land and wetlands inside the Chotiari reservoir area. The figure also shows that these actors were connected with other stakeholders of the nearest city (Sanghar), which is located about 35 km from the reservoir (Magsi 2012).

The relationship of the local population to other actors was based on the collective interests of livelihood survival, that is, marketing their produce, etc. According to a majority of the experts, they used to come to Sanghar early in the morning to sell their products (fish, vegetables, milk, honey and handicrafts, etc.) in the market and commute back to their villages. However, a few experts have also indicated that relations between the local populations were not always positive. The cause of the actors' uneven relations maybe due to the fact that local people used to live in isolation and scattered on sandy dunes inside reservoir area, and/or maybe due to ethnic diversity (different castes) among local population.

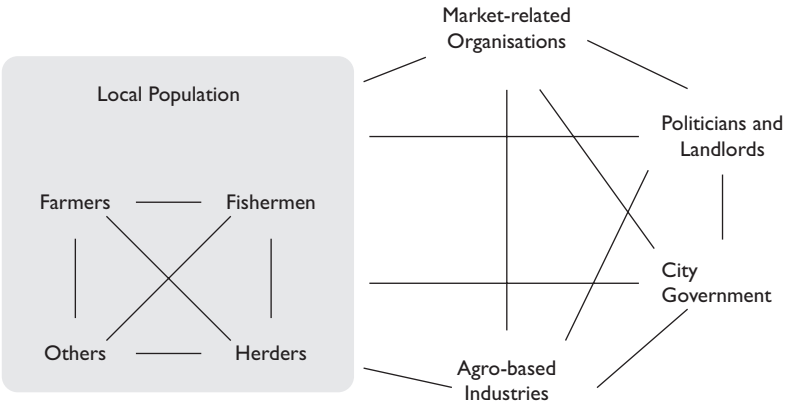

Figure 4. Principle Network of Chotiari Reservoir's Local Stakeholders (Before the Announcement of the Project)

Source: Authors' realisation based on expert opinions, field and literature survey.

3.3.2 Actors with Favour and Opposition

While assessing the network results of the stakeholders, we faced some complexities of placing the actors at their right places with respect to their centrality or closeness to other actors. The aim of this analysis is to show actors actual position either in support to construct, or to oppose, the Chotiari reservoir.

Here, we show the actors who were actively linked together in support to construct the reservoir (see Figure 5). Concerning this network, Nauman et al. (2001) have pointed out that the project was planned at the national level (by the federal government and funded by international agencies), where provincial actors were dictated to implement the project.

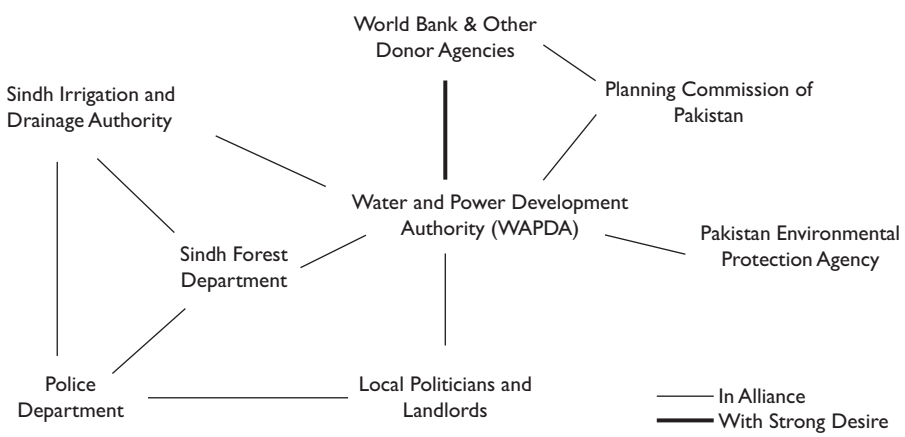

Figure 5. Network of Actors in Favour of Reservoir Construction

Source: Authors' realisation based on expert opinions, field and literature survey.

Figure 5 indicates the panel of the actors in a bureaucratic and politicised environment, comprised of federal to provincial ministries and local landlords, with a single objective to construct the reservoir on the Chotiari wetlands. In fact, the Water and Power Development Authority (WAPDA) had planned and initiated to construct the reservoir with the help of provincial departments (irrigation and drainage, forest and environment) as well as the local feudal lords (Nauman 2003), to provide irrigation water to down command area in the province, with financial assistance provided mainly by the World Bank and partially by other agencies. In this regard, WAPDA has also claimed that the construction of the reservoir and remodelling of the irrigation system would increase the cost–benefit ratio from 0.9:1 to 1:3.1 (Tarar 2003).

According to the experts, during construction period, the WAPDA and World Bank teams regularly paid visits to monitor the construction, where both stakeholders seemed to have the strong desire to construct the reservoir. During the analysis of the above networks, we observed that there are some actors whose support links have appeared temporarily. For example, the Planning Commission of Pakistan played a role as an intermediary between international donor agencies and WAPDA, where its role had not been seen directly during the construction of the project. The provincial police only appeared when the provincial departments and local politicians/landlords needed their support to control conflict (violent) situations during displacement and protests by the local population.

On the other hand, the pressure of state and donor agencies for reservoir establishment and media coverage has stimulated the local population to unite and protest. Their actions were conducted within the local to national management structure. Thus, local communities, NGOs, journalists and other voluntary organisations aimed to struggle for coherent action against construction of the reservoir (see Figure 6). Their alliance was not only based on the opposition to the reservoir project but also to promote the Chotiari wetlands as a national park and tourist stamping ground (Laghari 2001). Through daily press analysis, we came to know that the local population has demonstrated the socio-economic and environmental impacts of the project in various ways, that is, through protests, agitations, press conferences, as well as writing letters to public authorities through the press.

The network depicted in Figure 6 aims to reflect the actions performed by the actors against the project. In this regard, the actors' stake was to structure a hierarchy of coordination and to agitate till

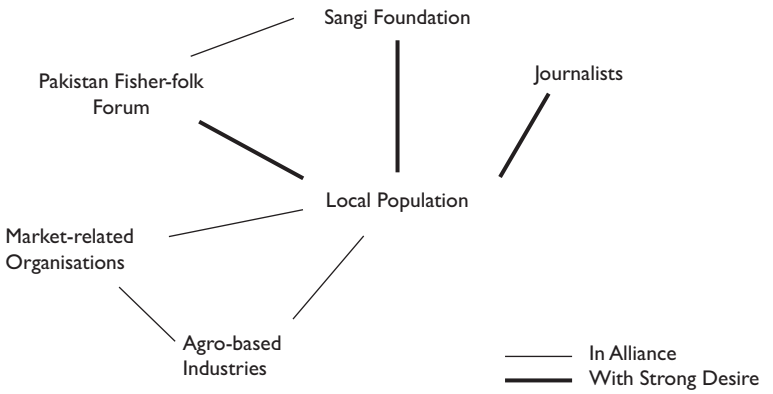

Figure 6. Network of Actors against the Chotiari Reservoir Construction

Source: Authors' realisation based on expert opinions, field and literature survey.

annulment of the project. Therefore, the local population (individually or collectively) has repeatedly protested in press-clubs as well as demonstrated during the visits of monitoring teams from the World Bank that the government has neither provided the facts related to the project nor an official list with details of the entitled affectees who were supposed to receive compensation (Jillani 1999). They also pointed out the question of environmental impacts and depletion of natural resources (Nauman et al. 2001), but there was no important effect.

The local population, in assistance with journalists, the Pakistan fisher-folk forum and the Sangi Foundation, seemed to have strong desire to either stop the project or to compensate the displaced families. Their cause has also been supported by market-related organisations in various forums. According to the daily press, some affectees, with the help of the Sangi Foundation (a national NGO), went on hunger-strikes in front of the President's office in Islamabad for justice where, within a few days, their strike was forcibly stopped and a few of them were arrested.

However, the opposition on the project between local and outside actors has increased with time. Because of the involvement of stakeholders (national and international), it was not possible to back the decision by the public authorities. But there were possibilities to set up social networks capable of responding to local situations and to improve relations between the local actors, officials and local elected politicians, which could facilitate the management of this land use conflict process.

3.3.3 Factors Created Conflicts in the Chotiari Project

The multidimensional catastrophe of the Chotiari reservoir cannot be understood with a single factor. Therefore, it is important to visualise and quantify the structural and proximate factor dynamics with their anticipation, which have not only escalated conflicts of land use but also unrest among the local population. Therefore, on the basis of articles published in the daily press and opinions from experts, we disclose the factors responsible for the conflicts of the Chotiari reservoir (see Table 3). In this regard, we have quantified the factors which appeared in the news, reports or articles published in the daily press as well as in the expert opinion interviews. These factors seemed responsible for either providing a favourable path to pre-conditions or a conducive climate to the conflicts.

Table 3 indicates that (according to the daily press and expert opinions) the major contributor of the conflict of land use over the Chotiari region is corruption, followed by the lack of scientific research,

Table 3. Conflict Factors of the Chotiari Reservoir

		Percentage	
Factor Types	Causes	Articles in Daily Press	Experts' Opinion
Structural factors	Corruption/misuse of funds	23.94	34.38
	Unilateral decision	21.81	21.88
	Lack of technical and scientific research	19.68	9.38
	International interest	7.98	12.50
	Non-existence of national resettlement policy	9.04	9.38
Proximate factors	Ethnic diversity and disarray (unrest among communities)	13.83	12.50
	Others (nepotism, illiteracy, etc.)	3.72	0

Source: Authors' realisation based on daily press and expert opinions.

international interests, etc. The results of the analysis also show that the ethnic diversity and disarray of the local population have also provoked favourable situations in the project initiation.

On the other hand, it is also obtained (through daily press and expert opinions) that due to ethnic disarray the local population united lately to oppose the project, and their opposition started with its negative impacts in the region. A majority of experts opined that the reservoir has the highest economic cost with different trade-offs between water storage to displacement of people, environmental damage, deforestation and loss in fish biodiversity. Moreover, the daily press argues that the reservoir has been built where supply of water is relatively low.

3.4 The Question of Property in Land Use Conflicts

Theoretical literature provides many factors of land use conflicts but the main reason alleged is usually the ineffectual definition and implementation of property rights. Therefore, in this section, we would like to unveil the motives of land use conflicts on properties as suggested by the literature. Furthermore, we also describe the loopholes in the property rights and institutional inconsistencies in the case study area, which can help in the illustration of conflict resolution measures of land uses.

3.4.1 Land Use under a Weak Property Regime

The properties that are being used for the construction of development projects are common, semi-common or private resources,[5] that is, entitled or un-entitled lands. Furthermore, if it cannot be denied that global development is directly related to the establishment of infrastructural projects, on the other hand these projects could give rise to big land use conflict if directly associated to property rights violations. The central idea of property is founded upon the use of the resource. A logical argument has previously been made by Hardin (1968) that the use of a common resource (common-pool resource) is economically non-rational, because its cost could always be much more than the gains, if the resource is commonly used. On the contrary, when the projects of a single use will be initiated on the CPR, it will lead other users away from the resource and will increase the cost of production, thus the increasing cost is itself a conflict (Ostrom and Nagendra 2006).

Land is a property, which is characterised by spatial distribution, knowledge and capital, where the right is the capability to stand upon a claim (Bromley 1998). Thus, the theory of property rights deals with resource allocation based on economic interest and bargaining power of the actors involved in the procedure of allocation of these resources. Because of its scarcity and preciousness, everyone is interested in his share. Although the degree of land subtractability depends on the characteristic and the type of land, likewise it is high for CPR (Ostrom 1990). Subtractability deals with the diminishing share of other users.

The property regime is a key factor in the political economy of rural masses, in which an individual feels secure when property rights are properly practised in the society. On the other hand, weak institutional approaches toward property rights often generate insecurity and tensions among the landowners. However, in certain cases landowners are poor, illiterate and unaware about land use rights and exercise of their power. For example, Khan (2006) has discovered several cases of corruption in property registration in the Lahore Development Authority (LDA) in Pakistan, that is, the main registration authority in the country. Thus, he concludes that where these rights are poorly defined, there are opportunities of tensions on land use. The tension, because of inconsistency between the law

and constitutional provision, causes confrontations on such land use (Alston et al. 2000). The concept of land use conflict has already been brought before various researchers (Campbell et al. 2000; Darly and Torre 2011; Deininger and Castagnini 2006; Mann and Jeanneaux 2009); they are the result of different stakes, policy responsiveness of the poor land-use planning, and violation of property rights.

3.4.2 Property Rights Loopholes and Institutional Inconsistencies: A Case Study

In most of the developing countries like Pakistan, the landownership rights are unclear or complex, and with a long hierarchy (Ali and Nasir 2010). Moreover, the local governance structure is unhelpful (Nemeroff 2008), with bureaucratic behaviour and controlled by the supremacy of institutions (Nauman 2003). Pakistan exercises the Land Acquisition Act, 1894,[6] where the law has been amended several times (Janjua 2007), but the transfer of land property and compensation systems are incompatible and have loopholes (Khan 2006). For example, Alam (2006) has investigated that irregular sales of immovable properties do not need to be documented. Because of the ambiguities in the laws, different investors have benefited by taking over lands from landowners (Khan 2006).

The institutions are responsible for developing a social interface between local populations and public officials among society and to promote the reforms and historical changes over time, which are normally invisible but can be measured through the policies (Ostrom 1990). In Pakistan, most of the landowners have confrontations with existing institutions because of their mismanagement and ignorant behaviour (Khan 2006), where the problems vary according to their land uses. This governance structure can be the reason of weak tenure rights and insecurity for smallholder, pastoralists, forest dependents and indigenous people.

A major part of the Chotiari wetlands was owned by the local population (Nauman et al. 2001), where they enjoyed complete rights of their landownership, but most of the owners were poor, illiterate and socially inefficient, and with little awareness of land use rights. In this situation, some outside stakeholders[7] took the advantage of property rights loopholes and created fake ownership papers for compensations and other benefits during the reservoir construction period (Nauman 2003). Additionally, the corruption of public servants is an undeniable fact in the country. For example, in the case of the Chotiari reservoir, the government has admitted cases of corruption and misuse of funds (Iqbal 2004).

According to the law, the government must notify and satisfy the landowners before taking land for a public project. On the contrary, in the Chotiari project, the daily press and experts highlight that no proper survey was conducted for land and damage valuation (neither for the entitled lands nor for the CPR), whereas the lands were used as a source of livelihood by the local inhabitants since generations. The country has been practicing construction of development projects for five decades; in this regard, many large and small dams have already been constructed (UNEP 2004), but there is no existence of any national resettlement policy (NRP). In this regard, the first draft (PC-I) of the NRP was finalised in 2002, which is still pending for approval from the concerned ministries and the parliament. But the policy draft does not address unresolved social and environmental conflicts of the previous development projects like the Tarbela dam (Iqbal 2004). Probably if this policy is approved in the near future, the question will arise whether the Chotiari affectees are benefited. In the National Resettlement Policy proposal, the 'resettlement action plans' for dams are based on the Land Acquisition Act, 1894 (Alam 2006), in which the plans have never benefited the Tarbela dam affectees in the past.

Legal action is the supreme means of ending conflict but a majority of experts opined that the courts have totally ignored the situations of opposition, expropriation and corruption, in the case of the Chotiari project. They further argue that this ignorance of their rights was due to the involvement of the landlords, politicians and public officials (Nauman 2003). Thus, the most effective approach to solve such conflicts is balancing socio-economic assessment based on the needs of the indigenous people, and giving them representation rights for negotiation to achieve a synthesis that can maximise the positive elements of each of these dimensions. Analysis of these conflicts from the expressions of experts makes it clear that the protesters often use the media to put disputes into the public domain.

4. Discussion and Conclusion

The article puts the stress on the limits of infrastructural development settings without agreement of local stakeholders and understanding of factors of oppositions by the local population. The only way to examine the institutional inconsistencies and distribution of dissimilar power, leading to land use conflicts and loss of local population's resources, is to analyse the dynamics of actors/stakeholders' network in the study area, such as the reaction of local actors and public officials during and after the project construction.

In the research, we conducted an analysis over the daily press and expert opinions, and found some dissimilar results in both sources (see Figure 2), where the press was concerned over decline of major economic activities, while the experts stressed on increasing social issues in the region, although both suggested that there exists a negative relationship between social issues (conflicts) and the setting of new economic activities/growth (infrastructure). During field visits, it was observed that local population held ancestral properties and there was no proper registration of it, which maybe the cause of their being unaware about property rights. It was also observed that the value of agricultural lands outside the reservoir is declining because of rapid contribution of seepage from the reservoir.

We have conducted a social network analysis of actors, aimed to go through the ground realities of the conflicts of Chotiari reservoir. The performance of public officials and administrative actors, in association with local landlords, gave birth to the processes of tensions and conflicts, where these actors seemed in favour of reservoir construction at any cost. Contrarily, there is another network of different actors (local market-related organisations, NGOs and journalists) correlated with the local population, who have started a long journey of confrontation with public officials and local landlords to discontinue the project. The estimated magnitudes show that despite longer opposition, the project has displaced local population with rehabilitation and resettlement issues. We also observed that the project seemed a risk to economic activities in the area because it did not correspond to the desired management policies in a sustainable manner (Nauman 2003).

Should this issue needed immediate resolutions measures? The fact is that in the case of the Chotiari reservoir, the institutional inconsistencies (Ali and Nasir 2010), without counselling the local population for reservoir construction (Abro 2001), and the behaviour of the public officials have led towards human and property rights violations. However, this is not an isolated case, where aiming to prevent such conflicts maybe imperative to promote human and property rights awareness among land users. Moreover, the study of multi-level governance and socio-spatial evaluation of the Chotiari reservoir would be a useful tool to recommend concrete policy measures and strategies to prevent such conflicts on land use for other infrastructural projects in developing countries.

Appendix 1

Daily Newspapers Selected for the Study

S. No.	Regional Dailies	National Dailies
1.	*Kawish*	*DAWN*
2.	*Ibrat*	*Daily times*
3.	*Jang*	*The Nation*
4.	*Tamer Sindh*	*The NEWS*
5.	*Awami Awaz*	*Pakistan*
6.	*Mehran*	*STAR*
7.	*Khabrain*	
8.	*Pak*	
9.	*Sach*	
10.	*Sham*	

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Notes

1. A standard selection procedure of articles was unmanageable due to different languages (Sindhi, Urdu and English); in this regard, the news/articles have been searched by specific keywords. The selected keywords followed by the word 'Chotiari' are as follows: affectees, agriculture, benefits, conflicts, costs, dam, development, displacement, ecology, economy, environment, fishing, press-conference, project, protest, rehabilitation, reservoir and wetlands.
2. The wetlands are defined as permanent or occasionally inundated areas, with static or flowing of fresh, brackish or salt water. Characteristically, wetlands possess the properties that (a) the land should support animals or plants, which are adapted to and dependent on living in wet conditions; and (b) the predominant substratum of undrained soils, which are saturated, or flooded long enough, to develop anaerobic conditions in the upper layers.
3. To acquire the actualities of the Chotiari reservoir conflicts and issues, various informal discussions have also been made with unknown people from the Chotiari peripheral area during field trips and visits to experts for interviews.
4. In a water-logging situation, the water stagnates and saturates the land surface; this condition is inappropriate for agricultural activities.
5. The common resources are free goods for individuals and are scarce goods for a society (Gordon 1954; Hardin 1968; Ostrom 1990), whereas according to Smith (2000), the semi-common properties are not only a mix of common and private properties, but both can interact and are significant. For example, a piece of a private land used for the collective interests of grazing, fishing, etc.
6. The Land Acquisition Act (1894) came into force on 1 March 1894 and was extended to the whole country (India, before Partition). In Pakistan, recently many amendments were made due to the needs of time.

According to this law, the provincial government is authorised to take land for public purposes, where the government appoints an officer for the survey of the land and to notify and satisfy the owner by paying compensation for the land and damages at the current market value. In case of objections by the owners, there must be reconsideration. In this situation, the officer can forward the recommendations to the executive district officer (revenue), where he/she will be the final authority to make decisions on land acquisition. Section 4(1) of the law explains that land can sometimes be acquired without a prior survey. In this regard, a declaration is made by an officer (authorised by the provincial government), and after the issue of the declaration, the government asks the officer to take charge of the acquired land. Thus, he will send a notice to the owners to claim their compensation for the land and damages and to lay their objections in writing within 15 days in front of the officer. The compensation and damage values are made on the current market values of land and damages (for details, see Janjua 2007).

7. The stakeholders other than local population, that is, landlords, contractors, politicians and government officials (Nauman 2003).

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