

# Improving social capital, a solution to manage water conflicts

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## Abstract

Water systems are categorized as coupled human-natural systems. It is argued that extreme events are primarily associated with the natural component of the system, while conflicts are considered as part of the human component of the water systems. Since the system is coupled, both human and natural components interact with each other. For instance, extreme events such as droughts can trigger conflict among societies. What needs to be noted here is that such disturbances in both systems are, to some extent, inevitable. However, by using the proper mechanisms and leverages, they can be alleviated. Enhancing social capital among stakeholders is one of those leverages to reduce the conflicts' likelihood or at least intensity. Social capital reflects people's collective level of awareness on the issues, their reciprocal relationships, and public participation. In other words, social capital captures three concepts of "Public Justice," "Public Cohesion," and "Public Participation." This paper aims to descriptively analyze the effect of social capital in social conflicts in the context of water systems. The results of this study indicated that social capital is effective in alleviating water conflicts, but requires large and long-term investments. Therefore, it can be used to alleviate conflicts to reduce vulnerability, and achieve development.

**Keywords:** Social capital, Water systems, Conflict, Vulnerability

## Introduction

Water systems are categorized as coupled human-natural systems (Liu et al. 2007). Two characteristics of water systems are the emergence of emergent and evolutionary behaviors (Islam and Repella 2015). Given these behaviors, these systems cannot be predicted given current information and knowledge. In addition to these issues, it is necessary to pay adequate consideration to climate change as an effective element on water systems. Taking into account the above, it is understandable that water systems are constantly changing and therefore, communities must be aware of issues like conflicts in water systems and take action to address them.

## Water systems and Extreme events

water systems consist of three sub-systems: natural (hydrological), socio-economic, legal and administrative subsystems (Loucks and Van Beek 2017). The global climate system, with its interconnected processes and feedbacks, has affected all elements of the hydrologic cycle and imposed many changes to the hydrologic subsystem. Because the different components of water systems interact with each other as well, changes in the hydrologic subsystem will also lead to changes in other subsystems. extreme events are natural and common phenomena in water systems; However, climate change has altered the frequency and seriousness of these events; And it will have effects such as long-time droughts or more severe floods, all of which will adversely affect other subsystems. These factors sometimes lead to conflict

because of their relation to the human component of water systems. Therefore, an approach to conflict reduction is required.

### **Social capital and water systems**

Social capital reflects people's collective level of awareness on the issues, their reciprocal relationships, and public participation. In other words, social capital captures three concepts of "Public Justice," "Public Cohesion," and "Public Participation." Therefore, it can be acknowledged that social capital plays an important and effective role in shaping the adaptive capacity of societies and consequently reducing conflicts (Pelling and High 2005). One of the functions of social capital is self-organization. Self-organization indicates the emergence of global behavior patterns (macro level) due to local interactions (micro level) (Atkinson et al. 2017). In other words, self-organization in social interactions refers to a specific issue that facilitates collective action. At the level of aquatic systems, these interactions take place through social networks and connections that take place between different actors. This feature indicates that most of the management and policy interventions imposed on these systems from the outside are not very successful and to influence these systems, it is necessary to try to influence the relations and interactions between the internal components of this system. In other words, it facilitated the self-organizing processes in these systems.

Now, to deal with extreme water events, such as floods or droughts, self-organization in response to these events is done in order to reduce vulnerability and it refers to interactions between people that have not been coordinated before, but at the time of the event, the events occur in order to reduce the damage and speed up the repair process. Therefore, it may be considered as an appropriate alternative to governmental and governmental interventions (Adger 2010). However, what opens the door to such interactions is social capital. For this reason, collective actions can result in the reduction of conflicts caused by extreme events.

### **Conclusion**

In light of the above, one of the key approaches to dealing with water systems (in addition to examining and applying alternative solutions) is to reduce conflict. Given that climate change has also disrupted the regime to some extent, reducing water conflicts and consequently reducing social vulnerability has become increasingly important. One way to recognize conflicts is to increase social capital. Increasing social capital requires investment, one of the solutions of which is to increase awareness and education about the concept of social capital, such as promoting and increasing the social network. Accordingly, social capital is one of the influential components of water conflicts that it is necessary to pay close attention to it in adopting approaches and decisions to deal with water systems.

### **References**

- Adger, W. Neil. 2010. "Social Capital, Collective Action, and Adaptation to Climate Change." Pp. 327–45 in *Der klimawandel*. Springer.
- Atkinson, Rob, Thomas Dörfler, Mustafa Hasanov, Eberhard Rothfuß, and Ian Smith. 2017. "Making the Case for Self-Organisation: Understanding How Communities Make Sense of Sustainability & Climate Change through Collective Action." *International Journal of Sustainable Society* 9(3):193–209.

Islam, Shafiqul, and Amanda C. Repella. 2015. "Water Diplomacy: A Negotiated Approach to Manage Complex Water Problems." *Journal of Contemporary Water Research & Education* 155(1):1–10.

Liu, J., T. Dietz, S. R. Carpenter, M. Alberti, C. Folke, E. Moran, A. N. Pell, P. Deadman, T. Kratz, J. Lubchenco, E. Ostrom, Z. Ouyang, W. Provencher, C. L. Redman, S. H. Schneider, and W. W. Taylor. 2007. "Complexity of Coupled Human and Natural Systems." *Science* 317(5844):1513–16. doi: 10.1126/science.1144004.

Loucks, Daniel P., and Eelco Van Beek. 2017. *Water Resource Systems Planning and Management: An Introduction to Methods, Models, and Applications*. Springer.

Pelling, Mark, and Chris High. 2005. "Understanding Adaptation: What Can Social Capital Offer Assessments of Adaptive Capacity?" *Global Environmental Change* 15(4):308–19.