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“Water scarcity and conflict – a matter of institutional sustainability”

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Water scarcity and conflict is a subject that has caused many debates in recent years, including alarming scenarios about “water wars” in the near future (Starr 1991) and, on the other hand, a remark that enhanced cooperation is being observed in cases of transboundary water courses (Shira, Wolf et al. 2003). In the research on Environmental Security itself, water resources are frequently pointed out as an example of how the effects of degradation and increasing scarcity of a resource can have an impact on the social and political stability of a region. But even if the subject is a recurrent one, two key issues remain insufficiently treated by current research: the relevance of potential environmentally induced conflicts at the local level and the potential for constructive social innovation linked to environmental change.

Many of the empirical studies on causal links between environmental degradation and conflict focus only on the international level and on possible inter-state conflicts. Empirical studies on the impact of environmental change at the local level have been conducted, but often consider its consequences with respect to the quality and quantity of the natural resources and fail to analyse the local responses to these phenomena (Biermann, Petschel-Held et al. 1998; Diehl and Gleditsch 2001).²

The adaptive capacity to environmental change, or, better, the constructive resolution of potential environmental conflicts, is another important issue on which little empirical research has been done so far. Although many authors refer to the necessity of innovative capacities for societies facing environmental change (Homer-Dixon 1995; Ohlsson 1999; Turton 1999; Ohlsson 2000; Abrams 2003),³ few examples of concrete strategies for dealing with environmentally induced conflict potential, especially at the local level, exist today. But, what

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² exception: the empirical studies by Bächler, G., Ed. (2002). Transformation of Resource Conflicts: Approaches and Instruments. Bern.

is the ultimate objective of studying causal links between environmental change and conflict? Beyond the pure establishment of the fact that certain environmental causes of conflict exist, should not this research also contribute to detecting areas of vulnerability and developing strategies for the prevention and the peaceful resolution of these conflicts?

This is precisely where the research on peace and conflict resolution can contribute to broaden and strengthen the current study on environmental security. It deals with the overall social, political, economic and psychological environment necessary for the establishment and maintenance of peace. Largely known as the concept of *conflict transformation* (Lederach 1994; Lederach 1995; Ropers 1995; Rupesinghe 1995; Reychler and Paffenholz 2000) this approach points out the necessity of better relationships between potentially or actual conflicting groups in the long term. This process is meant to be carried out by means of the active participation of all groups of a society and, finally, contributes to transforming the conflicting issues into processes of constructive change. According to Lederach (2000) , institutions and their leaders can play a key role in this evolution by connecting the large majority of the population with the political and social top-level leaders and can mediate in the case of conflict. Only the development and implementation of a consensus of all these actors can enable a long-term sustainable peaceful development.

Linking the research on environmental security to the concept of conflict transformation helps to understand the interdependence of the natural and the social system and thereby to develop a constructive approach for dealing with the challenges caused by the important changes that both systems are facing.

The importance of water for the overall development of a country has been widely recognized and the far-reaching direct and indirect consequences of water scarcity and degradation confirm this substantial role of the resource. Especially in many developing countries the practices of water management reflect and determine to a large degree the economic and social structure of the societies. The availability of water and its distribution patterns influence social and spatial inequalities on the local as well as on the national level and play a crucial role in the ongoing processes of change in the rural and the urban regions. This interdependency of the natural and the social system has been considered in the research on environmental conflicts only as far as it concerns conflict *analysis*, e.g., in the study of causal

³ Homer-Dixon: “ingenuity gap”, Ohlsson: “social resource scarcity”, Abrams: “capacity threshold”

relationships between environmental change and sociopolitical tension. But the potential role of the above-mentioned interdependency of both systems in a process of conflict transformation and constructive change has not yet been analysed to any great extent.

Especially regarding water management, modifications in the natural system in many cases have a direct or indirect impact on the social system and vice-versa. It seems logical that the evolution of forms of social organization related to natural resource management is closely linked to the evolution of the natural system. But such an evolution of a social system can have much wider impacts. Beyond the direct effect on the practices of resource management, it may contribute to the questioning of an entire system of social relations, established power relations, property rights and governance structures. Examples for such impacts are the necessary adaptation of water demand management to increasing scarcity and degradation of the resource, or the creation of local water user associations.⁴ These changes can lead to secondary conflicts, but they can also provide windows of opportunity for a cooperative process of social change.

As Wolf and others have determined for the case of transboundary water courses (Shira, Wolf et al. 2003), potential conflict parties can become partners for the mutual benefit of sharing a common resource cooperatively. The inner-state level also provides examples showing that environmental stress can lead to enhanced cooperation and can be an incentive for the resolution of other causes of social tension (Matthew 2000).

Changes in the management of natural resources can thereby directly and indirectly either lead to increased conflict potential or trigger constructive evolution of the social system. But what are the factors responsible for either one or the other type of development? The management of natural resources and the overall social system rely on the existence of formal and informal institutions, which we understand to be laws and rules but also customs, traditions and norms. Especially water management is a domain in which social hierarchies are closely linked to the distribution of the resource and the role of intermediate institutions in the above-mentioned sense is very significant. In the study of Common Pool Resources but

⁴ See for example Mathieu, P., A. Benali, et al. (2001). "Dynamiques institutionnelles et conflit autour des droits d'eau dans un système d'irrigation traditionnel au Maroc." *Revue Tiers Monde* **XLII**(n° 166).

also in New Institutional Economics the role of institutions in the mediation of the actor's relations of cooperation and conflict is widely recognized.⁵

But such an institutional framework is largely built upon a common history and established social relations. Adding a dimension of *conflict transformation* to existing approaches of the study of Common Pool Resources will create avenues to develop a new approach for the analysis of collective action at the local level. In order to take into account the above-mentioned interdependency between the natural and the social system, long-term modifications in water management are considered as political processes of social change that go beyond the purely technical adaptation of demand management. Integrating the historical context, the existing power relations and mutual perceptions of the interest groups into such an analysis will allow a broadening of existing approaches of these phenomena which are often quite technical (as in (Ostrom 1990). The aim is to focus more positively on the relevance of relationships and perceptions for a conflictive or cooperative outcome. The modification of property rights and governance structures provokes a moment of uncertainty and thereby an opportunity for the re-negotiation of institutional arrangements which can lead to a conflictive or cooperative evolution. The overall character of social relations has been proven to be a key element in the evolution of these processes (Lavigne Delville 1999; Caron and Pivot 2003).

The approach of conflict transformation is built upon a positive and constructive perception of conflicts, considering them to be a normal phenomenon in every society and a potential agent of social change. Issues of Environmental Security and especially modifications in water management systems can therefore be considered as a catalyst for transforming potential environmental conflicts into processes of constructive, cooperative change. These can be mediated by local formal and informal institutions. Only if the emerging new institutions are able to respond adequately to the environmental and to the sociopolitical challenges in a way that corresponds to the local needs, can they lead to a long-term sustainable and peaceful development.

The key questions to be looked at for the identification of concrete strategies for cooperative solutions regarding environmental change and its impacts are therefore: Which types of

⁵ According to these approaches, a stable institutional framework can help to reduce transaction costs by diminishing uncertainties.

institutional framework can facilitate a constructive environment for peaceful change and how do they evolve? Which are, at the local level, the characteristic patterns of collective action and the determining socio-cultural context needed to explain the emergence of certain interest groups? And, based on this analysis, how can relevant stakeholders of a constructive process not only be identified but acquire a key role in the design and implementation of this evolution?

To sum up the approach developed here: The assumption is that the interdependent evolutions of the natural and the social systems are particularly strong in the case of water management. This is one of the reasons why degradation or depletion of this resource can easily lead to socio-political tension. At the same time, these dynamic interactions are also an opportunity for triggering processes of social change in a cooperative way. Formal and informal institutions, as important mediators in these processes, can help to negotiate towards the necessary adaptations in both structures and thereby play a key role for a sustainable development of the ecological and the social system.

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