Long-term interactions between water resource depletion and labour migration.
A case study in Kerala

1. Introduction

Water shortage is one of the paramount global natural resource issues faced in the 21st century (UNEP 2007a; WHO & UNICEF 2006; Gregersen et al. 2007). A variety of reasons causing the scarcity of clean water are e.g. the growing demands for water in the face of limited supplies, inefficient use of existing water supplies, ineffective and sometimes inequitable distribution of water to users and pollution problems. Besides, the high population growth rates continue to create unprecedented pressures and increase the urgency of dealing with these causes of water scarcity (Gregersen et al. 2007; Chen, X. et. al. 2008).

Approximately one-third of the world's population lives in countries facing medium to high water stress (Singh & Jain 2004). International agency analyses indicate that by 2025, about 30% of the world's population will live in countries already experiencing water scarcity. The lack of sufficient water resources to meet domestic, agricultural, industrial and environmental demand will force people to develop additional water resources which may lead to an overexploitation and could be very detrimental for the environment and lead to increased water conflicts in the world (Gregersen et al. 2007). Rising water demand has also resulted in severe pollution in water bodies.

One of the most effective countries is India. Social unrest and environmental induced migration of people from drought-affected areas are more and more observed as a result (Singh & Jain 2004). Part of this migration effects low skilled people from rural regions who move to other countries, predominantly to the Middle East.

Remittances have short term effects of securing livelihoods of households left behind. International migrants transfer a share of their earnings back home to households (Adams 2006). The flows of formal remittances from migrants to their relatives in their country of origin indicate a rapid and accelerating growth rate (Özden & Schiff 2006).

India is the top remittance receiving country in the world. 2007, India received 27 billion US$ official remittances[1] (Worldbank 2008).

[1] Remittances consist of workers' remittances and compensation of employees (Worldbank 2008: 125).

2. Rationale

By far the largest share of India's international migrants comes from Kerala. Altough, Kerala is considered to be a water-rich state and there are 44 rivers and during monsoon seasons surplus rainfall. However, people suffer from significant water shortage during the dry months of the year (about five months per annum).

Almost 50% of the labour force works in the agriculture sector, mainly as smallholders. For them, water is essential for food security, irrigation and rural economic activities. The rural livelihoods and the environment depend largely on clean water availability. Land degradation and soil erosion threaten the sustainability of natural water resources in one third of the Panchayats in Kerala. Due to water scarcity and pollution households developed certain coping strategies. One important strategy for many households is migration (Vighneswaran & Ranjini 2006; Nair & Chattopadhyay 2005).

The project aims to investigate the linkage between the utilisation of received remittances and their impact on existing water resources in rural areas of Kerala. Based on empirical evidence the research group assumes that households invest a large share of their received money to increase agricultural productivity (such as purchase of land or irrigation facilities).

The project analyses the problems households in rural areas face due to water shortage and pollution. It investigates households' remittances use and what kind of social, political, economical and environmental implications they have on a broader population. A key to that is to analyse different stakeholders.

3. Research Design

The research focuses on three components: Water Resource Depletion, Migration and Remittances. The following questions will be approached:

1. Does migration influence agriculture transformation due to investments in water facilities and what kind of impact does it have on the environment?
2. Do remittances intensify water shortage and pollution on long term? What kinds of distribution conflicts evolve through remittances use?
3. How does the policy framework influence this kind of water resource depletion?

4. State of research

Since the early 1990s the relation between labour migration and water resources has attracted increasing attention. At the beginning of the 21st century it gathered momentum, with a strong focus on water stress as a pushing factor of out-migration. Especially the report of the

Intergovernmental Panel on Climate Change (IPCC) raised increased attention in 2007 on migration and as an impact of climate change. According to IOM human migration might be the greatest single impact of climate change causing millions of displaced people through shoreline erosion, coastal flooding and agricultural disruption. Estimations emanate from an increase in food and water scarcity in rural areas in South-Asia (IOM 2008). Environmental degradation as cause and consequence of migration is an important research field. IOM stated that the knowledge in this regard is still limited (IOM 2008). However, it is widely accepted that a relationship between certain environmental conditions and population movements exist (Schwartz & Notini 1994; IOM 2008; de Haas 2006). Yet, it has been overlooked that out-migration is not a one-way street regarding the impact on water resources.

The research project turns to these neglected aspects. Schwartz & Notini investigated in 1994 in their preliminary study environmental degradation related to unsustainable land and water use as one of the potential root causes of certain migration from Mexico to the United States. Mexico's arable lands are affected by processes of land degradation. Desertification led to environmental and socio-economic impacts, like people abandoning degraded lands and moving to marginal lands which are even less suitable for agriculture. They identified a certain need for policy and programmes (Schwartz & Notini 1994).
Hein de Haas found out in his research project that remittances have negative environmental impacts. The remittances of international migrants enabled households to afford to take the risk of digging a well and purchasing a motor pump. Due to this, the arable land could be extended and the consumption of water increased strongly (de Haas 2006).

5. Methodology and Data Collection

Information about the relation between remittances, water depletion and irrigation facilities is scattered. The data of the Migration Survey of Kerala conducted in 2007 by the Centre for Development Studies in Trivantrum, Kerala is a first assessment of the situation.
A major task of the project is to provide a first dimension of the problem. Based on that a cross sectional study will be conducted in two districts of Kerala, which comply with (1) high international migration rates; (2) physical features (high precipitation during the monsoon season and water shortage during the dry season). A semi-structured interview consisting of open and closed questions will be prepared in the light of research objectives to ensure the workability and suitability of the measuring instruments. Descriptive Statistics and Regressions Analysis will be used to show the dependence on the consumption of water resources and the investment of

remittances. Keeping in view the instruments and expenditure in the area, i.e. agriculture land purchases, farm machinery, livestock, purchase of real estate.

6. Perspectives

The research group assumes that there is significant evidence that remittances have a socio-economic and environmental impact on water resources. Solutions on the level of individual smallholder household levels will have negative impacts on over all communities water supply through reduced water availability and intrusion of salt water along costal areas. Also, the short term relief of water stress aggravates the water problems in the long run.