In the Lima region, there is increasing water demand from urban, rural, industrial, mining and hydropower users; coupled with an arid climate in the lower parts of the watershed and highly irregular rainfall patterns in the upper parts.

Despite the diversity of users, water policies have focused on supplying water to urban areas and hydropower plants through massive water transfers. These projects, known as the ‘Marca Projects’, transfer water through a tunnel from the Amazonian Mantaro watershed to the Santa Eulalia watershed. In the Santa Eulalia watershed, water is conveyed through underground tunnels to hydropower plants and ultimately to the city of Lima. Along the tunnels, some communities are able to access the water through so-called ‘water exits’.

While such mega-engineering projects are highlighted as central to Lima’s future...
water and energy supply, there is a large knowledge gap and no policy research on how they impact other water users, notably rural communities.

THE RESEARCH

• The research analyzes impacts of trans-Andean water transfers and hydropower development for different water users.
• The focus is particularly on rural communities in areas from where water is transferred (Upper Mantaro watershed) and the Santa Eulalia watershed, where hydropower development has been most significant.
• The research was conducted between August and October 2015 and involved extensive archival research, 46 interviews with key urban and rural stakeholders, and repeated field visits to different cities and communities in the Santa Eulalia and Mantaro watersheds.
  o Mantaro watershed (impact area project Marca IV): Cerro de Pasco, Huancayo, Carhuacayan, Huychao, Huascacocha.
  o Santa Eulalia watershed: Carampoma, Huanza, San Pedro de Casta, Callahuanca.
• Research questions focused on the degree to which current water governance policies can be considered sustainable and equitable from an environmental justice point of view.

Figure 1 Simplified overview of the water transfer and hydropower system in the Lima region (own elaboration)
RESULTS

History of water transfers and hydropower development

- The first water transfers were motivated by the wish to generate inexpensive hydropower rather than to provide drinking water (Empresas Eléctricas Asociadas, 1959). Accordingly, important parts of the infrastructure system (such as the trans-Andean tunnel) are today still owned by the hydropower company.
- Hydropower development was sustained by glorification of engineering, and discourses about modernity, progress and civilization; rather than by actual needs and technical evaluation.
- Areas from where water is transferred were portrayed as having plentiful water resources and communities’ scepticism was characterized as a matter of ignorance (cf. SEDAPAL, 1998). In that way hydraulic mega works were (and still are) depoliticized and possible opposition is downplayed.

Impacts of the recent Marca IV – Huascaocha Project (2012)

- Communities criticize the amount of compensation paid; the limited job opportunities during project construction, and that millions of dollars were invested for Lima’s water supply while local drinking water and sanitation systems continue to be deficient.
- Current disputes between communities and the construction company are also about the submerging of local pastureland by the dams, which is, according to community leaders, significantly more than what was calculated for as part of the compensation efforts.
- Of the three communities nearby the water transfer, one community stated that their water access has been reduced as a consequence of the Marca IV project.

Impact of hydropower development in Santa Eulalia

- Rural communities are differently affected by the construction of the hydropower infrastructure. Some communities eagerly use water from the tunnels that transport water between hydropower plants and that have several ‘water exits’; Others are concerned about dependencies created through the control of local water resources by companies, worrying that companies can ‘turn off the tap’ at any time.
- The worry of dependency is growing in the face of projected future climatic changes. For example, more irregular rainfall patterns could mean that hydropower companies and Lima’s drinking water company would stop water supply to rural communities in order to maintain or increase urban water supply and energy production. This indicates a very real potential for conflicts over water resources to be aggravated in the future.
• Other communities express concerns about the fairness of land deals rather than water as such.
• For the people living in the valley, the biggest problem is that hydropower companies do not sufficiently announce discharges from upstream regulation reservoirs during maintenance activities. This means occasional enormous water masses flooding fish farms and land close to the riverbed.

General conclusions

• Hydraulic interventions on behalf of urban water and energy demands are far from neutral, undisputed and a-political.
• Beyond questions of outright ‘water grabbing’, injustices are part and parcel of the distribution water, and of other water-related benefits. Other considerations include impacts of territorial transformation and destruction, including local communities’ loss of decision-making power and control over their territorial waters (cf. Hommes and Boelens, forthcoming).

POLICY RECOMMENDATIONS

• Water transfers as a primary urban water supply approach should be re-evaluated, especially given that perceived injustices about water-related benefits bear potential for conflicts in the future.
• Rather than augmenting supply by bringing more water from the outside, priority should be placed on improving water management and water use efficiency within the city. Such demand management, focussing on enhancing the effectiveness and equity of intra-city allocation and water uses, is more cost-efficient as well as without negative impacts for other water users and the environment. Opportunities include: reducing leakages; using treated waste water for urban irrigation; reducing luxury water uses such as golf courses and swimming pools; awareness raising to reduce per capita drinking water use.
• Possibilities for other ‘green’ projects such as watershed conservation should be explored with the participation of concerned urban and rural water users.
• With regards to hydropower plants, communities’ access to water from the tunnel should be legally assured and discharge schedules should be sufficiently coordinated with communities living in the Santa Eulalia Valley.

REFERENCES
Hommes, L. and Boelens, R. (forthcoming) Urbanizing rural waters: rural-urban water transfers and the reconfiguration of hydrosocial territories in Lima, under review