Co-creation of affordable irrigation technology
The DARE-TU project

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Co-creation of affordable irrigation technology: the DARE-TU project

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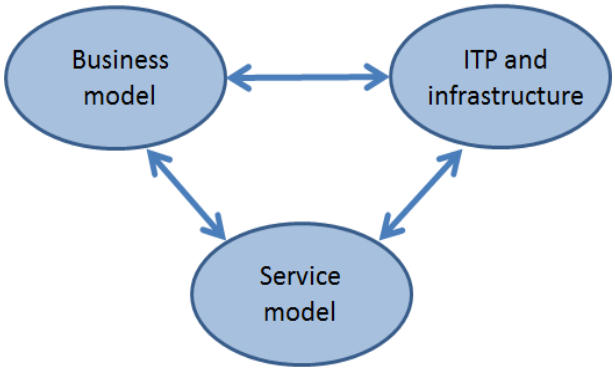
Global food production needs to increase. Such an increase can come from intensified irrigated agriculture. Many current irrigation technologies are energy- and cost-intensive. Providing irrigation services instead of selling hardware addresses the (financial) reality of smallholder farmers and builds a sustainable business model rather than relying on charity. Besides the scarcity of financial resources, a multi-dimensional view of sustainability becomes possible, including sustained and guaranteed operation over time and more environmentally friendly processes (including longer life of technologies). DARE-TU improves livelihoods of rural communities by design and management of appropriate Integrated Turbine Pump (ITP)-based irrigation infrastructures through sustainable product-service systems. Accessible and affordable water services technologies enable high-value irrigated agriculture (in terms of income and nutrients), providing opportunities for the rural poor and improving food security. With users and supporting organizations, DARE-TU translates general design principles into functional prototypes providing 'irrigation as a service' to communities, based on sustainable business models that are cost-effective for smallholders and profit-effective for organizations and/or businesses.



The three domains of DARE-TU

DARE-TU is based upon / has as core / is developed around theITP, an innovative hydraulic device, operating simultaneously as pump and turbine: the turbine provides energy to drive the pump. As ITP-hardware combines higher initial costs with much lower running costs compared to conventional fuel-based pumps, it is likely that ITP-systems are less affordable by individual farmers. As such, ITP business models are envisioned to be based on community appropriation and/or a model providing irrigation services. The DARE-TU project links knowledge institutions, private companies and NGOs in building/creating/constructing an iterative design process with inputs from users (co-creation) rather than setting technical parameters as given. In close cooperation with prospective users and support organizations, socio-economic contexts plus user preferences and challenges are translated into specifications and prototypes for users in different regions. DARE-TU's innovative approach of Context Variation by Design (CVD) intentionally and systematically combines insights from different contexts early on in the process to develop solution directions.