Sustainable Product-Service Systems

A different approach to secure smallholder production?

Intriago Zambrano, J.C.; Diehl, J.C.; Ertsen, M.W.

DOI
10.5194/egusphere-egu21-701

Publication date
2021

Document Version
Final published version

Citation (APA)
Intriago Zambrano, J. C., Diehl, J. C., & Ertsen, M. W. (2021). *Sustainable Product-Service Systems: A different approach to secure smallholder production?*. Abstract from EGU General Assembly 2021. https://doi.org/10.5194/egusphere-egu21-701

EGU21-701
https://doi.org/10.5194/egusphere-egu21-701
EGU General Assembly 2021

Sustainable Product-Service Systems: A different approach to secure smallholder production?

Juan Carlo Intriago Zambrano[1], Jan Carel Diehl[2], and Maurits W. Ertsen[1]
[1]Department of Water Management, Delft University of Technology, Delft, the Netherlands
[2]Department of Design Engineering, Delft University of Technology, Delft, the Netherlands

Smallholder farming is the cornerstone of the agricultural sector in the Global South. It produces 80% of the food in Sub-Saharan Africa and Asia, though it accounts for barely 12% of the global farmland. Its sustainable intensification is therefore paramount in the accomplishment of Sustainable Development Goal 2: Zero Hunger. In this respect, adoption of sustainable water pumping technologies is key to ensure access to irrigation water, thus to secure smallholder production. Sustained uptake of agricultural technologies, however, is a complex process whose attainment is far beyond the sole technology itself. It encompasses a number of intertwined variables of all kinds related to the adopter and the use context: biophysical, financial, institutional, social, cultural, etc.

We argue that innovative business models—like sustainable product-service system (SPSS)—have the potential to ease the adoption process by overcoming many of its constraints (e.g. unaffordable upfront costs, lack of adequate servicing). These business models, unlike traditional linear approaches of technology transfer, have to take into account a broader network of stakeholders. In this way, the technology becomes an agent of interaction between involved parties. It turns into a dynamic element, connected to other products and well-developed services, that caters multiple farming needs. In our paper, we discuss enablers and barriers for the implementation of an SPSS in smallholder contexts under different scenarios. We analyze them based on evidence from Nepali and Indonesian smallholder communities where a novel hydro-powered pumping technology, known commercially as the Barsha pump, has been deployed. The insights gathered reveal many leverage points to create synergies between farmers, entrepreneurs, financial institutions, non-profit organizations and governmental agencies. They also denote the persistent challenges in the required shift of mindset for such an innovative system to come into full operation.