



WATER and
ENERGY
for **FOOD**



Solar-Powered Irrigation Systems

A Game Changer and Nexus Approach for Water, Energy and Food Security

Webinar: Climate Adaptation and Resilience For All: Role of Small Scale Irrigation

22.03.2022 | Lucie Pluschke (GIZ)



International Initiative Water and Energy for Food (WE4F)

International initiative with 5 Donors, 2 Implementers and 5 Hubs

Multi-donor partnership, GIZ and USAID, 3 hubs in Africa and 2 hubs in Asia.



Innovations in agriculture for sustainable food production

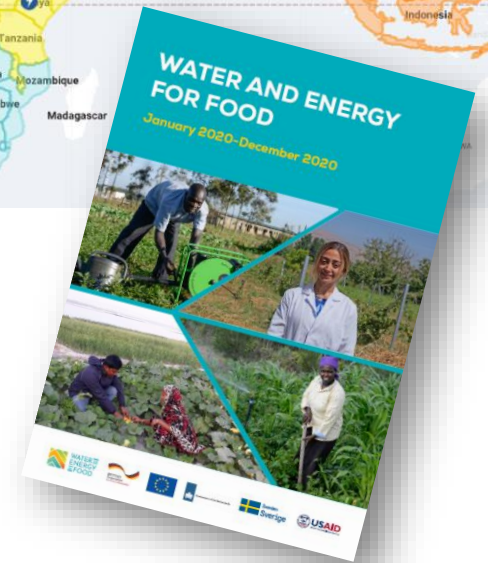
Promote climate-smart, water- and/or energy-efficient innovations for a more productive and ecological sustainable food production
→ Produce more with less

Supporting the local private sector in Africa and Asia through Hubs

Multisectoral partnerships, improved access to finance, capacity development

Global, regional and national Agenda Setting

Participation in international events, policy advise and broad communication





Key Lessons for scaling solar-powered irrigation systems

Why scaling of small-scale irrigation matters?

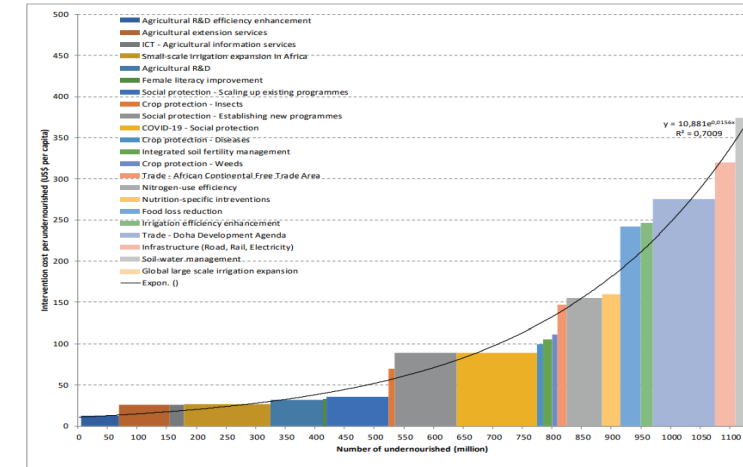
- **Small-scale irrigation** has the potential to lift more than **140 million people out of hunger** and poverty, with investment costs of less than **26 US\$** per person
- **On-farm water management, water storage**, soil moisture conservation and **irrigation** are some of the most common **climate change adaptation responses** and reduce vulnerability

Drivers for scaling?

- **Local private sector** for distribution, advisory and tech services as well as finance **is key!**
- **Marketability** of agricultural products and **need for return of investments**

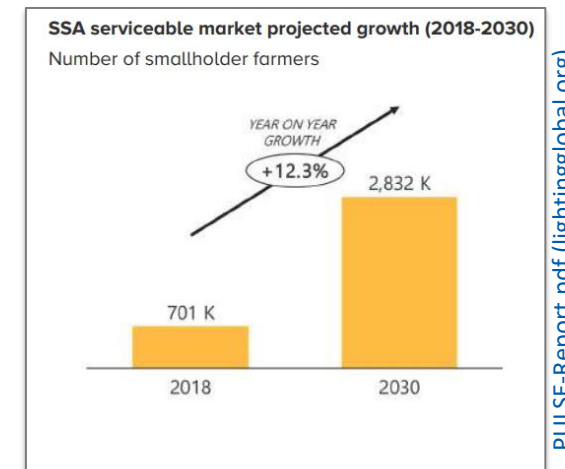
Challenges for scaling – Beyond the technology?

- **Key Constraints for smallholder farmers:** Access to land, Access to finance, markets, infrastructure, services and knowledge
- **Full benefits of SPIS will only be realized if....**
 - Access to future innovations, inputs, and finance is democratized
 - Technology is properly used and maintained → training and services for smallholders as well as understanding of own business case



Marginal cost curve of interventions to eradicate hunger and malnutrition

Source: Policy Brief Ending Hunger by 2030 – policy actions and costs: [SDG2_policybrief.pdf \(zef.de\)](https://www.lightingglobal.org/pulse-report)





Knowledge Gaps

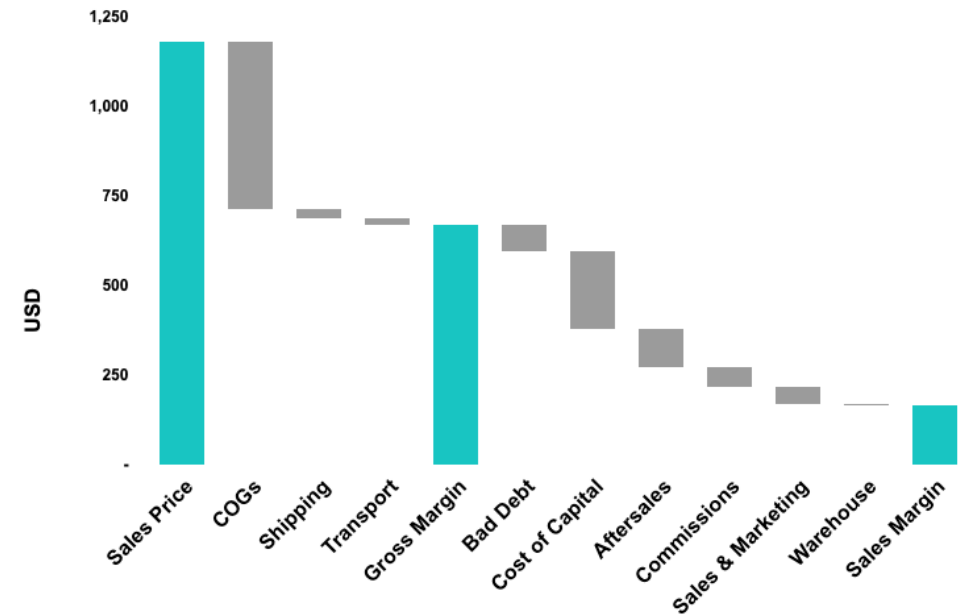
1. How to make SPIS affordable?

High-income farmers benefit from an increasingly impactful array of technological tools and **innovations**

vs.

Smallholder farmers have limited or no access to **innovations**, especially women and youth

- What are the most **effective partnerships and funding mechanisms** to support small-holder farmers?
- How can we effectively engage with the local finance systems, including **local banks and microcredit institutions**?
- What are other **ways of reducing costs**?





Knowledge Gaps

2. Water-Energy-Food: What can we learn from energy sector? How can we work more closely with the energy sector?

- What kind of **modular solar-powered solutions and business models for farmers** are needed to meet energy needs also for post-harvest activities (e.g. cooling, drying, milling, transport) and livelihoods ?
- What are the **user models** that enable farmers to make the most of their investment?





Knowledge Gaps

3. *Water-Food*: How to link small-scale irrigation with smart incentives for integrated water management at farm and catchment level?

- Not only efficient field irrigation systems but also **water storage solutions** (e.g. rainwater harvesting, water tanks) and **monitoring**, to **optimize and diversify usage of water sources** instead of relying only on groundwater sources.
- Monitoring systems that help farmers to **assess water availability and their own water requirements** → Empowering smallholders as stewards of water



Thank you!

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Annex



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Key lessons for scaling solar-powered irrigation systems

Why scaling of small-scale irrigation matters?

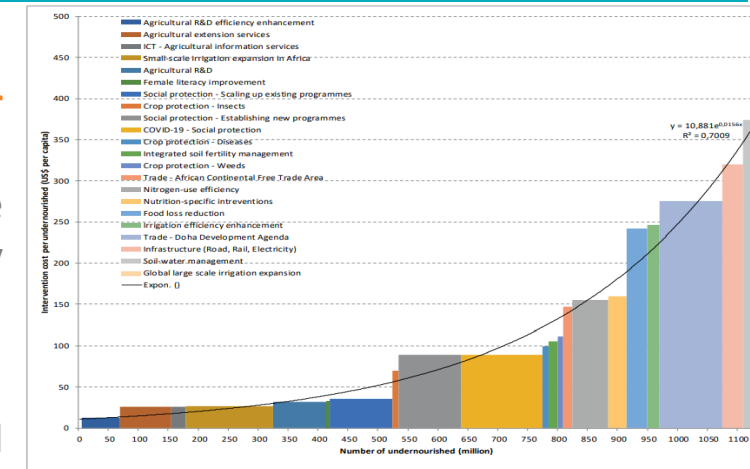
- **Small-scale irrigation** has the potential to lift more than **140 million people out of hunger** and poverty, with investment costs of less than **26 US\$** per person
- **On-farm water management, water storage**, soil moisture conservation and **irrigation** are some of the **most common climate change adaptation responses** and reduce vulnerability (high confidence)

Drivers for scaling?

- **Innovation and Local private sector is key!!!** → as solution providers for adopted and smallholder friendly solutions (supply, innovators)
- **Create smallholder-focused tech consortium** → led by farmer groups and village associations (demand, end-user)
 - **Marketability of agricultural products/return of investments** is key for investing in SPIS

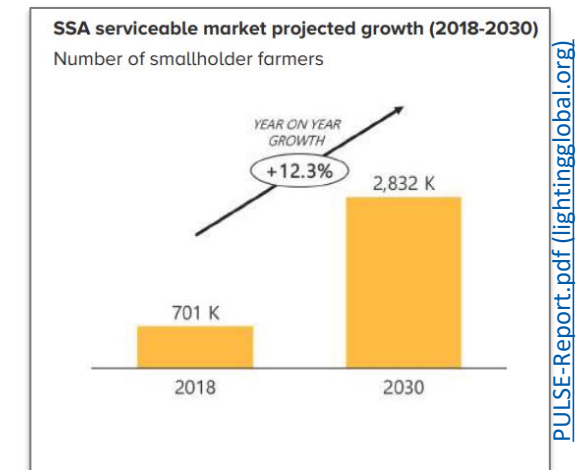
Challenges for scaling?

- **Key Constraints for smallholder farmers:** Access to finance, markets, infrastructure and knowledge
- **Full benefits of SPIS will only be realized if....**
 - Access to future innovations, inputs, and finance is democratized
 - The technology is properly used and maintained → requires upfront and after-sales **training and services for smallholders**
 - Capacity Building of smallholders – understanding their own **business case behind SPIS** – to identify best value agricultural activities on their farm.



Marginal cost curve of interventions to eradicate hunger and malnutrition

Source: Policy Brief Ending Hunger by 2030 – policy actions and costs: [SDG2_policybrief.pdf \(zef.de\)](#)



Key Constraints - Closing the Access Gap

High-income farmers benefit from an increasingly impactful array of technological tools and **innovations**

vs.

Smallholder farmers have limited or no access to **innovations**, especially women and youth

Key Constraints for smallholder farmers

- Access to Markets
- Access to Finance
- Infrastructure
- Knowledge

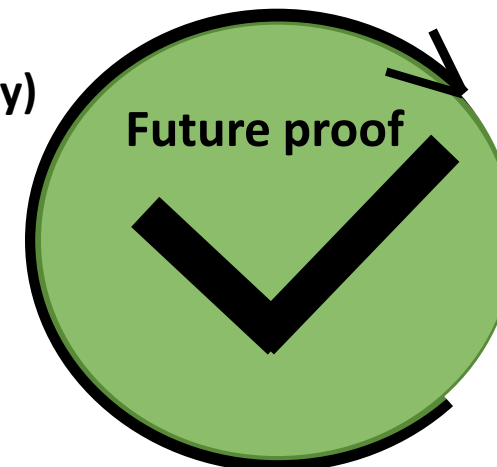


Democratize access to future technology, inputs, and finance:
empowering smallholders,
strengthen women, youth and poorest of the poor



Smallholders will reach:

- Optimised **production** (efficiency)
- Increased **income**
- Adaptive to **Climate Change**
- Improve their **diet** quality
- Restore depleted **soils**





Innovation, Entrepreneurial Spirit and Local Private and Financial Sector

Innovation and Local private sector is key!!!

- Innovation, Innovators and **End-user friendly products** and knowledge
- Local private sector driven development: Innovation call and SME development!
- Growing out of hunger and poverty with **Entrepreneurial spirit!!**
- Private Sector = **Self-employment & Independence (Self-Help needed!!)**
 - **Smallholders** = Private Sector
 - Agriculture & food sector is the biggest private sector worldwide
- **Poorest of the poor:** often land- and asset less people (social protection first to lift them up for self-help)

Game changer approach:

1. **Create smallholder-focused tech consortium:** led by farmer groups and **village** associations (**demand, end-user**)
2. **Support Local SME and innovators** as solution providers for adopted and smallholder friendly solutions (**supply, innovators**)
3. Find new **local financing innovations and mechanisms**, meaning end-user friendly financial products (savings, loans, ..) in the local finance system such as banks & microcredit agencies (**financing solutions for end-user and local Innovators**)

