The Water-Energy-Food Nexus in Egypt
Community Examples and Social Issues

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Examples

- Solar powered drinking water filtration
- Solar pumping in agriculture
- Integrated farming using solar and wind power
Solar Drinking Water Purification

Examples form Egypt’s Western Desert
El Heiz

- ‘Old’ oasis – has been inhabited since hunter-gatherer times, modern population arrived from Bahariya several decades ago

- Villages are socially characterized by close networks of extended families, cultural homogeneity

- Decisions are taken by ‘elders’ who represent the different extended families
El Kefah

- ‘New oasis’ established in the 1980s as part of desert reclamation and government resettlement schemes
- Village of government settlers – graduates, beneficiaries and investors
- Residents from all corners of Egypt – diverse social mix, lower levels of social capital
- People have no history of joint resource management – often turn to Government for support
How to tailor solutions to community needs?

- Engineering for people
- Communities are different
- Policy tools and initiatives have to be flexible enough to be adjusted to local situations
- Engage community organizations in design of solutions, policy formulation
Solar Pumping

- Community Examples
- Social Issues
Issues in Egypt’s Rural Areas

• Majority on wells – no competitive moveable solution, number of smaller systems growing (5-10 HP)
• Irrigation based on diesel pumps becoming too expensive
• Mostly combined with flood irrigation
• Solar powered irrigation more competitive – price drop, farmers pooling money
Issues:

• Illegal wells – how to monitor water use?
• Does solar pumping lead to higher extraction rates?
• Installation of water meters – for measurements / pricing?
• How will pricing mechanisms work on privately owned wells?
• Who sets quotas and enforces regulations of water use?
AUC / Orange / Gloucestershire, Cranfield and Bangor University, UK

- Installation of smart meters on solar wells in El Heiz, Western Desert
- How much water is being extracted?
- Develop water management plan based on crop water requirements
Community meetings

- Well is owned by local community
- Long-standing system on dividing water – 1 day per week
- Older people are opposed to technology (do not understand smart meters, do not trust information sharing)
- Metering is understood as the first step towards charging money
- Elders allow installation of meters for research purposes, as they trust the team
- Elders resist any card system to try out water shares based on crop water requirements (no pricing involved)
- Young farmers more willing to trust new technology
- TRUST is key
Challenges

- How to develop smart metering systems that farmers accept?
- Smart meters not allowed in every country
- How to include farmers in the planning and design process?
- Incentives? E.g. free information about farming, mobile credit, tangible water savings / better crops
- Partnerships between government, NGOs, private sector, farmers, farmers’ associations, universities
- Regulations have to be paired with participatory approaches
- Technical solutions have to be based on farmers’ needs
Gender and SPIS

- Actively engaging women in solar pumping for agriculture
- Gender division of labor: who is involved in irrigation? Who handles technology? Who makes decisions?
- Egypt: On-field irrigation is a man’s task
- Where are women involved?

Women and Solar Batteries

- 2010 CIDA, Canada Fund
- Development Association of Abu Minqar
- Only 6 h of electricity per day
- Charging station for batteries
- Women running the charging business
Building Capacity
Solar Powered Egg Incubators

Small: 200 W, 75 eggs
Large: 650 W, 1,200 eggs
Integrated Farming Systems

- Solar / wind powered systems with aquaponics / integrated aquaculture and livestock component
- Technical feasibility: Model farms
- Raising awareness and capacity
Take Away Messages

- Community work requires trust
- Every community is different
- Policy instruments have to have built-in flexibility
- Partnerships with local governmental and non-governmental entities
- What do men / women really work on? What do they really need?