

Decentralized Renewable Energy Solutions in the MENA Region: A Driver of Local Value and Job Creation

Solar Pumping Experiences from Morocco and Tunisia

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Content

- Solar pumping is only one area of „Decentralized Renewable Energy Solutions“ *and means more than: off-grid stand alone systems*
- Legal framework
- Financing
- Capacities

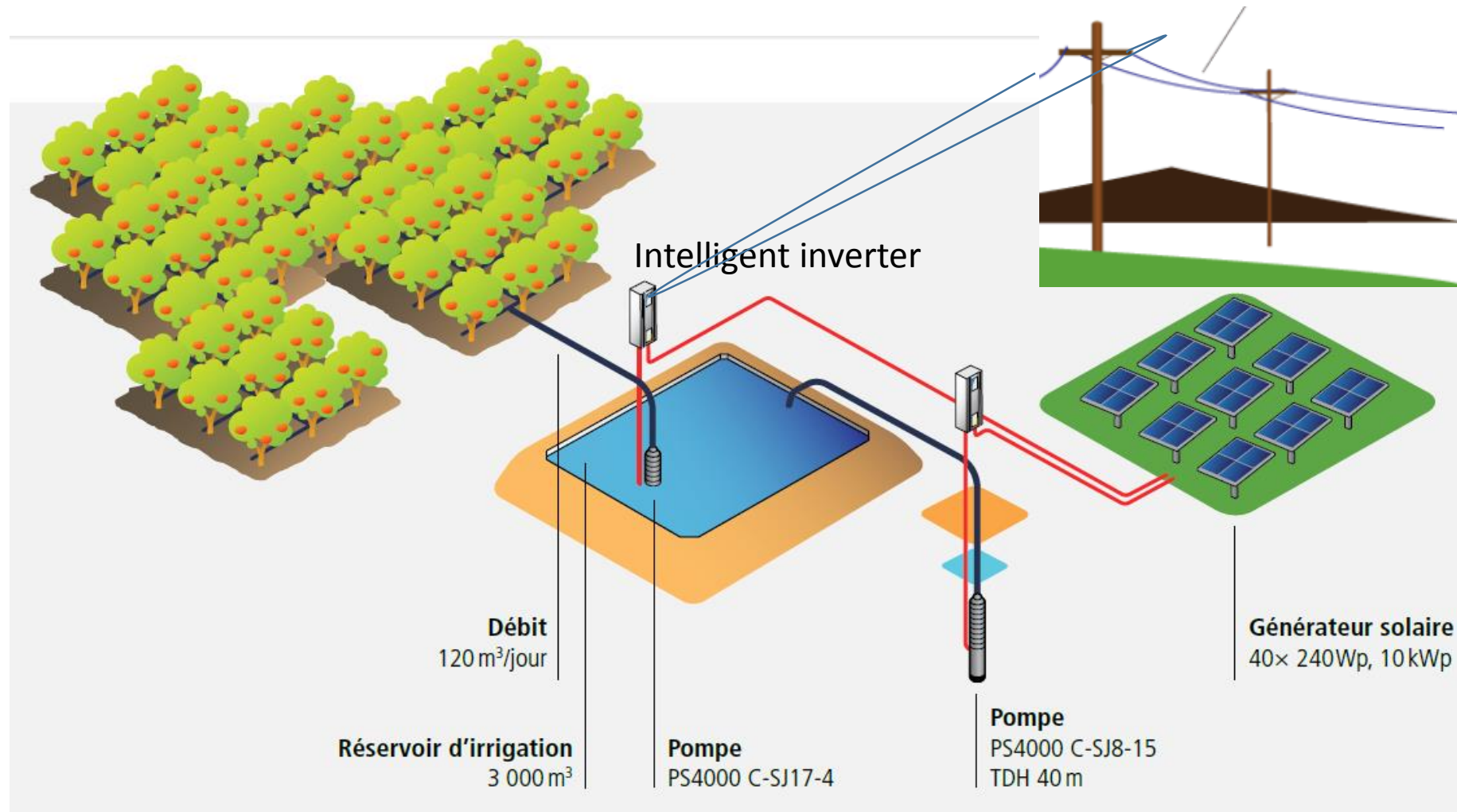


The evolution of the Solar Pumping Market in Morocco and Tunisia

- First: Solar PV-pumping was **first** used **for supply of drinking water** in rural areas (public development projects) and starts now for irrigation purposes in the agricultural sector -> *spreading out to the private sector brings new challenges*
- Second: Solar Pumping is **much more than off-grid systems** – if legally feasible, grid-connected farms with big irrigation systems can profit from experiences in the residential and industrial sector -> *look at the legal framework*
- Third: there is a **strong link** – namely in the rural areas – to **other solar PV applications** (public lighting, PV-kits for rural electrification, energy supply for telecoms,.....) -> *sensibilisation is ongoing*
- Fourth: there is a **big difference** in the policy approach for RE and especially PV between Morocco and Tunisia -> *strong impact on market development*



The „classical“ systeme for solar pumping.....and the new reality



Solar PV is much more than off-grid

From OFF – GRID



to



ON-GRID



.....for residential houses and industry, but also for solar pumping

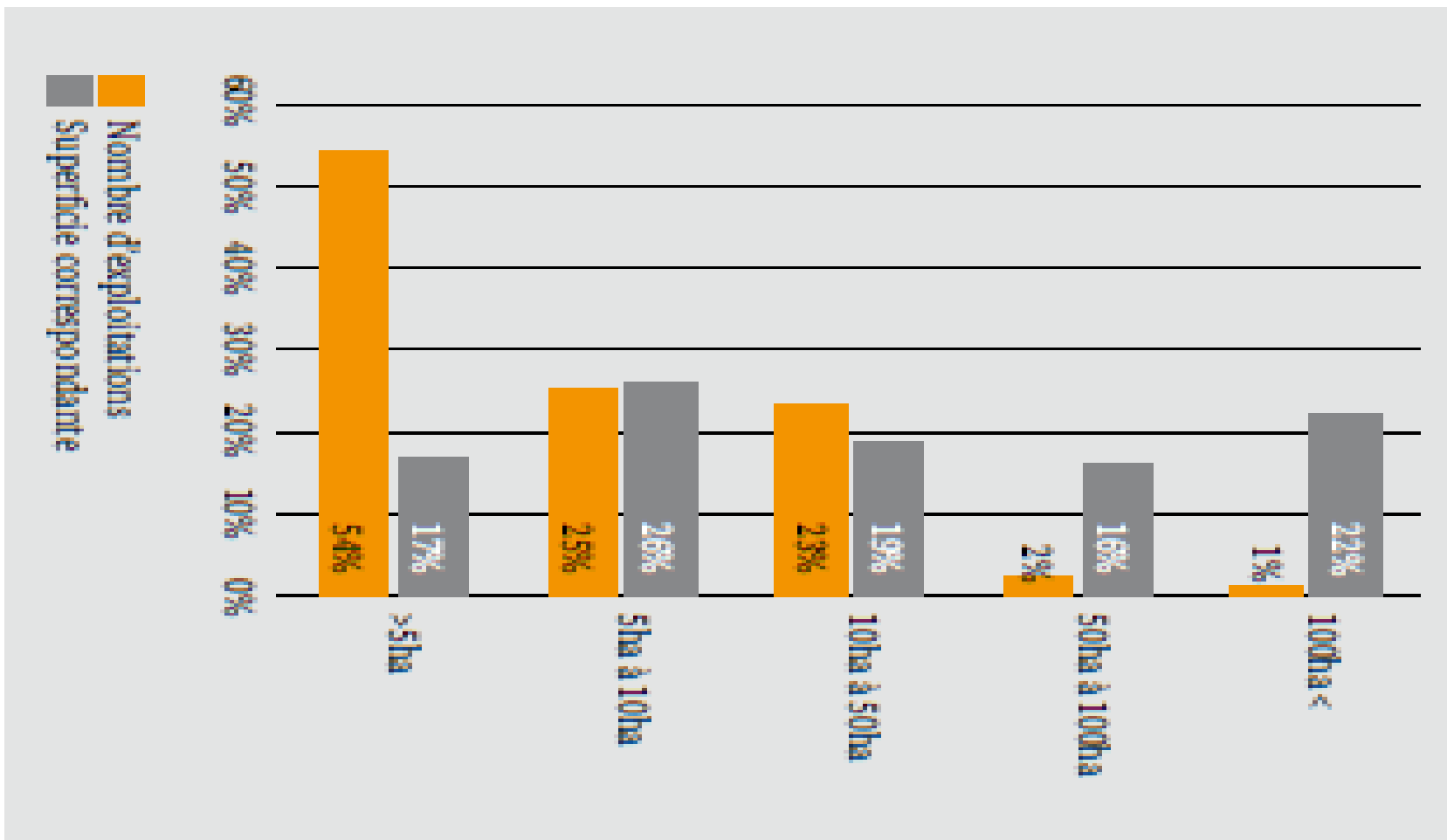
Morocco

- off-grid: no regulation than on the water side (**new** wells) -> authorization -> problems with existing stock
- On-grid: „Netmetering“ – **not yet** feasible to feed in exceeding power (whether MV nor LV grid) – expected to enter into force at the end of 2017
- **Strict** limitation to self-supply -> loss of economic viability (by seasonality etc)
- Around 20 companies working in the field, strong informal sector (-> quality problems)
- High subsidies for butane gas, widely used for pumping with diesel motors -> economic viability at risk
- 2013: first announcement of a solar pumping subsidy program – **not yet in place -> wait-and-see-position – barrier to market development**
- **Estimated** market size: around 2 MW /year

Tunisia

- Since 2009, a regulation for grid-connected LV-MV PV-systems (PROSOL Elec) -> more than **15000** systems (mostly residential, but also agricultural) realized
- Technical and financial support for residential and agricultural sector (subsidy of up to 50%) by ANME
- LV-regulation quite favorable: just drawing up a balance of consumption and production, exceeding production is transferred to the next month
- MV-regulation quite complexe -> limitation of feed-in to 30% of total production; low electricity tariffs -> only 50 installations up to now (but with a power up to 300 kWp) -> and **around 4 MW in the project pipeline**
- More than 200 companies certified, but nevertheless quality problems (mostly MV)
- **Estimated** market size: around 5 MW /year

Characteristics of irrigated farms in Morocco and Tunisia



Graphique 1 Structure des Exploitations Agricoles en Tunisie

Characteristics of irrigated farms in Morocco and Tunisia

Big farms (>20 ha, 4 %)

- Energy supply for irrigation: electricity by grid (MV) or fuel (diesel);
- Exportation of the harvest;
- Important property assured and stable;
- Acces to credits without problems

Small and medium farms (between 1 et 20 ha, 68 %)

- Energy supply for irrigation: electricity by grid (MV or LV), fuel or MA: butane gas (bottles);
- Some difficulties of acces to financing and credits
- Lack of technical assistance
- 50% of employment for rural population in Morocco

Micro-farms (< 1 ha, 28 %)

- Energy for irrigation: MA: Butane gas or diesel fuel (MA,TN)
- Low economic productivity
- Difficulties for acces to financing programs
- Lack of technical, financial and human capacities

Financing for solar pumping

Morocco

- Given the structure of the agricultural sector, there are inherent challenges for financing:
 - **access to the banking system** in the rural areas
 - guarantees for credits (**property** on land ?)
- Intention to extend the announced but not realized first subsidy program to farms up to 20 ha - **but not yet in place and nobody knows when**
- Nevertheless, the „Credit Agricole Maroc“ developed a program financing around 3000 solar pumping systems **off-grid**
- New financing instrument by the Moroccan Sustainable Energy Financing Facility (BERD)

Tunisia

- Given the structure of the agricultural sector, Tunisia succeeded to establish an appropriate approach
- The existing **subsidy and legal** framework by the state and the professional agencies (ANME – energy and APIA-agriculture) facilitates the financing of PV-projects in the agricultural sector – **off-grid and on-grid**
- Technical and financial support for the (residential and) agricultural sector
- Clear procedures
- Banking sector is ready to finance on the basis of qualified project proposals (-> *quality of project studies*)



Development of capacities for solar pumping

Morocco

Lack of cooperation, technical competences and human resources in the rural areas

Human capacities

National Agency for EE, the Institute for professional formation for RE and EE (IFMEREE), small companies and some NGO are engaged in professional formation. Still lack of coordination and structuration.

Tunisia

Efforts to cooperate and structurate the development of competences for solar pumping and PV – but: still a lot to do !

Human capacities

With strong and engaged actors (ANME, APIA) and 200 companies, there is a stock of competence for further growth of the market. Professional formation has to be structured.



Thank you for your attention !

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