**Problem Statement:**
- Egypt’s freshwater deficit was 15.6 Bm$^3$ (23% of demand) in 2000, and is expected to grow to 67.4 Bm$^3$ (48% of demand) by 2050.
- Energy intensive desalination is the only solution to cover the deficit.

**Requirements:**
- **Agriculture:** Irrigation water requirements.
- **Seawater Desalination:** Suitable technology to meet irrigation targets.
- **CSP:** Suitable technology to meet desalination energy needs.
- **Cost of CSP and desalination technologies, and farm revenue/cost estimations.**

**Engineering Basis:**
- **Specific Thermal/Electrical Energy need for Desalination (kWh/m$^3$).**
- **DNI monthly distribution (kWh/m$^2$).**
- **CSP Thermal/Electrical efficiencies.**
- **Relation between DNI-Desalination-Irrigation water production.**
  - Deficit and Surplus months
  - Surplus reservoir

**Results:**

**Technical model**
- Water Need Profile
- CSP technology parameters
- Desalination technology parameters

**Economical model**
- Economic Parameters (Farm Costs and revenues, Loan, Desalination and CSP)

**Next Steps:**
- **Linear Fresnel CSP technology (Lowest CAPEX/OPEX, local manufacturing).**
- Traditional desalination is expensive for agribusiness (RO 1.8 $/m^3$, MED 2.3 $/m^3$), HDH and DDD technologies may present a more feasible solution (1.3 $/m^3$).
- High value low water consuming crops are more favorable for this system.

- An optimum solution lies in the improvement of all sections (Solar, Desalination and Irrigation efficiency).
- Pilot projects must be built, while this model serves as a guideline for farm owners, the IFC and future projects.