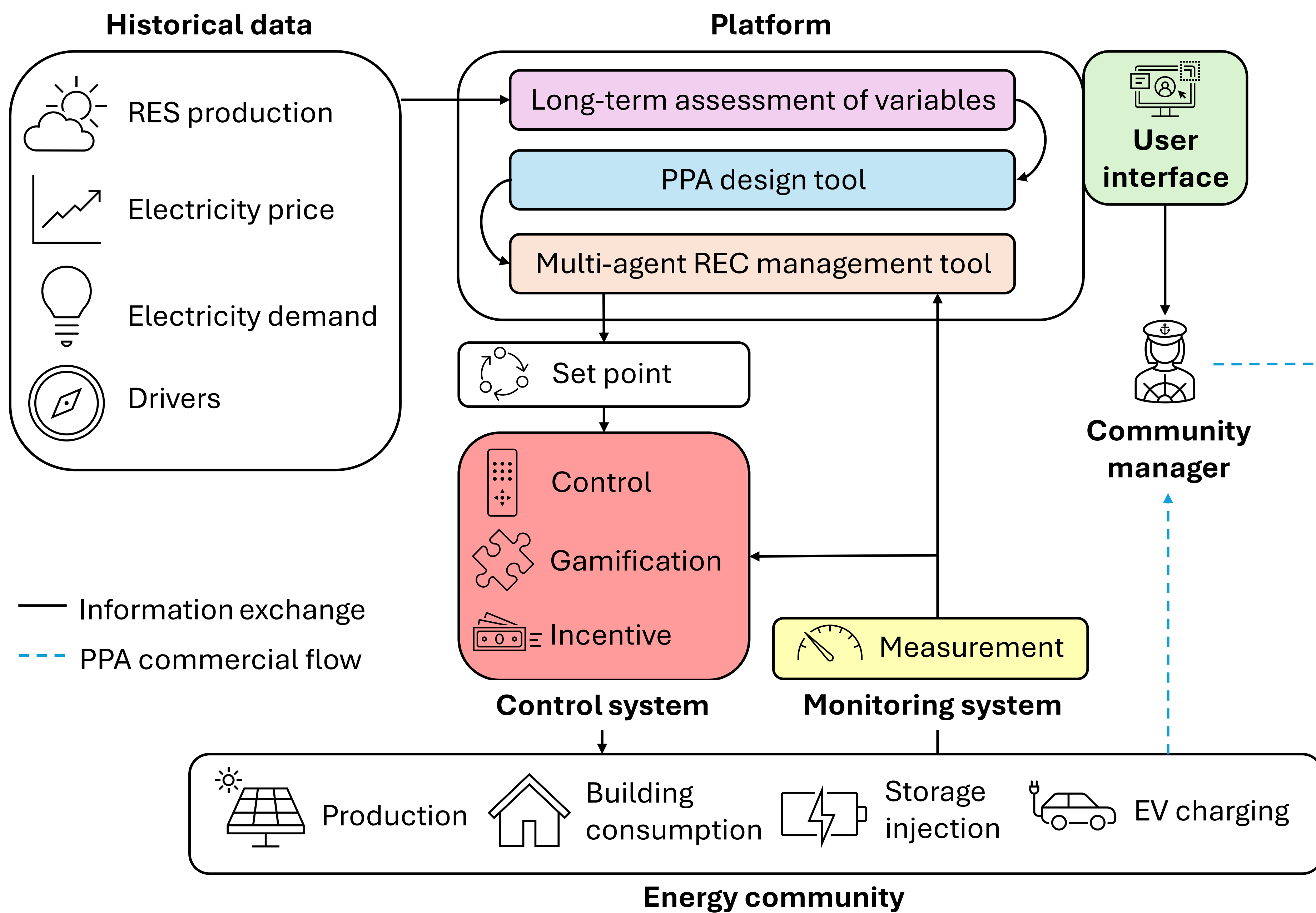




### Context and Motivation

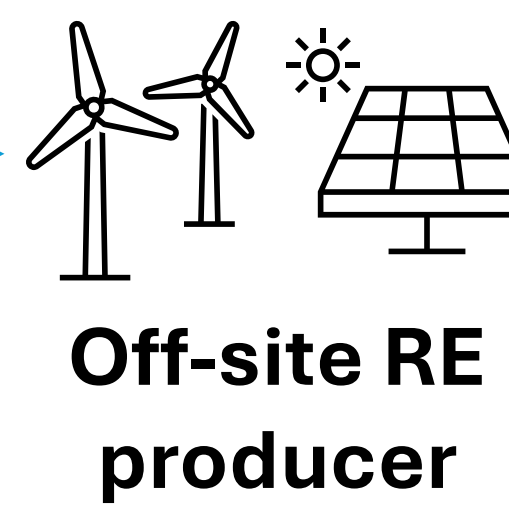
- Energy communities enhances local consumption through energy sharing, but on-site production is not enough to satisfy all the demand
- The residual demand can be satisfied by off-site production through PPAs
- Traditionally open only to large consumers and not easy to manage due to associated risks

### Decision-Support Platform



### Research Question

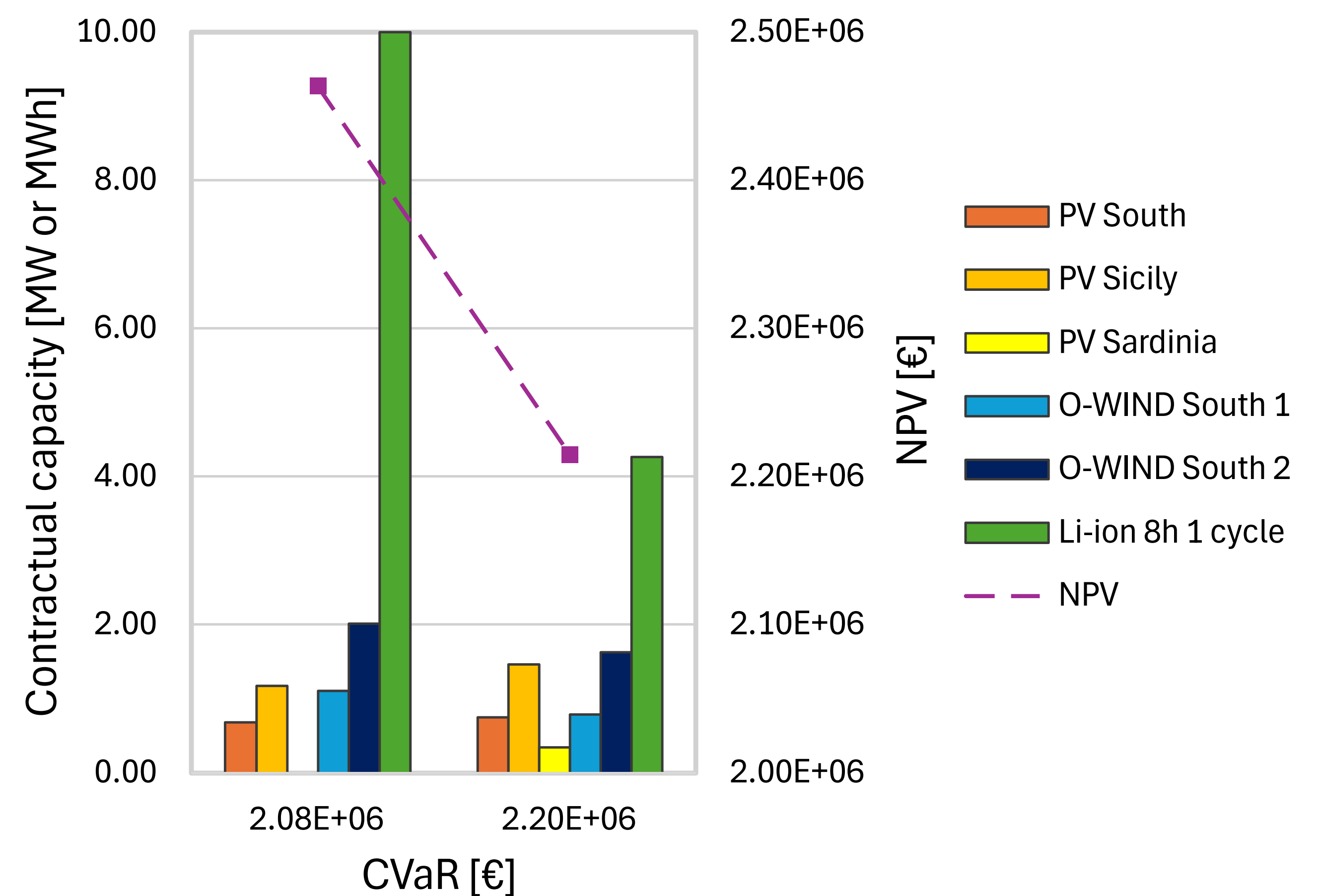
How can community managers efficiently manage long-term PPA contracts?



Develop a decision-support platform to manage energy procurement and innovative flexibility contracts

### LONG-TERM STRATEGY

- **Long-term assessment of variables**  
Day-ahead electricity price  
**Tools:** Linear Regression + Gaussian  
Process Regression coupled with Fast Fourier Transform
- **Bi-objective optimization**  
Pareto front between Max NPV e Max CVaR



### SHORT-TERM STRATEGY

- **On-going works:** day-ahead prediction of PV production; day-ahead prediction of energy consumption with Federated Learning
- **Future works:** integration with storage systems, demand response mechanisms, nudging, gamification and multi-vector optimisation