



Research Cooperation in Renewable Energy Technologies for Electricity Generation (REELCOOP)

1 Sept 2013 – 31 Aug 2017



Partners

research institutions:



companies:





Introduction

- **still 1.2 billion people (17%) live without electricity (World Bank)**
 - **2/3 in rural areas of Africa and Asia**
- **since 1990 the progress has been modest, and to achieve “electricity for everyone” by 2030, the expansion rate has to double**
- **in developed countries electricity demand is higher than supply and prices are increasing at high rates**
- **overall, only 18% of the electricity comes from renewable sources (20% in EU)**



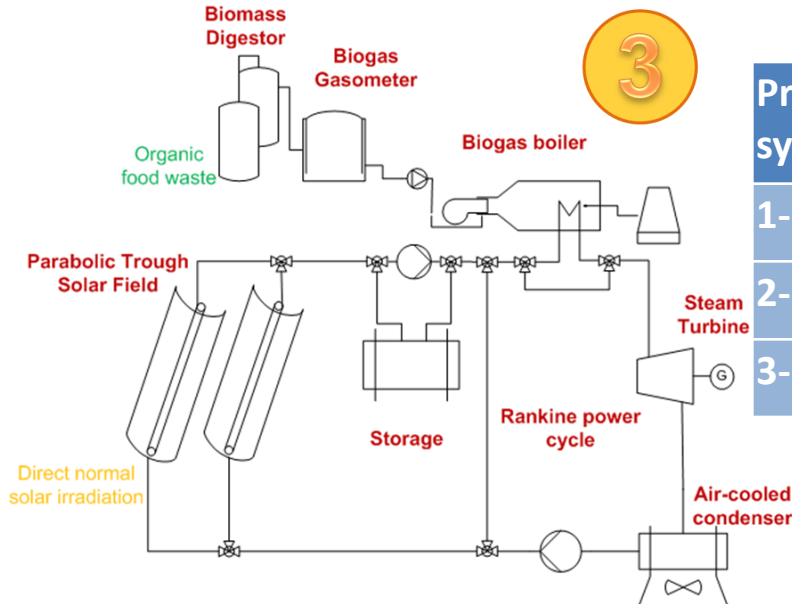
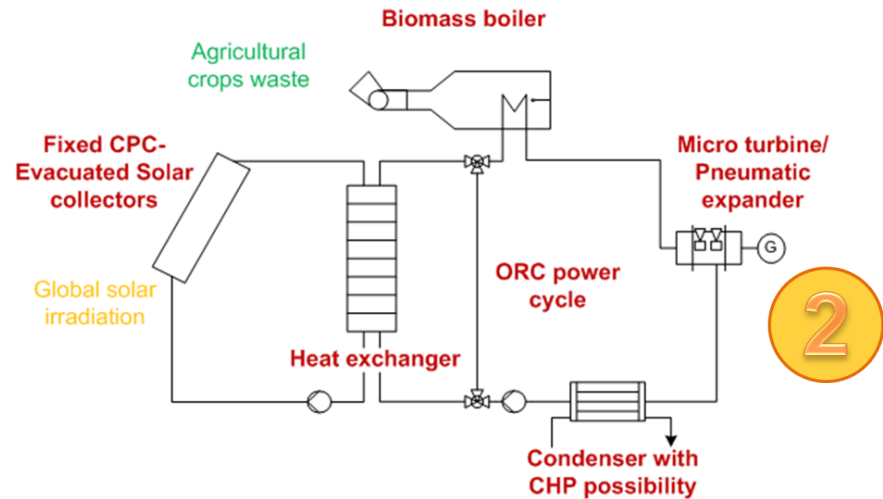
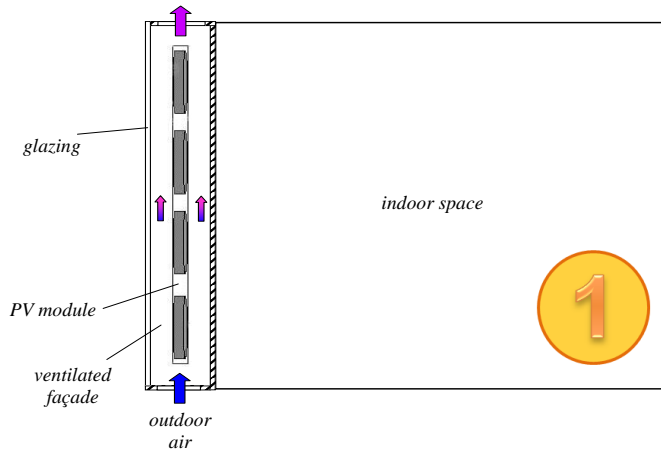
General objectives

- to address 5 REEL areas: PV, ST, CSP, biomass & grid integration
- to develop centralised (CSP) and decentralised (PV, ST/biomass) REEL solutions
- research cooperation and knowledge creation on REEL, involving EU and MPC countries, through the development of different technologies/systems in parallel, in all cases with a period of joint research and design of prototype systems, followed by a period of joint prototype testing and validation in MPC/MENA organisations, and establishing further cooperation on RTD&D and technology transfer.



Specific objectives

- prototypes



Prototype system	Energy sources	Electricity output ^a	Overall efficiency ^b	Levelised electricity cost
1- BIPV	solar	6 kW	15%	0.200 €/kWh _e
2- ORC-CHP	solar/biomass	6 kW	10% ^c	0.200 €/kWh _e ^d
3- CSP plant	solar/biomass	60 kW	10%	0.190 €/kWh _e

^a nominal useful output

^b average, source(s) to electricity

^c electrical only – not including heat

^d additional cost – above heat production cost

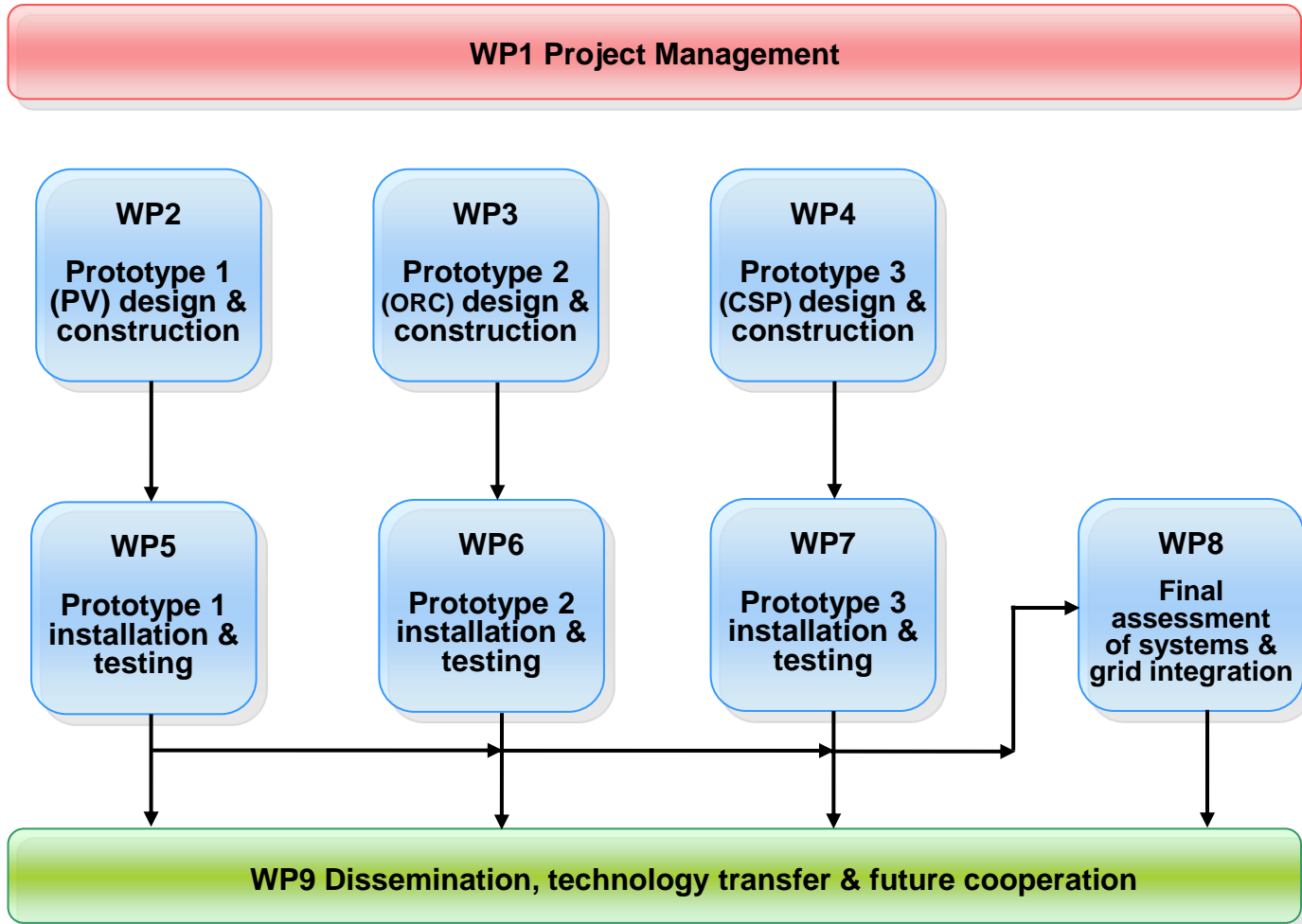


Specific objectives

- **system prototypes with several innovations:**
 - novel DSC solar cells will be developed and tested, and compared with c-Si cells in terms of efficiency and cost, with tests in ventilated façades in a real building
 - novel vacuum-CPC solar collectors will be developed and tested for medium temperature applications such as ORC-CHP systems
 - high efficiency expanders for ORC-CHP systems will be developed and tested
 - parabolic trough CSP systems with direct steam generation will be developed and tested, using novel collectors and a novel storage solution
 - hybrid solar/biomass solutions will be studied and implemented both for micro-cogeneration ORC-CHP systems and CSP systems
- **dissemination & exploitation of results**



Project structure





Dissemination / communicating research

- **REELCOOP website (www.reelcoop.com)**
- **REELCOOP workshops**
- **organised visits to REELCOOP prototypes' sites**
- **dissemination through communication media in REELCOOP**
 - TV / radio, during visits / workshops
 - use specific EC services / units
- **conferences, publications, newsletters**
 - attendance of conferences in relevant areas
 - publications in scientific journals
 - publication of a newsletter (every 6 months)



Schedule for Workshops

Workshop no.	Timing (month)	Planned venue	Comments
1	11 Apr 14	Rabat (Marocco)	in common with EUROSUNMED focus on state-of-the-art of REEL tec
2	Mar/Apr 15		
3	Mar/Apr 16		
4	Mar/Apr 17		in common with EUROSUNMED focus on project results

- to be attended by junior researchers of all interested REELCOOP Partners and open to outside public (registration through website)
- invited speakers from all REEL areas, including wind power



thank you! (watch www.reelcoop.com)