SUSTAINABLE COMMUNITIES

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Initatives of citizens and communities to promote the production and consumption of renewable energy

2400 REScoops in Europe involving hundreds of thousands citizens

Types:
- Only Producers (e.g. Wind Farms)
- Producers and consumers

Examples:
- **Denmark**: Hundreds community district heating systems, often combined with electricity production (CHP). 100 active wind cooperatives
- **Germany**: over 650 local utility companies that provide heat and electricity (PV systems on public roofs and biomass for heating)
- **Belgium**: Ecopower supplies electricity from RES to its 47,000 members.
VISION

- Energy cooperatives and municipal companies co-exist and cooperate with government and market based institutions
- Ideas: cooperation, self sufficiency, local control, non-profit, environmental protection, energy democracy

- Revenue generated can be invested to other environmental friendly projects e.g. energy efficiency etc.

- Can decrease the not-in-my-back-yard (NIMBY) mentality
CHARACTERISTICS

- Rural, Urban, grid-connected, off-grid
- Participation of members in the decisions (democracy)
- Collective private ownership or/and municipal
- Promote sustainability and combat climate change
- Small scale (mostly)

The role of Microgrids:
- Microgrids, can constitute the “technical” realization of energy communities.
- Applicable when production is relatively close to the consumer. e.g.
  - Island systems
  - CHP based cooperatives
THE MELTEMI COOPERATIVE

- Meltemi is used as test-site of sustainable technologies
- Environmental awareness
- User participation in technical experiments
Gaidouromantra Microgrid in Kythnos Island

- Off-grid settlement of 12 houses
- Intelligent Load Controllers (ILC) have been installed in each house
- The available energy is limited.
- Multi-Agent-System (MAS) for energy optimization provides a technical limitation and protection of the system to prevent over-use. This helps to maintain the good relationships between the neighbours.
- Importance of involving or at least explaining to users negotiation process to equally share the available energy - development of demonstration software
- The technical and economical aspects of system operation are evaluated positively: the system works quite reliably, users pay regularly, the maintenance and repairs of the system are well organized.
NTUA-NGO PROJECTS IN DEVELOPING REGIONS

- Indigenous communities: community mentality (e.g. common ownership of land)
- Accustomed to taking decisions in assemblies

- Not accustomed to energy saving. Energy saving was strongly advised, so that the life-time of the system is prolonged

- Education-training of local technician(s) for operation and maintenance is crucial. More people need to understand the basics

- Remote monitoring of the operation is important
**CHALLENGES**

- Institutional characteristics of the energy sector.
- Market and regulatory environment
- Economic feasibility
- In some cases negative experiences from cooperatives (e.g. agricultural sector)
- Individualism. Lack of cooperation culture