

# Islands of the Aegean Sea: A case study for local energy development

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## Who we are (1/2)

- DAFNI: Voluntary scheme of island communities
- Members: 38 island communities from 33 islands
- Our aim: To promote a sustainable future to the islands, through concerted action
- Our areas of activity:
  - Conservation & Protection of the Aegean environment
  - Strengthening of the role of local authorities & Communities
  - Promotion of quality certification in the tourism sector
  - Support communication & co-operation among the islands in sustainability issues

## Who we are (2/2)

- Our targets:
  - Balance of economic growth with environmental standards and social concerns
  - Regional development through qualitative tourism, social participation and innovative structures
  - New energy and water management schemes

## Sector activities

- RES penetration in energy production
  - Wind, Solar, Geothermal
  - Biomass
  - Hybrid systems
- Desalination with RES
- Energy efficiency
- Transport (biofuels, hydrogen)
- Energy storage systems combined with RES (e.g. hybrid, hydrogen)



## Local energy development

- Energy planning (Aegean Energy Agency)
- Interaction with key actors
  - Central government
  - Regulatory Authority for Energy
  - Public Power Corporation
  - Local authorities
  - Local communities

# Energy planning

- For each island: Creation of energy profile
  - Trends of population, tourism, energy demand (fluctuation)
  - Energy sectors: buildings (heating, cooling, electricity), infrastructure (e.g. street lighting), transport
  - Other energy consuming issues: Desalination, waste management, wastewater treatment
- Assessment of the cost:
  - Greek islands: Oil-dependend electricity production burdens National economy with 500M€/year
- Key issues:
  - Availability of data
  - Co-operation with local authorities
  - Training of staff

# Development of an Action Plan

- Covenant of Mayors scheme ([www.eumayors.eu](http://www.eumayors.eu))
- DAFNI: Supporting structure
- More than 20% of the registered Greek local authorities are from the Aegean islands
- Sustainable Energy Action Plan (SEAP)
  - Classification of islands (size, population, RES potential, etc)
  - Identification of priority sectors
  - Mix of short-, medium- and long-term actions

## Penetration of RES: potential vs reality (1/2)

- Measurements/studies and local needs
  - Geographical data
  - Climate data
  - Demographical data
  - Agriculture
  - Water consumption
  - Interconnections, electrical demand supply
  - Reservoirs and dams
  - RES potential
  - Current RES development (applications, installations)





## Penetration of RES: potential vs reality (2/2)

- Limits for RES penetration
  - Land planning
  - Geographical 4%
  - Technological 25-30%
- Management on electricity excess
  - Exportation to the mainland
  - Storage solutions

# Enhance RES penetration

- Interconnection of islands
  - Scenarios
  - Uncertainties (cost)
- Deployment of smart grids
- Promotion of storage solutions
  - Hybrid systems (e.g. wind-hydro)
  - Hydrogen
  - Electric vehicles

## Energy saving potential vs population's fluctuation

- Residential sector: High energy saving potential
  - Hotels
  - Small-scale accommodation
  - Residents
  - High cooling demand
- Limitations derive from climate & low occupancy throughout the year (residents + tourists)
  - Payback time for investments
  - High peak cooling demand in short time (A/C)



# Energy policies: Political will vs result

- Institutional and market issues
  - Limitations
  - Price of energy
  - Feed-in tariffs
  - Externalities
  
- The desalination case
  - Poor water quality
  - Transportation of water to 15 islands
  - Plan to replace transportation with on-site desalination
  
- Concerted approach required

# Investments: Maturity vs risk

- Existing financing opportunities:
  - Third party financing
  - PPP
  - Local investment funds
  - ESCOs
  - Banks
  - ...
  
- Lack of public funding for the maturing process
  
- Less mature technologies (hydrogen, smart grids, hybrid systems, geothermal): High risk for private sector, low bankability

## Co-operations and synergies

- Creation of technological platforms for regional cooperation in the Mediterranean region:
  - Smart grids
  - Large off-shore wind parks
  - Water desalination
  - Hybrid systems
  - Hydrogen for maritime transportation



## Climate change vs environmental impact

- Environmental concerns
  - Scale of projects / scale of islands
  - Restrictions in protected areas
  - Concerns about land use, birds, fishing (off-shore), noise
  - Visual impact
- Integration of RES in the landscape (landscape architecture)

## Local community: Enemy or ally?

- Benefits at local level: Municipality + Local community
  - Direct benefits: Fee (%)
  - Indirect benefits: Employment
  
- Participation in the investment scheme: The Danish model
  
- The role of local energy agencies: Provision of information to local communities and affecting the public opinion
  - Our action: Aegean Energy Agency: [www.aegean-energy.gr](http://www.aegean-energy.gr)
  
- Training for municipalities' staff (engineers, technicians, managers): A precondition for local development
  - Our action: Energy Academy





**DAFNI**

Network of Aegean Islands for Sustainability

EU  
**Sustainable  
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**Thank you for your attention!!**



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Pact of Islands

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