

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)
- 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

- Training for municipalities' staff (engineers, technicians, managers): A precondition for local development
 - Our action: Energy Academy



DAFNI

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Thank you for your attention!!



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