



Adapting to Climate Change: Greek case

- **Europe** hosts rich natural diversity (vast network of 26.000 protected areas) hotpots like **Mediterranean** with high ecological value.
- **Greece** part of the European East Mediterranean Region
- Covered by **Wetlands** (rivers, deltas, lagoons, lakes, marshes 210.000ha) and **forests**, including 5.500 **plant species**, 241 Sites of Community Importance (**SCI**), 202 Special Protection Areas (**SPA**).
- **Scenarios simulations** foresee: rise of the temprature, longer drought period, more tropical nights, intense heatwaves, erosions, high wildfire risks & serious impact on human activities & ecosystem.
- Although **wealthy in environmental services and resources**, Greece occupies the last places in International & European ranking in Climate adaptation, and the 20th among 154 countries for its ecological footprint.

Adapting to Climate Change: The need

- Soil & coastal erosion, forest fires, floods, droughts and environment degradation are already happening and **actions are needed now for the uncertain future**
- The **Pilot area** lies in Western Peloponnese, area of 14.300 ha & coastline of 22 km, the largest wetland system in Peloponnese & the biggest Umbrella Pine forest in Greece, Ramsar & Natura 2000, SPA & SCI
- **Network of ecosystems & rich biodiversity** (3 lagoons, marsh, salt pans, ponds, coastal dunes, beaches & mountains, forest, 450 plant, 250 bird, 24 reptile, 8 amphibians, 23 mammals species) **unique impressive diversity in Greece**



The Pilot of Kotychi-Strofylia

- An area of **important environmental services**

Provide food-Clean Water

Purify Air-Maintain soil

Regulate climate- Provide raw material

Defend against floods etc

- With **parallel human presence & activity** putting pressure on the ecosystem

Agriculture & over irrigation-Quarrying

overgrazing-Fishing- Hunting-

Tourist infrastructures- Illegal Waste disposal

-Illegal logging-Arson, human settlements etc

- **Resulting in** water pollution, deforestation, sedimentation of lagoons, erosion, forest fires, loss of natural resources & biodiversity etc



The Pilot of Kotychi-Strofylia

- A complex mosaic of great aesthetic and environmental importance

TOGETHER with intensive human activities and **affected by** weather conditions (high temperatures, dry summers, strong winds, reduced precipitations)

CHALLENGES us to achieve its **RESILIENCE** and **PROTECTION** for the **FUTURE**

- The **prolonged period of no control, no decisive actions and delays** turned the valuable area to vulnerable.
- F:ACTS set the principles and the area was analyzed from every **crucial aspect** (Governance, Stakeholder Involvement, Economic Viability, Multifunctional Land Use, Use / Users (future), Scale of intervention) identifying limitations & opportunities



The Pilot of Kotychi-Strofylia

- Important **economic & environmental sectors** (5th National Communication to UNFCCC, Jan 2010) that require **adaptation plan and regulation**
- Studied the **interrelation of sectors**, identified the learning needs, combined them with good practices -> improve management and resilience of vulnerable green areas

Our aim

- to **communicate the adaptation** need as **opportunity for sustainable developmental planning** with benefits for growth, jobs and innovative solutions
- **Introduce the urgency for environment protection** in operational plans of all levels of policy making
- Underline the importance of **INTEGRATED PLANS** (national, regional & local) regulating all sectors and drawing up a strategic reference framework

BIODIVERSITY
EROSION
INDUSTRY
AGRICULTURE
FISHERY
HEALTH
WATER RESOURCES
EDUCATION
TRANSPORTATION
CONSTRUCTION
FLOODS
TOURISM
FORESTRY

f:acts!

F:ACTS!: actions

- Recorded the **environmental system services**
- Reinforced participatory approaches by Actively involving 150 stakeholders**, representatives of Ministries, Regional authorities, municipalities, MB of protected areas, NGO, students, professors, teachers, volunteers, farmers, entrepreneurs etc
- Diffused the project and its actions** to 135 more organizations & bodies
- Created a **network of important organizations & stakeholders**
- Good practices were transfered** to the responsible stakeholders and with invited experts looked for opportunities & visualized plans



F:ACTS! Good practices!

- **Demonstrated good practices and identified other**
- > improve current policies
- **Rich basket of tools, practises & knowledge** included in the Greek Policy Issue Paper (INSPIRING future actions)
- **Cradle to Cradle** (management of wastes, agriculture, energy , GR & IT)
- **Climate proof areas** (FL)
- **Stakeholders' Involvement** (FL & NL)
- **Sustainable development** integrated plan of Italy (Slow Food, Oil Free Zone, Energy Book etc)
- **Reformation of legal framework** (umbrella organizations, flexible & constantly updated plans, **new financial mechanisms** etc FL-IT-NL)
- **Technology** for monitoring the changes, **& the common database** (GAL)
- **Innovative awareness campaiings** (FL)



F:ACTS!: Greek Best Practices!

- **The Basket of Products & the Cultivation Plan”**

Sustainable Rural Development Policy planned by the Region of Western Greece

Aim to restructure primary sector of regional economy through

- Ensuring multi-level sustainability in agriculture (social, cultural, environmental)
- Enforcing the Competitiveness of the Agro-Food sector
- Supporting of a new Agro-Food Model
- Endorcing a new model of growth

Setting as **priorities**:

- Nutritional security and sufficiency
- Agriculture and renewable raw materials
- Environmental protection and preservation
- Employment creation & social cohesion



F:ACTS!: Greek Best Practices!

- **An operational plan set up on concrete methodology developed inter alia with veterinarians & agronomists and consultation rounds with stakeholders in all regional units. An Umbrella strategy including**

- Consultation services by scientific experts
- Field visits to producers
- Funding schemes and opportunities
- Agrofood partnerships
- **Cultivation plan** as a business plan for consultation (cultivation proposals per area, agri products & cultivation future perspectives, agro-waste management solutions, soil & climate maps, maps of appropriate land uses, soil analysis water resources & management, environmental footprint etc)



F:ACTS!: Greek Best Practices!

Artificial Enrichment of underground aquifers in Western Achaia

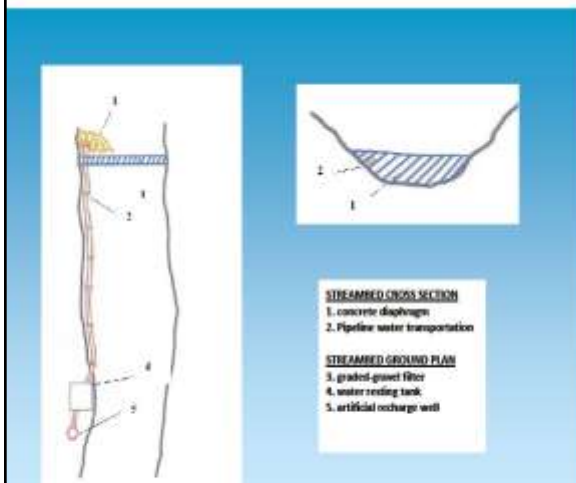
- Main economic activities : Agriculture, Livestock farming, tourism and industry
- Poor quality and quantity of available groundwater & large scale water salinity due to intensive pumping
- Solution: Artificial recharge -> the diversion of surface water with natural flow into aquifers through specially constructed wells.
- The systematic operation of 7 such drills can store more than 1.000.000 m³/year of water
- 130 to 150 days per hydrological years (January to May)

The practice:

- Eliminates the ineffective large-scale drillings
- Stores water when plenty (Winter) and recover it when needed (Summer)
- No water losses
- Low cost technique without expensive and huge surface constructions



F:ACTS!: Greek Best Practices!



F:ACTS!: Greek Best Practices!

Integrated Agro- industrial wastes treatement

- Solid & liquid waste treatment through Anaerobic Co-Digestion producing electricity, thermal energy, compost and irrigation water
- Pilot Plant operating under LIFE + program
- The cost benefit analysis: 1 MW plant can

Manage **105.000 tn wastes** per year
produce
Electricity->**9.230 MWh**,
Thermal Energy->**10.860 MWh**,
5.230 tn compost
Total investement cost : **5.008.775€**
Total revenues: **2.190.029 €**
Payback Time: **3 Years**



Acidogenic
reactor



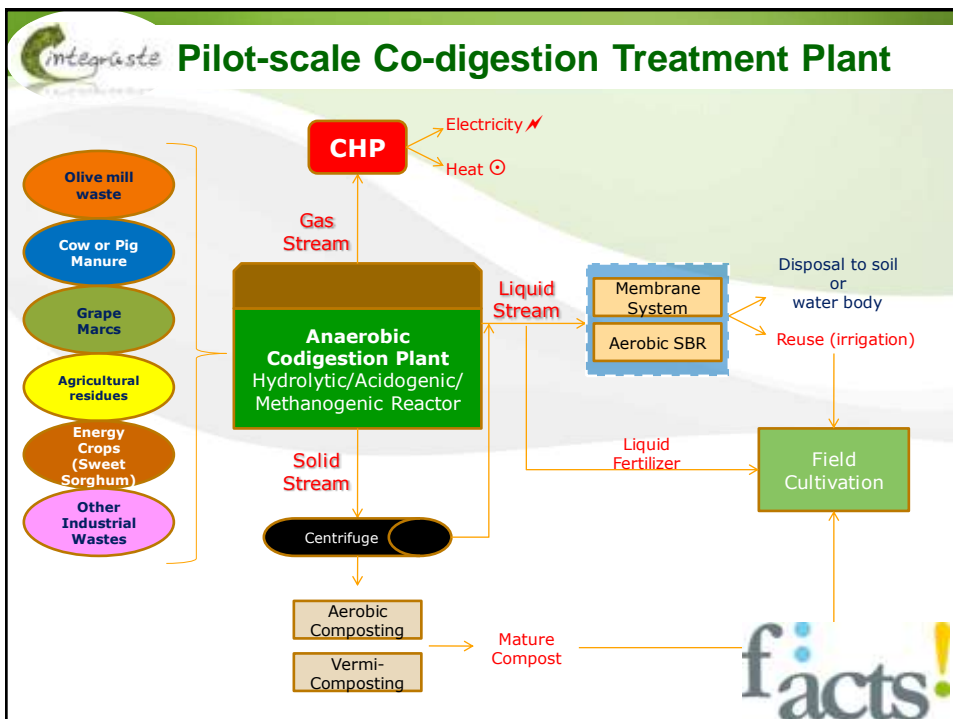
Methanogenic
reactor



Aerobic
SBR

www.achaia.gr/integraste/

f:acts!



Thank you

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