

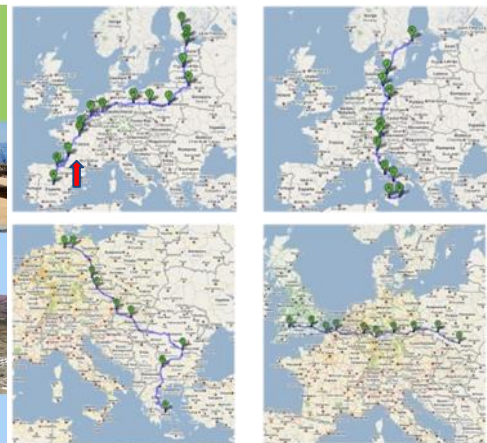
## Objective

- ❑ Andalucía (Spain): Local advantages of sustainable energies drive H2 technology applications
- ❑ European Pilot Region of “Vía Azul” (H2 Highway network to meet SET<sup>1</sup> 20-20-20 targets)
  - **H2 efficiency and technology application in transportation**
    - Scalable H2 infrastructure, based on sustainable solutions for local H2 production
    - Substantial initial H2 vehicle fleets
  - **Hydrogen Technology Center (in Málaga)**
    - Initial HQ for Vía Azul (Pilot) Mgmt. and integration of components (provider labs)
    - Drive Standards for H2 production, storage and unified interfaces to H2 vehicles
  - **Separate Highway Power Grid (Smart Grid Technologies )**
    - Electricity for H2 infrastructure through local sustainable energy resources (CSP<sup>2</sup>)
    - Scalable investments, embeddable to Super Grid (ES/EU)
  - **Generate potential for development of local employment**
  - **Substantial and sustainable reduction of CO2 emissions**
- ❑ Preparation of European Rollout for “Vía Azul Europe 10” (Network of EU Hydrogen Highways)
  - **Replicate Pilot Region** in other similar conditioned regions of Spain/EU
  - **Dynamic extension of EU capacities for sustainable energy production and H2 efficiency**
  - **Preserve remaining fossil resources** for other production processes in petrol chemistry

Pilot Region Andalucía



Examples of European Highways



<sup>1</sup> European Strategic Energy Technology; <sup>2</sup> Concentrating Solar Thermal Power Plants; <sup>3</sup> Atmospheric Electrolyser

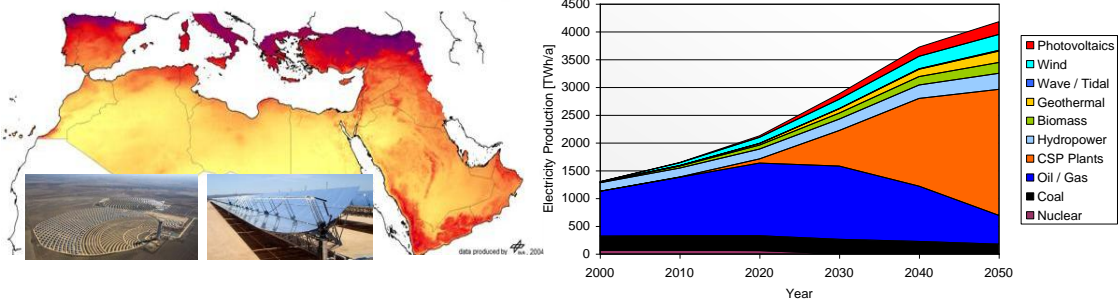
## Regional support through substantial local growth factors (social/economic):

1. High-Tec tourism to experience tangibly H2 vehicles and corresponding technologies
2. International leadership in through scalable wide area (Pilot region) application and demonstration of H2 technologies in transportation
3. Export of several technology modules locally manufactured and proven to other regions
4. Export of sustainable energy (primarily solar) via separate Highway Smart Grid and the general Super Grid towards the north of Spain and the EU
5. Malaga HQ (Nucleos): Recognized H2 turnkey platform for international experts/organizations
6. Raised local levels of employment: Construction, engineering, services and potentially tourism
7. Sustainable reductions of local CO2 emissions to meet Kyoto targets of Spain

## Predetermination factors: Andalucía as a European pilot region

- ❑ Local sustainable energy resources capacity soon to exceed capacity of 1 nuclear power plant
- ❑ Costa del Sol (Malaga): European touristic clients with above average purchasing power to experience and testify the tangible new H2 vehicles and safeness of corresponding technologies (Show window for demand establishment in corresponding home countries)

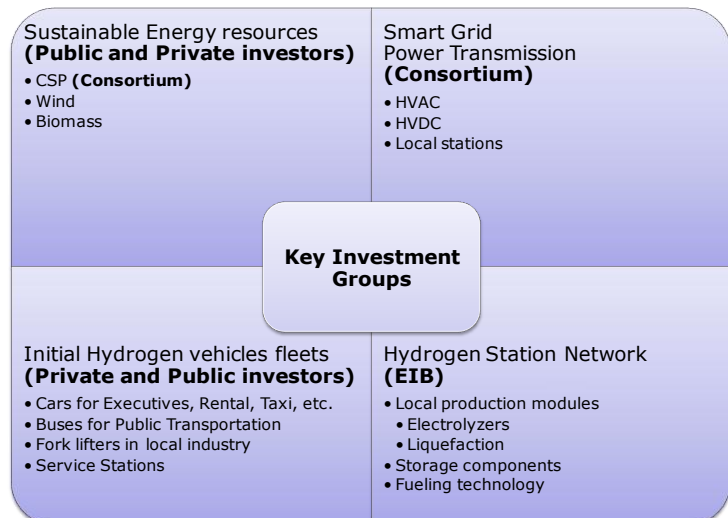
MED-CSP Study: Annual Direct Solar Irradiance in the southern EU-MENA Region / Electricity Generation All Countries



- ❑ Only European region with existing implementation base of CSPs
- ❑ Intensity of sun annual radiation determines and permits the substantial extension of the local installed base of concentrating solar thermo power plants
- ❑ Major European DESERTEC touch point for energy connections with Africa
- ❑ Potential 1<sup>st</sup> European (!) nucleus of DESERTEC concept
  - Political and technological pilot region
  - Immediate application of sustainable energy, serving as development pilot for European energy strategy in the transportation sector

### Establish Vía Azul Consortium (Draft Business Model)

- ❑ Public controlled (EUC) professional managed (holding)
- ❑ Owner of the H2 Highway Power Grid and required CSP<sup>2</sup>
- ❑ Vendor of the sustainable energy for local H2 production through Electrolysers (AE<sup>3</sup>)
- ❑ Funding: Partially public and private (Stocks - IPO to be scheduled - sustainable growth)
- ❑ Drive H2 Station transition initiative for rapid adoption of H2 technologies
  - Special 'first time mover' financing conditions to H2 Station owners
  - H2 Equipment, incl. Electrolyser (AE), to be owned and refinanced by H2 Station owner
- ❑ Manage efficient DESERTEC collaboration



Infrastructure and initial H2 vehicle fleets	
Project faces	Inversiones (Mío)
	Quantity
Pilot region (Andalucía)	705 €
Madrid extension	169 €
Hydrogen station network (every 50 km)	52
CSP (type 50 MW) required	2
Highway cable (km)	2.339
H2 City buses (included in invest. figures)	70
H2 cars (not included in invest. figures)	1.400
<b>Vía Azul Europe 10 (total)</b>	<b>11.399 €</b>