Interreg Europe
Co-funded by the European Union

UNIFHY

UNIFHY

Unifying policies to support the uptake of green hydrogen to decarbonize Europe.

Setkání „Focus Group“ #1

9. dubna 2025 | Ostrava (on-line)

Moravskoslezský kraj

LineUP ;-)

- o PROJEKTU & co je to „FG“? *(10 min)*
- DOBRÉ PRAKTIKY: *(60 min)*
    - lokální: identifikované / navrhované *(15 min)*
    - externí: IA#1: Badajoz *(ESP)* *(45 min)*
- SHRNUTÍ / DOPORUČENÍ K PŘENOSU *(15 min)*

Interreg Europe
Co-funded by the European Union

UNIFHY

O projektu…

Aleš Trnka
manažer projektu

Moravskoslezský kraj

Cíle a výstup projektu

GREEN

*„Identifikace, implementace a **přenos funkčních dobrých praktik** (GP) **do akčního plánu** dané strategie s využitím prostředků EU.“*

- *C1: aktivace **sektorů**, ve kterých **nelze snížit spotřebu energie** a elektrifikace prostřednictvím výroby zelené energie*
- *C2: identifikace potřeb na nástroje politiky na **podporu těchto sektorů při jejich dekarbonizaci***
- *C3: rozvoj strategických přístupů pro **optimalizaci výroby energie** prostřednictvím **vodíkových technologií***

Partneři projektu

6 partnerů ze 6 evropských regionů

Consortium Extremadura Energy Agency (ES)
Badajoz, Extremadura

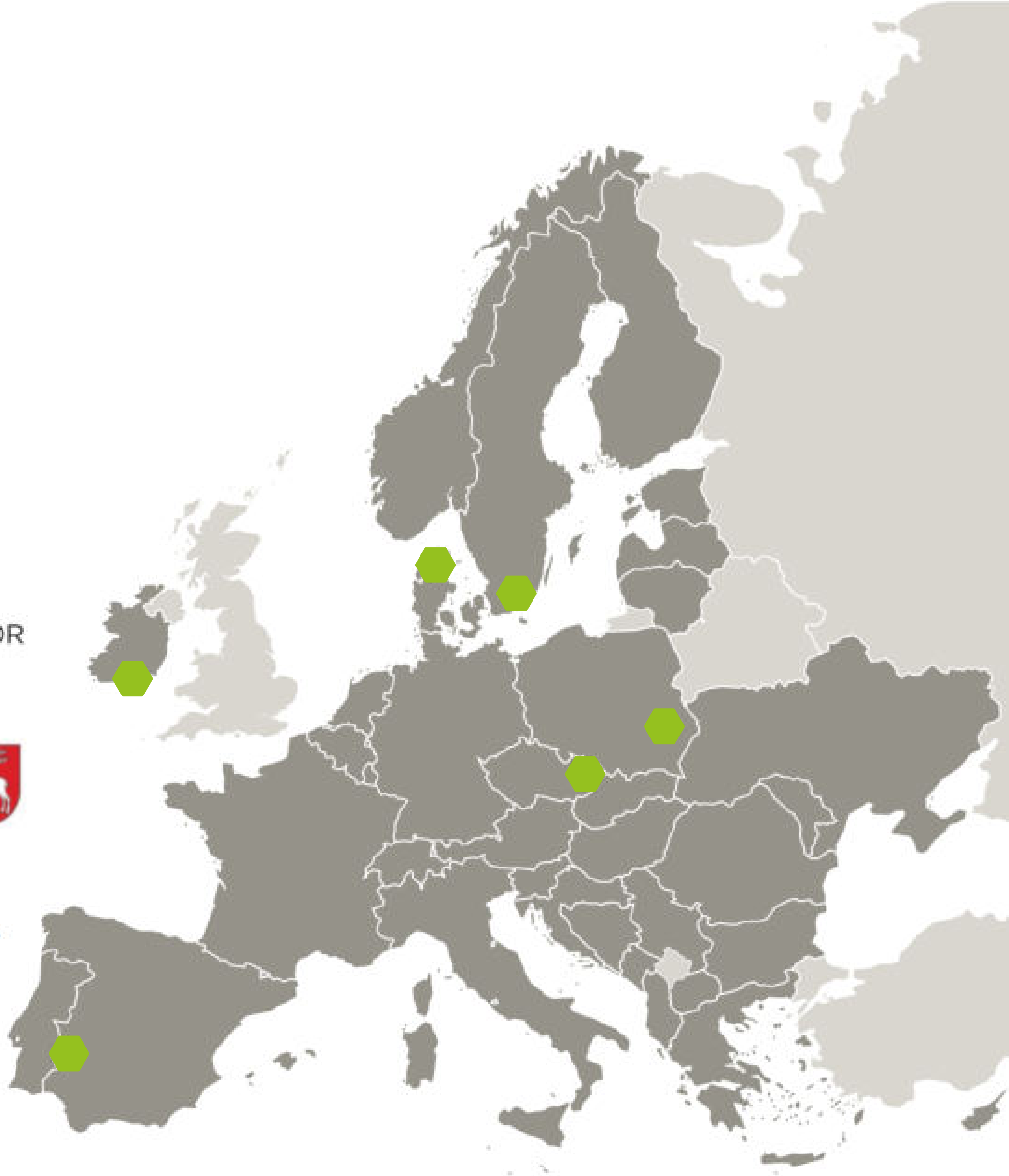
Aalborg Municipality (DK)
Aalborg, North Denmark Region

Energy Agency Southern Sweden (SE)
Växjö, South Sweden

Lubelskie Voivodeship (PL)
Lublin, Lubelskie

Moravian-Silesian Region (CZ)
Ostrava, Moravian-Silesian Region

South East Energy Agency (IE)
Kilkenny, South East Ireland



Projektový „přístup“ ??? = Jak!!!

1. SPOLEČNÉ TEMATICKÉ STUDIE A ANALÝZY
2. MEZIREGIONÁLNÍ/MÍSTNÍ UČENÍ A BUDOVÁNÍ KAPACIT
   - meziregionální výměna zkušeností a dobré praxe (IE)
   - výměna zaměstnanců / specialistů
   - setkání místních zainteresovaných stran (LSG/FG)
   - politické „snídaně“
3. ZLEPŠENÍ POLITIK A MONITOROVÁNÍ
   - společný report o adopci dobré praxe
   - metodika monitorování zlepšované politiky
4. ZÁVĚREČNÁ KONFERENCE

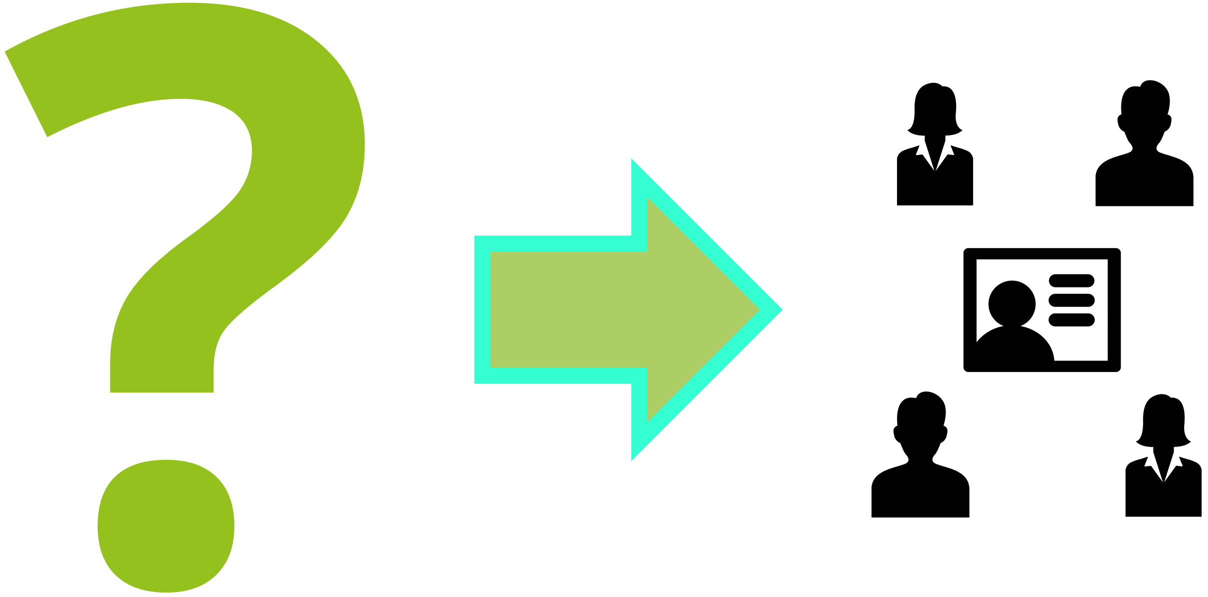
01 Apr 2024-
30 Jun 2028

1,395,028 €
budget

Více?

www.interregeurope.eu/UNIFHY

Kdo jsou naši stakeholdeři



DOBRÉ PRAKTIKY:

lokální: identifikované / navrhované

Daniel Minařík
odborný pracovník projektu

Low-cost public hydrogen filling station

GP owner / promoter:

Vítkovice, a.s. – local company, producer of large scale hydrogen storage systems & solutions

Brief description:

The first low-cost hydrogen refueling station in the Czech Republic, located in Ostrava, was developed to support the early adoption of hydrogen-powered vehicles. It features advanced energy-efficient technology, reducing operating costs significantly.

In June 2022, Vítkovice, a.s. inaugurated the first public hydrogen refueling station in the Czech Republic. Located in central part of Ostrava, the station covers approximately 90m² and is designed for hydrogen-powered passenger vehicles, offering refueling at 700bar.

Low-cost public hydrogen filling station

Evidence of success

The hydrogen refueling station in Vítkovice represents a major milestone in Czech hydrogen infrastructure. The station refuels approximately 10 vehicles daily, promoting hydrogen technologies and aligning with European Green Deal decarbonization goals. Its modular design ensures scalability to meet growing demand.

Potential of transfer

This model is ideal for replication in small to medium-sized cities. Its proximity to educational centers further enhances its value as a training and research hub for hydrogen technology.

GOAL OF REALISATION: acceleration of all regional developing hydrogen activities

MAIN BENEFIT: The total investment for the hydrogen station was CZK 15 million, which covered the installation of the storage tanks, compressor, and refueling equipment. The station was designed with low energy consumption in mind, reducing operating costs **by up to 70%** compared to larger (standard) filling stations.

Low-cost public hydrogen filling station

Lesson Learned

The implemented technology project, i.e. a given good practice from the perspective of MSR, implies several key benefits and experiences:

- the opportunity to work closely with a local „technological“ stakeholder
- **local reference available for setting up regional financial support** for similar low-cost infrastructure (in MSR using resources from Just Transition Fund: so-called MSR H2 Valley „Mesh Solution“)
- due to the low-cost solution, the necessary allocation of the support programme is expected to be minimized to create the required/planned number of filling points in the region
- clarification of the criteria for eligible costs for beneficiaries
- the result of existing regional innovation strategies.

Hydrogen safety related risks management system

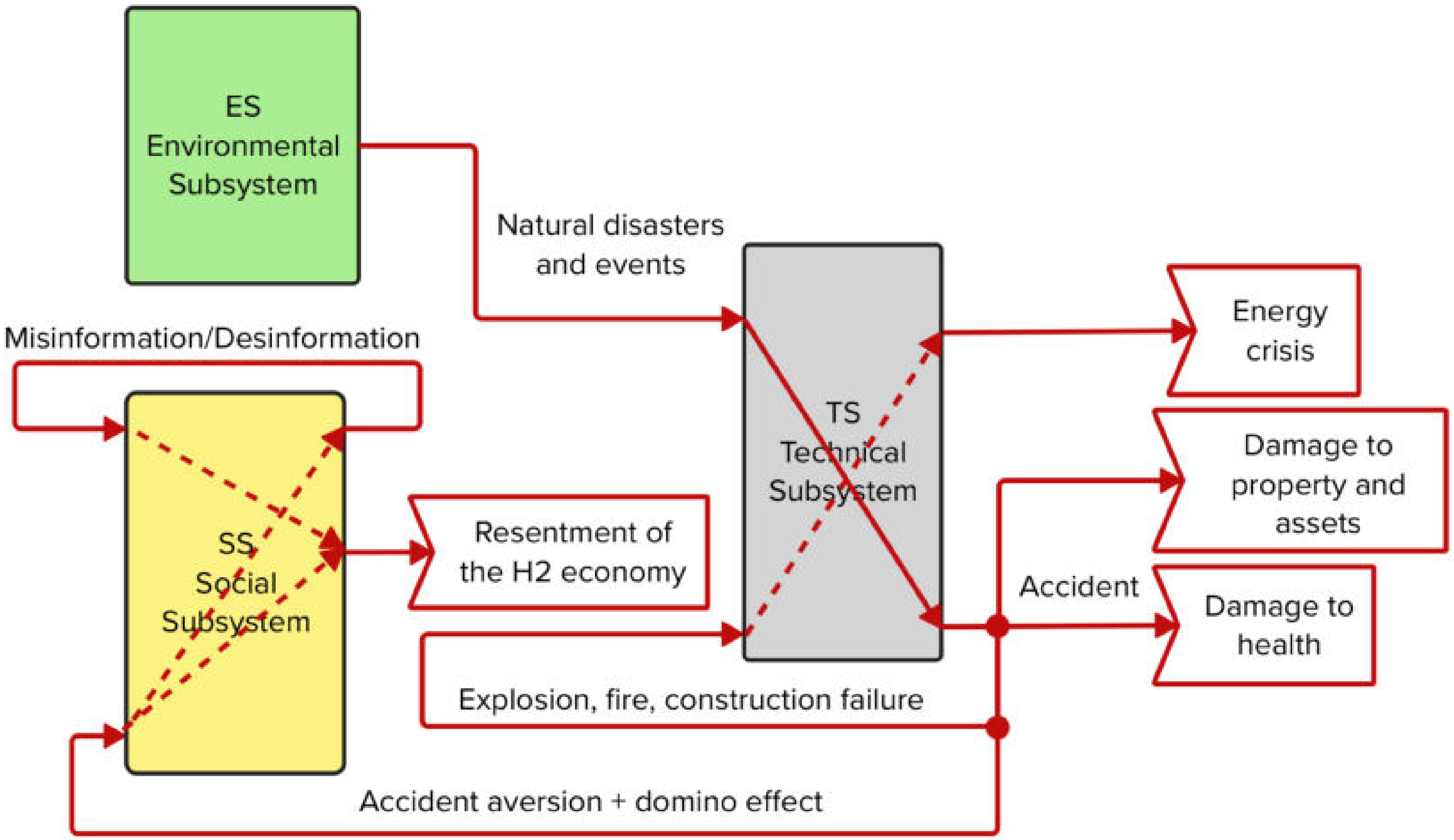
GP owner / promoter:

Technical University of Ostrava / Moravian-Silesian Region - application guarantor

Brief description:

This practice provides a **comprehensive approach to managing safety risks in the hydrogen economy**, focusing on the integration of safety, security, and sustainability.
It addresses the challenges posed by hydrogen's high energy potential and explosive nature, emphasizing the need for sophisticated risk analysis and preventive measures. **By employing systematic methodologies such as the MOSAR method**, it enables stakeholders to identify, evaluate, and mitigate risks effectively.

Hydrogen safety related risks management system



Hydrogen safety related risks management system

Evidence of success

This practice is considered good due to its comprehensive approach to risk management. The MOSAR method successfully combines macroscopic and microscopic perspectives. The first **deployment of the method in the Czech Republic is in the case of the Moravian-Silesian region**, where the principles of the method are **implemented** and highlighted **in the Regional hydrogen strategy** as the basic policy instrument in related development area

Potential of transfer

Transferring this practice can face challenges such as regulatory differences and technological levels in target regions. The mentioned methodical approach fulfills a basic view of solving complex hydrogen safety and security

Practical outputs what are supposed for future integration during preparation of for example action plans or conceptual of hydrogen valleys is aspects or safety standards of individual technologies (technical and safety management system aspects/classification) and also the system for ensuring the continuity of activities (BCMS according to ISO 22301) of the hydrogen infrastructure in the Moravian-Silesian Region during its implementation and operational state.

Hydrogen mobility in public transport system in City of Rybnik

GP owner / promoter:

City of Rybnik, Poland

Brief description:

The **hydrogen mobility project in Rybnik, Poland, was initiated to combat air pollution** and the city's high reliance on fossil fuels.
The city of Rybnik has introduced a hydrogen filling station and **deployed 20 hydrogen buses**, significantly reducing emissions and promoting sustainable transport.

Complex solution included a cutting-edge hydrogen filling **energy self-sufficient station**. This station provides refueling capabilities with 700 bar for passenger cars and 350 bar for buses, making it versatile for various vehicle types.

Hydrogen mobility in public transport system in City of Rybnik

Evidence of success

By deploying 20 hydrogen buses, Rybnik is expected to reduce CO_2 emissions by about 2,000t annually. This initiative aligns with the European Union’s broader decarbonization strategy, which aims to reduce greenhouse gas emissions by 55% by 2030. Positive feedback from both residents and city officials highlights the project’s success in reducing air pollution and noise.

Potential of transfer

This practice demonstrates **how smaller cities can effectively integrate hydrogen technology into their public transport systems**, contributing to EU decarbonization goals. Key success factors include strong political leadership, collaboration with private sector partners, and access to national or EU funding, making it a replicable model for regions with similar resources and ambitions.

Zásobník...

1. EDER SERVIS – první certifikované „self made“ servisní zázemí pro H mobilitu v ČR

2. APOKS – demonstrační polygon užití vodíku v podmínkách občasné zástavby (RD)

3. H2 TRUCK – projekt popularizace a výuky na SŠ
4. DEMNOSTRAČNÍ PS – SŠ Chomutov

5. H_2 & H_2T KURZY – organizované prostřednictvím DOV

Další dobré praktiky?

Doporučíte nám další dobré praktiky?

Jaké dobré praktiky by ještě dále připadaly v úvahu pro komunikaci s partnery do konce řešení projektu?

DOBRÉ PRAKTIKY:

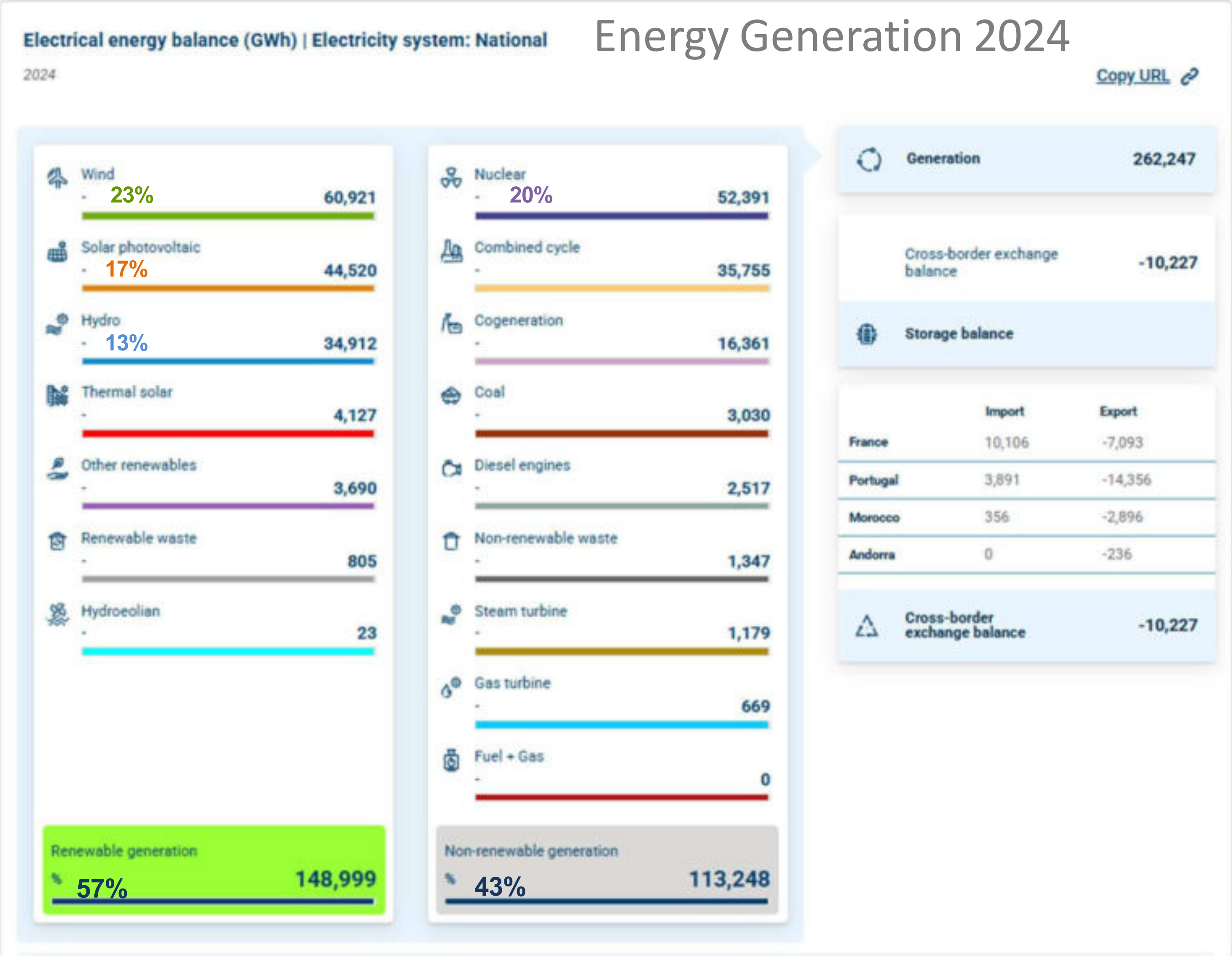
Externí z IE#1: Badajoz (ESP)

Daniel Minařík
odborný pracovník projektu

IE#1: Badajoz *28.-29. 1. 2025*

Energy Situation in Extremadura

Spanish Electric System



- **Spanish electric system in 2024.**

In 2024, renewables have achieved their best records, producing 57% of the total electric generation (7% more than in 2023 and nearly 14% more than in 2020).

Wind power is already the main source of electric generation in Spain, accounting for 23%.

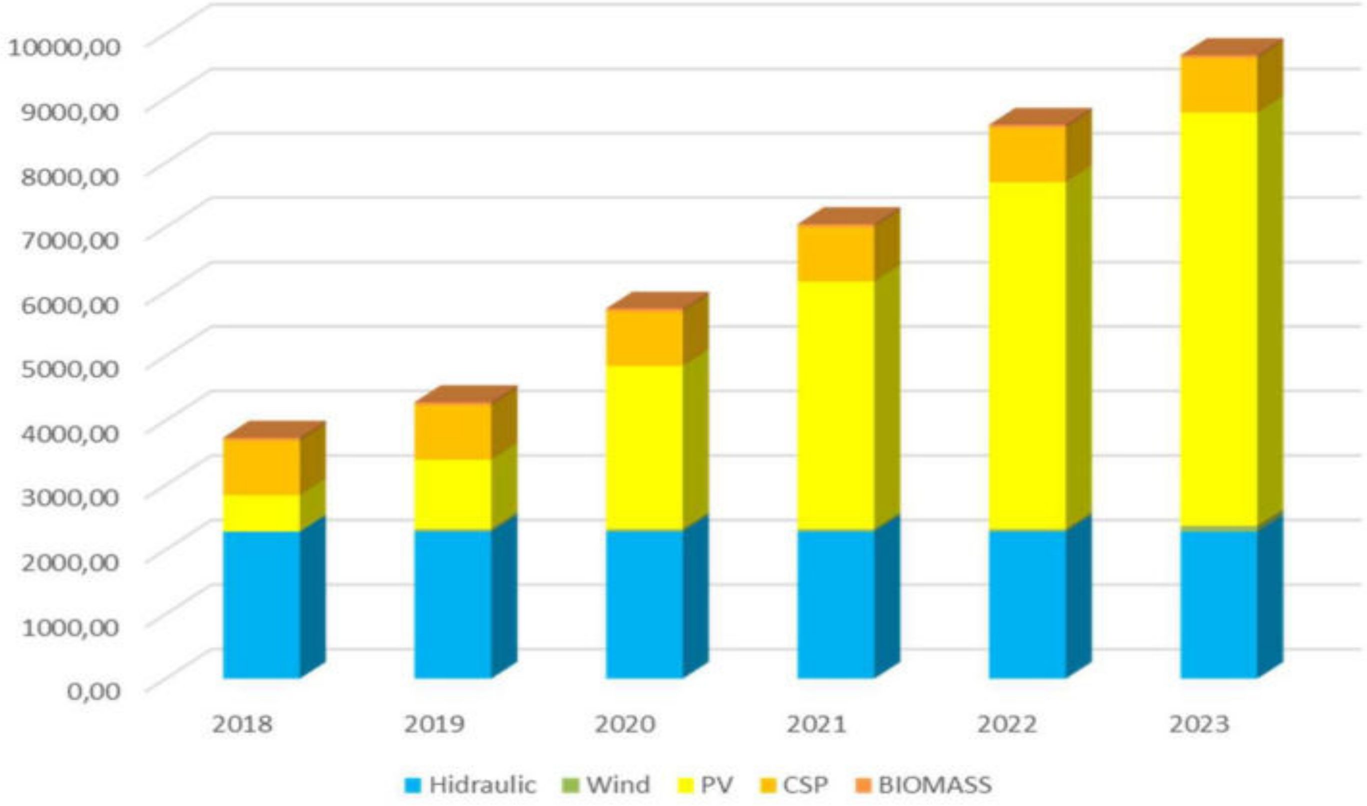
Photovoltaics is the technology that has increased the most compared to previous years. It marks its annual historical maximum of production and contribution to the Spanish generation mix (17% of the total).

Electric Generation in Extremadura

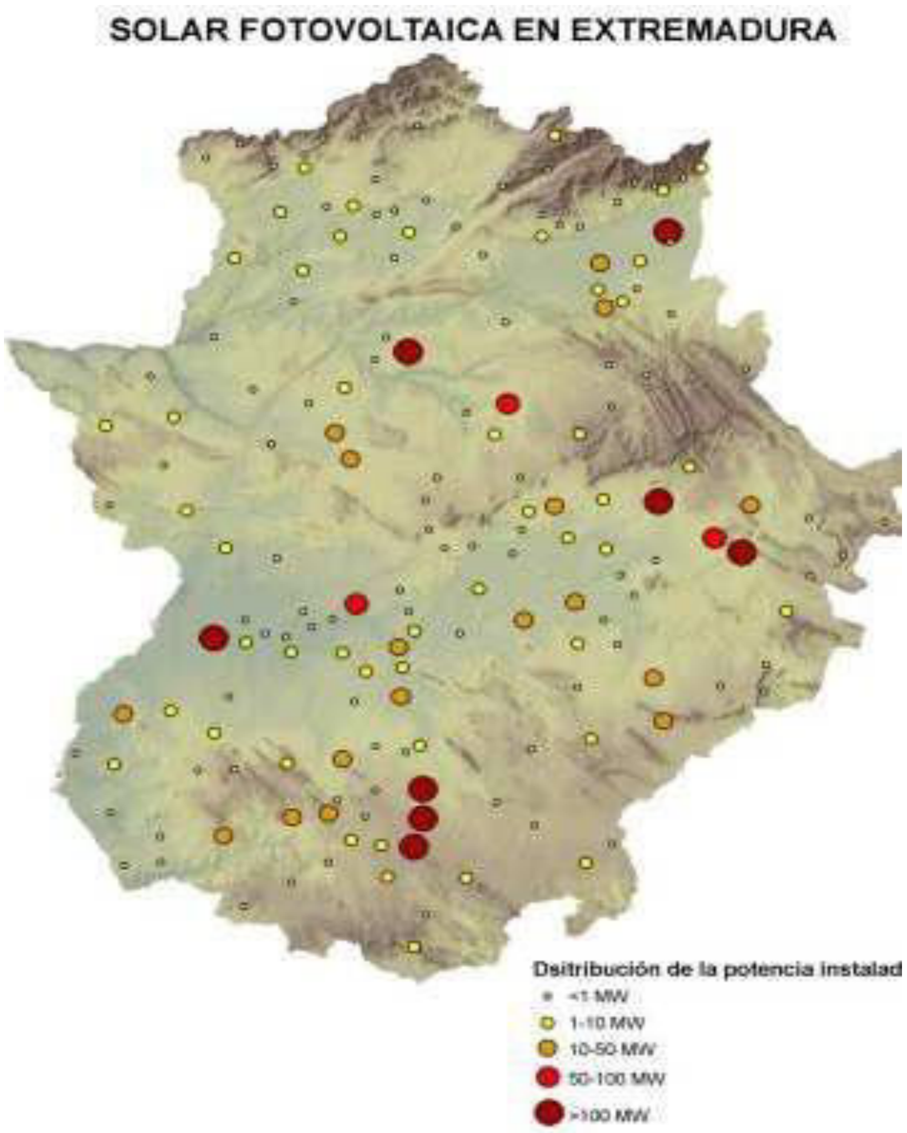
- The generation with renewable energy is almost **triple** the electric consumption in the region

Renewable Power installed in Extremadura

The installed capacity in Renewable Energies has doubled in the last 4 years



PV plants in Extremadura



- **Total power installed: 6,411 MW**
- **672 plants in 87 municipalities**
- **In 2023, 68 % of the renewable electricity in the region was generated by PV plants**

500 MW PV plant in Extremadura

EN USAGRE, BADAJOZ

La mayor planta fotovoltaica de Europa se ha construido en poco más de un año

- La instalación de Iberdrola en la localidad de Usagre puede suministrar la electricidad que consumen unos 250.000 personas

„The largest photovoltaic plant in Europe has been built in just over a year."

590 MW PV plant in Extremadura

Francisco Pizarro, el mayor proyecto fotovoltaico de Europa

A través de su filial en España, el grupo Iberdrola va a construir el proyecto Francisco Pizarro, que —con sus 590 MWp de capacidad instalada— dotará de energía limpia a 375.000 personas al año y se convertirá en la mayor planta fotovoltaica de Europa tras su puesta en operación en 2022.

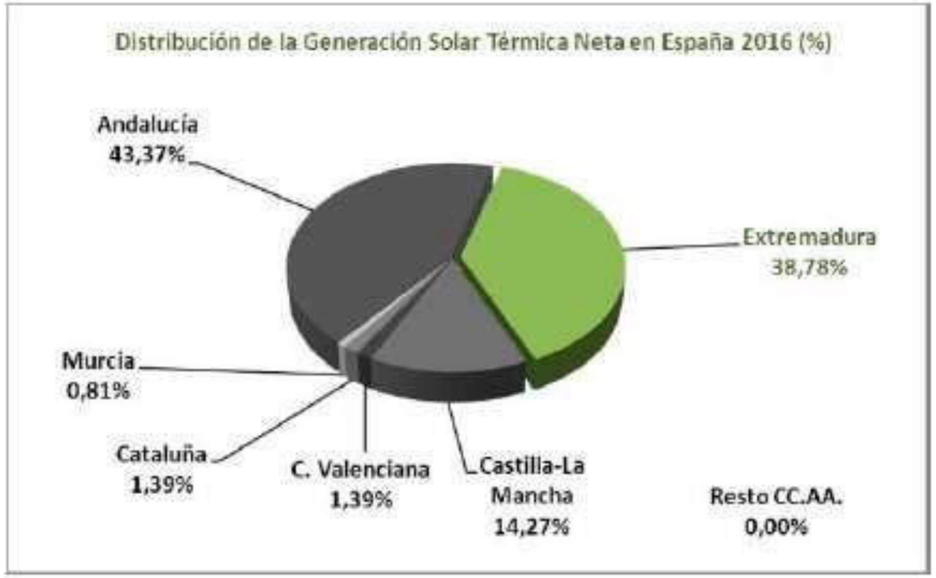
Francisco Pizarro, the largest photovoltaic project in Europe.

- Surface 1.300 Ha
- Its generation covers the equivalent electric consumption of 375,000 inhabitants every year.
- **It was built in 2022 and it is the biggest in Europe**

CSP plants in Extremadura

There are 17 **Concentrated Solar Power** (CSP) plants in Extremadura, with a power of 50 MW each.

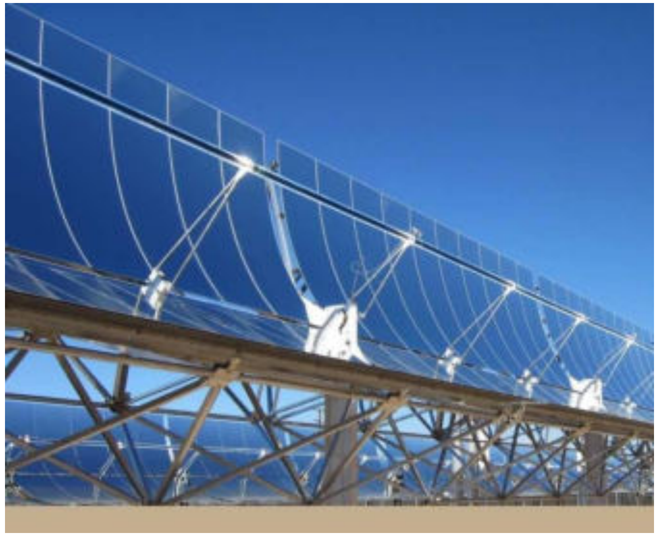
This tecnology allows up to 7,5 hours of thermal storage after sunset.

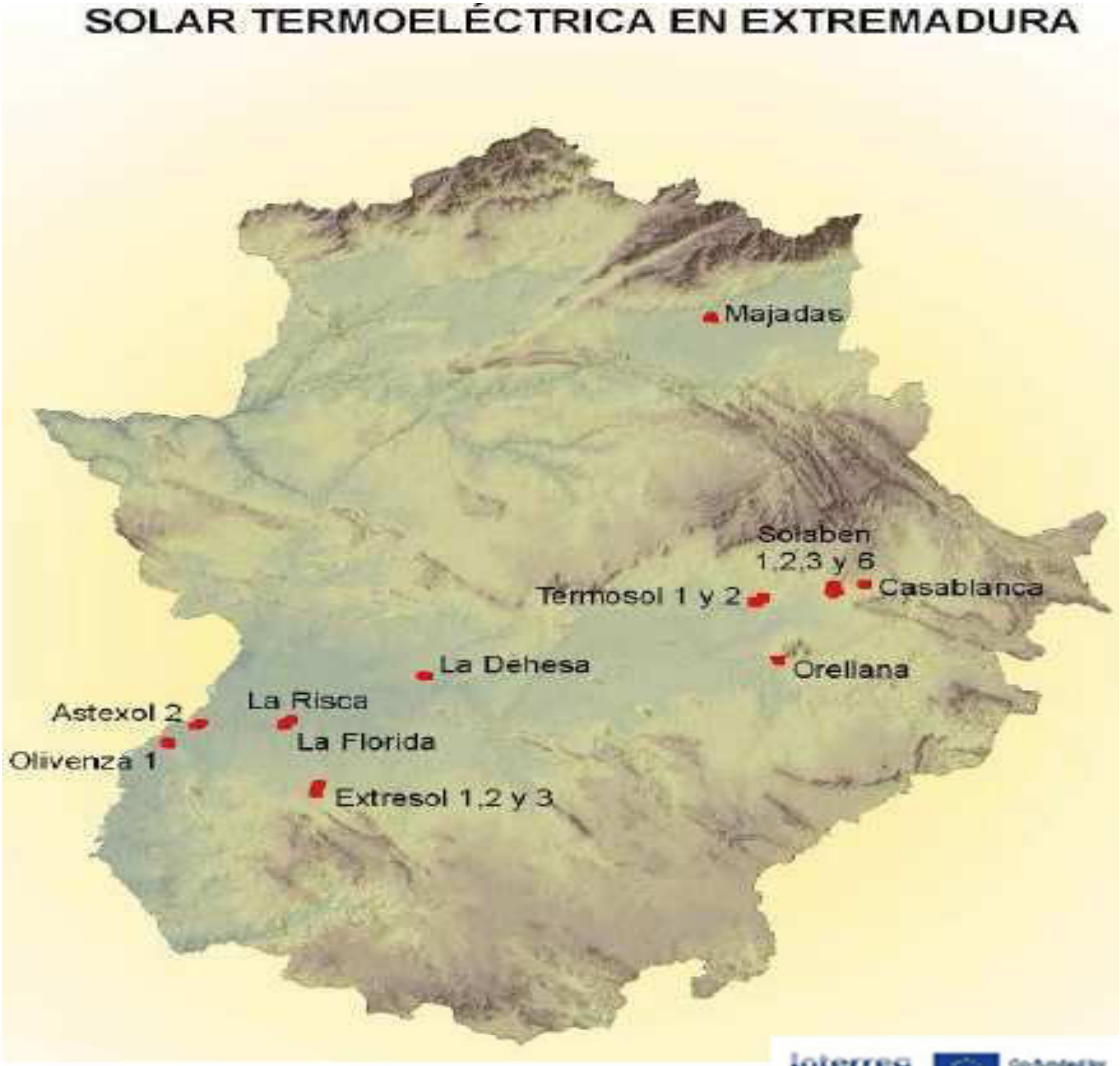


% of CSP in Spain

CSP plants in Extremadura

Location of CSP plants in Extremadura





Hydropower plants in Extremadura

Summary…

- Extremadura is the main photovoltaic energy producer in Spain
- 1 out of 3 new MWs installed in Spain is in Extremadura
- The renewable electric energy generated in Extremadura represents approx. 10 % of the national total
- In the last 3 years it implies 3,000 M€ investment and 12,000 new jobs created
- There are currently:
  - 28 projects under construction
  - 90 authorized
  - 51 more being processed

PV for self-consumption in Extremadura

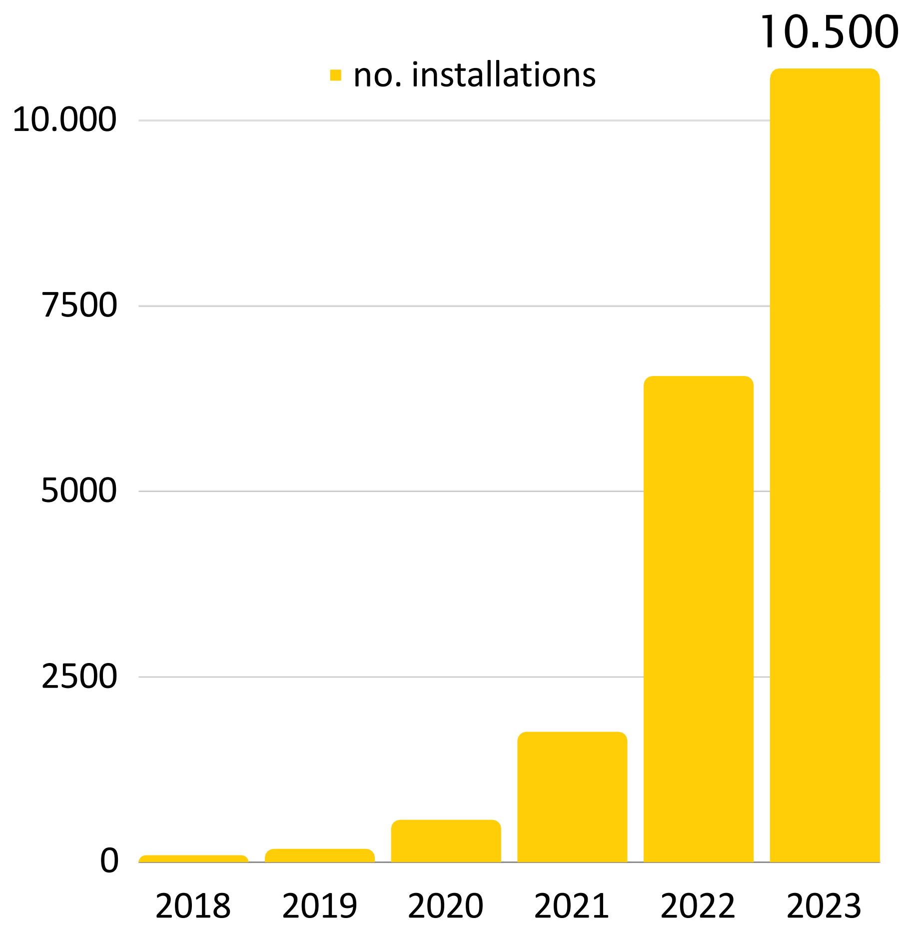
In 2022, 5.275 new installations started operating (4.784 private/individual, 419 in SMEs and 72 in the public administration)

Total new power installed: 45,9 MW

PV for self-consumption in Extremadura

Total power 106 MW

- Protocol to support self-consumption
- Creation of a thematic working group
- Availability of grants and simplified procedures for legalizing installations



Example of PV for self-consumption

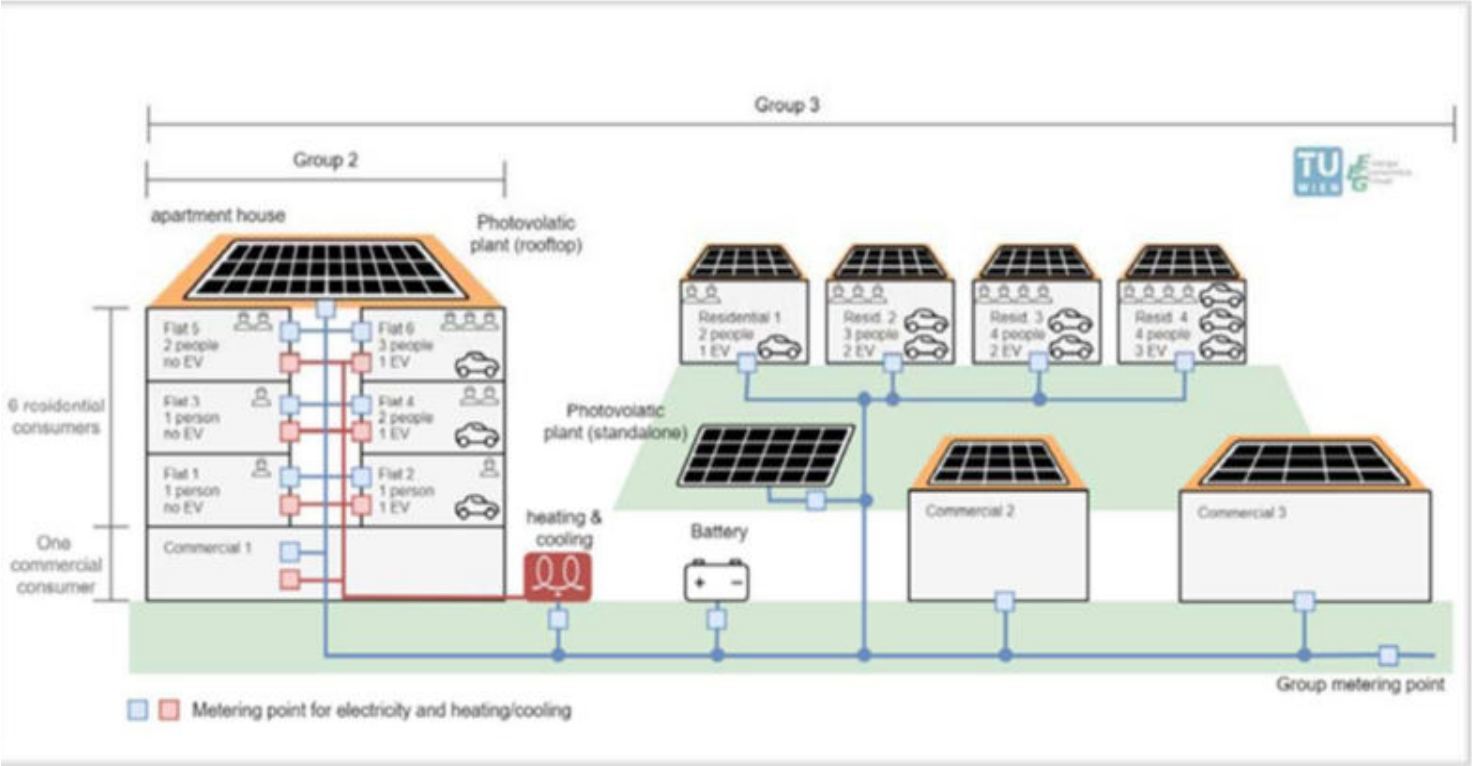
Photovoltaic installation for self-consumption of 8 MW in a glass bottle factory

Photovoltaic installation for self-consumption of 1,3 MW in an aluminum factory.

Example of PV for self-consumption

It is also very common to use photovoltaics for irrigation purposes.

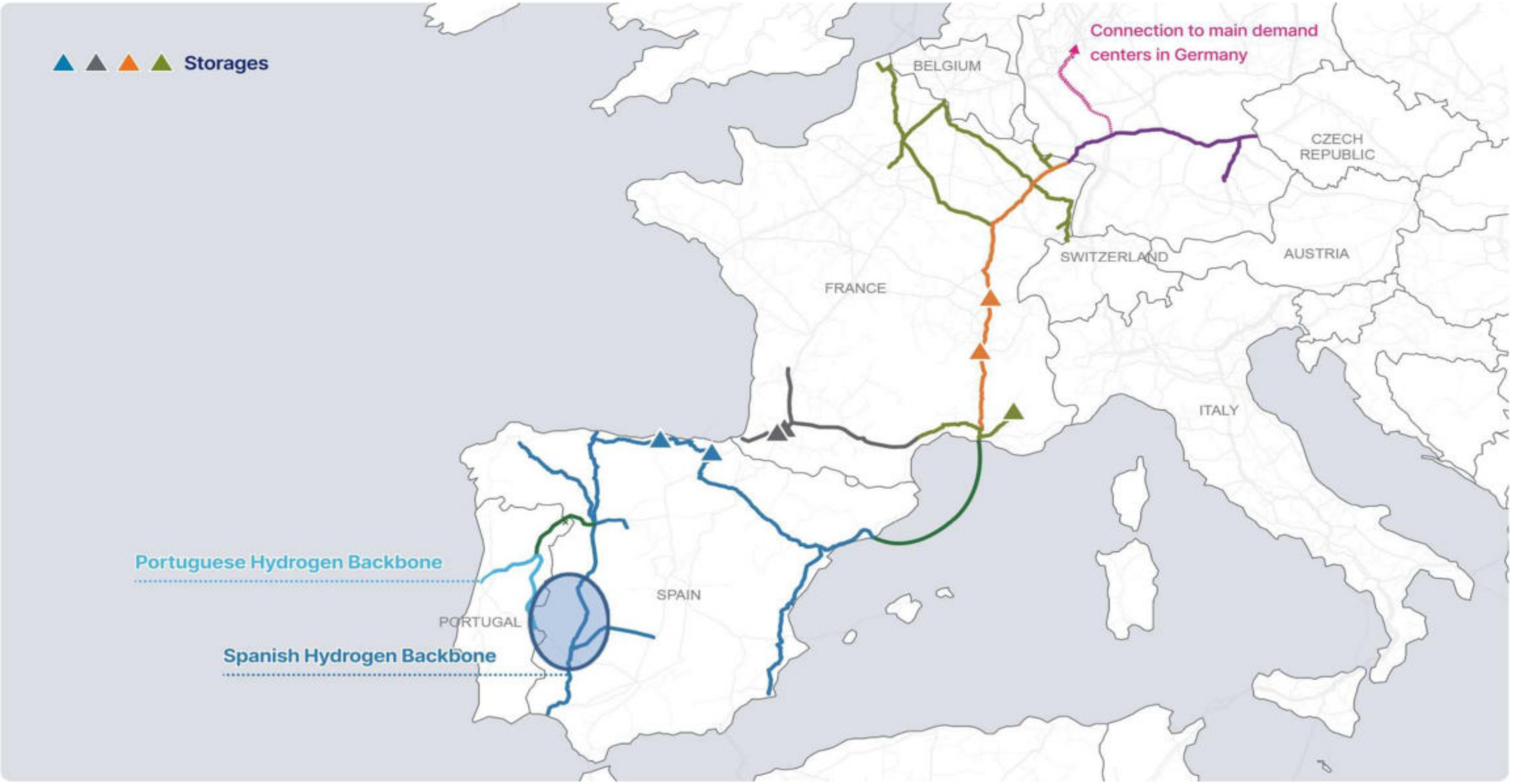
Shared self-consumption and Energy Communities



Fuente proyecto PVP4Grid

- Installations within 2.000 m of their consumption
- Connected to the same power transformer

H_2 Med



https://h2medproject.com/the-h2med-project


metanogenia
waste to energy
www.metanogenia.com

- 2000 — DTERMA (Uex) 1st AD Lab test
- 2008 — DTERMA (Uex) 1st Doctoral Tesis
- 2011 — DTERMA (Uex) Development of Biogas Predictive Mathematical Model
- 2012 — Spin-Off application
- 2013 — metanogenia waste to energy
- 2015 — 1st Pilot Plant; Kick-off Process Engineering
- 2020 — 2nd Pilot Plant
- 2022 — 1st Industrial project
- 2025
  - 3 Industrial project
  - 15 R&D project
  - 3 Europe projec
  - Turnover expec +500.000 €
  - 5 profesionals

1.Development of low-cost porous materials

Almond shell

Nutshell

Kenaf Fiber

Coal
Holm oak plant

By-product oak

Olive by-product

Objectives

- Maximize energy yields of the biomethanization process.
- Determine the optimum porous material of the mixture.
- Design and optimize biochar.
- Minimize the amount of biochar to be used.

1.Development of low-cost porous materials

Results obtained

- Highest energy yields for long reaction times, with an **increase in biogas production of** approx. **20 %.**
- **Stability** of **semi-continuous anaerobic digesters**.
- **Improves the economic profitability** of **the industrial plant** due to the increase in energy efficiency caused by the addition of biochar.


Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

Using low-cost porous materials to increase biogas production: A case study in Extremadura (Spain)

Consolación Sánchez-Sánchez [a,*], Almudena González-González [b], Francisco Cuadros-Salcedo [b], Francisco Cuadros-Blázquez [a]

[a] Department of Applied Physics, School of Agricultural Engineering, University of Extremadura, Avda. de Elvas s/n, 06006, Badajoz, Spain
[b] Metanogenia S.L. Edificio Biodiversidad, Campus Universitario, Avda. de Elvas s/n, 06006, Badajoz, Spain


Energy 179 (2019) 336–342

Contents lists available at ScienceDirect

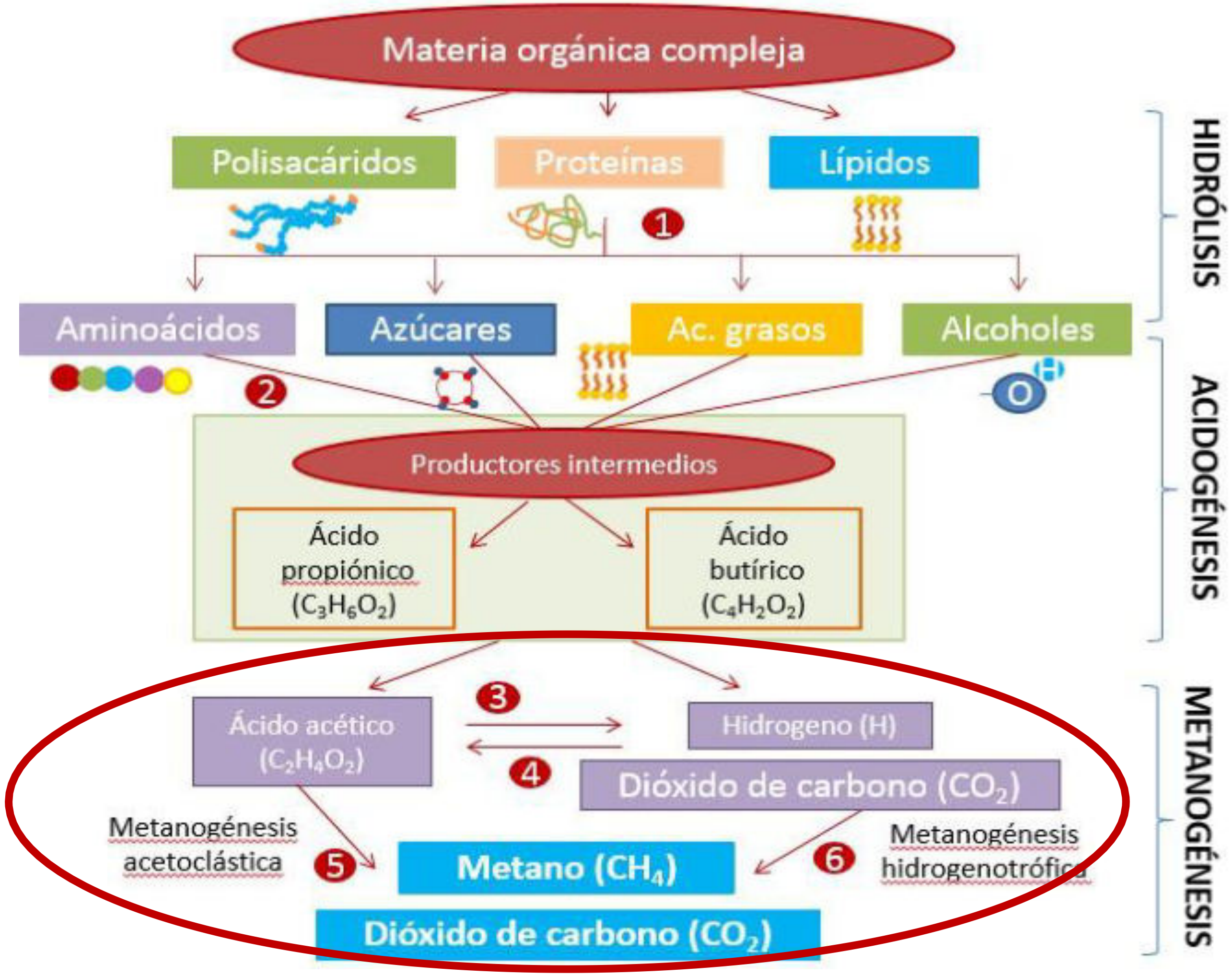
Energy

journal homepage: www.elsevier.com/locate/energy

Charcoal as a bacteriological adherent for biomethanation of organic wastes

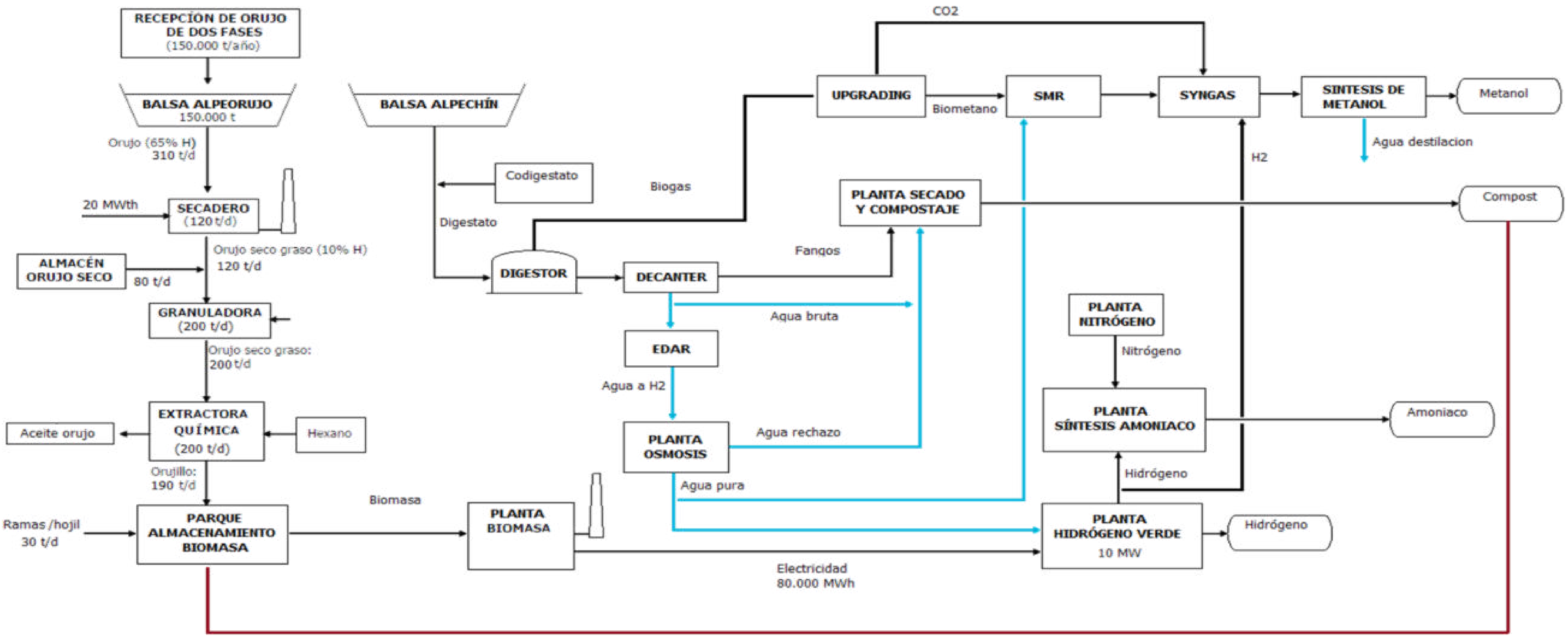
Consolación Sánchez-Sánchez [a,*], Almudena González-González [b], Francisco Cuadros-Salcedo [b], Vicente Gómez-Serrano [c], Francisco Cuadros-Blázquez [a,b]

2. Biological pretreatments



1. Bacterias hidrolíticas.
2. Bacterias fermentativas.
3. .Bacterias homoacetogénicas.
4. Bacterias oxidadoras de acetato.
5. Metanogénicas acetoclásticas.
6. Metanogénicas hidrogenitróficas.

3. Biomethane to H2. Industrial project



Golendus

GREEN HYDROGEN AS AN OPPORTUNITY FOR BUSINESSES AND CITIZENS

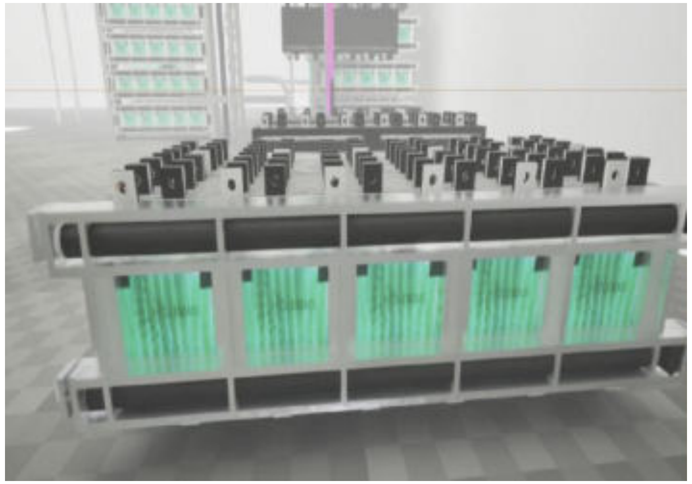
European Clean Hydrogen Alliance

TECNOLOGY in GOLENDUS

Golendus

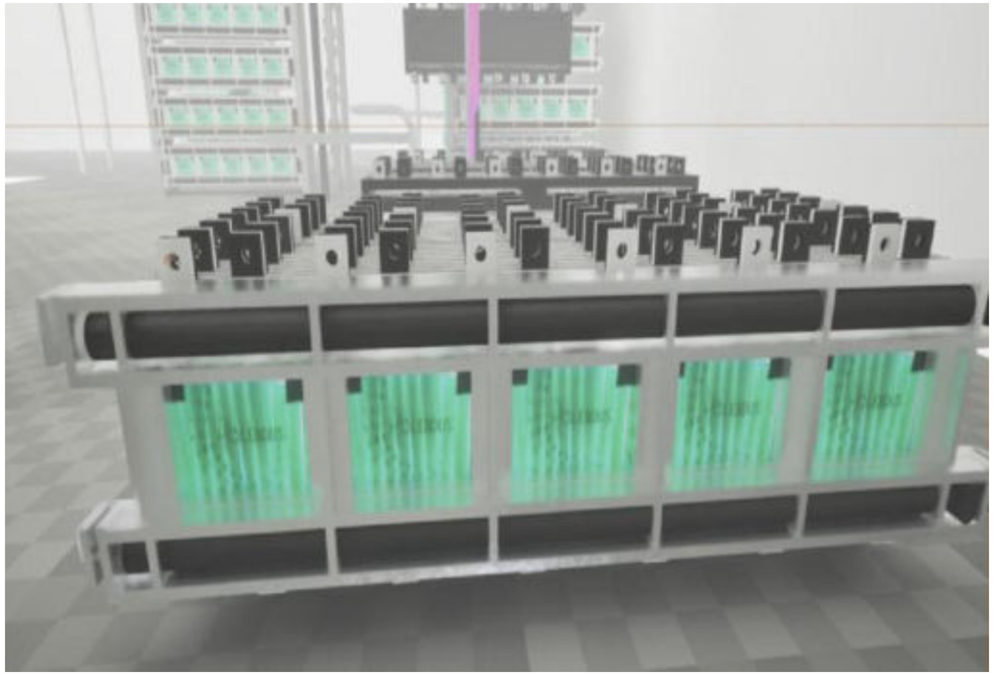
- Electrolyzers
- HRS and H2 plants
- Retrofit of H2ICE vehicles
- Retrofit of industrial equipment H2ICE
- Retrofit of agricultural equipment H2ICE
- E-Metanol andsynthetic fuels from hydrogen.

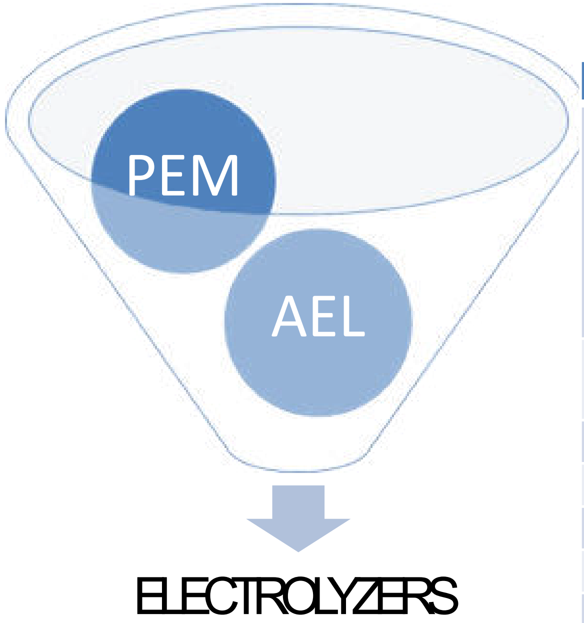
GOLENDUS TECHNOLOGY



GOLENDUS TECHNOLOGY

Golendus





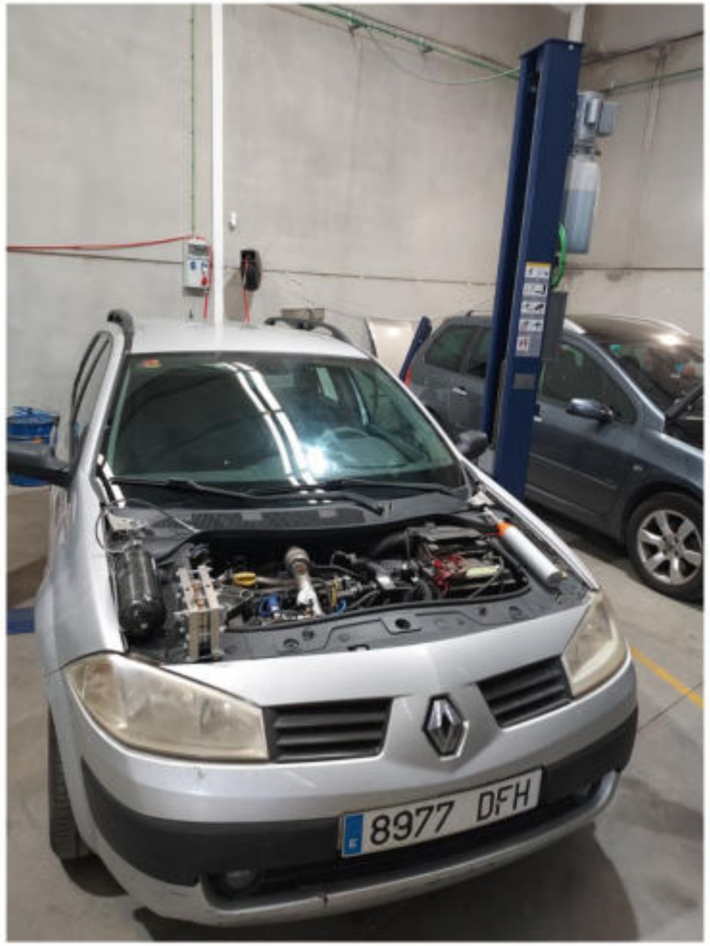
AEL	
WORK	ROOM TEMPERTURE/ LOW TEMPERATURE
ELECTROLYSER LIFE SPAN	Between 70.000 y 120.000 hours
PRODUCTION COST	<2€ per kg de H2
OUTLET PRESDSURE	1- 30 BAR
HYDROGEN PURITY	99,99%
HYDROGEN PURITY O2	99,99%
CAPEX	Between 420€ y 800€ per KW
OPEX	< 35 €/(kg/d)/Year

- AEL (SEAWATER)
- AEL (SEWAGE)
- AEL (FRESH WATER)

GOLENDUS TECHNOLOGY

RETROFIC OF ENGINE

- ICE- H2ICE
- EV -FCHV
- PHEV- FCHV- H2ICE
- CNGV- H2ICE


8977 DFH

RETROFIT OF VEHICLES AND EQUIPMENT

GOLENDUS TECHNOLOGY

- Creating a network of collaborating workshops so that vehicles can be converted anywhere in Spain.

- Creating a structure to install refuelling points for metal hydride capsules.

European Clean Hydrogen Alliance

GOLENDUS TECHNOLOGY

- TRAIN RETROFIT
- EUROPE'S FIRST HYDROGEN REFUELING STATION FOR HIGH-SPEED HYDROGEN TRAINS

European Clean Hydrogen Alliance

GOLENDUS TECHNOLOGY

RETROFIT GENERATING SETS (H2ICE)

H2 PRODUCTION

USE OF H2 (ZERO EMISSIONS)

TRANSFORMATION TO HYDROGEN

H2

GOLENDUS TECHNOLOGY

- METHOD OF PRE-HEATING MATERIALS BEFORE ENTERING THE CRUCIBLE THROUGH INDUCTION.
- SELF-CONSUMPTION OF HYDROGEN

European Clean Hydrogen Alliance

UNIQUE

- PRODUCTS FROM THE ENTIRE H2 VALUE CHAIN
- TECHNOLOGY THAT PRODUCES HYDROGEN AT LESS THAN €2 PER KG OF H2 (CHEAPER THAN PETROL AND DIESEL
- TECHNOLOGY FOR RETROFIT H2 ENGINES, E-METHANOL, AND OTHER GREEN FUEL H2
- SMART HOUSING WITH INDUSTRIAL CONSTRUCTION
- ELECTROLYZERS THAT WORK WITH SEA WATER

European Clean Hydrogen Alliance

Golendus

PROFITABILITY OF USING GREEN HYDROGEN

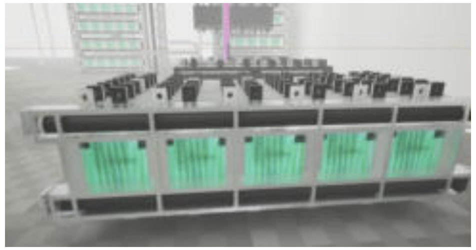
European Clean Hydrogen Alliance

Golendus

SELF-CONSUMPTION OF H2 (AGRICULTURAL SECTOR)

- 65 kVA generator consumes an average of 21.6 liters of diesel per hour (32.4€ of consumption per hour - 1.50€ per liter of diesel)
- 65 kVA generator consumes approximately between 3.5 and 4 kg of H2 (€21 if the cost is **€6** and if it is self-consumption, €7 per kg of H2)
- The generator set has a useful life of 25,000 hours. Therefore, the cost with diesel over the entire useful life is **€810,000** and with green hydrogen **€525,000** (cost €6 per kg of H2) and €50,000 (if the cost is €2 per kg of H2 per year).
- The cost of retrofit a generator set depends mainly on the storage systems. The average cost of retrofit a 65 kVA generator set ranges from €5,900 to €15,000.



Golendus

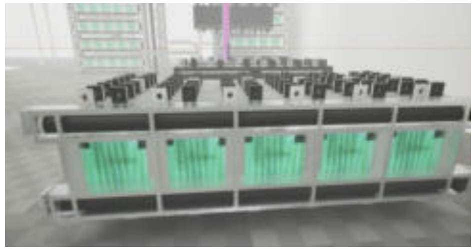
SELF-CONSUMPTION MOBILITY

A truck consumes an average of 36 litres of diesel per 100km. This represents a cost of €54 per 100 km (not including Adblu).

A truck consumes approximately 8 kg of H2 per 100 km. This represents a cost of €48 if the cost is **€6** per kg and if it is self-consumption, €16 per kg of H2

A truck has a useful life of 1 million kilometers. Therefore, the cost of diesel over the entire useful life is **€540,000** and with green hydrogen **€480,000** (cost €6 per kg of H2) and €160,000 (if the cost is 2€ per kg of H2 for self-consumption).

The cost of converting a truck depends mainly on the storage systems implemented. The average cost of retrofitting a truck ranges between €15.000€ and €40.000.



Golendus

OPPORTUNITY FOR COMPANIES

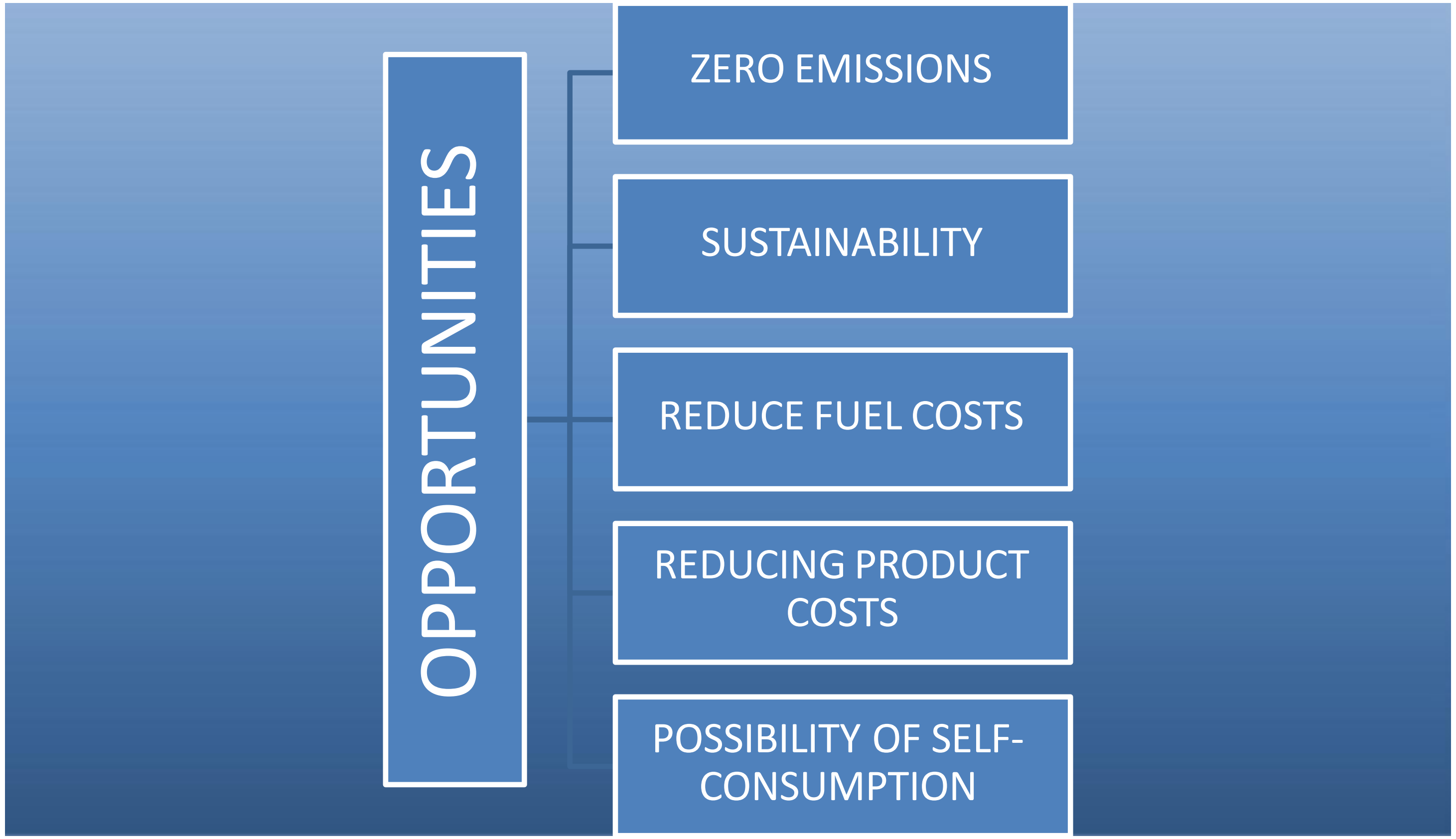
European Clean Hydrogen Alliance

OPPORTUNITY FOR COMPANIES

OPPORTUNITIES

ZERO EMISSIONS	SUSTAINABILITY
REDUCE FUEL COSTS	REDUCE PRODUCTS COSTS
POSSIBILITY OF SELF-CONSUMPTION	SELF-SUFFICIENCY

OPPORTUNITY FOR CITIZENS



PROBLEMS DETECTED

- LACK OF REGULATIONS
- SLOWNESS IN PROCESSING APPROVALS (NATIONAL GOVERMENT)
- LACK OF FINANCIAL SUPPORT FOR SMEs

NEEDS

- SOLUTIONS TO PROBLEMS
- NEED FOR DEMONSTRATIONS BY SECTORS
- MORE TECHNOLOGY DEVELOPMENT

Extremadura Public Land Rural Bank

JUNTA DE EXTREMADURA

OVERVIEW

Land sun and Water

INVEST IN EXTREMADURA
Extremely efficient

Land
+26000
Ha availables

26,000 ha public rural land
57 location 350 ha medium surface

Through its Public Bank Land tool, Extremadura has identified more than 26,000 ha of public rural land, belonging to different regional municipalities.

These 26,000 hectares are located in 57 locations, destined for renewable industrial activities and have an average surface area of 350 hectares.

Sun
+3000
hours year

More than 3,000 hours sun/year.
100% coverage - renewable sources

Extremadura has more than 3,000 hours of sun per year, and is one of the regions with the highest solar radiation of Europe.

This due to the availability of land, has allowed it to become the leading Spanish region for installed photovoltaic power, and the second for thermo-solar energy.

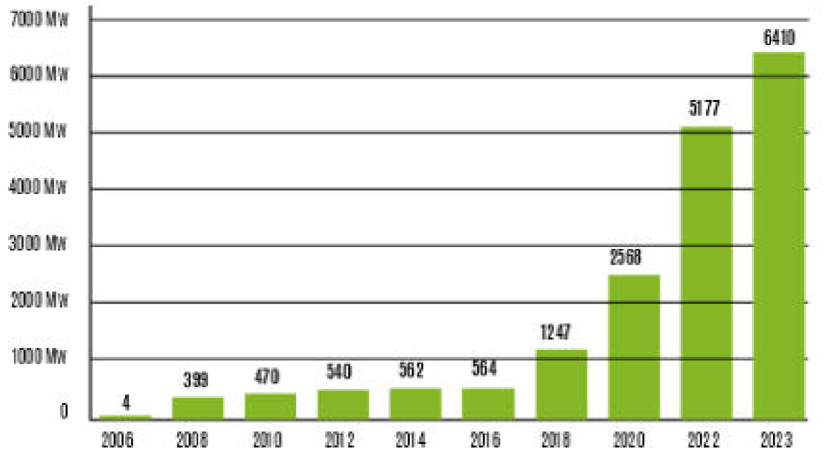
Water
+14000
hm^3 cap.

+25% of Spain's reservoir water.
The largest number of kms inner coast

Our region has more than 25% of Spain´s reservoir water and the largest number of kilometers inner coast.

This implies a reservoir volume of 14.220 hm with applications in agriculture, aquaculture and agribusiness, tourism, healh, but now also in renewable energies.

BACKGROUND
starting position of Extremadura



- Extremadura is the leading region in Spain in terms of installed photovoltaic capacity

  In the last four years, the installed power capacity in Extremadura has INCREASED TENFOLD, representing 25.1 % of Spain´s total.

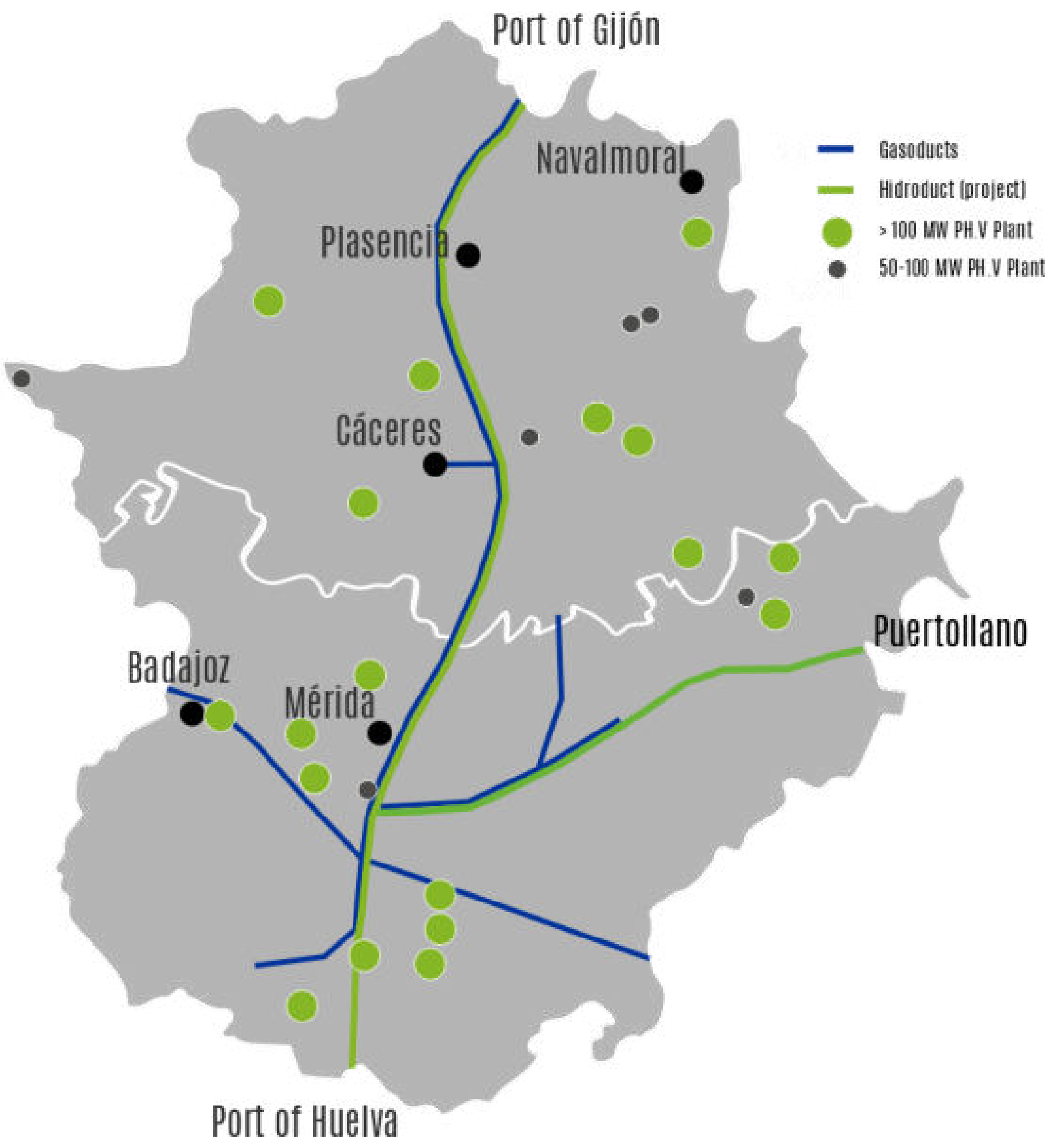
  Installed photovoltaic capacity at the end of 2023 was 6.4 Mw, with 1064 new Mw developed in that year.

- The **three largest photovoltaic plants in Spain**, are located in Extremadura:

  - **Cifuentes-Trillo**, 13 plants distributed between the municipalities of Budia and Trillo with a capacity of **626 MW**.
  - **Francisco Pizarro** in Torrecillas de la Tiesa (Caceres) with **590 MW** and the largest plant in Europe until June 2024.
  - **Núñez de Balboa** in Usagre (Badajoz). Also 2020, it was the largest in Europe. Its capacity is **500 MW**.

BACKGROUND
starting position of Extremadura

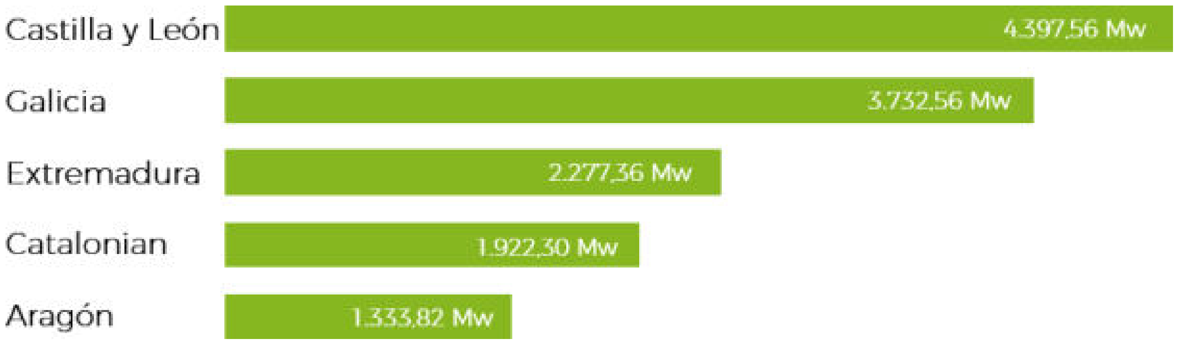
- Extremadura is crossed by several natural gas transmission networks managed by ENAGAS.
- One of them comes from the city of Cordoba and reaches the Spanish-Portuguese border, in the city of Badajoz. From the same pipeline, after passing through the town of Almendralejo, a branch line runs to Gijón on the Cantabrian Sea.
- In addition, there is a network of a regional company, Gas Extremadura, which has three additional pipelines connected to the above infrastructure.
- ENAGAS has been appointed as the operator of the future Spanish hydrogen network, which will follow the same route as the existing pipeline, at least in Extremadura.



BACKGROUND

starting position of Extremadura

- Extremadura, with **2.777 MW of installed hydroelectric power**, is the third largest producer of this type of renewable energy in Spain.The Alcántara dam in Extremadura, with a capacity of almost one gigawatt, is the second largest hydroelectric plant in Spain.



- The transition to a weather-dependent electric generation model, requires a significant **increase in energy storage capacity**. The conversion of existing hydroelectric plants into **pumped-storage plants** offers opportunities for Extremadura in this respect..

- According to the **International Energy Agency** (IEA), pumped hydro currently accounts for more than **90% of the EU's energy storage capacity**. Spain currently has 18 pumped storage plants with an installed capacity of 6 GW.

BACKGROUND

Rustic land of public ownership

- **The energy crisis** generated by **the war in Ukraine**, only highlights issues such as the cost of energy and energy independence. In this situation it was decided **at the end of 2022** to start the process of requesting information on **all publicly owned rural properties** of the various local, provincial and regional administrations of Extremadura.

- During the year 2023 we have been working on obtaining and managing this huge amount of information from the **more than 400 municipalities** in the region, initially identifying more than **140,000 properties** of public property and patrimonial property.

- In addition to all this information on publicly owned properties, useful information has been incorporated for the implementation of projects such as those relating to the various supply **networks for electricity, gas, raw water, telecommunications**, etc., and others relating **to areas with some type of use limitation** or restriction.

- In addition to all this information on publicly owned properties, useful information has been incorporated for the implementation of projects such as those relating to the various supply **networks for electricity, gas, raw water, telecommunications**, etc., and others relating **to areas with some type of use limitation** or restriction.

PROCESS
Initial Database

69.136
DATABASE CACERES

70.080
DATABASE BADAJOZ

- ~~ADIF~~
- ~~C.H. TAJO~~
- ~~C.H. GUADIANA~~
- ~~AEMET~~
- ~~Mº TRANS. ECOLOG.~~
- ~~Mº FOMENTO~~
- ~~Mº DEFENSA~~
- ~~Mº TRANSPORTES~~
- ~~UEX~~
- ~~COM. REG. GUADIANA~~
- ~~COM. REG. TAJO~~
- ~~DIP. BADAJOZ~~
- ~~DIP. CÁCERES~~
- ~~CONS. AGRICULTURA~~

68.820
DATABASE CACERES

69.889
DATABASE BADAJOZ

ONLY CADASTRAL LAND LARGER THAN 10 HECTARES

59.385
DATABASE CACERES

60.286
DATABASE BADAJOZ

JUNTA DE EXTREMADURA

INVEST IN EXTREMADURA
Extremely efficient

PROCESS
QGIS Geolocation

QGIS

JUNTA DE EXTREMADURA

PROCESS

SIGPAC export and filtering

INVEST IN EXTREMADURA
Extremely efficient

28.884
SIGPAC CACERES

24.896
SIGPAC BADAJOZ

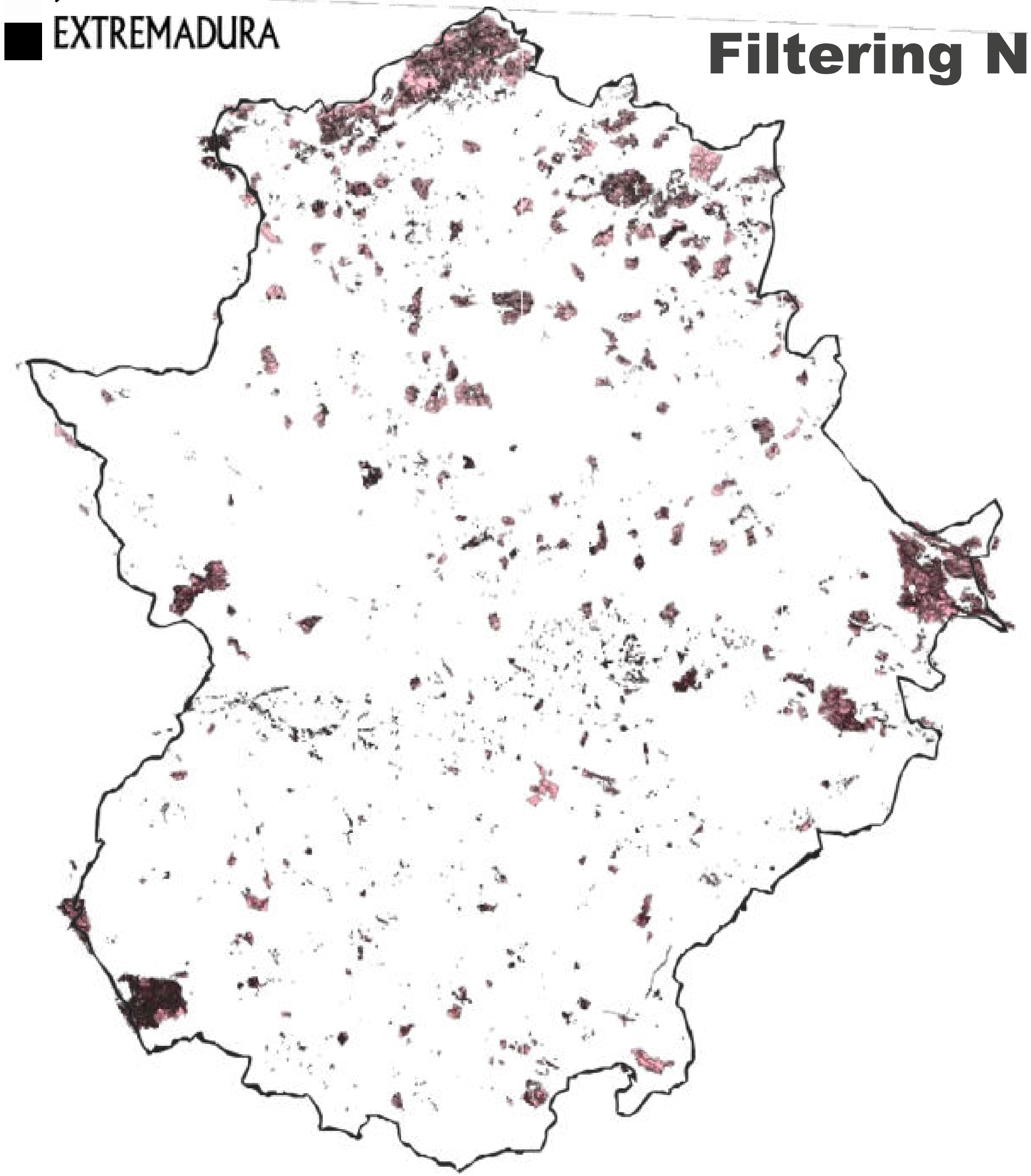
CÓDIGO	DESCRIPCIÓN USO SIGPAC		
AG	Corrientes y superficies de agua		
CA	Viales	OF	Olivar-Frutal
CF	Cítricos-Frutal	OV	Olivar
CI	Cítricos	PA	Pasto arbolado
CS	Cítricos-Frutal de cáscara	PR	Pasto arbustivo
CV	Cítricos-Viñedo	PS	Pastizal
ED	Edificaciones	FF	Frutal de cáscara-Frutal
FL	Frutal de cáscara-Olivar	TA	Tierra arable
FO	Forestal	TH	Huerta
FS	Frutal de cáscara	VF	Frutal-Viñedo
FV	Frutal de cáscara-Viñedo	VI	Viñedo
FY	Frutal	VO	Olivar-Viñedo
IM	Improductivo	ZC	Zona concentrada
IV	Invernaderos y cultivos bajo plástico	ZU	Zona urbana
OC	Olivar-Cítricos	ZV	Zona censurada

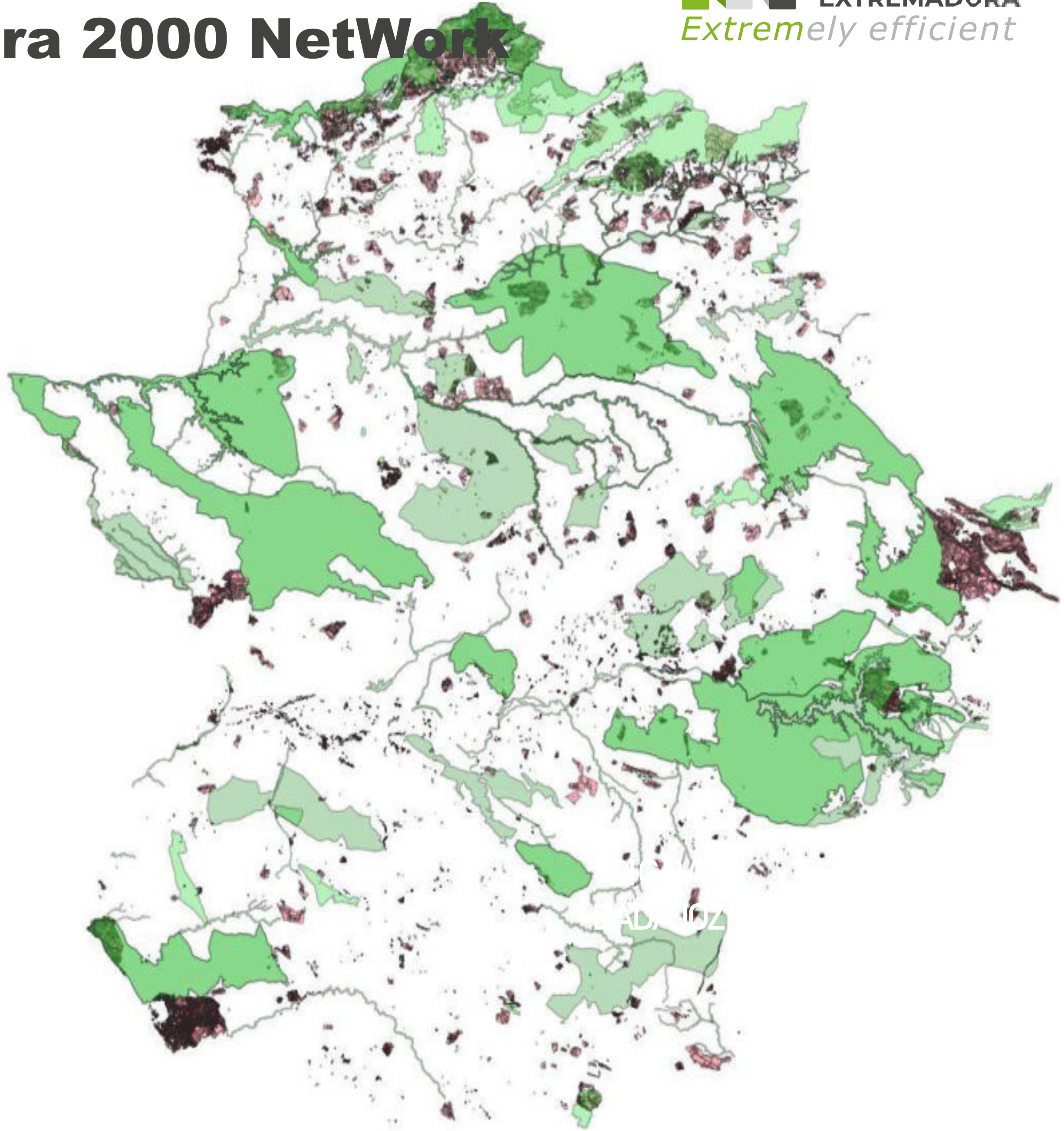
JUNTA DE EXTREMADURA

INVEST IN EXTREMADURA
Extremely efficient

PROCESS

Filtering Natura 2000 NetWork



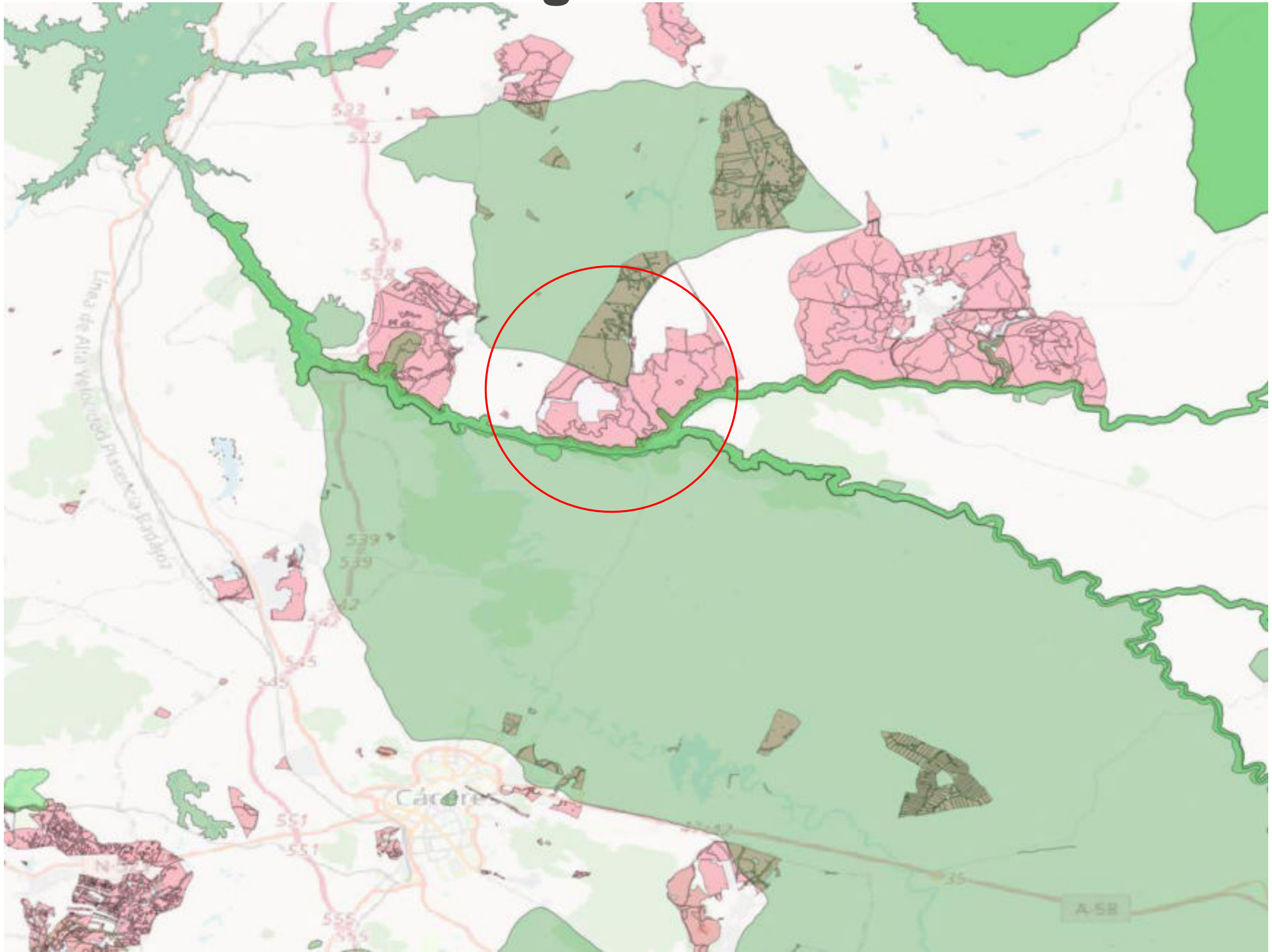


JUNTA DE EXTREMADURA

INVEST IN EXTREMADURA
Extremely efficient

PROCESS

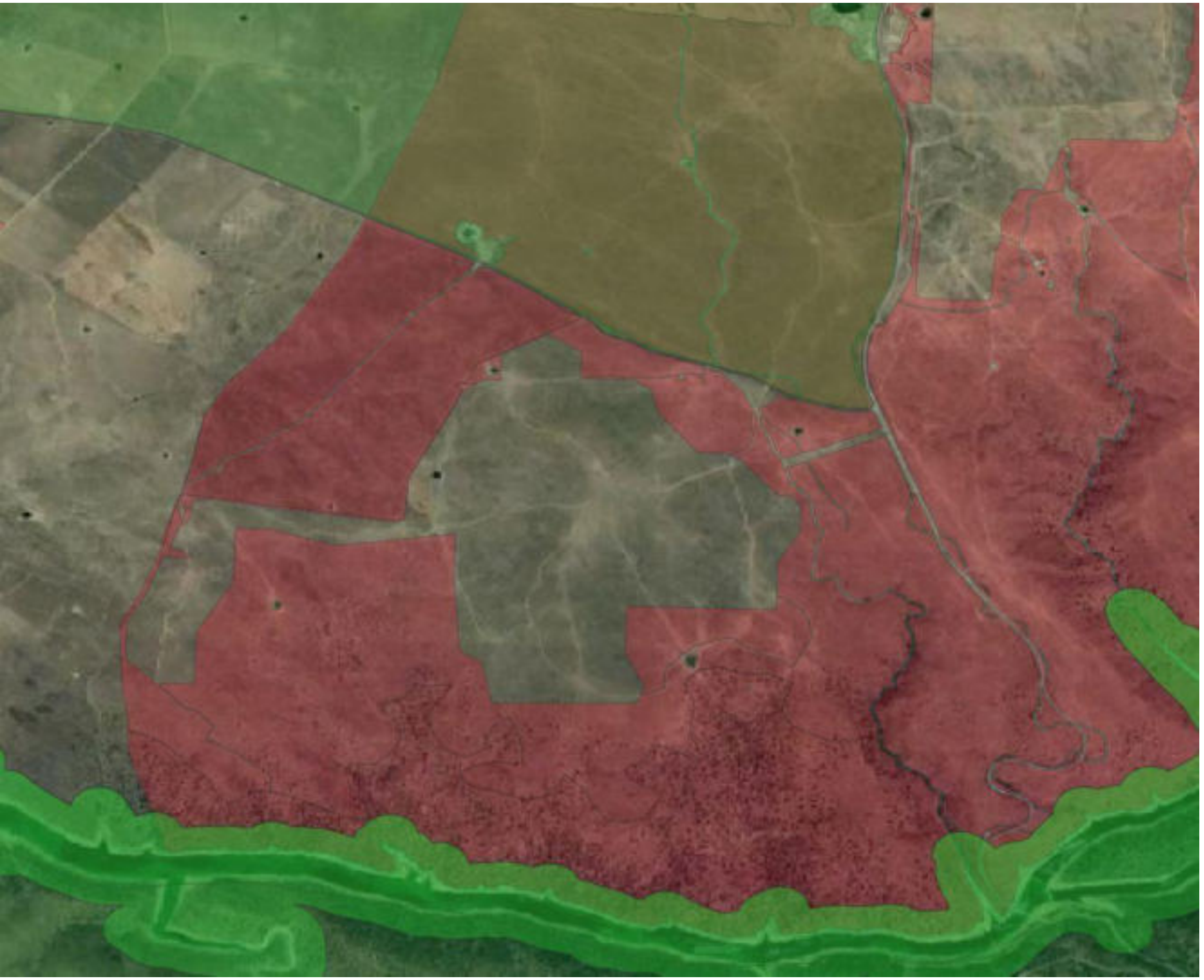
Filtering Natura 2000 NetWork

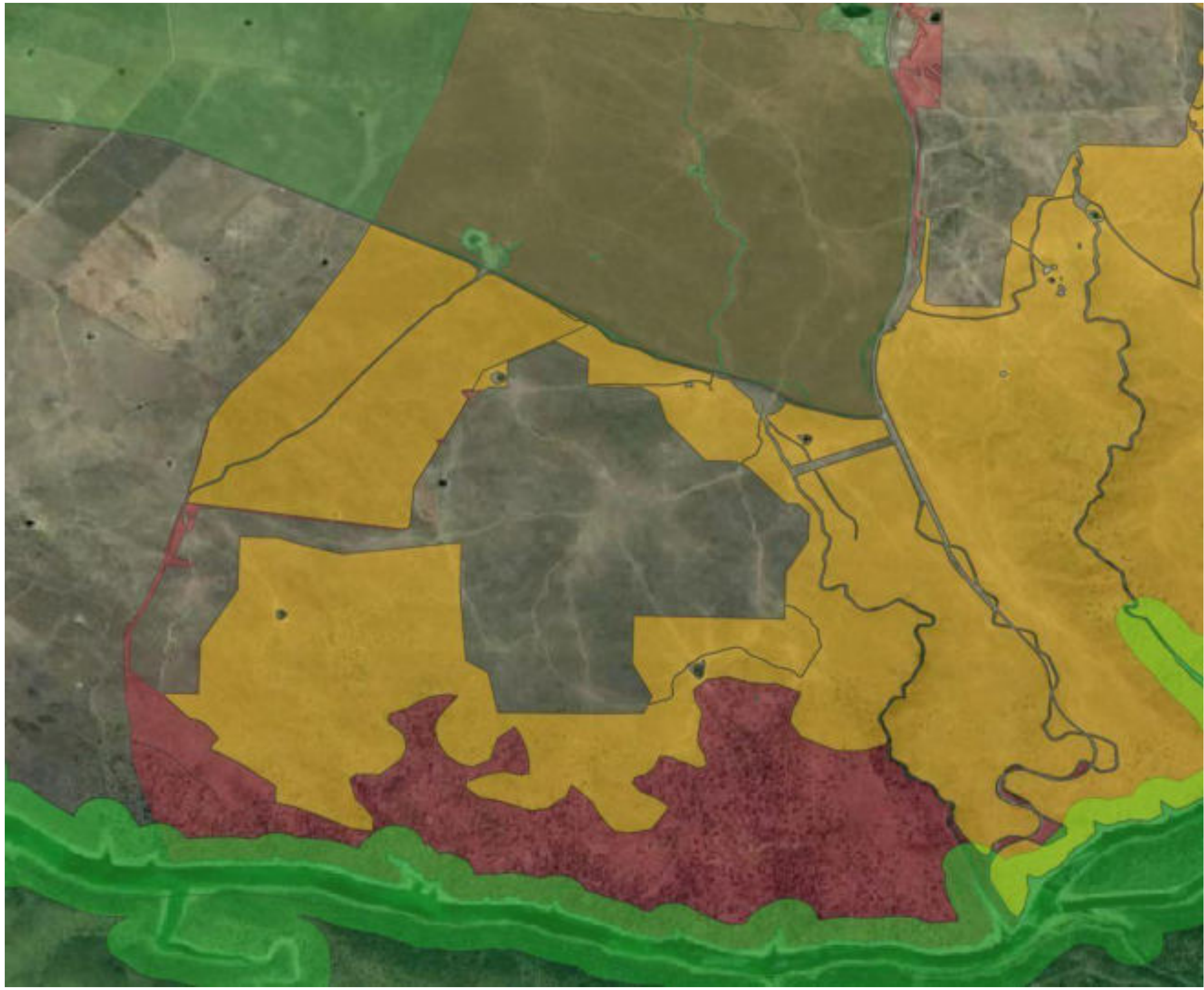


JUNTA DE EXTREMADURA

INVEST IN EXTREMADURA
Extremely efficient

PROCESS
Filtering forest masses

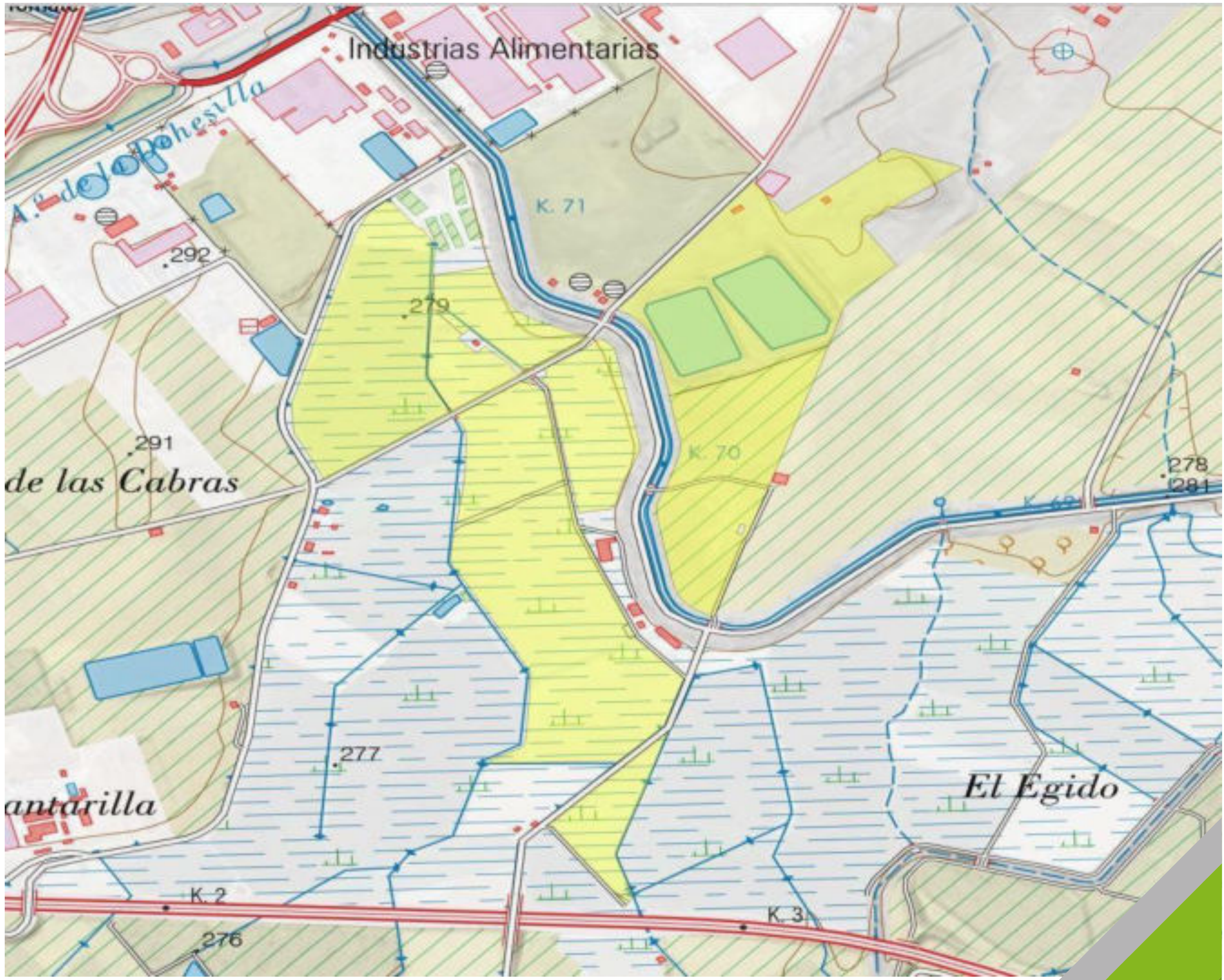




JUNTA DE EXTREMADURA

PROCESS
Filtering irrigable areas

INVEST IN EXTREMADURA
Extremely efficient



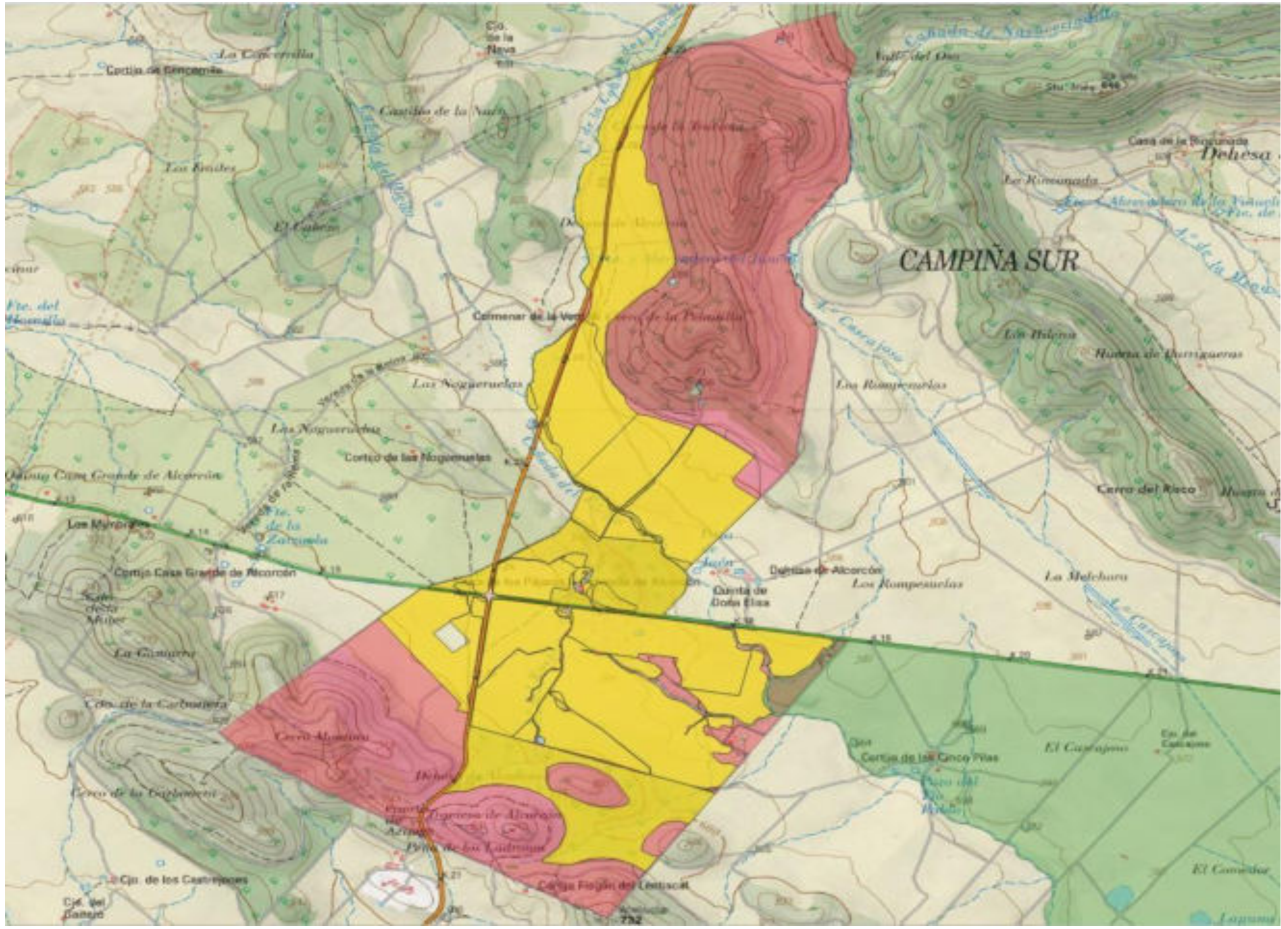
JUNTA DE EXTREMADURA

JUNTA DE EXTREMADURA

PROCESS

Topographic filtering

INVEST IN EXTREMADURA
Extremely efficient

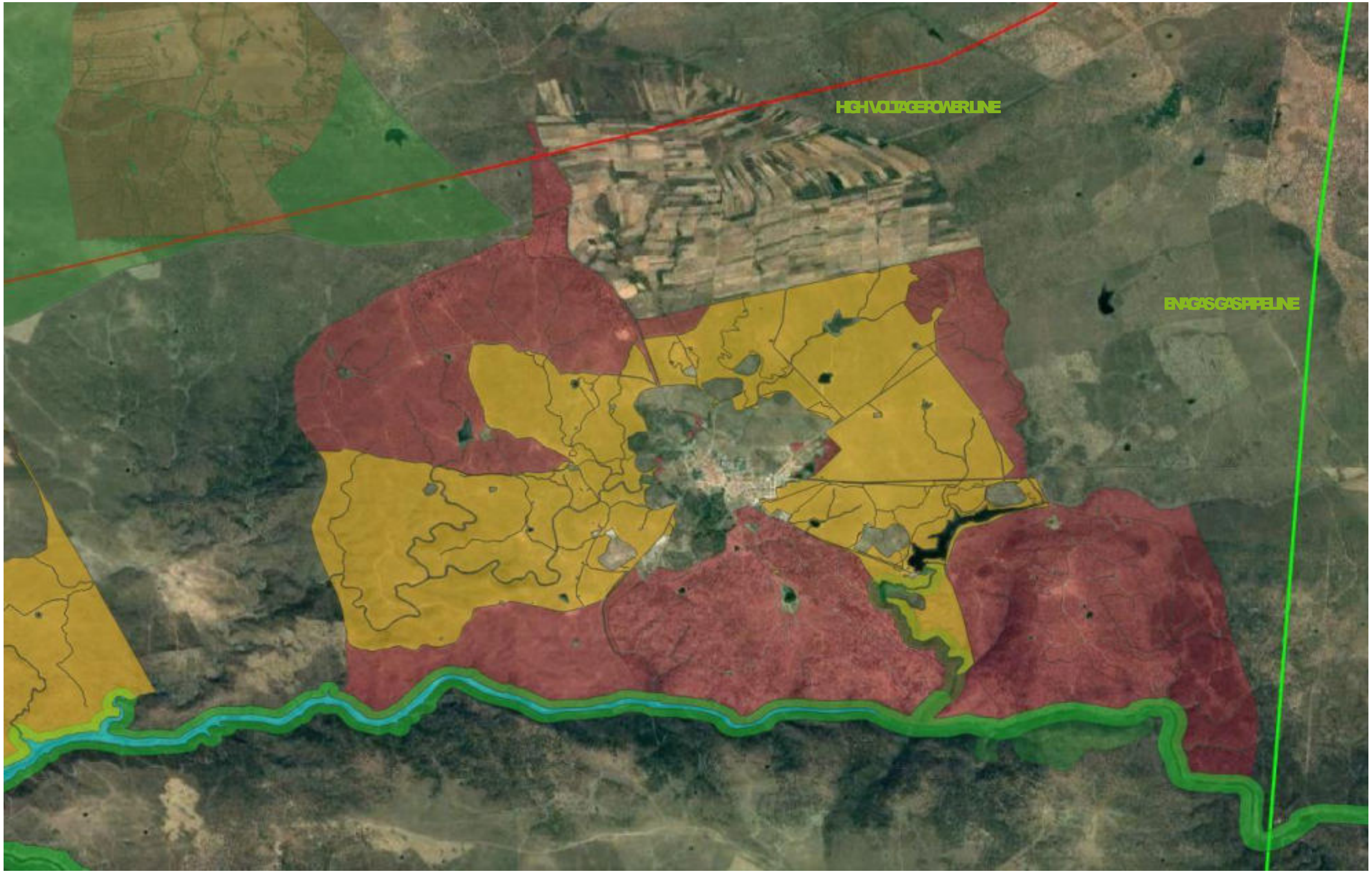


JUNTA DE EXTREMADURA

RESOURCES

Electricity, raw water and gas

INVEST IN EXTREMADURA
Extremely efficient



JUNTA DE EXTREMADURA

RESULTS
Statistical Data

INVEST IN EXTREMADURA
Extremely efficient

NUMBER OF LOCATIONS TOTAL		57 units
AREA 57 LOCATIONS AVERAGE		27,421 ha
57 LOCATIONS		347 ha
LARGEST LOCATION		1,471 ha
SMALLEST LOCATION		56 ha
LESS THAN 100 ha	3	5.2 %
GREATER THAN 100 AND UNDER 200 ha	7	12.3 %
OVER 200 AND UNDER 500 ha	29	50.9%
OVER 500 AND UNDER 1000 ha	11	19,3 %
OVER 1000 ha	7	12,3 %
INSTALLABLE POWER 57 LOCATIONS		13,711 MW
AVERAGE POWER PER LOCATION		173 MW
Locations close to Gas Pipeline		14
Locations near raW Water		32
Locations near MV/HV line		46

JUNTA DE EXTREMADURA

RESULTS
Cáceres

INVEST IN EXTREMADURA
Extremely efficient

Id	Localidad	Provincia	Ha Superfic	Potencia	DISTANCIA EN KM A: L. M/AT	C. Electrica	Agua bruta	Embalse	Carreter	Nombre Vi	Gasoduct	C.Gasistic	Propietario
43	Monroy	Cáceres	1.362,81 Ha	681 Mw	1,1 Km	REE	0,4Km	E.Alcántara	0,0 Km	CC-128	3,7Km	Enagas	AYUNTAMIENTODEMONROY
52	Talaván	Cáceres	1.063,96Ha	532Mw	0,0 Km	REE	0,2Km	E.Alcántara	0,0 Km	EX-390	10,7Km	Enagas	AYUNTAMIENTODETALAVAN
38	Jaraizdela Vera	Cáceres	1.062,79Ha	531 Mw	2,5 Km	REE	X	X	0,0 Km	EX-392	X	X	AYUNTAMIENTODEJARAIZDELAVERA
40	Madrigalejo	Cáceres	878,68Ha	439Mw	0,0 Km	REE	1,9Km	Canal E.Orellana	0,0 Km	EX-355	X	X	AYUNTAMIENTODEMADRIGALEJO
37	GuijodeCoria	Cáceres	867,65 Ha	434Mw	8,3Km	REE	2,6Km	E. Borbollón	0,0 Km	EX-204	X	X	AYUNTAMIENTODEGUIJODECORIA
45	Moraleja	Cáceres	714,92Ha	357Mw	5,1 Km	REE	X	X	0,0 Km	EX-A1	X	X	AYUNTAMIENTODEMORALEJA(54,77%)
36	Galisteo	Cáceres	664,33Ha	332Mw	1,1 Km	REE	X	X	0,0 Km	EX-A1	7,0 Km	Enagas	AYUNTAMIENTODEGALISTEO
50	Santa Cruzdela Sierra	Cáceres	622,23Ha	311 Mw	2,3Km	REE	X	X	0,0 Km	CC-24.1 (A-5)	X	X	AYUNTAMIENTODESANTACRUZDELASIERRA
34	El Gordo	Cáceres	609,85 Ha	305 Mw	0,0 Km	REE	0,0 Km	E. Valdecañas	0,2Km	A-5	X	X	AYUNTAMIENTODEELGORDO
39	La Cumbre	Cáceres	517,40 Ha	259Mw	0,0 Km	REE	X	X	0,0 Km	EX-381	X	X	AYUNTAMIENTODELACUMBRE
31	Cañaveral	Cáceres	489,14Ha	245 Mw	1,6Km	REE	2,4Km	E. Alcantara	0,0 Km	EX-A1	X	X	AYUNTAMIENTODECASADEDONGOMEZ
26	Aldeanueva dela Vera 2	Cáceres	461,37Ha	231 Mw	4,0 Km	REE	1,0 Km Rosarito	Canal MDE.			X	X	AYUNTAMIENTODEALDEANUEVADELAVERA
35	Escurial	Cáceres	426,08Ha	213Mw	0,0 Km	REE	0,0 Km	Canal E.Orellana	0,0 Km	EX-102	5,5 Km	GasExtremadura	AYUNTAMIENTODEESCURIAL
49	Ruanes	Cáceres	422,84Ha	211 Mw	0,0 Km	REE	X	X	0,0 Km	CC-85	X	X	AYUNTAMIENTODERUANES
46	Peraleda dela Mata	Cáceres	386,37Ha	193Mw	1,8Km	REE	2,6Km	E.Valdecañas	0,0 Km	A-5	X	X	AYUNTAMIENTODEPERALEDADELAMATA
53	TorredeSanta Maria	Cáceres	370,02Ha	185 Mw	0,0 Km	REE	3,8Km	E.Valdefuentes	0,0 Km	EX-206	X	X	AYUNTAMIENTODETORREDESANTAMARIA
57	Zorita	Cáceres	352,34Ha	176Mw	0,0 Km	REE	X	E.Alcollarin	0,0 Km	EX-102	X	X	AYUNTAMIENTODEZORITA
29	Calzadilla 2	Cáceres	345,49Ha	173Mw	X	X	0,0 Km	E. Calzadilla	1,5 Km	EX-102	X	X	AYUNTAMIENTODECAMPOLUGAR
44	Montehermoso	Cáceres	323,31 Ha	162Mw	0,0 Km	REE	X	X	0,0 Km	EX-370	X	X	AYUNTAMIENTODEMONTEHERMOSO
32	CasasdeDonGomez	Cáceres	306,11 Ha	153Mw	X	X	X	X	0,0 Km		X	X	AYUNTAMIENTODECECLAVIN
33	Coria	Cáceres	301,34Ha	151 Mw	0,0 Km	REE	1,1 Km	E. Alagón	1,0 Km	EX-109	X	X	AYUNTAMIENTODECORIA
42	Malpartida deCaceres2	Cáceres	276,43Ha	138Mw	X	X	X	X	0,0 Km	N-521	X	X	AYUNTAMIENTODEMALPARTIDADECACERES
30	CampoLugar	Cáceres	272,22Ha	136Mw	X	X	0,0 Km	Canal Orellana	0,0 Km	A-66	X	X	AYUNTAMIENTODECAÑAVERAL
56	Trujillo	Cáceres	269,07Ha	135 Mw	0,0 Km	REE	X	X	0,0 Km	A-5	X	X	AYUNTAMIENTODETRUJILLO
41	Malpartida deCaceres1	Cáceres	268,37Ha	134Mw	X	X	X	X	0,0 Km	N-521	X	X	AYUNTAMIENTODEMALPARTIDADECACERES
27	Arroyomolinos	Cáceres	266,26Ha	133Mw	0,0 Km	REE	X	X	3,5 Km	CC-117	X	X	AYUNTAMIENTODEARROYOMOLINOS
48	Robledillodela Vera	Cáceres	256,30 Ha	128Mw	X	X	2,7Km	E.Navalmoral	0,0 Km	EX-119	X	X	AYUNTAMIENTODEROBLEDILLODELAVERA
28	Calzadilla 1	Cáceres	254,74Ha	127Mw	X	X	X	X	0,2Km	EX-204	X	X	AYUNYAMIENTODECALZADILLA
25	Aldeanueva dela Vera 1	Cáceres	218,99Ha	109Mw	5,1 Km	REE	0,0 Km Rosarito	Canal MDE.	0,0 Km	EX392	X	X	AYUNTAMIENTODEALDEANUEVADELAVERA
54	Torrecillasdela Tiesa	Cáceres	205,69Ha	103Mw	6,7Km	REE	X	X	0,0 Km	CC-23.3	X	X	AYUNTAMIENTODETORRECILLASDELATIESA
55	Torrejoncillo	Cáceres	183,97Ha	92Mw	0,0 Km	REE	1,1 Km	E.Portaje	0,0 Km	EX-109	X	X	AYUNTAMIENTODETORREJONCILLO
47	PuertodeSanta Cruz	Cáceres	155,24Ha	78Mw	0,0 Km	REE	7,2Km	E.Alcollarin	0,0 Km	A-5	X	X	AYUNTAMIENTODEPUERTODESANTACRUZ
51	Santiagodel Campo	Cáceres	136,82Ha	68Mw	0,0 Km	REE	0,3Km	E.Alcántara	0,0 Km	A-66	X	X	AYUNTAMIENTODESANTIAGODELCAMPO
24	Aldea del Cano	Cáceres	56,24Ha	28Mw	X	X	0,0 Km	E. Aldea del Cano	0,0 Km	A-66	0,5 Km	Enagás	JUNTADEEXTREMADURA

JUNTA DE EXTREMADURA

RESULTS
Badajoz

INVEST IN EXTREMADURA
Extremely efficient

Id	Localidad	Provincia	Ha Superfic	Potencia	DISTANCIA EN KM A: L. M/AT	C. Electrica	Agua bruta	Embalse	Carreter	Nombre Vi	Gasoduct	C.Gasistic	Propietario
3	Alburquerque1	Badajoz	1.470,71 Ha	735 Mw	3,5 Km	REE	8,2Km	E. Peña del Aguila	0,0 Km	EX-110	X	X	AYUNTAMIENTODEALBURQUERQUE
4	Alburquerque2	Badajoz	1.170,63Ha	585 Mw	7,7Km	REE	9,5 Km	E. Peña del Aguila	0,0 Km	EX-110	X	X	AYUNTAMIENTODEALBURQUERQUE
18	Orellana	Badajoz	1.118,04Ha	559Mw	0,0 Km	REE	1,7Km	E.Orrellana	0,0 Km	BA-105	X	X	AYUNTAMIENTODEORELLANALAVIEJA
20	Siruela	Badajoz	933,04Ha	467Mw	0,0 Km	REE	5,2Km	E.Zujar	0,0 Km	BA-136	X	X	AYUNTAMIENTODESIRUELA
12	Helechosa delosMontes	Badajoz	802,15 Ha	401 Mw	2,3Km	REE	6,3Km	E. Cijara	0,0 Km	CM-4106	X	X	AYUNTAMIENTODEHELECHOSA
10	FuentedeCantos2	Badajoz	772,01 Ha	386Mw	0,0 Km	REE	X	X	0,0 Km	BA-068	X	X	JUNTADEEXTREMADURA
19	Peraleda del Zaucejo	Badajoz	765,36Ha	383Mw	X	X	X	X	0,0 Km	EX211	X	X	AYUNTAMIENTODEPERALEDADEZAUCEJO
9	FuentedeCantos1	Badajoz	549,52Ha	275 Mw	6,8Km	REE	X	X	0,0 Km	A-66	X	X	AYUNTAMIENTODEFUENTEDECANTOS
14	JerezdelosCaballeros1	Badajoz	481,28Ha	241 Mw	3,9Km	REE	6,2Km	E. Valuengo	0,9Km	N-432	1,6Km	GasExtremadura	AYUNTAMIENTODEJEREZDELOSCABALLEROS
16	Llera	Badajoz	440,08Ha	220 Mw	X	X	0,3Km	E. MolinosMatachel	0,0 Km	BA-080	3,7Km	Enagas	AYUNTAMIENTODELLERA
17	Merida	Badajoz	391,63Ha	196Mw	0,0 Km	REE	4,9Km	E. Montijo	0,0 Km	A-66	1,0 Km	Enagas	AYUNTAMIENTODEMERIDA
13	Herrera del Duque	Badajoz	346,69Ha	173Mw	X	X	3,1 Km	E. Cijara	9,4Km	BA-158	X	X	JUNTADEEXTREMADURA(67,71%)
8	Bienvenida	Badajoz	324,07Ha	162Mw	1,9Km	REE	X	X	2,5 Km	EX-A1	X	X	AYUNYAMIENTODECALZADILLA
11	Fuentedel Arco	Badajoz	247,85 Ha	124Mw	0,0 Km	REE	X	X	9,8Km	EX-200	X	X	AYUNTAMIENTODEFUENTEDELARCO
7	Badajoz	Badajoz	237,75 Ha	119Mw	0,0 Km	REE	X	X	0,0 Km	A-5	0,5 Km	Enagas	JUNTADEEXTREMADURA(79,72%)
6	Azuaga	Badajoz	220,00 Ha	110 Mw	1,7Km	REE	X	X	0,0 Km	N-432	¿?	Enagas	AYUNTAMIENTODEAZUAGA
2	Ahillones	Badajoz	200,61 Ha	100 Mw	0,0 Km	REE	X	X	0,0 Km	N-432	X	X	AYUNTAMIENTODEAHILLONES
21	Zafra	Badajoz	185,46Ha	93Mw	1,6Km	REE	X	X	0,0 Km	EX-101	0,2Km	GasExtremadura	AYUNTAMIENTODEZAFRA
1	Acedera	Badajoz	182,87Ha	91 Mw	1,1 Km	REE	0,0 Km	Canal Orellana	0,0 Km	N-430	X	X	AYUNTAMIENTODEACEDERA
5	Alconera	Badajoz	136,86Ha	68Mw	2,0 Km	REE	X	X	0,0 Km	EX-101	0,5 Km	GasExtremadura	AYUNTAMIENTODEALCONERA
15	JerezdelosCaballeros2	Badajoz	117,66Ha	59Mw	7,6Km	REE	10,0 Km	E. Valuengo	2,9Km	N-433	¿?	GasExtremadura	AYUNTAMIENTODEJEREZDELOSCABALLEROS
23	Santa Marta	Badajoz	76,94Ha	38Mw	2,5 Km	REE	X	X	0,0 Km	N-432	X	X	AYUNTAMIENTODESANTAMARTA
22	La Garrovilla	Badajoz	72,71 Ha	36Mw	0,4Km	ENEL	4,2Km	E. LosCanchales	0,0 Km	EX-202	X	X	AYUNTAMIENTODELAGARROVILLA

JUNTA DE EXTREMADURA

CONCLUSIONS

Competitive advantage and applications

INVEST IN EXTREMADURA
Extremely efficient

- The study has concluded with the identification of up to **57 locations**, with the data in terms of surface area, installable power and proximity to resources shown in the following slide.

- The availability of **exclusive information at the national level**, something that no other Spanish regions has, constitutes an important competitive advantage for the implementation of projects, particularly those related to:

  - Biometano.
  - Green natural gas (TURN2X)
  - Hydrogen.
  - Green fuels (ethanol, ammonia, etc).
  - Data Centers.
  - Bitcoins factories.
  - Fertilizers plants.

It can also be relevant information for **green energy projects** based on cultivation of plant species.

SUCCESS STORIES

Self-consumption photovoltaic DIAMOND FOUNDRY

- The US company **Diamond Foundry** has chosen the Extremadura city of Trujillo to build a plant for the **production of diamonds** using **plasma reactors**, mainly for **high-tech semiconductors**.
- The factory will be built on a site of **80,000 m2** and a building of 30,000 m2. It will create around **300 direct jobs** and represent an investment of **670 million euros**.

  The project also includes a **23 megawatt** on-site photovoltaic plant on a **540,000 m2** site owned by the Trujillo City Council.
- The location of the project in Spain was **absolutely determined** by the possibility of having this **self-consumption photovoltaic plant**. Other industrial projects, such as the **Envision battery factory**, will have self-consuming photovoltaic systems.

SUCCESS STORIES

RIC ENERGY, ENCE, NATURMET, Biometano production

- More than 20 biomethane plants are currently being developed in Extremadura, connected to the current pipeline network of both ENAGAS and GAS EXTREMADURA.

- Some of these projects are supported by INVEST IN EXTREMADURA and companies such as Rick Energy, Naturmet or Ence have benefited from the information provided by the Public Rural Land Bank.

- The production of biomethane is limited by the availability of inputs. However, studies conducted by SEDIGAS, the Spanish Gas Distribution Society, conclude that up to 30% of current fossil natural gas could be replaced by green biomethane.

JUNTA DE EXTREMADURA

SUCCESS STORIES

TURN2X reneWable natural gas

INVEST IN EXTREMADURA
Extremely efficient

- The German start-up company TURN2X has set up a pilot plant for the production of "**green natural gas**" in Miajadas (Caceres).
- The technology developed by TURN2X produces **synthetic methane gas** through the electrolysis of water and the recombination of the hydrogen obtained with CO2.
- This technology to produce synthetic natural gas has important advantages when combined with the technology used to produce biomethane. It **valorizes the biogenic CO2** emitted, **shares the injection costs**, etc.
- This has led to the use of information from the PBL to develop new TURN2X projects on an industrial scale with biomethane producers.

Potenciál pro přenos?

Jaké dobré praktiky považujete za přenositelné?

Na jaké dobré praktiky se má tým dále zaměřit a vyhledat je?

DĚKUJEME ZA VAŠI ÚČAST!

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