Erasmus+ WATT ELSE Project

NETWORK FOR A DYNAMIC ACTORS INVOLVED IN THE TRANSITION OF COMPETENCES IN THE ENERGY FIELD FACING LEARNING CHALLENGES IN EUROPE

INDUSTRIAL ENERGY PRODUCTION: A CHANGING SECTOR

The example of 6 European countries

related by

12 Erasmus+ partners

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EDITORIAL

Ice-breaking presentation
Paul GROSJEAN, President MIFE
Valérie BRENOT, Director - MIFE
Conseil départemental du Territoire de Belfort
2019, October 16th

In France, in Europe and in the whole world, the global energy transformation is gathering place, driven by the twin forces of changing customer expectations and rapid technological evolution.

Our firms, our jobs and our territories in the field of the energy sector are going to be impacted**.**

While the energy production sector is moving like never before, supporting the mutations requires action on several fronts:

- understand technological changes, which are rapid and not yet stabilized
- measure the effects on future jobs and skills, as well as those in decline

As a public authority supporting the energy sector and its jobs in the Territoire de Belfort, the MIFE must rise to these upheavals.

Introduction by Mr Paul Grosjean, President MIFE

"For 10 years, Watt Else has been an action showing the commitment of more than 20 local actors. They are all committed to support and develop the energy field of activity on our territory. And the current situation invites us to even more support our jobs in that field and to look at the future to keep our competences.

The Franche-Comté region is the leader in France for the energy field for producing turbines and alternators. It represents 14 000 direct employees, more than 35 000 indirect workers, a turnover of about 4 billion euros with the world leader and about 200 subcontractors.

In our territory, it represents 18 000 persons, 1400 working with subcontractors, 1800 indirect jobs showing the importance to sensitize, train, prepare to the jobs of the future in the energy field of activity.

To this end, we would like to thank and underline the richness of this partnership and more particularly our colleagues from the MIFE, the Chamber of Commerce and Industry, the Valley energy but also our business partners (GE, EDF and ENEDIS and all subcontractors) without whom this operation could not take place.

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We can also greet public authorities for their support as well as cluster such Gaia énergie, Pôle énergie, together with universities (UTBM, UFR STGI) and training organizations (AFPA, GRETA, colleges,…).

This year, we decide to work at European level to sensitize and promote the energy future jobs and to model our works closely with European best practices dealing with mutation of their industrial territory.

That is why, in parallel with our usual activities to make discover the energy jobs to students and pupils visiting the labos of the UTBM, we welcome our partners coming from Italy, Greece, Spain, Sweden, Romania, Reunion Island and Slovakia to launch this 2 year project.

Among the first activities that we will carry, let's present tomorrow's conference in the UTBM called "Watt else in Europe : the energy transition in Europe, which impacts on the jobs on our territories ?" to show you the various stakes at European level".

How to make this change a chance?

From this autumn 2019 and for 2 years, 12 European partners are starting an important project: support their respective territories in the transformation of their local industrial sector of energy production and building insulation, specifically in terms of human resources, employment and training.

The main objective of the project is to compare their respective professional practices to enrich them and better support the territories in this challenge.

Each meeting, each exchange, each working session aims to take a step back on the respective situations of our territories; and to equip ourselves mutually to better support these territories, in the field of employment and training in the energy sector

I warmly thank all the partners of this extraordinary project for their investment of time; and wish them success in this work.

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INTRODUCTION

Twelve European partners are involved in the major project "**WATT ELSE - Network for a dynamic actors involved in the transition of competences in the energy field facing learning challenges in Europe**"

1. **MIFE - Cité des métiers du Territoire de Belfort, France, design the project and manage it**
2. Cité des Métiers, Reunion Island – France
3. Consorci de la Ribera – Spain
4. EDF – France
5. EnAIP - Ente Acli Istruzione Profesionale Piemonte – Italy
6. Horizon Réunion (SPL), Reunion Island – France
7. HOU - Hellenic Open University - Greece
8. ISJ - Inspectorate of Education Judetean Iasi – Romania
9. ITS Energie Piemonte – Italy
10. KTH Royal University – Sweden
11. TREXIMA Statistical Institute – Slovakia
12. UTBM -Université Technologique Belfort Montbéliard - France

The stakes of this unique partnership are to

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- ✓ Assist an industrial energy branch mutating, in terms of human resources
- ✓ Update needs of recruitment and training path
- ✓ Spin off a method of territorial action and learning about the European partners own methods

WATT ELSE will be punctuated by 8 transnational meetings and partnership activities, designed

- to carry out an inventory of trades and skills in each European partner territory
- to model support methods
- to support the transformation of training systems and to share experiences on good practices in terms of territorial and partnership management.

A 3-day training activity for employment/training advisers, trainers and teachers completes this Erasmus + WATT ELSE project. Its purpose is to enable them to be equipped respectively to return to people with new counselling methods at the end of the meeting and to better encourage professional and geographical mobility of the public.

At the end of this European project, an inventory of energy professions and the sectors to access them will be produced, accompanied by an intervention methodology for a changing industrial territory.

Finally, follow-up could be given in a new "Erasmus + Innovation" project, but it is still too early to talk about it...

The first transnational meeting TM#1 (Belfort, October 17th 2019)**, was the moment to present the local data**

The first step was, for each country, to prepare an inventory of its local situation, and their local challenges regarding energy production and consumption.

We call it "State of the Art".

These data are based on the preparatory work carried out by each of the partners. We thank them warmly for this work which was carried out with care.

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Short presentation of each partners

	**MIFE - Maison d'Information sur les Formations et l'Emploi / *Information House on Training and Employment*** is a local public administration with three main missions: ✓ improve the integration policy ✓ contribute to enhancing learning and vocational training ✓ support the local development of employment The MIFE is born in 1989, it has a staff of 20 collaborators actually. Nearly 20,000 persons are helped each year to find a job, choose a training or create a firm. **MIFE is the leader of the project** http://www.mife90.org/
	**La Cité des Métiers – Réunion Island** is a multi-partner organization that welcomes any kind of public looking for information and advice about a professional project La Cité des Métiers La Réunion was created in 2004, it has a staff of 9 collaborators. Nearly 14,000 persons are helped each year to find a job or a training. www.citedesmetiers.re
	**Consorci de la Ribera** is a local public body working for 47 small/medium-sized municipalities (300,000 inhabitants) within Valencia Autonomous Region. Its missions are focusing on: ▪ Environment & sustainable energy promotion ▪ Economic promotion ▪ Tourism sector promotion with the aim to support the economic growth and environmental sustainability of its territory. https://consorcidelaribera.com/
	EDF – Electricité de France, is a worldwide integrated electricity

	company, active in all areas of the business: generation, transmission, distribution, energy supply, trading and services EDF is a key player in energy transition as a global leader in low-carbon energies (90%), services and facilities It has a staff of 166,000 employees (62,000 in France). EDF invest € 15 billion per year for the next 10 years, it count 40 million customers (29.7 million in France) with a 69 billion consolidated sales in 2018 https://www.edf.fr/groupe-edf
	EnAIP - Ente Nazionale ACLI Istruzione Professionale is a non-profit organisation, the largest vocational training provider in the Piedmont region (training, guidance, consultancy, support in the professional insertion and job creation) Created in 1961, EnAIP Piedmont is composed of 16 centers, which count 330 employees and 800 consultants. Each year, 6500 trainees receive training to prepare them for the labour market https://www.enaip.piemonte.it/
	ITS Energia Piemonte (Superior Technical Institute) mainly manages courses in the energy sector, i.e. post-diplomas high technical specialization paths. Three biennial training programs, addressed to unemployed and employed people, related to fields as Energy Efficiency, Supply and generation of energy, Energy efficiency in processes and plants, Sustainable and energy efficient building. ITS Energia Piemonte count 33 different partners, which include companies, universities, technical schools and training agencies. http://www.its-energiapiemonte.it/
	ISJ Iasi is a public authority that provides professional guidance, coordination and evaluation services for schools. ISJ Iasi supervises an administrative area that includes ▪ 231 schools ▪ 130,512 students ▪ 8793 teaching positions ▪ 3230 non-teaching and auxiliary staff positions

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	http://www.isjiasi.ro/

	**KTH** is a public university established in 1827, ranked 98 in the latest QS World University Ranking KTH activities rest on four pillars: • Sustainability • Internationalisation • Equality • Digitalisation It count 17,000 Students (2,000 doctoral students), 960 faculty members and 950 researchers https://www.kth.se/

	**Trexima is a main tasks in the field of labor market and human resources:** It produce some research and detailed retrospective analyses and productivity prognoses, employment of graduates in sectors within 5 years, wage statistics (project ISCP), advisory and consulting services (project ISTP). From 3 employees in 1992 (year it was created) Trexima now has 50 employees https://www.trexima.sk/

	**HOU is a state university**, the only Higher Education Institute in Greece eligible to provide open and distance learning education It has been established in 1992. It's academic staff counts 2.000 members. The headquarters stay at Patras, and there is some branches at all major Greek cities 45.000 students attend the courses of HOU https://energies-reunion.com/
	**UTBM is a public institution of higher education and scientific research** created in 1999. It is composed by 4 thematic poles: Energy and Informatics, Industry 4.0, Mobility and future transportation, Human sciences. Since its creation, UTBM trains 3059 students to become engineers, and obtain masters and PhDs. UTBM current budget is 40M€. The staff of 402 persons is composed by 190 teachers and teacher-researchers and 212

	administrative and technical staff The universities has 3140 partners among which 140 universities and 3000 companies UTBM graduates no less than 600 Engineer each year. It is ranked 7th among 200 engineer schools in France regarding to the number of graduates. **http://www.utbm.fr**

HORIZON REUNION	Since 2013, **the local public company Horizon Reunion** has supported Reunion Island towards electric autonomy, serving communities, territories and its inhabitants. Horizon Reunion providing its shareholders with reliable energy balance and indicators, ensuring decision support to its members, helping to stand and follow their strategies in the fields of expertise of the company Horizon Reunion giving greater visibility to energy subjects by informing and raising awareness amongst citizens and other stakeholders The team is composed of 68 employees **https://energies-reunion.com/**

The following data are aggregated by geographical territory, based on what may have been collected by the partners.

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The social situation of the countries

The Erasmus + WATT ELSE partnership involves countries with very different local situations. Within each country, there are also regional differences. By these key figures, we have some bridges of comparison between the territories.

	FRANCE	*Nord Franche-Comté*	*Reunion Island*	ITALY	*Piedmont Region*	ROMANIA	*Iasi*	SLOVAKIA	SPAIN	*Valencia Autonomous Region*	SWEDEN	*Stockholm*
GDP per capita	40.920 €	26.600 €	21.526 €	37.918 €	30.342 €	22.249€	6.200 €	30.583 €	35.992 €	31.997 €	48.266	58.793 €
Inhabitants	64.100.000	306.000	862.308	60.400.000	4.356.406	19.530.631	930.000	5.431.000	46.500.000	302.000	9.600.000	2.269.060
Unemployment rate (of labour force)	9,1%	9,4%	23,0%	10,6%	8,4%	4,3 %	5,6%	6,5%	15.3 %	14,6%	6,3%	6,3%
Fertility rate (children per woman)	1,86			1,32		1,64		1.52	1.31		1.78	
CO2 emissions per capita	4.4 tonnes			5.4 tonnes		4,2 tonnes		5.6 tonnes	5.1 tonnes		3.8 tonnes	

https://data.oecd.org/ https://tradingeconomics.com/romania/gdp-per-capita-ppp

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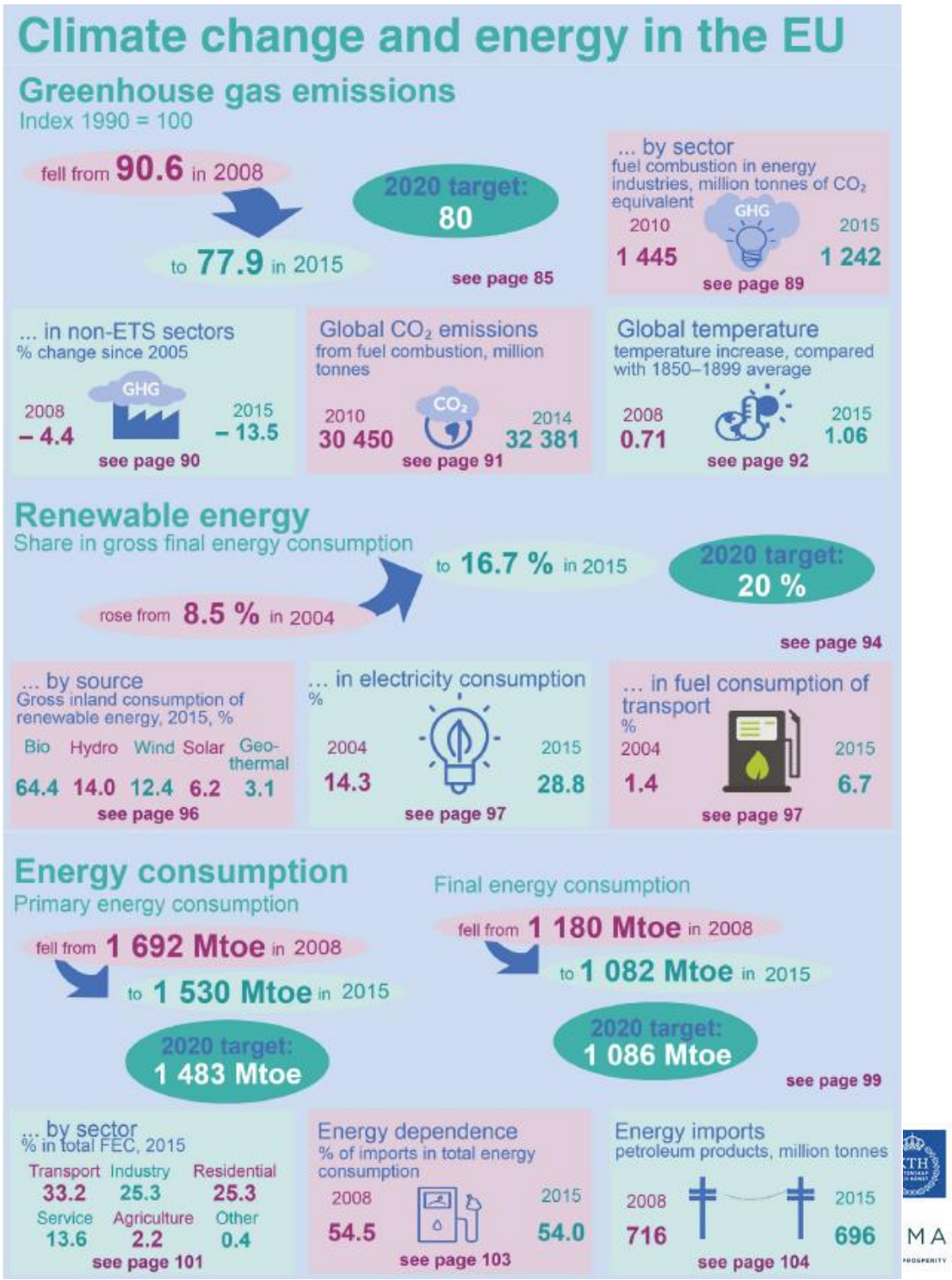
Europe 2020 strategy targets on climate change and energy

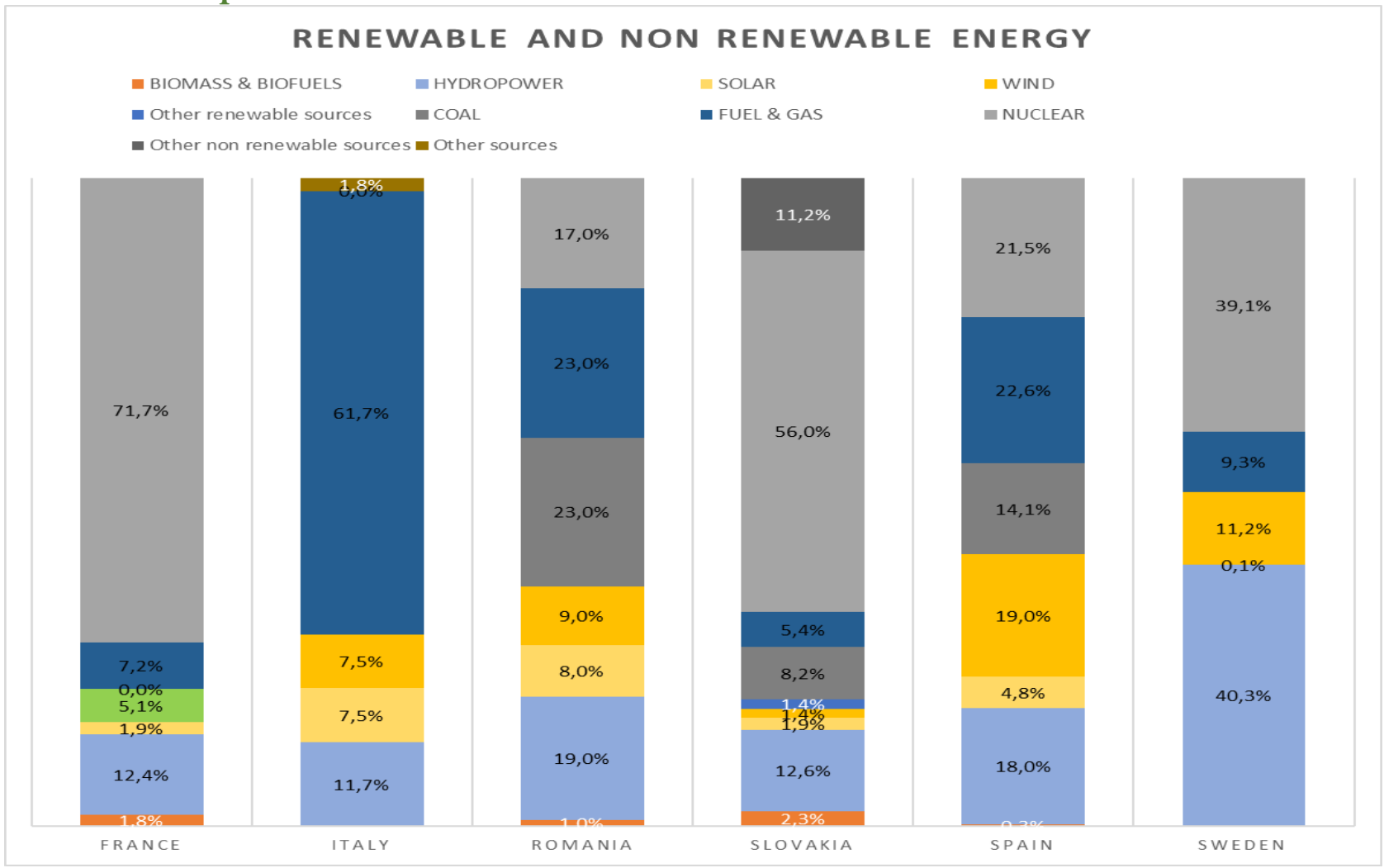
The Europe 2020 strategy sets three objectives for climate and energy policy, to be reached by 2020:

- Reducing GHG emissions by at least 20 % compared with 1990 levels;
- Increasing the share of renewable energy in gross final energy consumption to 20 %; and
- Moving towards a 20 % increase in energy efficiency.

These targets are also known as the '20-20-20' targets. The Europe 2020 strategy's three climate and energy targets are interrelated and mutually support one another. The EU is currently debating the climate and energy targets for 2030 (Source: Smarter, greener, more inclusive? Indicators to support the Europe 2020 strategy, 2017 edition, Statistical Books, Eurostat)



The different power mix



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France

Due to its historical position as a producer of nuclear power plants, the national territory is interconnected by nuclear installations, so most of its energy comes from uranium.

Focus on a specific area in France: Reunion Island

The Reunion Island is an island, so is not connected to any electricity grid, as the European countries are. It must therefore produce its own electrical energy. And the most efficient way is to use the fossil fuel.

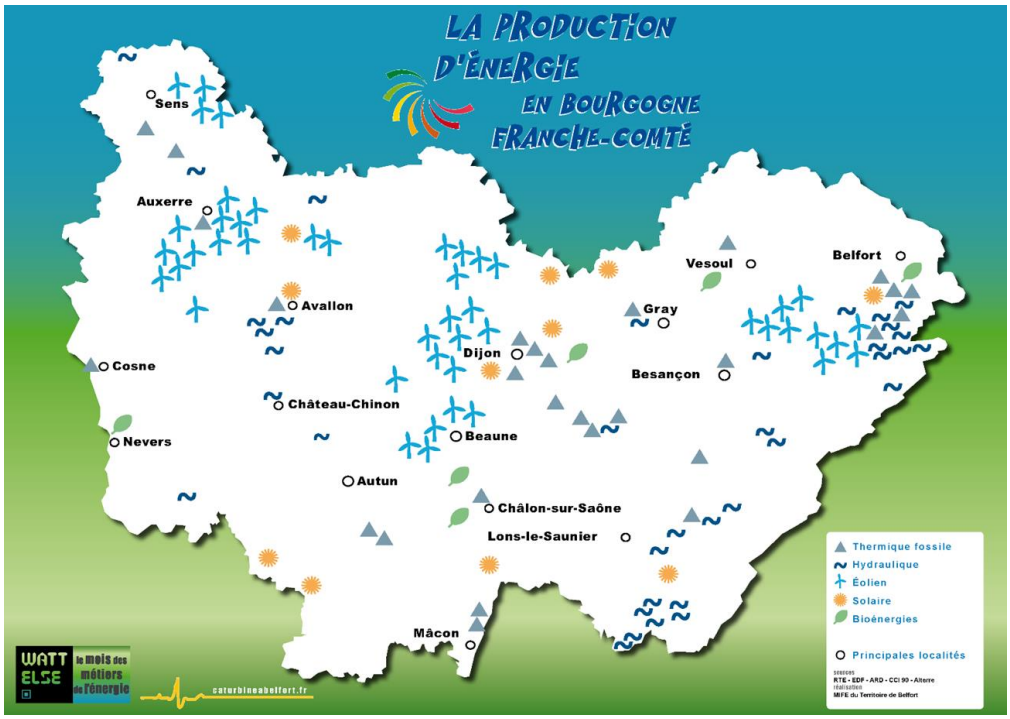
Renewable energy production is growing strongly because Reunion Island has two major assets: water (hydropower) and bagass: a fibrous residue from sugar cane

Renewable energy (as % of gross final energy consumption in 2017) = **16.3%**

Energy transition target in France:

- Carbon neutrality in 2050
- 40% of decrease in fossil uses in 2030 compared to 2012
- Reduce to 50% the part of the nuclear in the total generation in 2035 (71,7% in 2018)
- End of coal generation in 2022
- New measures to sustain the development of sustainable energies (hydraulic, off shore wind, solar PV) and hydrogen
- Constraining measures to put an end to the high energy accommodations

Highligths in Bourgogne Franche-Comté region



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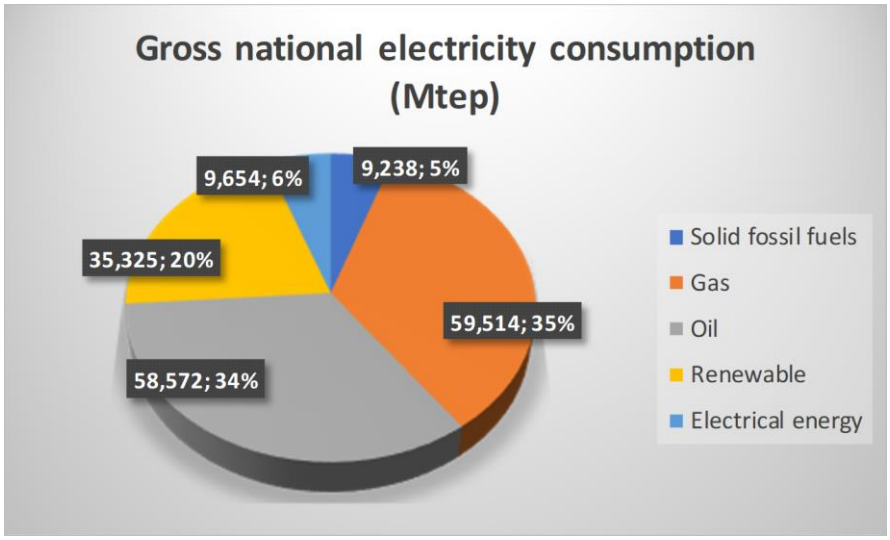
Italy

Italy has the particularity of having shut down all its nuclear power plants following the Tchernobil accident
As a major user of fossil fuels, Italy, which is also an energy importer, is turning to renewable energies to solve these two paradigms simultaneously.
Source: Relazione annuale situazione energetica nazionale (2018)



Renewable energy (as % of gross final energy consumption in 2017) = **18.3%**

Romania

The Romanian National Energy Strategy (NES) 2016-2030 approved this strategic investments in November 2018:

- Reactor-groups 3+4, Cernavoda Nuclear Power Plant;
- New 600 MW Power Plant at Rovinari
- Hydro Power Plant with pumping accumulation at Tarnita-Lapustesti
- Hydro-Complex at Turnu Magurele-Nicopole

Romania has the specificity of not having a major contractor on its territory.

"*With resources and a relatively balanced mix, Romania can hope to achieve energy independence and even become a significant player in the European energy market*".[1]

Renewable energy (as % of gross final energy consumption in 2017) = **24.5%**

[1] Challenges and prospects of the energy sector in Romania ©DG Trésor - Ambassade de France en Roumanie - Service économique de Bucarest, June2018

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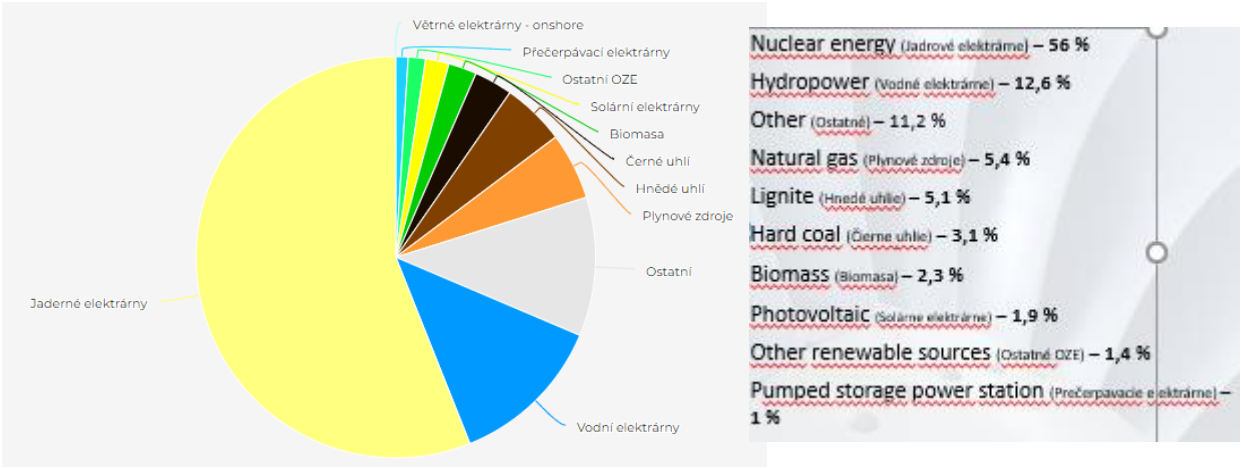
Slovakia

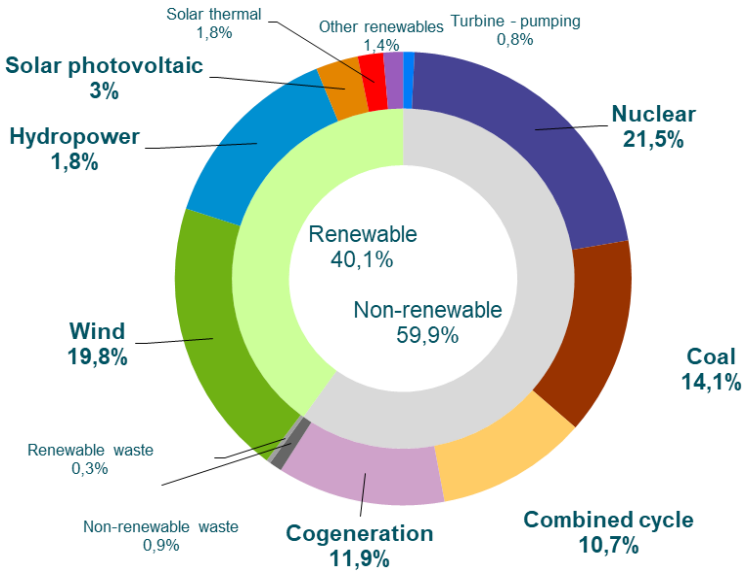
The Slovakian energy mix has a similar situation to the energy mix of France.
Slovakia electricity production follows rivers: they cool nuclear power plants (56% of the energy) and are punctuated by hydroelectric power plants (12.6%)
Until 2005, Slovakia was an exporter of electricity. It is now an importer.
Source: interactive module OEnergetice.cz – energostat DATA Source: ENTSO-E Transparency Platform



Renewable energy (as % of gross final energy consumption in 2017) = **11.5%**

Spain

The proportion of renewable energies in Spain is almost half of the energy production.
An interesting fact relayed by a member of the public at the Erasmus + WATT ELSE conference: there are more solar farms in Germany than in Spain. The Consorci de la Ribera partner confirms this, specifying that the Consorci de la Ribera is working to support the development of companies in the sector to close the gap (due in particular to the lack of SMEs)
Source: El Sistema Eléctrico Español. Informe 2018. Red Eléctrica Española



Renewable energy (as % of gross final energy consumption in 2017) = **17.5%**

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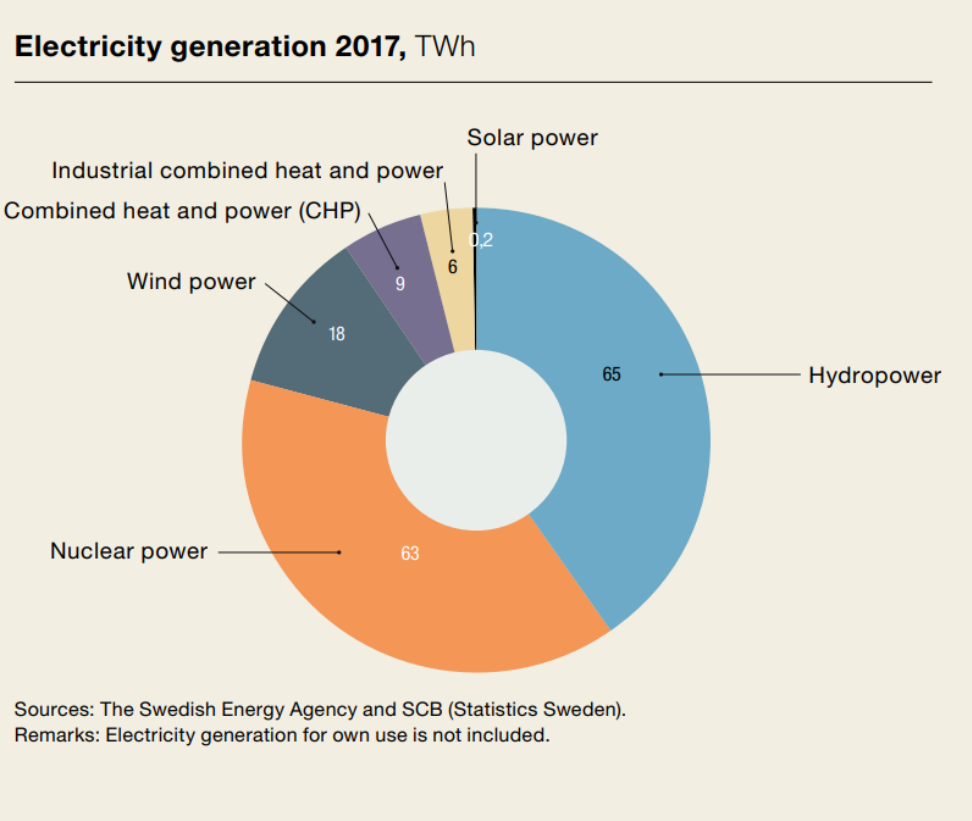
Sweden

Sweden has major smarts city development projects, which involve a new organisation of energy production and consumption patterns

Energy transition target:

Sweden's energy ambition is impressive compared to the rest of Europe. The difference between the EU's 20% renewable energy target for 2020 and the national target of 49% illustrates the country's progress compared to other countries, with Sweden having already exceeded 50% by 2015.
The government has also set a target of 50% energy efficiency by 2030, again exceeding the recently approved European target, which imposes only 32.5% on Member States[2].



Renewable energy (as % of gross final energy consumption in 2017) = **54.5%**

[2] Sweden, the European champion of renewable energies, Sam Morgan | EURACTIV.com 2018

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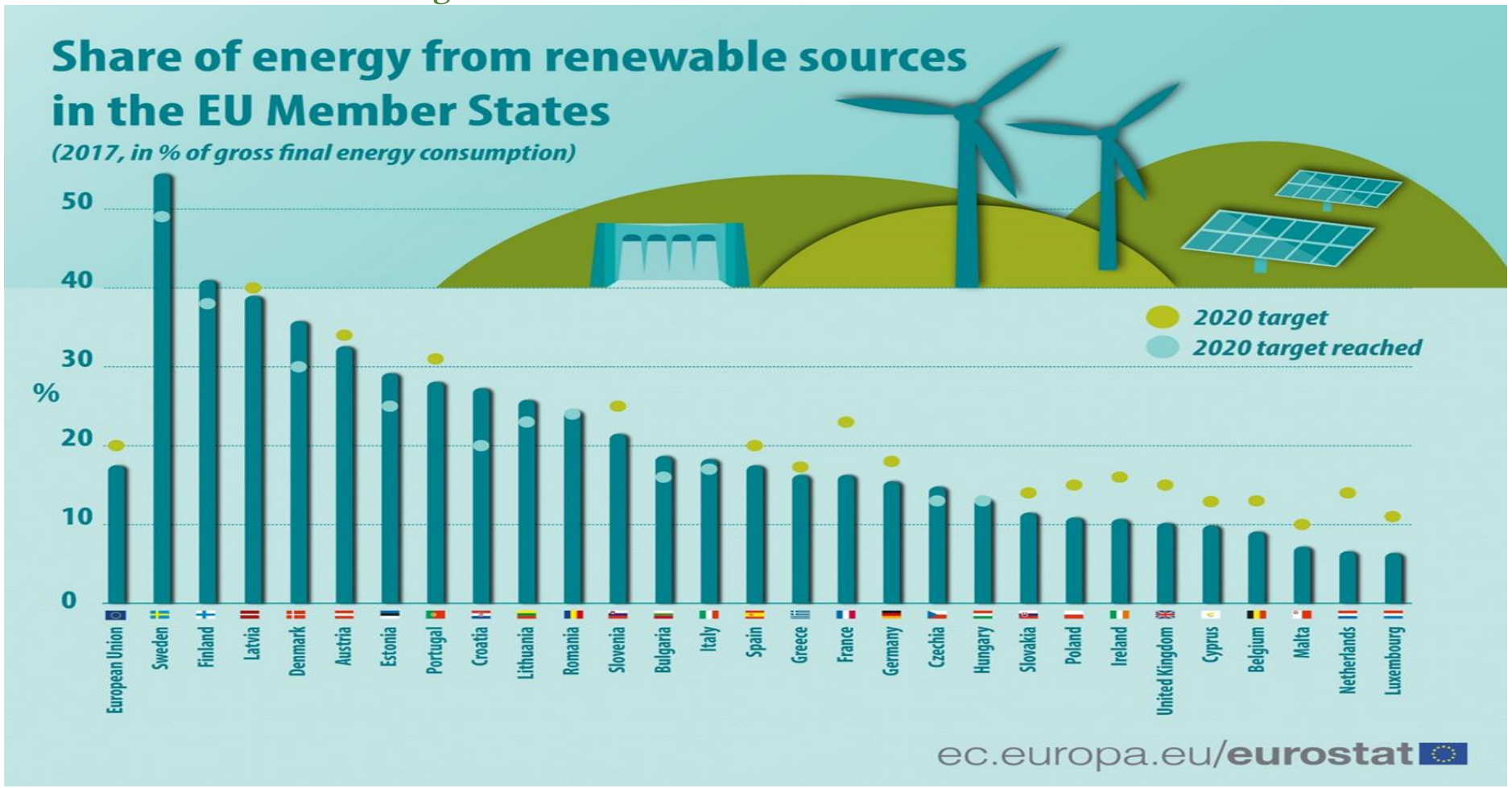
Focus on the renewable energies



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The employment at the energy sector, and the future jobs to be expected

At the same time as industrial energy production is preparing for a revolution, the trades carried out by this sector are also subject to opposing forces.

The question of energy-related jobs is divided into two main issues:

- what are the current jobs in the energy sector? (and some current jobs in the energy sector will decline?)
- what are the new jobs to be expected from the energy transition?

What role can local authorities play in supporting these jobs? And to support citizens who want to get involved and also those who are at risk of losing their jobs?

On the next page, you will find an overview of the professions concerned by the energy transition, both current and emerging for the future.

Let us recall here the objectives of the Erasmus + WATT ELSE project: to carry out an inventory of jobs and training in the energy sector, to make an inventory of the existing situation and to prepare the future.

The jobs that were highlightened by the partners were among those

Researchers Research and development engineers Project managers Test technicians Operation and maintenance technicians and engineers Sales representatives	Installation And Energy Efficiency Engineer Thermal Installer Prevention and/or quality and/or environmental technician Product definition and innovation manager (R&D) Architect or construction engineer Energy efficiency sales advisor Energy EfficiencyCertifying Agent Energy engineer Sales agent of renovating building for improved energy performance

Because of opportunities placed in the following fields (mostly stated by Italien, french and Spanish partners)

Construction and maintenance of high efficiency power grid
Short chain agro-marketing
Green mechatronic systems
Green building
Low environmental impact air conditioning systems
Environmental risk management
Environmental education
Energy management
Green mechanical techniques

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The Energy field challenges

For this first stage of the project, **TASK 1 - Data collection**, each partner was asked to provide a of analysis based on the SWOT method.
A complete table of their responses can be found on the following page.

It is impossible to convert this SWOT into a single one that summarizes the issues of the different partners.
However, here is what emerges from it

The strengths rely on industrial fabrics, on energy production for other industrial sectors, which provides a solid basis for industrial change, in terms of production tools and manpower

The weaknesses are the mirrors of strengths: an industrial fabric that is too pronounced, when it is weakened, shakes the whole territory.
Workers and companies may lack the flexibility to convert.

The opportunities lies in the fact that the renewable energy sector is at the centre of all attention, and that the local community is seeking to prepare itself to welcome them.

Attention to **the threats** at the end, when the change in the type of industry is not anticipated. either a vacuum is created or another industry replaces it but the dropout is probably in terms of qualifications.

The following table shows at a glance the major challenges facing our partners.

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	France	Reunion Island	Italy	Slovakia	Spain
STRENGTHS	An industrial area, of prime importance in France and even in Europe	Importance of renewable energies	High quality level of academic courses and high technical education and training (ITS) courses in the area	Salary in the energy sector	An imp. industrial area producing vehicles (FORD).
	Contactors and sub-contractors at the forefront of technology		Increasing job opportunities for technicians able to act incisively on environmental quality (positioned between engineering managers and specialized workers)	Opportunity of fast work promotion	Experienced RES companies.
				The need of the sector in all regions	Ambitious national RES & RUE plans
WEAKNESSES	Strong impact on local jobs	High consummation of transportation	Leadership of SMEs low skilled in valorising the know-how of students/young employees leaving the training courses (high job demand of more traditional profiles persists)	Lack of practical experts	Most RES or EE companies are SME.
	•when the two big contractors change their strategic orientation	ZNI (Reunion Island in not interconnected to the european network)		Lack of retraining centers	High energy dependency on imported fossil fuels (approx. 50% on final energy consumption).
	•or if an economic downturn happen		Lack of knowledge among enterprices on the high technical non-academic profiles	Insufficient number of students for the energy sector	
OPPORTUNITIES	Many qualified people	Many renewable energies are available on Reunion Island	Economic diversification which leads to applied green skills needs	Make the study of energy sector more attractive	Biomass market is not developed yet.
			Positive institutional environment towards energy efficiency and presence of funds for energy-efficiency in buildings and in industries (2030 climate and energy targets)		
	Many training centers and universities		Good business dynamics of green companies and high green jobs demand		Many training centers (vocational) and universities
THREATS	Different time scales between the know-how of the employees of the area and the needs of companies	Geography of Reunion Island	Economic system characterized by SMEs with lower propensity to energy efficiency investments especially due to low return of investment	Fast aging workforce	Global economy trade tensions.
		Reunion Island has protected landscapes	Slow down in economic growth		A lack of investor confidence because of past energy policy decisions

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CONCLUSION:

The project partner countries gave us a glimpse of their local situations.

The diversity of energy production methods reflects local industrial histories; and also the public organisation of these energy production and distribution routes.

First organized within each nation state, the production and consumption of electrical energy crosses borders; electrical energy could not be stored.

Then energy networks have been deployed through geographical logic and trade agreements; and are developing in the same way as the single market of the European Union.

This movement will only be amplified, as the European Union supports the cooperation of its members, as a new territorial organisation of energy production and consumption and as the new expectations of a low-carbon energy. The Commission has also set a specific target: by 2020, each Member State must be able to transport 10% of the electricity it produces to a neighbouring country. An interconnection percentage that will reach 15% in a second phase, by 2030[3].

The task of accompanying these changes is immense.

The MIFE and its eleven partners are joining forces to work together to support these changes on the subject of jobs and skills.

Next step : **TASK 2 – STATE OF THE ART PRESENTING THE STAKES IN THE PARTNER COUNTRIES IN THE ENERGY FIELD OF ACTIVITY**

[3] Electricity interconnection: a tool for the European energy transition, publié le 11.10.2019 in Le Monde de l'Energie

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