

An overview of the partners' RAs

Interreg Europe RESINDUSTRY RESINDUSTRY „Policies for Renewable Energy Sources in industry”

In 3rd and 4th semesters (December 2020 to June 2021), the RESINDUSTRY partners collected the data necessary to complete the template of the RAs. The office of the Marshal of the Świętokrzyskie Voivodeship (MOSR), as the task lead partner, gathered and evaluated the RAs. The results of the work will be used in preparation of the Action Plan by every partner corresponding to their unique geographical, climatic and economic conditions.

By the end of January 2021, all the partners sent their RAs' first drafts to the Task Lead partner (MOSR). The drafts were then discussed online at Interregional Workshop 4 on 23rd February, 2021. The meeting, organised by the Office of the Marshal of the Świętokrzyskie Voivodeship, was attended by international representatives of the RESINDUSTRY project partners, which are the Czech University of Technology in Prague, the University Center for Energy Efficient Buildings, the LAB University of Applied Sciences in Finland, the Extremadura Energy Agency in Spain, the Regional Energy Agency in Tartu in Estonia, Vorarlberg University of Applied Sciences in Austria and the Ministry of Gozo in the Republic of Malta. The foreign partners were accompanied by their stakeholders during the workshop. Dr. Tomasz Fiszer, an expert of the Office of the Marshal of the Świętokrzyskie Voivodeship (MOSR), presented international partners with instructions and suggestions on collecting data on the potential of the regions when it comes to renewable energy.

Then, on 29th April, 2021, the skype meeting with dr Tomasz Fiszer followed when further improvements to the RAs were done. Next the partners completed 2nd drafts and after that, they sent their final versions to MOSR by the end of June 2021.

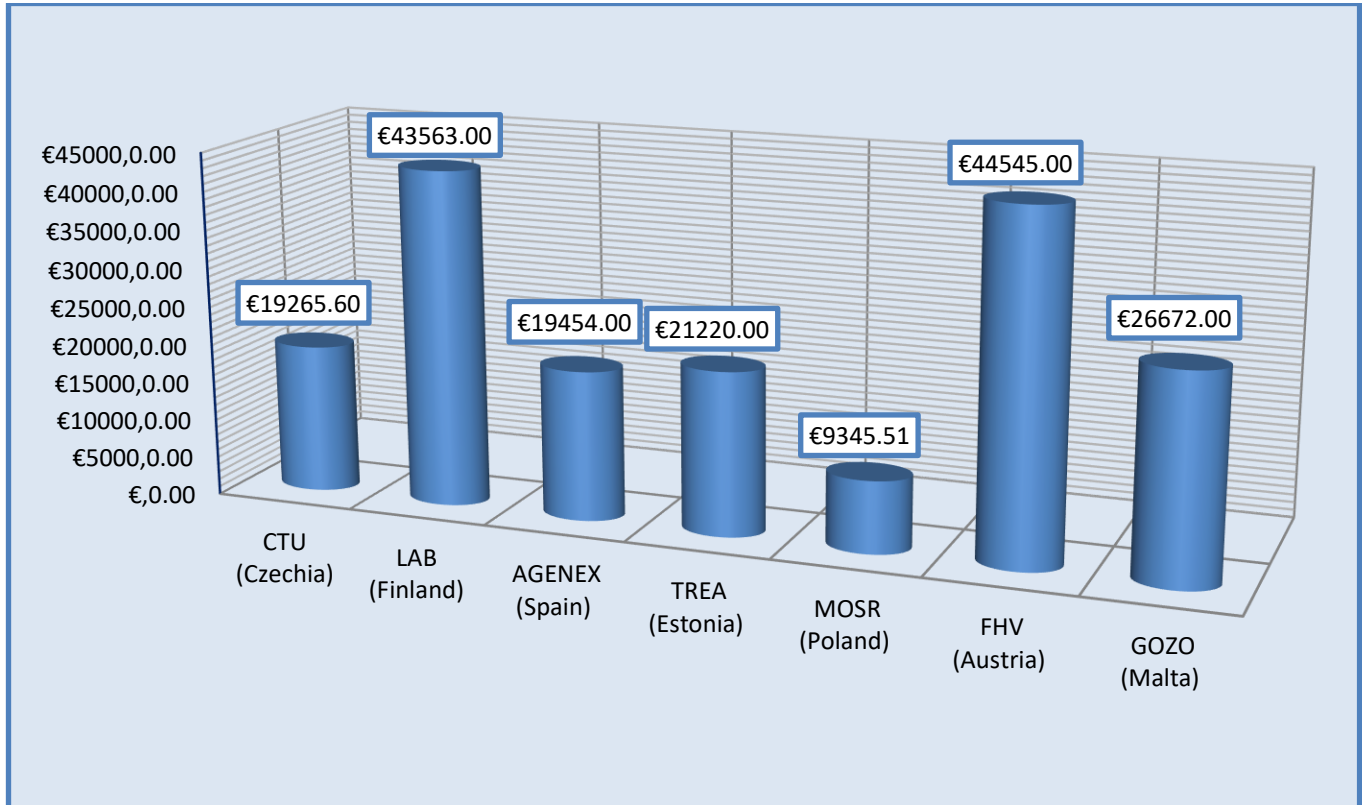
The final RAs include such information as general regional or national economic statistics, renewable energy share in electricity production, share of energy from renewable energy sources in relation to the total electric energy produced in the country, emission of CO₂ (t/year), a type and share of energy sources used in industry, type of renewable energy dominantly used in industry, installed capacity at individual sources in the region, including data source (MW), total installed capacity of renewable energy sources in the region and much more.

Information in these templates, such as, types and the share of energy sources used in industry, the planned reduction of emissions by 2030, the capacity of RES installations in industries significant to a given region, and many others, will allow to determine the profile of a given area and indicate opportunities and ways to support the development of renewable energy in industry and, most importantly, they will be crucial for every partner to create their specific Action Plans for their regions.

Partner region	Czech Technical University in Prague, University Centre for Energy Efficient Buildings (Czechia)	LAB University of Applied Sciences (Finland)	Extremadura Energy Agency – AGENEX (Spain)	Tartu Regional Energy Agency – TREA (Estonia)	Marshal Office of Świętokrzyskie Region – MOSR (Poland)	Vorarlberg University of Applied Sciences – FHV (Austria)	Ministry for Gozo – GOZO (Malta)
Gross Domestic Product per capita in EURO	(2019) 19,265.6	(2019) 43,563 €	(2019) 19,454 €	(2019) 21,220 €	(2019) 9,345.51 € (estimated)	(2019) 44,545 €	(2019) 26,672 €
Unemployment rate %	(2019) 2%	2019 5.9%	(2019) 22.5%	(2019) 4.4%	(2019) 7.9%	(2019) 7.4%	(2019) 3.47%
Renewable energy share in electricity production % (Regional level)	(2018) 13.71%	(2019) 43%	(2019) 22.14%	(2019) 22%	(2019) 21.1%	(2019) 83%	(2019) 8.2%
Emission of CO2 tonnes/year	(2018) 104.2 Mt/y (from burdensome plants)	(2019) 52.8 tonnes	(2018) 9,515,470 tonnes	(2018) 20,184 tonnes	(2019) 13,588,740 tonnes	(2019) 72,438,293	(2018) 2,190,450
Planned emission reduction by 2030 at the national level % (CO2)	55% when compared to 1990	55%	23% compared to 1990 (20% regional level)	70%	23% by 2030 as compared to 1990 levels	2%	19% of 2005 emission levels
Predominant industry sectors in the region	Non-metallic, food and beverages, steel and metals, chemical and pharmaceutical	Machinery and metal products, forestry (paper pulp and lumber) food chemicals	Food industry 40% energy 27% steel and metal 14% chemical 7%	wood and paper food	Metal casting industry resource-efficient construction sector agriculture and food processing industry health and medical sector	Metals and machinery – 63,5% electronics – 16,7% food and beverages – 12,3% textiles – 7,8%	Wholesale repair of household goods and other services, manufacturing industry real estate activities construction industry

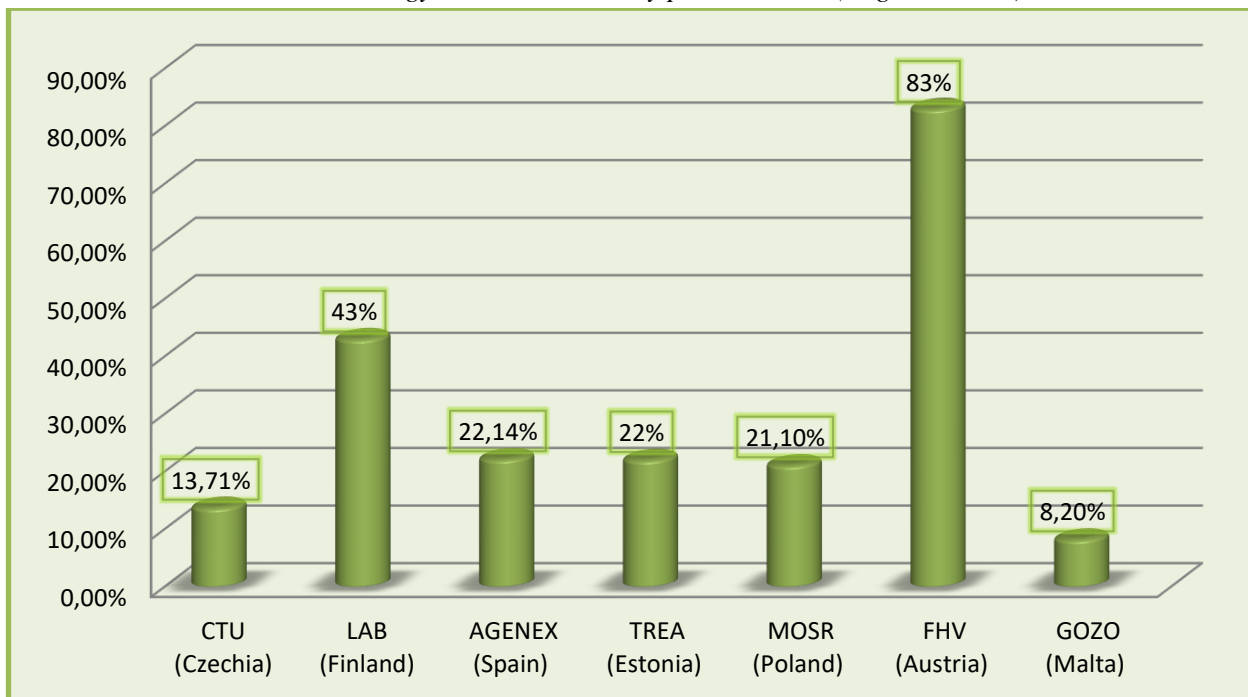
Type and share of energy sources used in industry	Coal 17 % natural gas 21.8 % Petroleum 28.1 % RES 15 %	coal 10 % natural gas 9 % petroleum 11.2 % RES 65 %	coal 3.8% natural gas 28.5% petroleum 8.4% RES 5.8% Electricity 57.2%	coal and peat 15% natural gas 17% Oil 21% Biofuels and waste 6% Electricity 33% Heat 6%	coal – 76.8 % (hard coal – 47.85%, brown coal – 29.0%) natural gas – 7.5 % RES – 12.7% energy from pumped water 0.2% other fuels 2.8%	coal 8% natural gas 10% petroleum 25% RES 30%	Natural Gas 2,435,666 MWh 91.05% RES 218,059 MWh 8.95%
RES types used in industry	solar energy environmental energy biomass biogas	solar energy geothermal energy environmental energy biomass biogas wind energy	solar energy biomass biogas	environmental energy biomass biogas	solar energy environmental energy biomass biogas wind energy	solar energy geothermal energy environmental energy biomass biogas wind energy hydropower	solar energy biogas wind energy
Total installed capacity of RES in the region	Biogas power plants – 6,76 TWh Biomass power plants – 37,8 TWh Solar power plants – 2,52 TWh Wind power plants – 0,7 TWh Hydroelectric power stations – 2 TWh	400 MW	4,450 MW	594 MW	268.1 MW	2,530 MW	158.25 MWe

Picture 1. Gross Domestic Product per capita in EURO (2019)



The chart shows how gross domestic product per capita differs by every region in 2019. The highest GDP per capita was in Vorarlberg, Austria (€44,545), while the lowest was in the Świętokrzyskie Voivodeship, Poland (€9,345.51). However the size, population and overall GDP were not taken into account which could influence the GDP analysis of the region.

Picture 2. Renewable energy share in electricity production % (Regional level)



Renewable energy share in overall electricity production was amazingly high in Vorarlberg, Austria, reaching 83% in 2019. The lowest rate was observed in GOZO, Malta, at 8.2%.

Table 2. Type and share of energy sources used in industry

Partner region	CTU (Czechia)	LAB (Finland)	AGENEX (Spain)	TREA (Estonia)	MOSR (Poland)	FHV (Austria)	GOZO (Malta)
RES types used in industry							
Coal	17 %	10 %	3.8%		76.8 %	8%	
Natural gas	21.8 %	9 %	28.5%	17%	7.5 %	10%	91.05%
Petroleum/oil	28.1 %	11.2 %	8.4%	21%		25%	
RES	15 %	65 %	5.8%		12.7%	30%	8.95%
Electricity			57.2%	33%			
coal and peat				15%			
Biofuels and waste				6%			
Heat				6%			
energy from pumped water					0.2%		
other fuels					2.8%		

Type and share of energy sources used in industry depends a great deal on the geography, climate and geology of a region. The table shows the difference in energy sources use in the partner regions. In some regions natural gas is a predominant energy source such as GOZO, Malta (91.05%) or in Extremadura, Spain, where it is also high, while other regions have got high share of petroleum such as Středočeský kraj, Czechia, at 28.1% or RES in Päijät-Häme, Finlandia, at 65%.

Table 3. RES types used in industry

Partner region	CTU (Czechia)	LAB (Finland)	AGENEX (Spain)	TREA (Estonia)	MOSR (Poland)	FHV (Austria)	GOZO (Malta)
Energy source							
solar energy							
geothermal energy							
environmental energy							
biomass							
biogas							
wind energy							
hydropower							

The most common RES type used in industry is solar power as shown by Table 3, which is present in almost every region. Other popular RES types are biomass and biogas. The only region that uses hydropower for energy production is Vorarlberg, Austria.

Energy data by industries – average RES investment rates

Table 4. Average RES investment rates

Partner region	CTU (Czechia)	LAB (Finland)	AGENEX (Spain)	TREA (Estonia)	MOSR (Poland)	FHV (Austria)	GOZO (Malta)
Sector							
FOOD AND BEVERAGES/FOOD investment cost	600 000 EUR	36 M€		N/A – Ministries and Estonian Statistics does not publish data, also confidential information			
annual energy savings	300 MWh	data unavailable		No records are kept in Estonia (300 GWh after 5 years in the preliminary estimate of the measure)			
reduction of energy costs	28 850 EUR/y	Companies prefer to keep their energy prices secret, industry specific data NA		Not evaluated in total (2-3% per company)			
reduction of co2 emissions	290 tons CO2 per year	data unavailable		Not taken into account			
simple cost reduction	2068 EUR/ton CO2	567 (From SYKE numbers calculating from period of 2005-2018)		data unavailable			

MACHINE AND METALLURGICAL/ STEEL AND METAL							
investment cost					1,708,503.09 EUR	40 mil EUR	
annual energy savings					2,100MWh	data unavailable	
reduction of energy costs					109,519.428 EUR	data unavailable	
reduction of co2 emissions					1,100 tonnes/Year	5%, exact numbers unavailable	
simple cost reduction					1,555.17 EUR/1 tonne CO ₂	data unavailable	
WHOLESALE AND RETAIL TRADE, REPAIR OF MOTOR VEHICLES							
							€400,000
							2,000 MWh/year
							600 MWh/year
							422 tonnes/year
							data unavailable