

# SPEEDIER

SME Program for Energy Efficiency through Delivery and  
Implementation of Energy Audits

## D7.3 - ACTION PLANS SHOWING HOW SPEEDIER CAN ASSIST IN ACHIEVING EU WIDE POLICY TARGETS

**Lead Contractor: IERC**

**Author(s):** Lorena Sánchez Relañó

**Date: 30<sup>th</sup> November 2021**

This document corresponds to D7.3 (M30) lead by International Energy Research Centre (IERC). This document contains action plans showing how SPEEDIER can assist in achieving EU wide policy targets.

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 847034.*

Project details			
<b>Project acronym</b>	SPEEDIER	<b>Start / Duration</b>	June 2019/ 30 Months
<b>Topic</b>	LC-SC3-EE-8-2018-2019 Capacity Building programmes to support implementation of energy audits	<b>Call identifier</b>	H2020-LC-SC3-EE-2018
<b>Type of Action</b>	CSA	<b>Coordinator</b>	Pádraig Lyons (IERC)
<b>Contact persons</b>	Pádraig Lyons <a href="mailto:padraig.lyons@ierc.ie">padraig.lyons@ierc.ie</a>		
<b>Website</b>	<a href="http://www.speedierproject.eu">www.speedierproject.eu</a>		

Deliverable details			
<b>Number</b>	D7.3		
<b>Title</b>	Action plans showing how SPEEDIER can assist in achieving EU wide policy targets.		
<b>Work Package</b>	7		
<b>Dissemination level</b>	Public	<b>Nature</b>	Report
<b>Due date (M)</b>	M30	<b>Submission date (M)</b>	30-Nov-2021

Deliverable Contributors		
<b>Deliverable leader</b>	<b>Name</b>	Lorena Sánchez Relaño
	<b>Organisation</b>	IERC
	<b>Role/Title</b>	Research Assistant
	<b>Email</b>	<a href="mailto:lorena.sanchez@ierc.ie">lorena.sanchez@ierc.ie</a>
<b>Contributing Author(s)</b>	<b>Name</b>	Carla Sebastiani Guía
	<b>Organisation</b>	SIE
	<b>Role/Title</b>	Business & Marketing Manager
	<b>Email</b>	<a href="mailto:carlasebastiani@sustainableinnovations.eu">carlasebastiani@sustainableinnovations.eu</a>
<b>Contributing Author(s)</b>	<b>Name</b>	Diana Romeu Marín
	<b>Organisation</b>	ITEC
	<b>Role/Title</b>	Engineer

	<b>Email</b>	<a href="mailto:dromeu@itec.cat">dromeu@itec.cat</a>
<b>Contributing Author(s)</b>	<b>Name</b>	Nicola de Giusti
	<b>Organisation</b>	Polimi
	<b>Role/Title</b>	Business Analyst
	<b>Email</b>	<a href="mailto:nicola.degiusti@polimi.it">nicola.degiusti@polimi.it</a>
<b>Reviewer(s)</b>	<b>Name</b>	Carla Sebastiani Guía
	<b>Organisation</b>	SIE
	<b>Role/Title</b>	Business & Marketing Manager
	<b>Email</b>	<a href="mailto:carlasebastiani@sustainableinnovations.eu">carlasebastiani@sustainableinnovations.eu</a>
<b>Reviewer(s)</b>	<b>Name</b>	Diana Romeu Marín
	<b>Organisation</b>	ITEC
	<b>Role/Title</b>	Engineer
	<b>Email</b>	<a href="mailto:dromeu@itec.cat">dromeu@itec.cat</a>
<b>Review and quality approval</b>	<b>Name</b>	Tom Flynn
	<b>Organisation</b>	TFC Research and Innovation Limited
	<b>Role/Title</b>	Innovation and Business Development Manager
	<b>Email</b>	<a href="mailto:t.flynn@tfcengage.com">t.flynn@tfcengage.com</a>
<b>Final review and submission</b>	<b>Name</b>	Pádraig Lyons (IERC)
	<b>Organisation</b>	IERC
	<b>Role/Title</b>	Primary project coordinator/Head of Group
	<b>Email</b>	<a href="mailto:padraig.lyons@ierc.ie">padraig.lyons@ierc.ie</a>

<b>Document History</b>			
<b>Date</b>	<b>Version</b>	<b>Name</b>	<b>Changes</b>
02/11/2021	0.1	Lorena Sánchez Relaño	First document version.
9/11/2021	0.2	Carla Sebastiani, Diana Romeu	Internal project review.
11/11/2021	0.3	Lorena Sánchez Relaño	Updates applied.
16/11/2021	0.4	Tom Flynn	Quality assurance review.
17/11/2021	0.5	Lorena Sánchez Relaño	Updates applied.
22/11/2021	0.6	Lorena Sánchez Relaño	Inclusion of Romania results.
30/11/2021	0.7	Lorena Sánchez Relaño	Minor text changes
30/11/2021	1.0	Padraig Lyons	Approval and ready for EC portal submission.



# TABLE OF CONTENTS

<b>TABLES LIST</b> .....	<b>6</b>
<b>FIGURES</b> .....	<b>7</b>
<b>ABBREVIATIONS</b> .....	<b>8</b>
<b>EXECUTIVE SUMMARY</b> .....	<b>9</b>
<b>1 INTRODUCTION</b> .....	<b>10</b>
<b>2 BARRIERS FACED BY SMES TO IMPLEMENT ENERGY EFFICIENCY MEASURES: LEARNINGS FROM WP2</b> .	<b>11</b>
<b>2.1 SMEs</b> .....	<b>11</b>
<b>2.2 Stakeholders</b> .....	<b>12</b>
<b>3 EU ENERGY &amp; CLIMATE POLICIES</b> .....	<b>14</b>
<b>3.1 The 2011 Energy Efficiency Action Plan</b> .....	<b>14</b>
<b>3.2 Europe's Energy Strategy</b> .....	<b>14</b>
3.2.1 Energy Union .....	14
3.2.2 Clean Energy for all Europeans package .....	15
3.2.3 National energy and climate plans (NECPs) .....	16
3.2.4 2050 long-term strategy.....	17
<b>3.3 European Green Deal</b> .....	<b>17</b>
3.3.1 Energy and the Green Deal .....	18
<b>4 ENERGY POLICY IN SPEEDIER PILOT SITES</b> .....	<b>19</b>
<b>4.1 Ireland</b> .....	<b>19</b>
4.1.1 The Alternative Energy Requirement (AER) scheme .....	20
4.1.2 REFIT 1, 2 and 3 Renewable Electricity Support schemes .....	20
4.1.3 New Renewable Electricity Support Scheme (RESS) .....	20
4.1.4 Corporate Power Purchase Agreements .....	21
4.1.5 Better Energy Communities (BEC) Scheme .....	21
4.1.6 Microgeneration Scheme .....	22
4.1.7 Support Scheme for Renewable Heat (SSRH) .....	22
4.1.8 Energy market integration policies in Ireland NECP.....	22
4.1.9 Policies and measures to achieve low emission mobility in Ireland NECP for SMEs .....	22
<b>4.2 Spain</b> .....	<b>23</b>
4.2.1 Development of new facilities for generating electricity using renewables .....	24
4.2.2 Incorporation of renewables in the industrial sector.....	25





4.2.3	Development of own consumption using renewables and distributed generation.....	25
4.2.4	Local energy communities.....	26
4.2.5	Promoting the proactive role of citizens in decarbonisation .....	26
<b>4.3</b>	<b>Italy .....</b>	<b>27</b>
4.3.1	Piano Nazionale Integrato per l'Energia e il Clima (PNIEC) .....	27
4.3.2	Long-Term Strategy .....	27
4.3.3	Piano nazionale di ripresa e resilienza (PNRR) .....	28
4.3.4	National Hydrogen Strategy .....	29
4.3.5	FER 1.....	30
4.3.6	Energy plants for individual and collective self-consumption: regulatory and economic measures in Italy NECP	31
4.3.7	Energy communities in Italy NECP.....	31
4.3.8	ECOBONUS .....	31
<b>4.4</b>	<b>Romania.....</b>	<b>32</b>
4.4.1	Increase in the RES-E in the residential sector and fostering prosumers' development .....	34
4.4.2	Policies and measures to promote the use of renewable energy in heating and cooling (RES-H&C).....	35
<b>5</b>	<b>ENERGY SUPPLY ASSESSMENT OF SMES PARTICIPATING IN SPEEDIER .....</b>	<b>37</b>
<b>5.1</b>	<b>Ireland.....</b>	<b>37</b>
5.1.1	Energy mix structure .....	37
5.1.2	SMEs energy supply.....	40
<b>5.2</b>	<b>Spain .....</b>	<b>42</b>
5.2.1	Energy mix structure .....	42
5.2.2	SMEs energy supply.....	44
<b>5.3</b>	<b>Italy .....</b>	<b>46</b>
5.3.1	Energy mix structure .....	46
5.3.2	SMEs energy supply.....	48
<b>5.4</b>	<b>Romania.....</b>	<b>50</b>
5.4.1	Energy mix structure .....	50
5.4.2	SMEs Energy Supply .....	51
<b>6</b>	<b>ACTION PLAN TO ENABLE THE ADOPTION OF SPEEDIER IN OTHER EU COUNTRIES .....</b>	<b>53</b>
<b>6.1</b>	<b>EU Level .....</b>	<b>53</b>
<b>6.2</b>	<b>Regional Level .....</b>	<b>54</b>
	<b>BIBLIOGRAPHY.....</b>	<b>58</b>
	<b>ANNEX 1: POLICY TEMPLATE.....</b>	<b>59</b>
	<b>ANNEX 2: SURVEY QUESTIONS.....</b>	<b>60</b>
	<b>ANNEX 3: SURVEY RESPONSES TEMPLATE .....</b>	<b>61</b>



## Tables list

Table 1: Summary of SME survey results (modified from SPEEDIER's D2.3) .....	<b>Error!</b> <b>Bookmark not defined.</b>
Table 2: Summary of energy expert survey results (modified from SPEEDIER's D2.3).....	13
Table 3: Italy GHG emissions reduction targets .....	27
Table 4: Romania NECP objectives by 2030.....	33





## Figures

Fig. 1: Total final consumption by fuel in Ireland (2005-2019) .....	38
Fig. 2: Share of electricity generated in Ireland by source type (2019) .....	39
Fig. 3: Share of heat generated in Ireland by source type (2019) .....	39
Fig. 4: Share of final consumption in transport in Ireland by fuel (2019) .....	40
Fig. 5: Summary of Ireland SMEs responses to the survey (Part 1) .....	41
Fig. 6: Summary of Ireland SMEs responses to the survey (Part 2) .....	41
Fig. 7: Summary of Ireland SMEs responses to the survey (Part 3) .....	42
Fig. 8: Total final consumption by fuel in Spain (1990-2018) .....	43
Fig. 9: Share of electricity generated in Spain by source type in percentages and GWh (2019) .....	44
Fig.10: Summary of Spain SMEs responses to the survey (Part 1) .....	44
Fig.11: Summary of Spain SMEs responses to the survey (Part 2) .....	45
Fig.12: Summary of Spain SMEs responses to the survey (Part 3) .....	45
Fig.13: Total final consumption by source in Italy (2019).....	46
Fig.14: Share of electricity generated in Italy by source type (2005-2020).....	47
Fig.15: Share of heat generated in Italy by source type (2020) .....	47
Fig.16: Summary of Italy SMEs responses to the survey (Part 1).....	48
Fig.17: Summary of Italy SMEs responses to the survey (Part 2).....	49
Fig.18: Summary of Italy SMEs responses to the survey (Part 3).....	49
Fig.19: Total final consumption by source in Romania (2019) .....	50
Fig.20: Summary of Romania SMEs responses to the survey (Part 1) .....	51
Fig.21: Summary of Romania SMEs responses to the survey (Part 2) .....	52
Fig.22: Summary of Romania SMEs responses to the survey (Part 3) .....	52



## Abbreviations

CEP:	Clean Energy for all Europeans' Package
EC:	European Commission
EED:	Energy Efficiency Directive
ECM:	Energy Conservation Measure
MS:	Member States
NEEAP:	National Energy Efficiency Action Plans
NECP:	National Energy and Climate Plans
RES:	Renewable Energy Sources
SME:	Small and Medium sized Enterprise
UNFCCC:	United Nation Framework Convention on Climate Change
WP2:	Work Package 2







## Executive Summary

SPEEDIER is a highly innovative one-stop-shop solution that applies an integrated approach to SMEs energy management, providing information, advice, capacity building, energy auditing, financing, implementation of energy efficiency solutions and monitoring of impacts.

The system is being developed and tested in SMEs in four pilot countries: Ireland, Italy, Romania and Spain. After the end of the year 2021, it will enter its next development stage, further expanding in the pilot countries and developing activities in new EU countries.

Having been developed to ease the energy auditing and management process for EU SMEs and to promote Energy Conservation Measures implementation by companies, SPEEDIER system aims to support the EU in achieving its energy efficiency and energy consumption objectives.

Therefore, it is important to know in detail what are the ongoing energy and climate policies, not only in the EU, but also in each of the pilot sites participating in SPEEDIER. As a result, this document includes a general overview of the most significant legislation regarding current energy and climate measures in the EU. Furthermore, a review of the most relevant policies of each pilot country has been also performed. However, with the purpose of avoiding redundancy on the content of other deliverables and expanding the scope of SPEEDIER once zero-cost and basic energy saving measures have been implemented, this review has been focused on other decarbonisation measures than energy efficiency.

More specifically, the analysis of the regional policies covers the main decarbonisation measures collected in the NECPs and other schemes that SMEs from these Member States could adopt. In this manner, among these measures the possibility as SME of generating their own energy has been considered, either for self-consumption or to sell it to the grid (if the legislation allows it), the option of creating energy communities with other businesses or buildings, as well as other mechanisms to decarbonise their use of heating or transport if needed.

Nevertheless, energy efficiency has been also tackled in a general way, throughout this policy analysis and more deeply in the first section of the deliverable, where learnings concerning barriers for SMEs to implement ECMs have been drawn from WP2. This first section will be vital in order to develop the subsequent action plan.

In order to assess the energy supply of SMEs participating in SPEEDIER and their awareness with regard to the aforementioned policies and the financial mechanisms offered by the regional and local governments, a survey has been carried out, preceded by a summary of the energy mix structure and generation data of each pilot country. Previous literature has already put the spotlight on the arduousness to process financial schemes to implement renewable energies and other GHG reduction measures in other jurisdictions, along with the complexity of finding this information for business owners. For this reason, these questions have been addressed in the survey together with other reported barriers.

To conclude, recommendations for policy makers have been proposed at EU and regional level as an action plan, based on the findings from the surveys and the policy literature review.



# 1 Introduction

SPEEDIER delivers a self-financing outsourced energy management service enabling SMEs to implement energy conservation measures (ECMs) and obtain access to the energy services market. The service is available via energy consultants, auditors and experts and facilitates the uptake of energy audits, and the subsequent implementation of energy efficiency measures in SMEs. The service also streamlines for SMEs the process of identifying and implementing ECMs by outsourcing time-consuming energy management activities that can instead be outsourced to a SPEEDIER energy expert.

The SPEEDIER Service aims to create a new dynamic through the EU, increasing energy auditing in SMEs and improving their energy efficiency across all sectors.

In 2012, the EU established a set of binding measures to reach a headline 20% energy efficiency target by 2020 [1]. The 2018 amending directive sets new targets of 32.5% energy efficiency for 2030 with the possibility to revise them upward in 2023 [2].

The energy efficiency support service developed during the SPEEDIER project, aims to support the reduction of energy consumption and increase the implementation of energy efficiency measures. The service is being developed and tested in SMEs in four pilot countries: Ireland, Italy, Romania and Spain. Beyond 2021, it is envisaged that SPEEDIER will enter its next development stage, further expanding in the pilot countries and developing activities in new EU countries. Its application at EU level after the end of the project will help SMEs to reduce their energy consumption permanently by deploying ECMs at a larger scale.

The aim of this deliverable is to elaborate some recommendations from the policy makers point of view at EU and regional level, with the objective of expanding the scope of SPEEDIER and to support its replication in other EU member states.

A summary of the learnings from WP2 where a survey was carried out to understand the barriers faced by SMEs in implementing Energy Conservation Measures (ECMs). To support the development of these recommendations, a review of the main ongoing energy and climate policies across the European Union, as well as in the pilot sites regions has been carried out and is presented in section 4. Part of this review has already been completed in other deliverables of WP2 and WP7 of SPEEDIER and is presented in section 3. However, many of these policies were more focused on energy efficiency and energy saving measures. In contrast, in this occasion, additional policies related to renewable energies and other decarbonisation measures that SMEs could implement will be tackled.

In section 5, an assessment of the energy supply of SMEs that participated in SPEEDIER, complementary literature and a survey that covered not only the implementation of the aforementioned measures, but also the SMEs awareness with regard to the policies that address these mechanisms along with their financial schemes.



## 2 Barriers faced by SMEs to implement energy efficiency measures: learnings from WP2

In WP2, two online surveys were conducted in each pilot country, one for SMEs and another for other stakeholders, with the objective of better understanding the market, as well as drivers and barriers identified during the survey analysis. D2.3 “*Report on findings from surveys of businesses participating in SPEEDIER*” presents the results and analysis of these online survey responses [1].

### 2.1 SMEs

The results from this study indicated that there are many similarities between the pilot regions, most of the surveyed SMEs do not have a dedicated Energy Manager, an energy policy, they haven't set any targets for energy efficiency, and have not had an energy audit in the last 5 years. There is a general lack of support from local and national governments for energy experts to deliver energy audits or other energy efficiency support services, indicating that these support schemes either do not exist, are ineffective, or are not widely known.

The survey found that the most common ECM that SMEs have implemented was upgrading to LED lights. This was due to the ease of implementation of these systems with little disruption to the business. Other ECMs were found to be much less common among SMEs. This could be due to lack of knowledge on what to implement or how to procure these technologies, lack of finance, and the low priority of energy within the business.

Additionally, it was found that very few SMEs had undertaken any staff awareness program in relation to energy efficiency. Due to this, a need has been identified in all pilot regions: the SMEs require guidance through the implementation of more complex ECMs, due to their lack of knowledge on which measures they should implement and how to do it.

There were differences across the pilot regions as well, enough to conclude that the SPEEDIER Service should be tailored to meet the specific needs of each market. Table 1 depicts the main challenges each of the regions are currently facing.



Table 1: Summary of SME survey results (modified from SPEEDIER's D2.3)

Region	Main challenges	Opinion on outsourcing	Dedicated funds for investing in EE	Government support or investment for EE
Ireland	45% – Do not know which ECMs to implement 35% – Lack of time	35% YES – free 35% NO 25% YES – paid	55% – NO 20% – Own fund	55% – NO 20% – Don't know
Italy	61.1% – Lack of finance 33.3% – Lack of time	50% YES – free 20% YES – paid 20% NO	55% – NO 35% – Own fund	50% – NO 45% – Don't know
Spain	38.9% – Lack of finance 33.3% – No control of building	43% NO 19% YES – paid 19% YES – free	71% – NO 24% – Own fund	71% – NO 19% – Don't know
Romania	60.9 % – Lack of finance 34.8% –No control of building	74% YES – paid 22% YES – paid 4% NO	52% – NO 44% – Don't know	96% – Don't know 4% – No answer

Spain was the only country, among the pilot site jurisdictions, where a majority of respondents had a negative opinion on outsourcing EE services, while the other countries all leaned towards “YES,” but then the answers were divided into “YES – free” and “YES – paid.”

More than 52% of the respondents in all regions stated that they didn't have dedicated funds in their business for energy efficiency (EE) investment. When asked about government support for EE investment, more than 50% of the respondents in Ireland, Italy, and Spain said that their businesses have not received any support to implement ECMs, and for Romania, 96% of the respondents stated that they did not know if their business has or has not received any support.

## 2.2 Stakeholders

Among the stakeholders considered were energy experts (i.e, energy auditing, energy management and energy consultancy), technology installers, landlords, finance providers. From the responses received, most respondents consider themselves as “energy experts.”

In Table 2, the survey results for stakeholders from all the pilot sites have been summarised. Therefore, it shows data such as their main business activity, their years of experience in the business or their percentage of turnover from energy audits. However, the information most relevant to highlight are the results corresponding to their perception of barriers. In this regard, all the countries agree that the main barriers to undertake energy audits and other energy conservation measures are the lack of finance together with the lack of time or priority.



Nevertheless, the Romania stakeholders considered that lack of knowledge is the second most important barrier too.

On the other hand, through the focus groups carried out in each of the pilot regions in D2.4 of SPEEDIER, the report was able to provide a deeper insight into the behaviour and opinions of SMEs and energy experts on energy auditing and the challenges of implementing ECMs in SMEs [2]. The key learning points can be found in Table 4 of the aforementioned deliverable.

Table 2: Summary of energy expert survey results (modified from SPEEDIER's D2.3)

Region	Main Business Activity	Business Experience	Turnover from energy audits	Perception of barriers
Ireland	82% Energy experts 11% Provision/installation of EE technology	30% 11-15 years 29% 6-10 years 26% 0-5 years 15% more than 15 years	56% of SMEs >10-25%	1 <sup>st</sup> Lack of finance 2 <sup>nd</sup> Lack of time
Italy	50% Energy experts 30% ESCO	40% 0-5 years 20% 6-10 years 15% 11-15 years 15% more than 15 years	55% of SMEs >10-25%	1 <sup>st</sup> Lack of finance 2 <sup>nd</sup> Lack of time/Low priority
Spain	64% Energy experts 25% Others	59% more than 15 years 25% 11-15 years	38% of SMEs >10-25%	1 <sup>st</sup> Low priority 2 <sup>nd</sup> Lack of finance
Romania	55% Energy experts 15% Landlord	40% 6-10 years 25% 11-15 years	25% of SMEs >10-25%	1 <sup>st</sup> Lack of finance 2 <sup>nd</sup> Lack of knowledge



## 3 EU Energy & Climate Policies

Since 2000, the European Commission has published several Energy Efficiency Action Plans laying out its strategic vision and proposing actions such as new policies or strengthened existing measures. The following sections present the main elements of the Commission Energy Efficiency Action Plans in 2000, 2006 and 2011, and the Energy Union in 2015.

### 3.1 The 2011 Energy Efficiency Action Plan

In 2011, the European Commission presented the roadmap for moving to a competitive low carbon economy in 2050 introducing new far-reaching targets to promote energy security, energy equity, and environmental sustainability: a cut in GHG emissions of 40% by 2030, 60% by 2040 and 80-95% by 2050 compared to 1990 levels. At the same time the Commission adopted a new Energy Efficiency Action Plan [3].

Given the large energy saving potential of building renovations, the Plan stressed the need of more energy renovations in private and public sectors and introduced energy efficiency criteria for public buildings. In particular, the Plan proposed the requirement to renovate at least 3% of central government buildings every year. At that stage, the potential energy savings in residential buildings had been largely unexploited. EU MSs were thus encouraged to set up tools, instruments, and measures to stimulate more energy performance upgrades of buildings in the private sector. Some measures introduced by the Plan were directed towards addressing the issue of 'split incentives', promoting the use of cogeneration combining electricity generation and district heating systems (wherever possible) and facilitating the use of tools such as energy performance contracting, energy audits, and ESCOs.

In 2014, the EU adopted energy and climate targets for 2030 as part of the Intended Nationally Determined Contributions (INDC) to UNFCCC process leading to the Paris agreement. These were defined as: a 40% reduction in GHG emissions compared to 1990 levels, a minimum 27% share of renewable energy consumption, and at least 27% energy savings. In 2018, following the discussions on setting the legal basis for the targets, the renewable and energy efficiency targets were modified to 32% and 32.5%, respectively [4].

### 3.2 Europe's Energy Strategy

#### 3.2.1 Energy Union

The energy union strategy (COM/2015/080), published on 25 February 2015, as a key priority of the Juncker Commission (2014-2019), aims at building an energy union that gives EU consumers - households and businesses - secure, sustainable, competitive and affordable energy.

Since its launch in 2015, the European Commission has published several packages of measures and regular progress reports, which monitor the implementation of this key priority, to ensure that the energy union strategy is achieved.

The 2020 state of the energy union report was published on 14 October 2020. The report looks at the energy union's contribution to EU's long-term climate goals and takes stock of the progress made in the five energy union dimensions. It also highlights how the NextGenerationEU recovery plan can support EU countries, through a number of EU funding programs.





The Regulation on the governance of the energy union and climate action (EU)2018/1999 entered into force on 24 December 2018 as part of the Clean energy for all Europeans package. The regulation emphasizes the importance of meeting the EU's 2030 energy and climate targets and sets out how EU countries and the Commission should work together, and how individual countries should cooperate, to achieve the energy union's goals. It considers the fact that different countries can contribute to the energy union in different ways [5].

The goals of the regulation are:

- To implement strategies and measures which ensure that the objectives of the energy union, in particular the EU's 2030 energy and climate targets, and the long-term EU greenhouse gas emissions commitments are consistent with the Paris agreement.
- To stimulate cooperation between Member States to achieve the objectives and targets of the energy union.
- To promote long-term certainty and predictability for investors across the EU and foster jobs, growth, and social cohesion.
- To reduce administrative burdens, in line with the principle of better regulation. This was done by integrating and streamlining most of the current energy and climate planning and reporting requirements of EU countries, as well as the Commission's monitoring obligations.
- To ensure consistent reporting by the EU and its Member States under the UN Framework Convention on Climate Change and the Paris agreement, replacing the existing monitoring and reporting system from 2021 onwards.

The governance mechanism is based on integrated National Energy and Climate Plans (NECPs) covering ten-year periods starting from 2021 to 2030, EU and national long-term strategies, as well as integrated reporting, monitoring and data publication.

The transparency of the governance mechanism is ensured by consulting wide public on the NECPs.

### 3.2.2 Clean Energy for all Europeans package

In 2019, the EU overhauled its energy policy framework to help us move away from fossil fuels towards cleaner energy - and, more specifically, to deliver on the EU's Paris Agreement commitments for reducing greenhouse gas emissions.

The agreement on this new energy rulebook – called the Clean energy for all Europeans package – marked a significant step towards implementing the energy union strategy, published in 2015.

Based on the European Commission proposals published in 2016, the package consists of 8 new laws. Following political agreement by the EU Council and the European Parliament (finalized in May 2019) and the entry into force of the different EU rules, EU countries have 1-2 years to convert the new directives into national law.

The new rules will bring considerable benefits for consumers, the environment, and for the economy. By coordinating these changes at EU level, the legislation also underlines EU leadership in tackling global warming and makes an important contribution to the EU's long-term strategy of achieving carbon neutrality (net-zero emissions) by 2050 [6].



### 1. Energy performance in buildings

Buildings are responsible for around 40% of energy consumption and 36% of CO<sub>2</sub> emissions in the EU, making them the single largest energy consumer in Europe.

By making buildings more energy efficient, the EU can more readily achieve its energy and climate goals. The Energy Performance of Buildings Directive (EU 2018/844) outlines specific measures for the building sector to tackle challenges, updating and amending many previous rules (Directive 2010/31/EU).

### 2. Renewable energy

To show global leadership on renewables, the EU has set an ambitious, binding target of 32% for renewable energy sources in the EU's energy mix by 2030.

The revised Renewable Energy Directive (2018/2001/EU), which contains this commitment, entered into force in December 2018.

### 3. Energy Efficiency

Putting energy efficiency first is a key objective in the package, as energy savings are the easiest way of reducing greenhouse emissions, while also saving consumers money. The EU has therefore set binding targets of increasing energy efficiency over current levels by at least 32.5% by 2030.

The Directive on Energy Efficiency (EU) 2018/2002, in place since December 2018, sets out this target.

### 4. Governance Regulation

The package includes a robust governance system for the energy union, the EU's plan to fundamentally transform Europe's energy system.

Under this strategy, each EU country is required to establish integrated 10-year national energy and climate plans (NECPs) for 2021-30. The NECPs outline how EU countries will achieve their respective targets on all 5 dimensions of the energy union, including a longer-term view towards 2050.

The relevant act – the Regulation on the Governance of the Energy Union and Climate Action (EU) 2018/1999 – has been in force since December 2018.

### 5. Electricity Market Design

A further part of the package seeks to establish a modern design for Europe's electricity market, adapted to new commercial realities – more flexible, more market-based and better placed to integrate a greater share of renewables.

The electricity market design elements have 4 strands - 2 new laws on electricity, 1 on risk preparedness and 1 outlining a stronger role for the Agency for the Cooperation of Energy Regulators (ACER).

## 3.2.3 National energy and climate plans (NECPs)

To meet the EU's energy and climate targets for 2030, EU countries need to establish a 10-year integrated national energy and climate plan (NECP) for the period from 2021 to 2030.





Introduced under the Regulation on the governance of the energy union and climate action (EU/2018/1999), the rules required the final NECP to be submitted to the Commission by the end of 2019 [7].

The national plans outline how the EU countries intend to address:

- Energy efficiency
- Renewables
- Greenhouse gas emissions reductions
- Interconnections
- Research and innovation

This approach requires a coordination of purpose across all government departments. It also provides a level of planning that will ease public and private investment. The fact that all EU countries are using a similar template means that they can work together to make efficiency gains across borders.

### 3.2.4 2050 long-term strategy

The EU aims to be climate-neutral by 2050 – an economy with net-zero greenhouse gas emissions. This objective is at the heart of the European Green Deal and in line with the EU's commitment to global climate action under the Paris Agreement.

The transition to a climate-neutral society is both an urgent challenge and an opportunity to build a better future for all. All parts of society and economic sectors will play a role – from the power sector to industry, mobility, buildings, agriculture, and forestry.

The EU can lead the way by investing into realistic technological solutions, empowering citizens, and aligning action in key areas such as industrial policy, finance and research, while ensuring social fairness for a just transition.

All Parties to the Paris Agreement are invited to communicate, by 2020, their mid-century, long-term low greenhouse gas emission development strategies. The European Parliament endorsed the net-zero greenhouse gas emissions objective in its resolution on climate change in March 2019 and resolution on the European Green Deal in January 2020.

The European Council endorsed in December 2019 the objective of making the EU climate-neutral by 2050, in line with the Paris Agreement. The EU submitted its long-term strategy to the United Nations Framework Convention on Climate Change (UNFCCC) in March 2020 [8].

## 3.3 European Green Deal

As part of the European Green Deal, the European Commission proposed in September 2020 to raise the 2030 greenhouse gas emission reduction target, including emissions and removals, to at least 55% compared to 1990.

It looked at the actions required across all sectors, including increased energy efficiency and renewable energy, and started the process of making detailed legislative proposals by July 2021 to implement and achieve the increased ambition.

This will enable the EU to move towards a climate-neutral economy and implement its commitments under the Paris Agreement by updating its Nationally Determined Contribution.



### 3.3.1 Energy and the Green Deal

The production and use of energy account for more than 75% of the EU's greenhouse gas emissions. Decarbonizing the EU's energy system is therefore critical to reach our 2030 climate objectives and the EU's long-term strategy of achieving carbon neutrality by 2050.

The European Green Deal focuses on 3 key principles for the clean energy transition, which will help reduce greenhouse gas emissions and enhance the quality of life of our citizens:

- Ensuring a secure and affordable EU energy supply,
- Developing a fully integrated, interconnected, and digitalized EU energy market,
- Prioritizing energy efficiency, improving the energy performance of our buildings, and developing a power sector based largely on renewable sources,

As part of the European Green Deal, the European Commission proposed in September 2020 to raise the 2030 greenhouse gas emission reduction target, including emissions and removals, to at least 55% compared to 1990.

It looked at the actions required across all sectors, including increased energy efficiency and renewable energy, and started the process of making detailed legislative proposals by July 2021 to implement and achieve the increased ambition. This will enable the EU to move towards a climate-neutral economy and implement its commitments under the Paris Agreement by updating its Nationally Determined Contribution [9].

Key targets for 2030:

- At least 40% cuts in greenhouse gas emissions (from 1990 levels),
- At least 32% share for renewable energy,
- At least 32.5% improvement in energy efficiency.

The 40% greenhouse gas target is implemented by the EU Emissions Trading System, the Effort Sharing Regulation with Member States' emissions reduction targets and the Land use, land use change and forestry Regulation. In this way, all sectors will contribute to the achievement of the 40% target by both reducing emissions and increasing removals.

All three pieces of climate legislation will now be updated with a view to implement the proposed at least 55% net greenhouse gas emissions reduction target.



## 4 Energy policy in SPEEDIER pilot sites

Energy policies related to energy efficiency and energy conservation measures from the different pilot site countries have already been addressed in Deliverables 2.1 and 7.2 of SPEEDIER. However, in order to ensure the continuity of SPEEDIER once the project is finished and to expand its scope, it is important to investigate other alternatives after implementing zero cost and basic energy saving measures.

To this effect, and to elaborate a helpful action plan, a review of the most relevant policies concerning SMEs in SPEEDIER pilot sites countries is presented in this section. These policies will have the purpose of addressing the other EU dimensions when establishing their energy and climate objectives apart from energy efficiency, which focus mainly on the fostering of renewable energies and the reduction of GHG emissions.

The template used to systematically evaluate each policy can be found in Annex 1.

### 4.1 Ireland

Ireland is an energy importing economy, which relies largely on gas and oil imports to meet its energy needs. Nonetheless, to fight the effects of climate change, it is necessary not only to reduce this reliance on fossil fuels in all sectors of society and decrease carbon emissions. Thus, one of the main goals for the government is to enable Ireland, within EU and global frameworks, to achieve a transition to a low-carbon, climate-resilient and environmentally sustainable economy.

Therefore, by 2030, the government aims to meet the following targets [3] [4]:

- 80% renewable electricity.
- 30% reduction in CO<sub>2</sub> emissions.
- 32.5% Improvement in energy efficiency.

This involves achieving a balance between developing low-carbon and renewable energy sources, while ensuring a safe, secure and reliable supply of electricity, and what is more, maintaining a competitive and well-regulated energy market.

In this transition, the increase of energy efficiency also plays a fundamental role. For this reason, the government has put measures and supports in place to allow individuals, communities, businesses and the public sector to be part of this challenge, helping in this way energy to be more affordable, while mitigating energy poverty too.

To this effect, the Irish final NECP was published in June 2020 [4]. It outlines Ireland's energy and climate policies in detail for the period from 2021-2030 and looks onwards to 2050. It was prepared in accordance with Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action to incorporate all planned policies and measures that were identified up to the end of 2019.

Hence, all the policies presented in Ireland's NECP that relate to SMEs are transposed from EU legislation and targets that have been summarised below. Ireland is currently developing those policies and measures and intends to integrate the revision of the NECP into the process which will be required to support the EU's obligations under the Paris Agreement [10].



#### 4.1.1 The Alternative Energy Requirement (AER) scheme

The AER scheme, which is closed, was launched by Ireland's Department of Transport, Energy and Communications in 1996. It was the first step towards a market support for wind energy as part of the Department's programme to promote generation of electricity from renewable resources. The programme involved the tendering for contracts of certain fixed amounts of capacity by potential renewable energy generators and will remain in place until the end of 2021.

#### 4.1.2 REFIT 1, 2 and 3 Renewable Electricity Support schemes

- REFIT 1. This scheme was open for applications until the end of 2009 and provides a support for a period of 15 years. The technologies covered in REFIT 1 are small wind (< 5MW), large wind (>5MW), hydroelectricity and biomass/landfill gas. Due to delays in grid rollout for REFIT 1 projects, and with State Aid approval in August 2013, the backstop date for REFIT 1 was extended by two years to 2027.
- REFIT 2. This scheme succeeded REFIT 1 and closed to new applications in 2015. It came into operation in March 2012 and provides for up to 4,000MW of renewable generation, covering small wind (< 5MW), large wind (>5MW), hydroelectricity and biomass/landfill gas. The backstop date for REFIT 2 is 2032.
- REFIT 3. This scheme is closed to new applications since 2015. It aims to support the addition of 310MW of biomass technologies including anaerobic digestion (AD) and combined heat and power (CHP). The heat generated in a CHP plant can be used for many purposes including district heating and displacing industrial heat demand. The backstop date for REFIT 3 is 2030.

#### 4.1.3 New Renewable Electricity Support Scheme (RESS)

The new Renewable Electricity Support Scheme (RESS) is being developed under the guidance of the Climate Action Plan and supports the target of 80% of electricity from renewable sources by 2030 and is envisaged to support up to an additional 4.5 GW of renewable generation by that year.

The RESS has been designed within a competitive auction-based, cost effective framework to support the connection of larger renewable generators. The qualification process of the first RESS auction began at the end of 2019. As a result, the terms and conditions were published in February 2020 and the target date for the auction bidding process was June 2020. This RESS I auction is expected to procure between 1,000 and 3,000 GWh with the final auction quantity determined by competition analysis of the Commission for Regulation of Utilities (CRU).

There is a target for six RESS auctions until 2030. These auctions are expected to support the connection of renewable generation that could potentially provide 13,000 GWh of renewable electricity.

In addition to the support for larger renewable generation, Ireland's objective is to support up to 10% **community renewable electricity** projects by 2030. To this effect, and with the purpose of facilitating diversity of renewable technologies and citizen investment, the following levers will be applied in the RESS auctions, subject to EU state aid approval:



- Preference for Community Projects in RESS auctions.
- A mandatory Community Benefit Fund (CBF) must be provided by all projects successful in a RESS auction. The contribution is to be set at €2/MWh. The CBF will be aligned to incentivise investment in local renewable energy, energy efficiency measures and climate action initiatives.
- Irish citizens or communities will have access to investment opportunities in renewable energy projects, prioritising those citizens that live in closer proximity to the projects
- There will be a Community Framework to encourage the development of a meaningful community electricity generation sector. Measures included within this framework will consist of:
  - Financial supports including grants and soft loans
  - A trusted intermediary network to/ work with communities through the various stages of projects
  - A trusted advisor network to be available to them to give them specialist advice such as legal and financial.
  - A trusted information source for a variety of “how-to” information guides.
  - A central point of contact organisation to co-ordinate all of these enabling services.

#### 4.1.4 Corporate Power Purchase Agreements

In addition to the RESS, subsidy free renewable energy through corporate power purchase agreements provide a route to market for renewable project developers in the shorter term, providing them with a real opportunity to boost Ireland's renewable energy capacity in advance in addition to the RESS scheme. This will be based on input from the industry intensive stakeholder interactions with a report to be delivered by the SEAI in Q2 2020.

#### 4.1.5 Better Energy Communities (BEC) Scheme

The BEC Scheme is a network of sustainable energy communities funded by the Irish Government and underpinned by SEAI mentors and grants to develop a Local Energy Master Plan.

It provides funding for community groups to improve the efficiency and the sustainability of energy use in their local areas and its aim is to support projects at a community level, specifically seeking to test innovative and pioneering partnerships for delivery between the public and private sectors, residential and non-residential sectors, and commercial and not-for-profit organisations. The scheme is part of the national retrofit programme which provides funding to upgrade Ireland's building stock and facilities to high standards of energy efficiency, thereby reducing fossil fuel use, running costs and greenhouse gas emissions.

Since 2012, the BEC Scheme has supported delivery of over 400 community energy efficiency projects. As a result, almost 18,000 homes, and over 2,500 community, public and private buildings have been upgraded to end 2019 (from community centres, to sports clubs, schools, retail, religious and cultural centres).

Government, through SEAI has provided grants of over €145m which have resulted in €370m total investment in communities across the country, achieving energy savings of over 900GWh.



The projects have increased each year in scale, complexity and ambition, with total investment in community energy upgrades increasing from €11m in 2012 to approximately €60m in 2019.

#### **4.1.6 Microgeneration Scheme**

In July 2018, the Government announced a new pilot scheme to support microgeneration. This first phase of support for microgeneration is targeting solar PV installation and domestic customers for self-generation and consumption. A grant of up to a maximum €3,800 is now available (max 4kWp + battery) for homes built before 2011 with the aim of fostering the concept of prosumer.

#### **4.1.7 Support Scheme for Renewable Heat (SSRH)**

Ireland's Support Scheme for Renewable Heat (SSRH) is a government funded initiative designed to increase the energy generated from renewable sources in the heat sector, such as biomass and anaerobic digestion. The scheme will support the adoption of this kind of systems by commercial, industrial, agricultural, district heating, public sector and other non-domestic heat users not covered by the emissions trading system.

#### **4.1.8 Energy market integration policies in Ireland NECP**

Ireland's wholesale market has been recently redesigned with the purpose of increasing renewable energy penetration and the progressive decarbonisation of the electricity sector. As a result, participation in the day-ahead, intra-day and balancing markets introduced is already non-discriminatory for all market participants, including renewables, Demand Side Units (DSU) and battery storage. Furthermore, all technologies are permitted to participate in the new market capacity mechanism.

On the other hand, to make the customers more proactive in their use of electricity and help them saving money, Ireland has also developed smart meters rollout programme so that smart-ready electricity meters will be installed in every house and business by 2024.

#### **4.1.9 Policies and measures to achieve low emission mobility in Ireland NECP for SMEs**

The Climate Action Plan sets a target of 936,000 electric vehicles (including both, battery and plug-in hybrid electric vehicles) to be on the road in Ireland by 2030. To this effect, there are some support measures in place in order to promote the uptake of electric vehicles. In this manner, there are Accelerated Capital Allowances for businesses to support investment in charging infrastructure and the purchase of electric vehicles, in addition to grants of up to €10,000 for electric vehicles in the taxi/hackney/limousine sector since 2020.





## 4.2 Spain

The International Energy Agency (IEA) regularly conducts in-depth peer reviews of the energy policies of its member countries. This process supports energy policy development and encourages the exchange of international best practices and experiences. Since the last IEA review in 2015, Spain has solved a long-standing issue of tariff deficits in its electricity and gas sectors and closed all of its coal mines, which has allowed it to place the energy transition at the forefront of its energy and climate change policies [11].

The current Spanish framework for energy and climate is based on the 2050 objectives of national climate-neutrality, 100% renewable energy in the electricity mix and 97% renewable energy in the total energy mix. As such, it is centred on the massive development of renewable energy, particularly solar and wind, energy efficiency, electrification and renewable hydrogen.

The future trajectory of its power mix warrants careful consideration to ensure a smooth transition, especially as Spain plans to phase-out both coal and nuclear power generation. Plans include expansion of storage, demand side management, digitalization and international interconnections.

As a member of the European Union (EU), Spain is bound by EU targets for energy and climate change as part of the Energy Union. Toward this end, the central strategy guiding Spain's energy and climate policies over the coming decade is its National Energy and Climate Plan (NECP) for the period 2021-30. It outlines several policy actions in various sectors that will support the country's climate targets, including in the areas of energy efficiency, renewables and transport [12].

Its 2030 objectives include:

- a 23% reduction in greenhouse gas emissions from 1990 levels; a 42% share of renewables in energy end use.
- a 39.5% improvement in energy efficiency.
- a 74% share of renewables in electricity generation.

Policies include increasing renewable power installations and boosting the use of renewable gases in the power sector, modal shifts and electrification in the transport sector, refurbishments and increasing the use of renewable heating in the residential and commercial sectors, promoting energy efficiency and fuel switching in the industry sector, and energy efficiency improvements in the agricultural sector. However, the present deliverable will collect in detail only those who may address SMEs.

The government anticipates that investments of €241 billion will be needed to enact the measures outlined in the NECP, out of which 80% is estimated to come from the private sector.

Domestically, the Climate Change and Energy Transition Bill places the fight against climate change and the need for an energy transition at the centre of the economy and society. Its main targets are like those in the NECP, also placing renewable energy and energy efficiency at the centre of the energy transition.



In addition, under Spain's decentralised system of government, the implementation of several efficiency measures for transport, buildings and industry will fall on regional and local governments, making co-ordination between the central government and regional/local administrations as well as skills capacity at all levels of government essential to success.

Moreover, Spain has emphasised the concept of a just transition to ensure that communities in traditional energy sectors, notably coal mining, are not left behind. To this end, Spain's Just Transition Strategy includes measures to promote employment opportunities in the energy transition, supported by a framework of vocational training, active labour policies, support measures to the most vulnerable and economic stimulus plans for those regions most affected by the energy transition. These are executed through "just transition agreements" between the government, unions and businesses, which can serve as an example to other countries facing similar issues.

#### 4.2.1 Development of new facilities for generating electricity using renewables

Over the 2021-2030 period, the installation of 59 GW of additional capacity for generating electricity using renewables is planned. To this effect, the following mechanisms will be launched:

- Calls for tenders for the allocation of a specific remuneration scheme. Regarding the tenders, Article 6 of the Climate Change and Energy Transition Bill, which was submitted to public consultation that began on 22nd March 2019, provides the following:
  - Procedures for financial entitlements will be organised annually to promote the construction of at least 3,000 MW of renewable facilities each year. This installed capacity target may be formally reviewed according to the evolution of the decarbonisation of the Spanish energy system.
  - In order to encourage predictability and stability in the revenue and financing of new facilities generating electricity from renewable energy sources, new remuneration frameworks will be developed. These frameworks will be based on long-term recognition of a fixed price for the energy generated.
  - The mentioned remuneration frameworks will be granted through competitive tendering procedures in which the product to be tendered for will be the electricity to be generated. On the other hand, the variable on which it will be offered will be the remuneration price of this electricity.
  - In the competitive tendering procedures, it will be possible to distinguish between different energy generation technologies depending on their technical characteristics, manageability, location criteria, technological maturity or anything else that may guarantee the transition to a decarbonised economy, in accordance with EU regulations.
  - Until the new remuneration frameworks and their granting procedures are developed via regulations, the calls will take place pursuant to Article 14(7) of Law 24/2013 of 26 December 2013 on the Electricity Sector and its implementing regulations.
- A support mechanism will be established through which participatory citizen projects can enter into a contract of sale for their electricity at a fixed price tied to the result of the tenders. An annual quota will be reserved for participatory citizen projects and will be





granted to the first that request it and comply with the requirements until the energy quota is met.

#### 4.2.2 Incorporation of renewables in the industrial sector

With the purpose of promoting the decentralised generation of renewable energies and own consumption in industry, which accounted for 24% of final energy demand in 2015, the following actions are planned for the next years:

- Aid programmes to incorporate renewable energies into industrial processes. Aid lines for industries or the heating networks that supply them, depending on the potential, cost and characteristics of the technology and the potential improvement in their carbon footprint.
- Institutional capacity building. The specific incorporation of the energy dimension into industrial policy tools will be promoted (at all levels of the administration).
- Sectoral agreements. Voluntary agreements will be made with specific industrial subsectors to encourage increased consumption of renewable energy.
- Aid for conducting energy studies, reports and audits that will help the industry to move towards less carbon intensive processes. These studies should identify the different technology options in line with the specific process heat requirements of each industrial subsector (on the basis of the documents on the best available techniques developed within the framework of Directive 2010/75 on industrial emissions), their physical, technical and economic potential, and the identification of challenges and proposals for measures.

#### 4.2.3 Development of own consumption using renewables and distributed generation

The following mechanisms are planned to promote the development of own consumption:

- National Own Consumption Strategy. The own consumption objectives will be set out in the future Strategy for the 2021-2030 period. As part of this strategy, the penetration potential will be analysed for each type of consumer (residential, services or tertiary, industrial), so that indicative objectives can be set for the period, which will be ambitious but achievable. The required technical-economic sustainability of the electricity system will also be considered, enabling both the distribution networks and the structure of the electricity tariff to be adapted to the new generation scenario. In any case, the deployment of own consumption in Spain will be monitored quantitatively and qualitatively, in accordance with the monitoring mechanisms provided for in Royal Decree 244/2019.
- Soft financing. This facilitates the mobilisation of private investment, enabling the return of financing based on the economic savings made as a result of the own consumption of the energy generated.
- Management by third parties or the energy services model. Under this model, companies specialising in energy services, such as electricity traders, invest in own consumption facilities and maintain them, selling the energy produced to consumers under favourable terms. This avoids the consumer company, family or administration having to make an investment in or take charge of an activity of which they have no experience.



- Measures to promote local involvement. Given the local nature of own consumption markets, it is necessary to implement promotion measures at the municipal, regional or, where applicable, island level, in particular by simplifying processes and properly integrating the measures into urban planning instruments. The General State Administration will coordinate the development and monitoring of best practices with local, island and regional bodies for this purpose.

#### 4.2.4 Local energy communities

The appropriate legislative framework will be developed to define these legal entities and to promote their development, in particular to comply with Article 22 of Directive 2018/2001 and Article 16 of Directive 2019/944. To this effect, the legislative framework must take into account the roles and cases of existing actors or groups that could set themselves up as local energy communities, such as cooperatives, industrial parks, technology parks, residents' associations or port areas.

Furthermore, barriers will be eliminated by establishing a one-stop shop that makes it possible to guide the applicant, acting as a facilitator of administrative procedures, as well as promoting the simplification of procedures in processes linked to local energy community projects.

On the other hand, demonstration projects of local energy communities that cover the widest possible range of cases will be promoted, identifying and establishing viable business models for the different types of projects, enabling them to be developed on a large scale.

Last but not least, training and capacity-building programmes for local energy communities will enable them to obtain the human and technical resources required to identify, process, execute and manage the projects, as well as to mobilise the necessary investments.

#### 4.2.5 Promoting the proactive role of citizens in decarbonisation

Besides the aforementioned mechanisms to promote the proactive role of citizens in decarbonisation, it is necessary to underline also the identification and removal of legal, administrative and economic barriers to the introduction of the direct purchase and sale of renewable electricity between producers and consumers regardless of their size, with the aim of facilitating a greater positive impact of citizen buying power on the energy transition.

Moreover, citizen participation in demand management (individual or aggregate), will be guaranteed through the necessary mechanisms to ensure that the structures of tariffs, tolls and electricity charges are designed to give a favourable signal both for active demand management and for consumption reduction.



## 4.3 Italy

### 4.3.1 Piano Nazionale Integrato per l'Energia e il Clima (PNIEC)

On January 21, 2020 the Ministry of Economic Development published the text of the Integrated National Plan for Energy and the Climate (PNIEC), prepared with the Ministry of the Environment and Protection of Land and Sea and the Ministry of Infrastructure and Transport, which incorporates the innovations contained in the Climate Decree Law as well as those on investments for the Green New Deal provided for in the Budget Law 2020.

The PNIEC was sent to the European Commission in implementation of Regulation (EU) 2018/1999, thus completing the path started in December 2018, during which the Plan was the subject of a fruitful discussion between the institutions involved, citizens and all stakeholders.

Analyzing the forecast reduction in total national emissions, in the BASE and PNIEC scenarios, a reduction of 36% and 43.5% respectively is forecasted. Similarly, evaluating the forecasts set under the BASE scenario and the PNIEC scenario in the transport sector (of which non-ETS), a reduction in emissions of around 25.6% and 37% respectively is forecast (Table 3) [13].

Table 3: Italy GHG emissions reduction targets

GHG emissions	2030 –BASE Scenario		2030 –PNIEC Scenario	
	[Mton CO <sub>2</sub> eq]	% Red.	[Mton CO <sub>2</sub> eq]	% Red.
<b>Total</b>	384	-36%	328	-43,5%
<b>ETS</b>	137	-45%	109	-56%
<b>Non-ETS</b>	245	-26%	216	-34,5%
<b>of which transport</b>	93	-25,6%	79	-36,8%

The mix (with a view to optimizing system costs) for reaching the target for the share of RES in the transport sector is given by the contributions of the various types of fuels obtained from renewable sources.

It should be noted that the contribution of the renewable portion of electricity from road transport covers almost 6% of the RES-transport target, which by 2030 is equal to 22% overall. This last target was judged by the European Commission in October 2020 as challenging but also achievable according to the policies defined in the plan.

Last but not least, by 2030, a fleet of pure electric vehicles (BEVs) and plug-in electric vehicles (PHEVs) of 6 million vehicles is expected, of which 4 million are BEVs.

### 4.3.2 Long-Term Strategy

By January 1, 2020, the EU Member States had to communicate to the commission their Long-Term Strategy on the reduction of greenhouse gas emissions (as stipulated in Article 15 of the European Governance Regulation, 2018/1999), the objective of which is to achieve the targets set by the Paris Agreement.



The strategy must be consistent with the PNIEC established for the period 2021-2030, and must have a perspective of at least 30 years, until 2050. It is also foreseen that these strategies will be reviewed every 10 years, starting on January 1, 2029 [8].

The Italian strategy aims at a situation of climate neutrality at 2050 and foresees two evolution scenarios:

- Reference Scenario. It assumes the achievement of the targets set by PNIEC at 2030 and the 'carryover' of the resulting trends to 2050. This scenario is insufficient to achieve the 2050 climate neutrality target as it assumes a level of total residual emissions of about 200 MtonCO<sub>2</sub>eq, of which about 30% (60 MtonCO<sub>2</sub>eq) are attributable to the transport sector.
- Decarbonization Scenario. It foresees a sharp reduction in energy demand and a radical shift in the energy mix in favour of renewables (in tandem with deep end-use electrification). These measures include achieving climate neutrality by 2050.

To conclude, the decarbonisation scenario aims at the total reduction of emissions in the transport sector, acting in particular on the technologies applied and on transport demand:

- Greater electrification of vehicles, up to almost 50% of the total in the transport sector and in particular in the automotive sector.
- Growing use of hydrogen, which is expected to account for more than 50% of the sector's final consumption, in addition to an increase in advanced biofuels or fuels of synthetic origin (particularly for air and naval transport).
- For passenger transport: reduction of passenger mobility with energy consumption (teleworking, cycling), promotion of intermodality, with a shift from private to public road and rail transport.
- For freight transport: strengthening of rail freight transport; drastic reduction of 'empty' trips in road freight transport.

#### 4.3.3 Piano nazionale di ripresa e resilienza (PNRR)

The National Plan for Recovery and Resilience (PNRR) is the Italian investment program to respond to the Covid-19 pandemic crisis. According to the Government's plan, the total amount of resources foreseen in the Italian PNRR is 235.1 billion € (191.5 billion € from the European Recovery and Resilience Facility, 30.6 billion € from the Complementary Fund, and 13 billion € from REACT-EU).

The Plan identifies 6 missions, subdivided in turn into 16 components, functional to achieving the economic and social objectives defined in the Government's strategy. The missions of interest for this report are "Green revolution and energy transition" and "Infrastructure for sustainable mobility", for which 30% and 13% of resources have been allocated respectively.

Specifically, the Green Revolution and Ecological Transition Mission is divided into 4 components: Circular Economy and Sustainable Agriculture; Renewable energy, hydrogen, grid and sustainable mobility; Energy efficiency and building requalification; Protection of land and water resources.



In particular, the component 'Renewable energy, hydrogen, grid and sustainable mobility', has the objective of progressive decarbonization of all sectors, in particular the transport sector, which accounts for 36% of the total funds.

Within the scope of intervention called 'Increasing the share of energy produced by RES', which is part of the aforementioned component, funding of €5.9 billion is planned. Of this € 5.9 billion, around 33% (€ 1.92 billion specifically) is earmarked for the development of biomethane. Among the goals of this investment line, there is a reform aimed at promoting the production and consumption of biomethane in other sectors in addition to transport (for which there are already promotional tools) such as the industrial, tertiary and residential sectors, mainly for heating and cooling [14].

#### 4.3.4 National Hydrogen Strategy

According to the vision of the Italian government, hydrogen will play an important role in the decarbonization path of the country, which should culminate in full decarbonization by 2050. Hence, The Ministry of Economic Development (MiSE) has issued some guidelines regarding the implementation of the national strategy for the development of the hydrogen supply chain.

In line with what was presented by the European Commission in the strategy for hydrogen, the national program provides for a gradual development of the market, using the blue hydrogen in the short to medium term to give birth and develop a supply chain to date in an embryonic state, but with the aim, to 2050, to provide a decisive penetration of green hydrogen [15].

- **Phase 1 (2020-2030).** The program, in order to foresee a hydrogen penetration in final energy consumption of 2%, identifies some sectors/end uses. In particular, we find:
  - Chemical industry and refineries: in these realities hydrogen is already used for the production of basic chemicals (ammonia and methanol) and in refining processes.
  - Mobility: long-haul trucks (ensuring coverage by 2030 of about 2% of the circulating fleet) and trains (ensuring coverage by 2030 of about 50% of non-electrifiable routes)
  - Blending hydrogen into the existing gas grid: the expectation is to replace about 2% of the natural gas transported with hydrogen
  - Creation of Hydrogen Valleys: an example are the first applications such as the Hydrogen Valley South Tyrol and the one of Brescia-Iseo-Valcamonica
  - Other pilot projects: Local Public Transport (LPT), biological methanation and hydrogen utilization in the secondary steel industry (DRI)
- **Phase 2 (2031-2050).** In order to foresee a hydrogen penetration in final energy consumption of at least 20% by 2050, within the program, additional hydrogen application fields are identified:
  - Residential heating: hydrogen boilers could compete with heat pumps, but it will be necessary to foresee the reconversion of the existing gas network (also on the distribution side) to hydrogen and a burner replacement in case of high percentage blend or use of pure hydrogen.
  - Mobility: long-haul trucks (ensuring in a full decarbonization scenario coverage of up to 80% of the fleet by 2050), synthetic fuels for the maritime sector and applications on cars (corporate fleets and long-distance vehicles).
  - Industrial heating: especially in processes with temperatures above 1000°C



- Hard-to-abate sectors: hydrogen use in primary steelmaking and aviation.
- Flexibility services: conversion of hydrogen to generate electricity to feed into the grid and provide the balancing required by the TSO.

#### 4.3.5 FER 1

The regulatory reference for RES is the FER (Fonti Energia Rinnovabile = Renewable Energy Sources) Decree 1 of July 4, 2019, on which the Manager of Energy Services GSE has created a web portal that recalls the scope of application, groups into which the plants entitled to incentives are divided, procedures for enrolment in the registers and participation in tenders, available power and calendar of calls.

With an estimated investment of about € 10 billion, the decree provides for the construction of new plants for a total capacity of about 8,000 MW, with an expected increase in production from renewable sources of about 12 billion kWh

The plants eligible for this mechanism are subdivided according to type, renewable energy source and category of intervention:

- Group A:
  - On-shore wind plants of new construction, complete reconstruction, reactivation or upgrading.
  - Photovoltaic plants of new construction.
- Group A-2:
  - Photovoltaic systems of new construction, whose modules are installed in replacement of roofs of buildings and rural buildings on which is operated the complete removal of asbestos or asbestos.
- Group B:
  - Hydroelectric plants of new construction, complete reconstruction (excluding plants on aqueduct), reactivation or upgrading.
  - Gas plants residues of purification processes of new construction, reactivation or enhancement.
- Group C:
  - Plants subject to total or partial reconstruction
  - On-shore wind farms.
  - Hydroelectric.
  - Gas-fired waste water treatment plants.

There are two ways to access the incentives.

- Enrolment in the registers: for plants with a capacity of more than 1 kW (20 kW for photovoltaic) and less than 1 MW that belong to Groups A, A-2, B and C. Through the registers the available power quota is assigned on the basis of specific priority criteria.
- Participation in auction procedures: installations with a capacity greater than or equal to 1 MW that belong to Groups A, B and C. Through the auctions, the available power quota is assigned according to the highest discount offered on the incentive level and, if the discount is equal, applying further priority criteria.





#### 4.3.6 Energy plants for individual and collective self-consumption: regulatory and economic measures in Italy NECP

The rules governing the collection of general system charges and electricity tariffs, introduced in 2018 as part of the plan for adaptation to EU guidelines on State aid for energy and the environment, provide a regulatory framework that favours instantaneous self-consumption.

Conversely, for collective self-consumption, especially in cases where the use of existing public networks is preferred, the possibility of introducing direct forms of support is currently being examined. In this, due regard is being given to the benefits linked to distributed generation in terms, for instance, of decreased use of the network.

Moreover, work will also be carried out on development of the net metering mechanism in order to promote rewards for plants on the basis of their quota of self-consumed energy, which can also be increased by installing accumulation systems.

Further instruments to support self-consumption, both individual and collective, will be:

- Reinforcing minimum quota obligations for renewable energy sources in new buildings or buildings subject to major renovation.
- Progressive and gradual extension of the minimum quota obligation for renewable energy sources (including thermal renewables), which is currently envisaged only for new buildings or buildings subject to major renovation to existing buildings.

#### 4.3.7 Energy communities in Italy NECP

To avoid inefficiencies in the development of the network, renewable energy communities will be promoted primarily by utilising the existing electricity network. What is more, they will be fostered in economic terms by means of direct support mechanisms for production, including by more than one plant and for locally consumed energy. The benefits to be reaped in terms of network use in this last case will be taken into account, with due regard to the rights and obligations of the members of the community as customers.

Lastly, the development of standard tools for setting up and managing the communities, as well as for exploiting energy production will be assessed. This assessment may include the possibility of providing other services such as energy-efficiency and electric vehicle recharging.

#### 4.3.8 ECOBONUS

Ecobonus is the measure promoted by the Ministry of Economic Development and managed by Invitalia (the Italian Development Agency) that offers contributions for the purchase of vehicles with reduced emissions, as provided for by the Budget Law 2019 and subsequent regulatory changes. It is not only a support measure for the vehicle market, but also an entirely environmental purpose, integrating with current European legislation on air quality and the environment.

In this manner, the Ecobonus 2020 provides a tax deduction of 110% of the expenditure, for anyone who chooses to renovate their home or their condominium by December 31, 2021. It



will be possible to discount the expense in a maximum of 5 years for a maximum value of € 60,000.

Alternatively, there is the possibility of having a tax deduction from 50% to 60% of the expenditure for anyone who chooses to make non-structural interventions but of another kind, such as the replacement of windows or fixtures, boilers or heat pumps.

Ecobonus 2020 can be used by all those who choose to carry out work aimed at saving energy in their homes or in their condominiums.

Are subject to deductions all expenses incurred for:

- Thermal improvement of the apartment or building,
- Installation of solar panels,
- Replacement of winter air conditioning systems,
- Installation of multimedia devices for remote control of heating systems.

## 4.4 Romania

The European Commission has assessed the draft national integrated plans for energy and climate under Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action. The assessment comprised the level of ambition of the objectives, targets and shares designed to ensure achievement of the EU targets collectively. In particular, the assessment covered the EU targets for 2030 in the area of renewable energy sources and energy efficiency, as well as the interconnectivity of electricity grids that Member States aim for [16].

- The assessment of the integrated plans submitted by all the Member States has revealed a gap between the EU targets and the Member States' share in matters of energy from renewable sources and energy efficiency:
- There is a gap between the 32 % target for RES, as committed to at EU level, and that inferred from these plans, which ranges between 30.4 % and 31.9 %.

The Commission's assessment in the field of energy efficiency has revealed a reduction between 26.3 % and 30.2 % in primary consumption and between 26.5 % and 30.7 % in final consumption.

Following the Commission's recommendations, the updated contribution of Romania to the achievement of the EU objectives by 2030 is outlined in Table 4:





Table 4: Romania NECP objectives by 2030

Overview of the main objectives of the 2021-2030 INECP by 2030	
ETS emissions (% compared to 2005)	-43.9 %*
Non-ETS emissions (% compared to 2005)	-2 %
<b>Overall share of renewable energy in gross final energy consumption</b>	<b>30.7 %</b>
↓	
RES-E share	49.4 %
RES-T share	14.2 %
RES-H&C share	33.0 %
<b>Energy efficiency (% compared to the PRIMES 2007 projection for 2030)</b>	
Primary energy consumption	-45.1 %
Final Energy Consumption	-40.4 %
Primary energy consumption (Mtoe)	32.3
Final energy consumption (Mtoe)	25.7

As regards the share of renewable energy, the European Commission recommended Romania to increase the level of ambition for 2030 up to a share of renewable energy of at least 34 %. Consequently, the level of ambition regarding the share of renewable energy was revised compared to the updated version of the INECP from an initially proposed share of 27.9 % to 30.7 %.

In order to reach this new ambition level regarding the share of renewable energy of 30.7 % in 2030, Romania will thus develop additional RES capacities of approximately 6.9 GW compared to 2015. In order to achieve this target, appropriate funding from the EU is needed in the sense of providing for the appropriate adequacy of electricity grids and flexibility in the production of RES-E by deploying backup gas capacities and storage capacities and by using smart electricity grid management techniques.

Romania has chosen to adopt a prudent approach to the level of ambition, taking into account the national particularities and the RES investment demand for both replacement of capacities that have reached the maximum operation period and new ones in order to achieve the targets committed to in the INECP, having regard to the fact that Regulation (EU) 2018/1999 stipulates that, in future revisions of the INECP, shares may be adjusted only upwards. In the context of designing this approach, it is also noteworthy that, in the process of implementation of the recommendations, there was also the issue of absence of the data required to prepare a detailed plan regarding the measures, actions, and financial resources envisaged by the Romanian authorities in order to achieve the RES targets in the period 2021-2030, in particular in the area of RES for heating & cooling and transport. A new review/adjustment of the 2030 target will be possible on revision of the INECP, which will enable to estimate much better the effects of the implementation of Directive (EU) 2018/410 and of the Green Deal support programmes.



In conclusion, in order to reach the proposed RES targets, Romania will develop a series of policies and measures purposed to reduce consumption of energy and to foster the use of RES sources in relevant sectors - heating and cooling, electricity and transport, by maximising the synergies between the various projected actions.

However, the European Commission mentioned that Romania would have to plan a more significant reduction in primary and final energy consumption by 2030 in order to ensure the achievement of the Union's energy efficiency objective.

Furthermore, in order to comply with the obligations under Article 7 of Directive (EU) 2018/2002 amending Directive 2012/27/EU on energy efficiency, Romania must reach a cumulated value of new energy savings of 10.12 Mtoe in the period 2021-2030. Following a detailed assessment, Romania has decided to prepare and to implement alternative measures and policies in order to foster energy savings. Moreover, a draft Long-Term Renovation Strategy was submitted for public consultation and it was to be adopted by March 2020 (the current renovation scenario provides for energy efficiency and significant CO<sub>2</sub> savings as well as new facilities for RES-E production installations - most of them in the form of photovoltaic panels for existing buildings).

#### **4.4.1 Increase in the RES-E in the residential sector and fostering prosumers' development**

The draft Long-term Renovation Strategy (LTRS), which was initiated by the Ministry of Public Works, Development and Administration (MLPDA), includes a series of policies and measures by 2050 and concerns rehabilitation and renovation of public, residential and commercial buildings. This draft strategy also provides for measures to increase the use of RES energy, which is produced in-situ or in the proximity, for types of buildings covered by the LTRS: under the optimum renovation scenario, the amount of RES energy is estimated to reach approximately 0.22 Mtoe by 2030. This scenario provides for an investment demand of EUR 2.94 billion in the period 2021-2030 for the installation of RES solutions.

These measures are added to those set out in the draft law amending and supplementing Law No 372/2005 on the energy performance of buildings, which was initiated by MLPDA, according to which an obligation is imposed for new buildings to ensure, from 1 January 2021 onward, 30 % of the consumption of energy from renewable sources produced in-site or in the proximity. Moreover, when it will prepare the methodology for determining the regulated prices and charges for natural gas, the regulatory authority will see to it that it contains elements to support, in the most cost-effective way, the development of secure, reliable and efficient non-discriminatory systems that are consumer oriented, in line with the overall policy objectives in the field of integration of large and small scale production of gas from renewable energy sources.

In accordance with the draft LTRS, it will also be necessary, in order to achieve the RES-E share, to encourage active consumers (prosumers) towards the measure involving implementation of smart metering solutions and smart networks, for which a clear calendar and adequate regulations should be put in place. The regulations should include recognition of investments in smart meters in the tariff and their recognition in the investment plans of distribution system operators or the prioritisation of these projects from the viewpoint of funding provided by the EU (including Structural Funds). In addition, it will be necessary to use renewable energy systems in the renovation of public buildings and, where an optimal cost-



benefit ratio can be achieved, systems will also be used in the renovation of residential buildings. The law on renewable energy prosumers should enable residential blocks and related tenants' associations to produce and to sell the excess solar and possibly wind energy in more flexible forms by creating net metering schemes, simplifying connection procedures and introducing incentives and financial support. In this respect, Romania plans to encourage household, industrial and agricultural prosumers simultaneously with the development of the smart networks and meters. Moreover, the integration of distributed production systems and prosumers in the electricity system is also important. In the following years, photovoltaic capacities are foreseen to be developed in Romania in the form of average capacity solar parks established on degraded or less productive lands and in the form of small scattered capacities developed by energy consumers who can achieve transition to the prosumer.

The adoption of Law No 184/2018, establishing the system for promoting production of renewable energy was a step forward in the regulation of prosumers' status in Romania. The new law provides for a series of advantages for prosumers, as follows:

- The scheme is applied to prosumers owning renewable energy production units with installed capacity of not more than 27 kW per consumption place in individual households, residential blocks, residential, commercial or industrial areas, etc.
- The electricity distribution operators must connect prosumers in accordance with the specific regulations issued by the regulatory authority in this respect.
- Prosumers have the possibility of selling electricity to suppliers with whom they have concluded electricity supply contracts at a price equalling the weighted average price recorded on the day-ahead market in the previous year; suppliers having a contract with prosumers must take over the energy at the former's request.
- Prosumers are exempted from the payment of excise duties for the amount of electricity produced from renewable sources for self-consumption, and the excess production sold to suppliers.
- Prosumers as natural persons are exempted from the obligation of purchasing green certificates annually and quarterly for the electricity produced and used for own final consumption, other than own technological consumption of power plants.
- Prosumers are provided with the service of regularisation between the value of electricity delivered and the value of electricity consumed in the grid by the electricity suppliers with whom they have concluded electricity supply contracts the service.

#### **4.4.2 Policies and measures to promote the use of renewable energy in heating and cooling (RES-H&C)**

Law No 372/2005 on the energy performance of buildings, as republished, includes the obligation for new buildings in the property/administration of the public administration authorities, which are to be subjected to the acceptance procedure under the construction permit issued after 31 December 2020, to be nearly zero-energy buildings. In the draft law amending and supplementing Law No 372/2005 on the energy performance of buildings, which was initiated by MLPDA and which is purposed to transpose Directive (EU) 2018/844 by amending the definition of "nearly zero-energy building", the value for covering consumption of primary energy from RES has been increased from 10 % to 30 %. Moreover, a growing number of households, in particular new residences, will adopt efficient biomass heating installations with full combustion and zero pollutants. This transition towards more efficient and greener



biomass forms of heating will be experienced intensively over the following years as well as after 2030. Predominantly electricity-based heating in Romania will also contribute to the achievement of the RES-H&C target for 2030. In this respect, the highest potential is encountered in individual households in the semi-urban and rural area, where the investment in high-efficiency air-soil heat pumps can be justified economically. Accompanied by heat accumulators, heating through heat pumps could be feasible by using the electricity produced in the night standstill period, which is also a form of storage of electricity. The further long-term implementation of the “Casa Verde Plus” Programme could foster development of a national heat pump market and could provide for the heat demand by the use of heat solar panels.





## 5 Energy supply assessment of SMEs participating in SPEEDIER

With the purpose of knowing more about the energy supply of the SMEs participating in SPEEDIER, a survey was conducted asking them about whether they had any kind of energy generation technology installed (either thermal or electrical) to produce their own energy, as well as any other decarbonisation measures. Furthermore, it was also asked if they had any targets or objectives when exploiting their energy resources, in addition to their level of awareness about the financial schemes and other mechanisms existing in their countries to implement this kind of measures. All the questions of the survey can be found at the end of this document (Annex 2), together with the template of the results analysis (Annex 3).

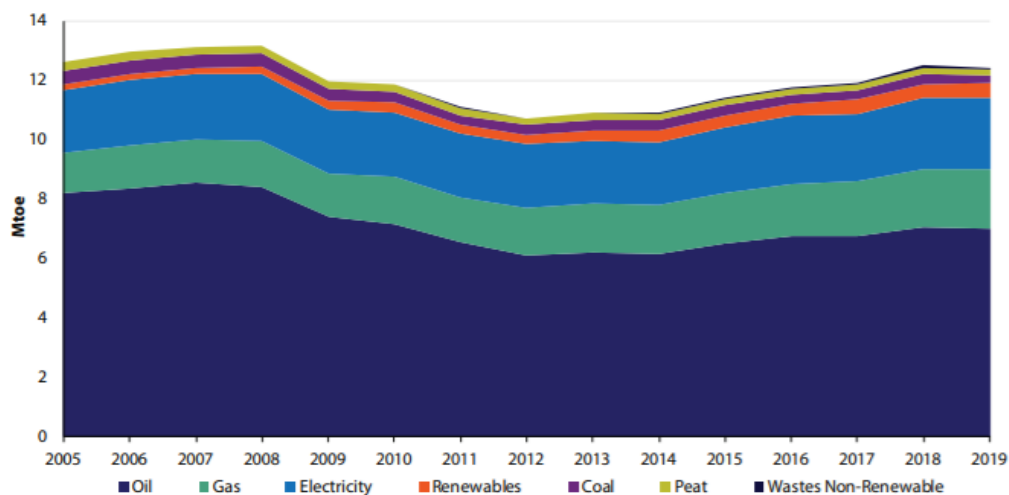
Therefore, the present section has been divided, in turn, in other two sections for each pilot country. The first sub-section introduces some basic information of each pilot energy mix in order to provide a more complete global overview: which are the leading energy sources and their corresponding contribution, along with other generation and total final consumption data, whereas the second sub-section collects the analysis of all the survey responses for each country.

### 5.1 Ireland

#### 5.1.1 Energy mix structure

In 2019, the total final energy consumption in Ireland was 12,414 ktoe, experiencing which was a decrease of 0.6% compared to 2018 even if the energy demand for electricity and transport continued to increase. In this manner, 2019 total final energy consumption was 16% above the 2012 low point, but 5.9% lower than the peak in 2008.

With regard to energy sources, oil has by far the largest share in Ireland's energy mix, accounting for 57% in 2019, more than all other fuel types combined (Fig.1). This is as a result of the almost complete dependence on oil for transport and its aforementioned largest share of final energy use [17].



Source: SEAI

Fig. 1: Total final consumption by fuel in Ireland (2005-2019)

Transport has been the mode with the largest share of final energy demand since 2014. In 2019, transport accounted for 42% of final energy, closely followed by heat at 38%. On the other hand, electricity had the smallest share of final demand, accounting for 20%. It is important to clarify that where thermal or transport energy is provided by electricity (such as in electric vehicles), this energy is counted under electricity, and not under thermal or transport.

Concerning sectors, transport is still the largest energy-consuming sector, with a share of 42% in 2019. The residential sector had the next largest share of final energy in the same year at 24%, followed by industry at 18% and services at 14%.

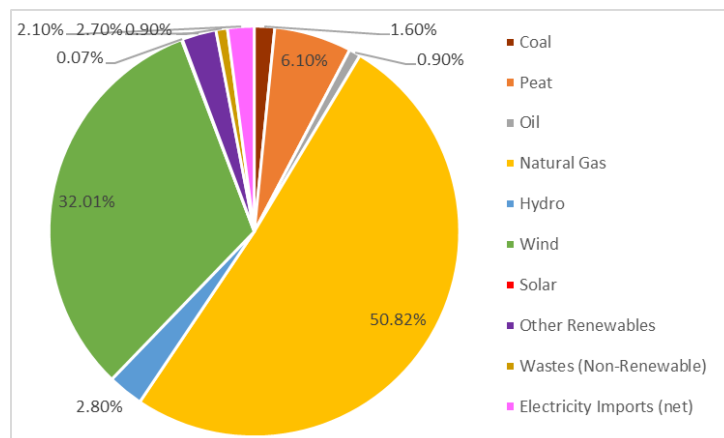
### Electricity

Fig. 2 shows the share of electricity generated in Ireland by source type in 2019. As it can be appreciated, there were two main sources prevailing in the Irish electricity mix: natural gas, which constituted the largest generation source with a percentage of 50.82% (in spite of a decrease of 108 GWh) and wind power, which accounted for 32% of the total electricity produced.

During this year, the most significant change was that coal generation was reduced in a great extent, resulting in 1,644 GWh less being produced from coal (accounting only for 1.6% in overall). Furthermore, there was another reduction in generation from peat of 164 GWh, having a contribution in the electricity generation of 6.1%. These shortfalls were compensated by the rest of sources: hydropower (192 GWh-2.8%), oil (141 GWh-0.9%), and other renewables (9 GWh). Last but not least, a reduction in exports and an increase in imports contributed another 672 GWh (2.1%).

Regarding the sectors, electricity demand grew in all of them in 2019, except for the residential and agriculture sectors. Consequently, services had the largest share of electricity use in 2019 at 43%, being the residential sector the second largest at 29% and transport the sector experiencing the largest relative growth.





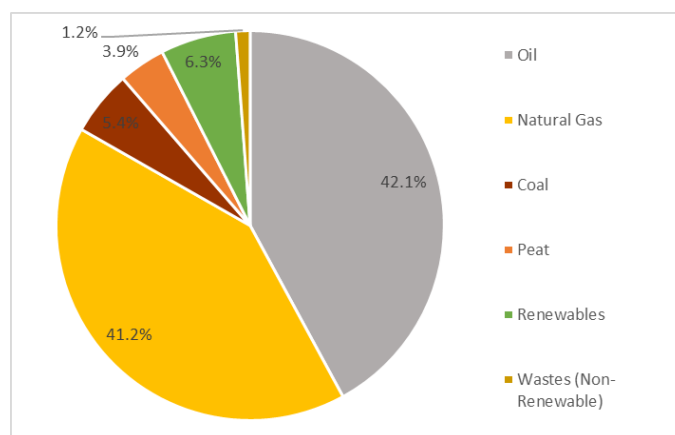
Source: SEAI

Fig. 2: Share of electricity generated in Ireland by source type (2019)

## Heat & Transport

The use of energy for heat was dominated by oil from 1990 to 2010. Oil was still the most prominent fuel for heat energy in 2019 but its share fell, from 57% in 2005 to 42.1% in 2019. In contrast, natural gas use for heat has steadily increased since 1990. By 2005 it accounted for 25% of heat energy and increased to 41.2% by 2019 due to the expanding gas network, falling oil use and fuel switching in industry from oil to gas.

Apart from oil and natural gas, the remaining 16.3% is composed by renewable sources (6.3%), coal (5.4%), peat (3.9%) and a small portion of wastes (1.2%), as it is shown in Fig. 3.



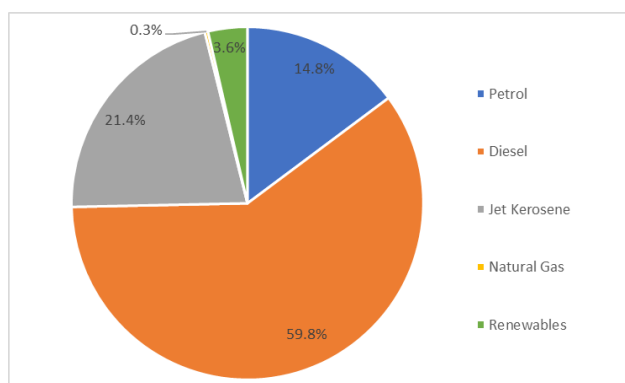
Source: SEAI

Fig. 3: Share of heat generated in Ireland by source type (2019)

Concerning sectors, residential was the most strongly affected by weather and the largest consumer of heat energy (46%) in 2019, ahead of the industry sector (34.8%). This is partly because Ireland has very little energy intensive heavy industry, such as steel or car manufacturing. Conversely, the services and agriculture sectors demanded in the same year only 15% and 4.2% of the total heat generated, respectively.



With regard to transport, diesel has by far the largest share of transport fuel use, accounting for almost 60% in 2019. Its consumption grew by 1% during 2019, as it also happened with jet kerosene, which had the second largest fuel after diesel (21.4%). Moreover, petrol use continued to fall in 2019, reducing by 5.8% and accounting for 14.8%. Lastly, renewables and natural gas had still very low percentages of contribution (only 3.6% and 0.3%, respectively) as it can be appreciated in Fig.4.



Source: SEAI

Fig. 4: Share of final consumption in transport in Ireland by fuel (2019)

Private car energy use clearly dominates transport mode (39.7%), followed by aviation (21.4%) and Heavy Goods Vehicles (HGV) (15.1%).

### 5.1.2 SMEs energy supply

From the Irish SMEs participating in the survey, **40% had installed some kind of energy generation technology** (Fig.5), specifically PV or thermal solar. Furthermore, from the remaining SMEs that didn't locally produce energy, 20% stated that generating their own energy was something they would consider when redeveloping their businesses. However, this would depend significantly on costs and available grants too.

Conversely, from the SMEs producing their own energy, only **20% had established targets when exploiting their resources** (Fig.5), which consisted of 150 kW base load generation via solar.

It is important to underline also that **none** of the SMEs **had other decarbonisation measures in place** (Fig. 5). Nevertheless, SMEs with installed thermal and PV solar are considering a major PV project in the near future.



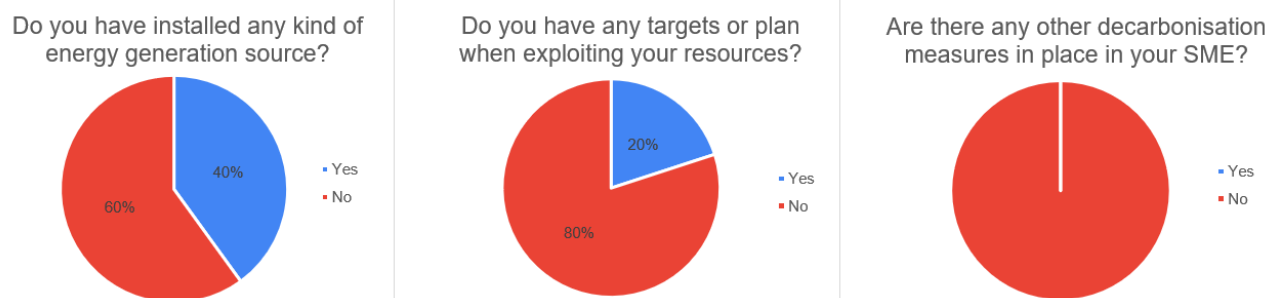


Fig. 5: Summary of Ireland SMEs responses to the survey (Part 1)

Moreover, from the asked SMEs, **40% stated to be aware about the possibilities they have to install renewable energy sources and other decarbonisation measures as businesses** in Ireland, and say this information was easy to find (Fig. 6). They highlighted SEAI grant funding, in addition to audits, training, financial supports and other grants to invest in more energy efficient equipment.

On the other hand, **40% of SMEs answered neutrally regarding their level of awareness to implement the aforementioned measures**, claiming the information was neither difficult nor easy to find (Fig.6).

Last but not least, **20% of SMEs said to be somewhat unaware with regard to these measures**, affirming that even if some information had been very easy to find for them, they did not know if there were some additional mechanisms (Fig. 6).

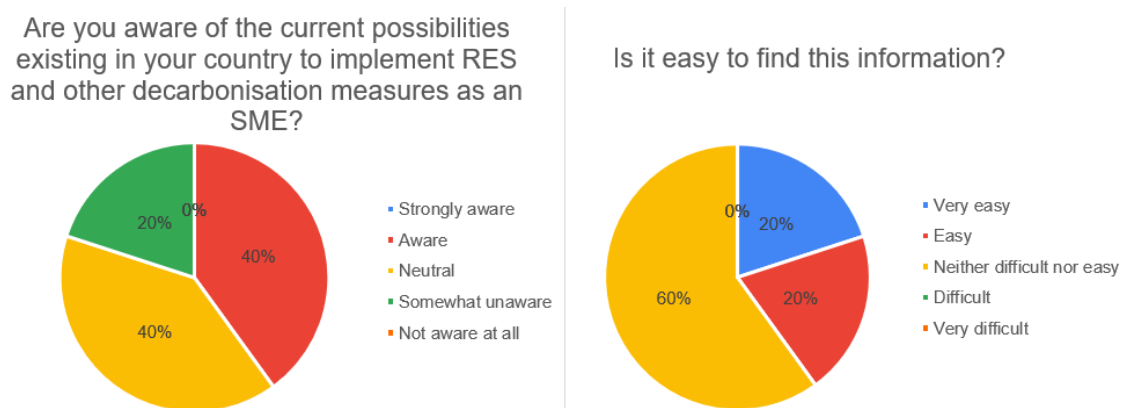


Fig. 6: Summary of Ireland SMEs responses to the survey (Part 2)

From the SMEs asked in the survey, **60% said to be aware about the existing financial schemes** in Ireland to implement the measures explained above, whereas the remaining 40% affirmed to be **somewhat unaware** (Fig. 7).

In the same manner, **40% of SMEs disagreed** with the fact that these **financial schemes were too complex to process**, while the rest remained neutral in this regard, adding that it **took too long to get paid and the amount of documentation required was highly arduous** (Fig.7) .

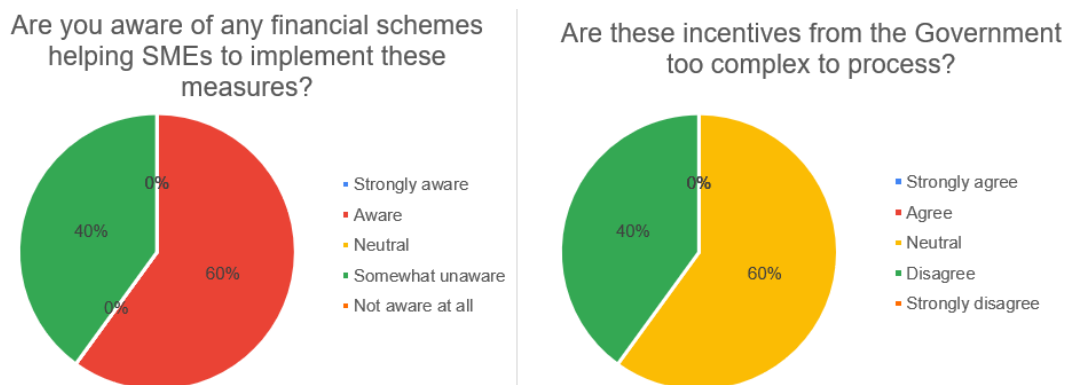


Fig. 7: Summary of Ireland SMEs responses to the survey (Part 3)

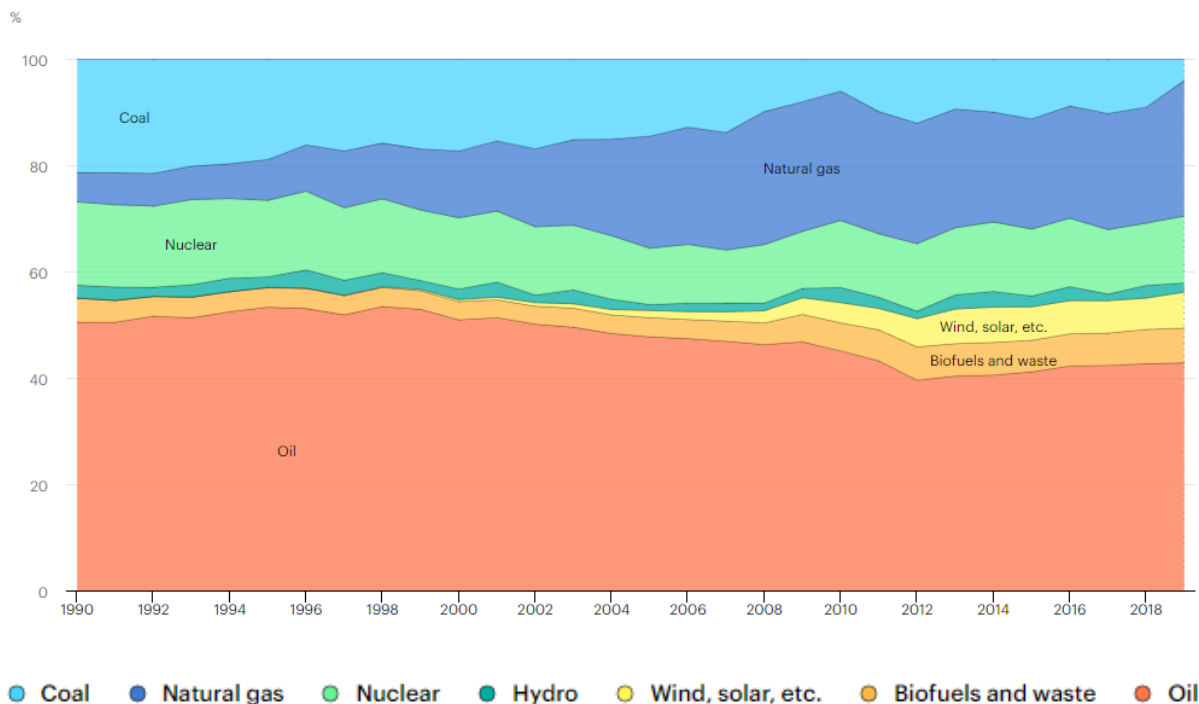
## 5.2 Spain

### 5.2.1 Energy mix structure

Spain's total energy mix is still heavily dominated by fossil fuels. Notably, the transport, industry and buildings sectors all have considerably more work ahead to meet the country's targets for renewables penetration and decarbonisation.

Most of Spain's energy supply and demand is met with fossil fuels, which accounted for 68% of total final consumption (TFC) in 2019. However, the share of renewables significantly increased between 2009 and 2019 (Fig. 8).

Transport and industry are the highest energy-consuming sectors, accounting for 38% and 29% of TFC, respectively, followed by the residential (17%) and services (16%) sectors. TFC was 86 Mtoe in 2019, with high shares of oil (51%) and gas (17%). Electricity, on the other hand, was largely used in the services (53%) and residential (43%) sectors. Bioenergy and waste were also a significant source of energy for residential consumption in 2019, accounting for 18% of TFC in the sector [11].



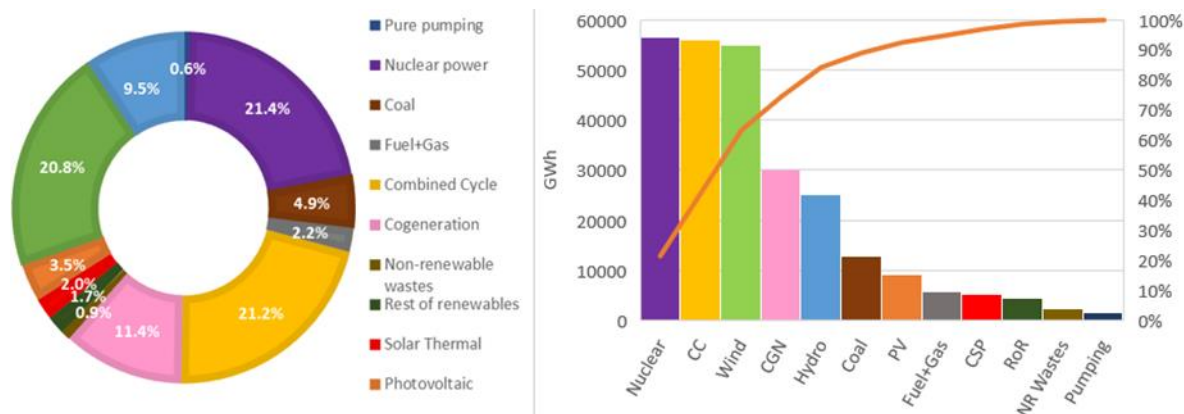
Source: IEA

Fig. 8: Total final consumption by fuel in Spain (1990-2018)

## Electricity

In terms of electricity production, the electricity demand in Spain during 2019 reached the figure of 264635 GWh. In this year, renewable sources accounted for 37.5% of the total generation, being wind power the most significant one and becoming the third most relevant of the whole electricity mix with a contribution of 20.8% (Fig. 6). Within the RES group, it was followed by hydropower (9.5%), which is the most likely technology to suffer the greatest variations depending on the rainfalls of the year [18].

In contrast, nuclear power had the greatest overall contribution (21.4%) owing to its permanent use. This is the reason why the rest of thermal plants play a more important role than they do only in terms of installed capacity, except for coal, which has registered its lowest contribution in the electricity mix according to historical records. This is due to the decommissioning of several coal plants throughout 2019, being this source replaced now by combined cycle plants. This technology accounted for 21.2% of the total electricity produced in 2019, becoming in this way the second source with the largest share in the whole Spanish electricity mix, after nuclear power (Fig.9).



Source: REE

Fig. 9: Share of electricity generated in Spain by source type in percentages and GWh (2019)

## 5.2.2 SMEs energy supply

In the case of Spain, from all the SMEs asked, **none of them had installed any source of power generation** (Fig.10). As a result, none of the SMEs produced its own energy or had a plan to exploit their resources. To motivate them to do so, SMEs claimed that government subsidies should be promised to establish energy saving policies and clearly report the benefits and improvements that this entails.

Regarding **other decarbonisation measures**, 40% of SMEs assured to have them in place (Fig. 10). However, they meant mainly more optimized behaviours in daily life, such as being more aware in general terms about the energy expenditure and putting or trying not to have lights on in rooms that are not being used.

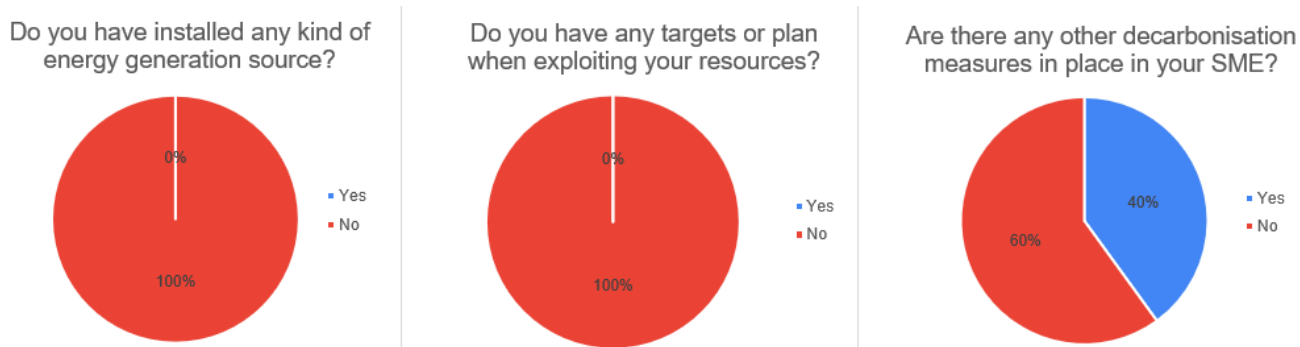


Fig.10: Summary of Spain SMEs responses to the survey (Part 1)

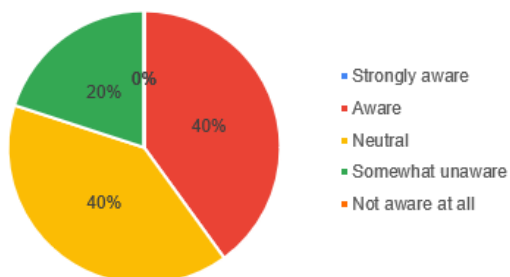
Moreover, **40% of people considered being neutral (neither aware nor unaware) about the possibility of implementing renewable energies in their businesses**. Nevertheless, **20% declared to be somewhat unaware**, ignoring that these measures can be applied. Finally, the remaining **40% said to be aware** of these measures (Fig.11), remarking MOVES program for



electric cars and a catalogue of self-consumption (solar energy mainly) options available, as well as other regulated strategies related to decarbonisation.

Concerning the **level of difficulty to find this information**, **80% of SMEs said it was neither difficult nor easy** and another **20%** thought it was **difficult** (Fig.11).

Are you aware of the current possibilities existing in your country to implement RES and other decarbonisation measures as an SME?



Is it easy to find this information?

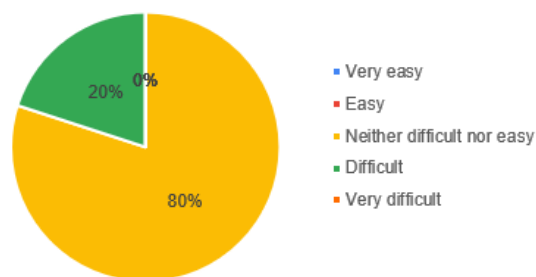
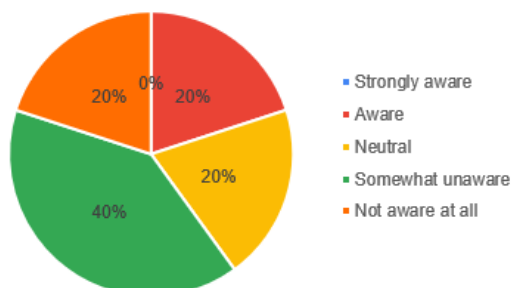


Fig.11: Summary of Spain SMEs responses to the survey (Part 2)

In addition, **40%** of SMEs said to **be somewhat unaware about the existing financial schemes in their countries to implement the aforementioned measures**. On the other hand, **20%** considered being neutral about this (neither aware nor aware). What is more, another **20%** stated to be aware and finally, the last **20%** was completely unaware (Fig.12).

All the SMEs agreed with the fact that these financial schemes **were very complex to process for SMEs** (Fig.12). They added that making them understandable and affordable for the SMEs in general would help, lessening the bureaucracy and the requirements to make them work too.

Are you aware of any financial schemes helping SMEs to implement these measures?



Are these incentives from the Government too complex to process?

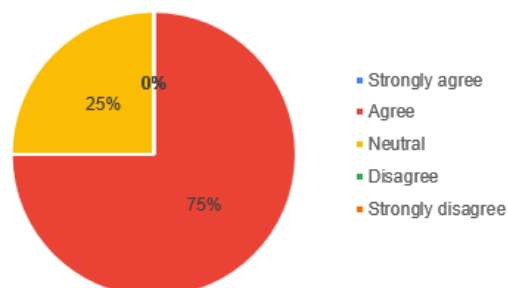


Fig.12: Summary of Spain SMEs responses to the survey (Part 3)



## 5.3 Italy

### 5.3.1 Energy mix structure

Final energy consumption in Italy is estimated at between 114 and 115 Mtoe, down about 10% from 2019 levels. In terms of sources, the lower energy demand in 2020, about 12 Mtoe less than final consumption in 2019 (Fig.13), is to be found for more than 3/4 in the contraction of consumption of petroleum products in transport, down from 2019 levels by about 18%. Electricity and gas consumption also declined (altogether more than 2.5 Mtoe less than the previous year's levels), by 5% and 3% respectively, mainly due to the contraction of production activities, industry and services, as well as climatic factors [11].

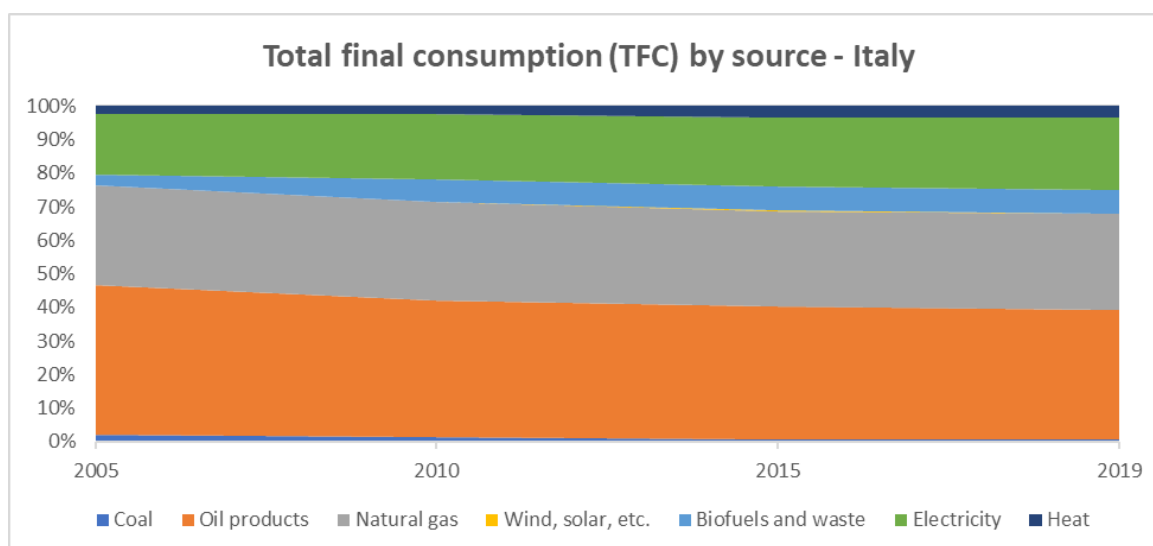


Fig.13: Total final consumption by source in Italy (2019)

### Electricity

In 2020, consumption from renewable sources amounted to about 22 Mtoe, experiencing an increase of more than 1% compared to 2019 consumption, thanks to the growth of electrical RES. The growth in 2020 continues a long-term trend, but in absolute value the slowdown in growth is confirmed compared to the first half of the last decade, when energy consumption from RES increased from 17.3 Mtoe in 2010 to 21.3 Mtoe in 2015, primarily due to the strong growth of photovoltaics and wind power (Fig.14). After braking in 2016 and recovering in 2017 (when they reached a high of 22 Mtoe), consumption from renewables fell again in 2018 (due to the first year of decline in electricity production from intermittents). In the subsequent two-year period 2019-20, renewables then returned to a moderate growth trend, reaching the same peak levels at the end of 2020 as in 2017. Nevertheless, it is in fact necessary that the new capacity installed by RES grows at a significantly faster rate than observed in recent years.

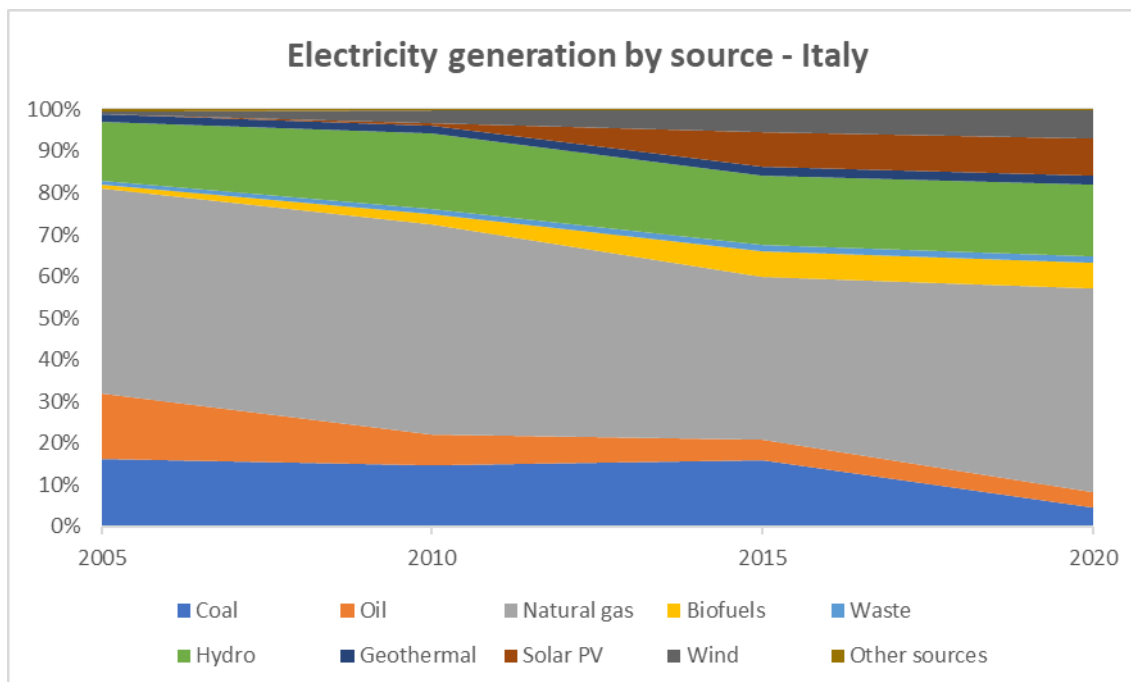


Fig.14: Share of electricity generated in Italy by source type (2005-2020)

## Heat & Transport

Even the RES target on consumption for heating and cooling, set by the PNIEC at 33% in 2030, is challenging in light of the fact that this share, in 2020 less than 20% (Fig. 15), has grown by just two percentage points in the last seven years (the audit of biomass consumption, which has made a decisive contribution to the growth of sectoral and overall RES, is now absorbed).

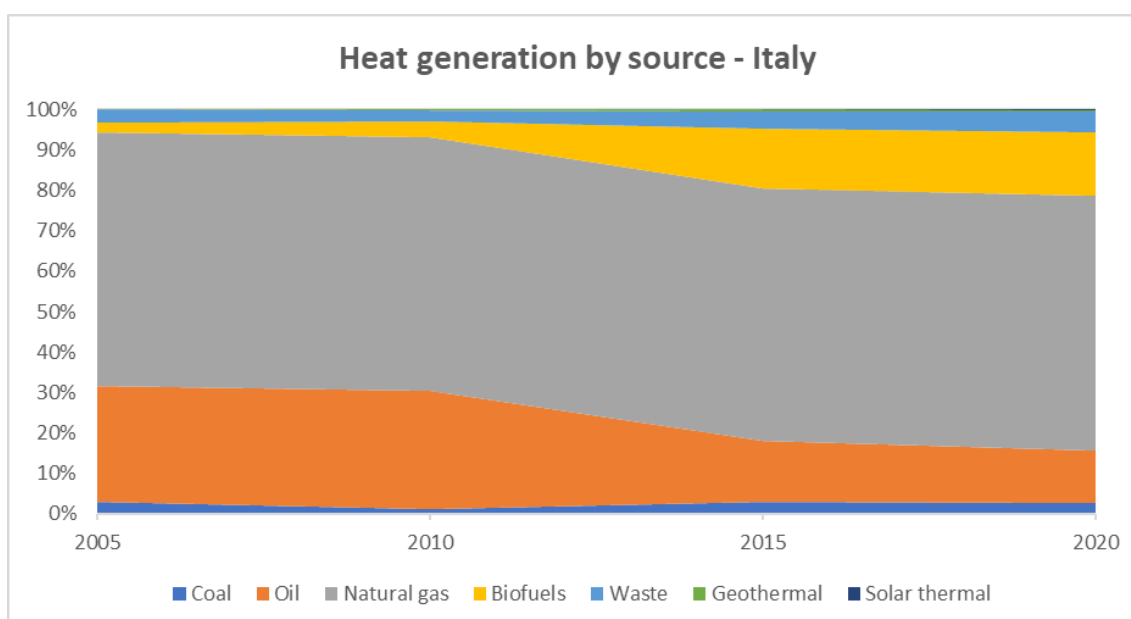


Fig.15: Share of heat generated in Italy by source type (2020)





Also for the share of RES in transport, despite the estimated increase for 2020 compared to 2019 levels (about one percentage point more), the 2030 target set at 21% seems challenging in view of both the current level (less than 10%) and the fact that this share has increased by just 2 percentage points in ten years. Moreover, as mentioned for the overall RES result, the positive result for 2020 is, even more so for the transport sector, mainly due to the drop in oil consumption due to the collapse in traffic volumes, rather than linked to a wider diffusion of biofuels and electricity in road transport. For both thermal RES and renewables in the transport sector, the achievement of the 2030 targets is, as is known, strongly linked to the ability to reduce energy demand, which, net of the 2020 result, moved in the second half of the decade on a trend of moderate recovery.

### 5.3.2 SMEs energy supply

From Italian SMEs, **40% had installed an energy generation source** (Fig. 16) which corresponded in all cases of photovoltaic panels to produce electrical energy. The level of adoption and installation of photovoltaic panels in Italy has significantly increased in the last years, also thanks to the funding options that support and incentivize it.

The vast majority of Italian **SMEs interviewed** do not produce their own energy and those who have installed some kinds of energy generation sources **do not often set specific targets (75%)** (Fig. 16). However, some companies usually set targets of energy efficiency (and renewable sources) in terms of energy use (25%).

Furthermore, the **80% of Italian SMEs had different decarbonisation measures in place** (Fig. 16). In particular, half of them had adopted insulation solutions and materials to gather energy efficiency. Moreover, other two SMEs exploited renewable energy sources to increase the decarbonisation, whereas other mentioned the use of efficient lighting and more efficient production machines.

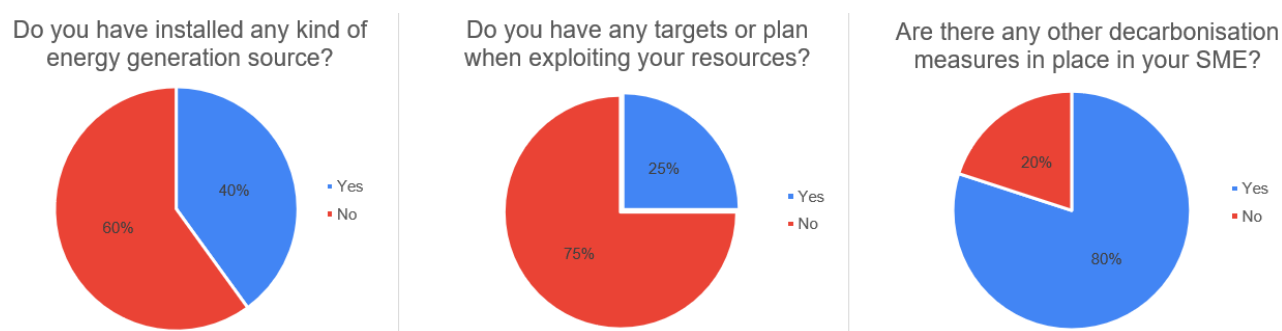
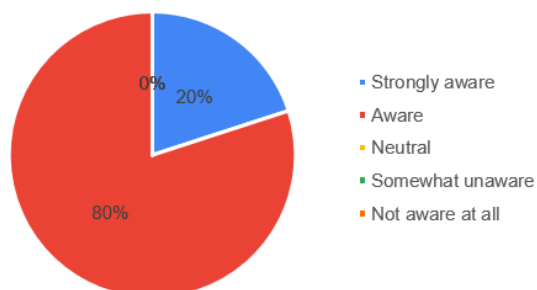


Fig.16: Summary of Italy SMEs responses to the survey (Part 1)

On the other hand, **all Italian interviewed SMEs are aware (80%) or completely aware (20%) of the current possibilities existing in their country to implement renewable energy sources and other decarbonisation measures as an SME** (Fig. 17). Therefore, they put in evidence that the level of awareness on this type of information is pretty high in Italy. However, only the **20% of them highlighted that is easy to find this information**, while the rest of them declared that it is neither easy nor difficult (Fig.17).



Are you aware of the current possibilities existing in your country to implement RES and other decarbonisation measures as an SME?



Is it easy to find this information?

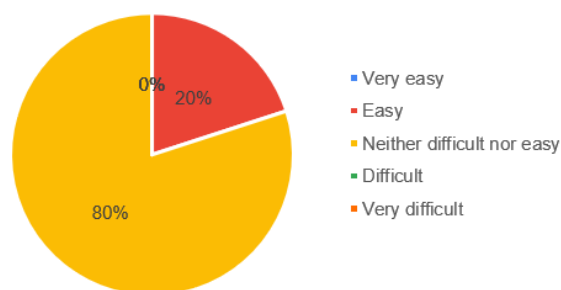
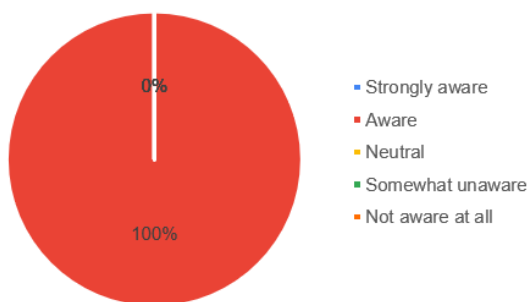


Fig.17: Summary of Italy SMEs responses to the survey (Part 2)

What is more, **all the Italian SMEs asserted that they are aware of the available financial schemes to implement renewable energy sources and other decarbonisation measures** (Fig.18). They did not express a clear vision on the complexity to process these financial incentives. This aspect can suggest us that the available financial schemes are still not enough easy to process and get. Specifically, the suggestion coming from SMEs is the need of providing simple explanations of the steps that need to be taken to access the financial schemes.

Are you aware of any financial schemes helping SMEs to implement these measures?



Are these incentives from the Government too complex to process?

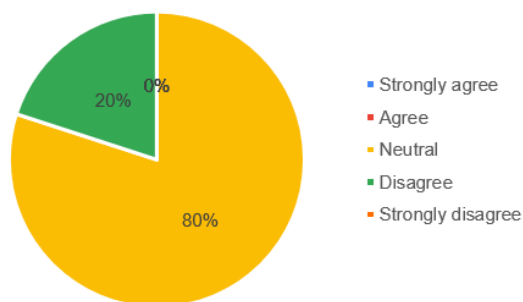


Fig.18: Summary of Italy SMEs responses to the survey (Part 3)



## 5.4 Romania

### 5.4.1 Energy mix structure

Even though Romania traditionally had the third lowest energy dependency rate in the EU due to natural gas and oil reserves, besides an oversized electricity production system, in the last period, the country has shifted from electricity exporter to net importer as a result of a drought affecting hydro power generation.

Romania's electricity mix is one of the most balanced in the European Union, with coal, hydropower, natural gas, nuclear energy, and wind power having comparable shares of capacity and power generation, as it can be appreciated in Fig.19.

Except for wind and solar, almost all units in the systems are old. Therefore, although there is an official installed capacity of 22GW, the average power delivered to the system is around 7GW, with many experts believing that a demand above 11GW is hard to cover relying exclusively on national resources.

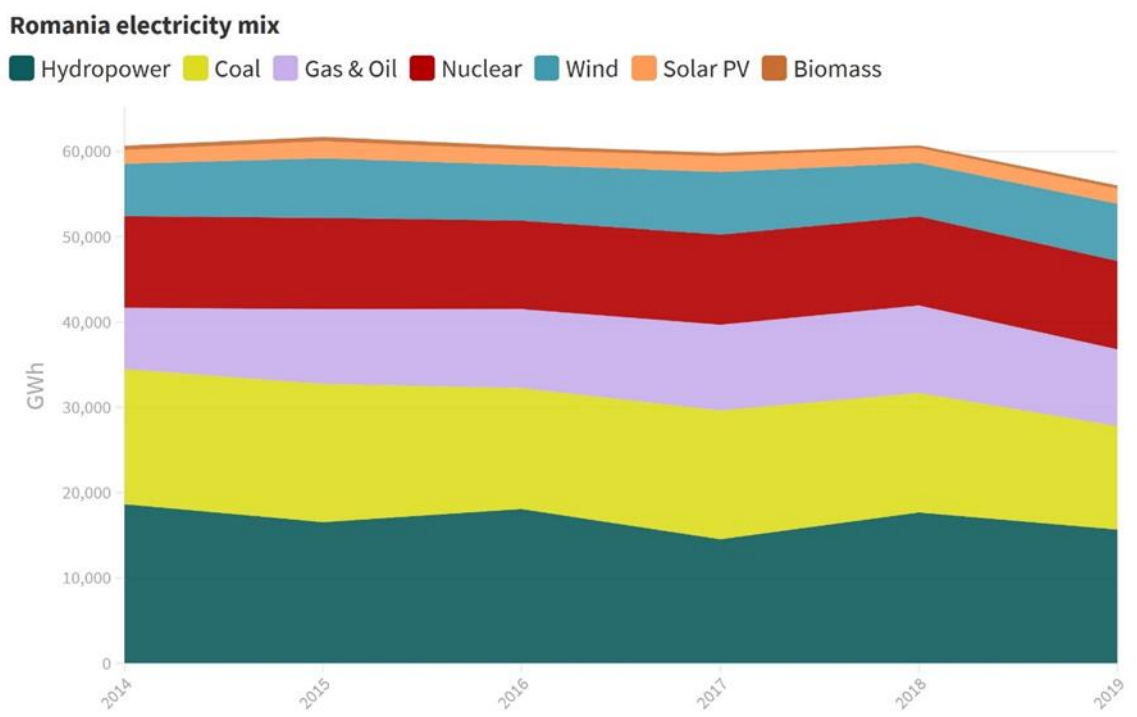


Fig.19: Total final consumption by source in Romania (2019)

The most important planned projects in the Energy Strategy are focused on natural gas, hydropower, nuclear and coal. By promoting these projects, the Ministry of Energy limits the space in the energy system for new clean units and risks investing in infrastructure that will be uneconomic to operate, especially given the current overcapacity laying idle.

None of the ongoing coal power plants are fully compliant with the Industrial Emissions Directive, what is more, most of them benefit from derogations for SO<sub>2</sub>, NO<sub>x</sub> and/or PM.



For this reason, some of the current hard coal and lignite plants are expected to close during the following years, being replaced by gas units.

On the other hand, wind power has experienced rapid growth in Romania, due to the high wind potential and supporting policies for renewable energy production. Romania's potential in wind energy is considered to be the highest in Southeastern Europe, estimated at around 14 000 MW, able to generate around 23 TWh per year.

Following the positive development of the wind sector, investors started showing interest in the field of solar energy production too, which is also virtually inexhaustible in the medium and long term. Romania's solar potential has been estimated in 1.2 TWh of electricity per year, accounting for 2.5% of current national consumption.

The fact that the energy intensity of Romania's economy is twice the European average is an indicator that there is plenty of room for improvement. Concerning the different activity sectors, buildings account for the largest share of energy use in Romania. In this manner, the household sector along with the tertiary sector (i.e. offices, retail premises and other non-residential buildings) account for 46% of total national energy consumption.

#### 5.4.2 SMEs Energy Supply

From the Romanian SMEs participating in the survey, **only 9% had installed some source of energy generation**, specifically, thermal solar panels to heat the water (Fig. 20). However, the rest of the businesses admitted to be considering installing either thermal or PV solar panels (and in some cases, both), specially if some subsidies were available.

With regard to have a plan when exploiting their energy resources, **36% of SMEs confirmed having some established targets** (Fig. 20). The majority of them claimed that they want to become energy independent by 2050, whereas a smaller proportion intended to cover 25% of their energy demand with their own generation on the short-term.

Nevertheless, **82% of Romanian SMEs asked in this survey assured having other different decarbonisation measures in place**. Most of these measures were related with ECMs such as windows and building insulation and, in a lesser extent, water saving devices, energy use monitoring or new lighting bulbs. Moreover, it is important to underline that a few SMEs added staff training and communication with their clients about their energy use as decarbonisation measures.

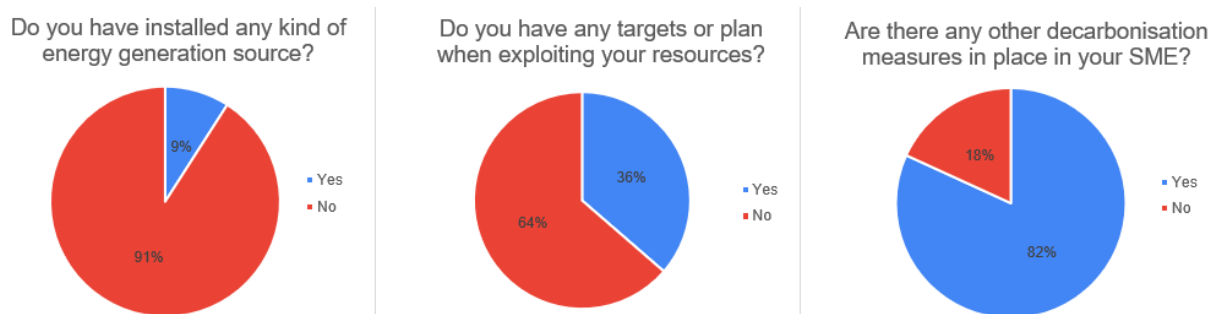


Fig.20: Summary of Romania SMEs responses to the survey (Part 1)



Concerning the awareness of the Romanian SMEs about the existing possibilities to implement RES and other decarbonisation measures as businesses, it is striking how only 8% of the companies declared to be aware, whereas **55% and 27% of SMEs stated to be somewhat unaware or not aware at all**, respectively. Furthermore, **91% of SMEs found difficult or very difficult to access to this information**. This represents an urgent need to make this information more accessible with the aim of enhancing the awareness of companies regarding these policies.

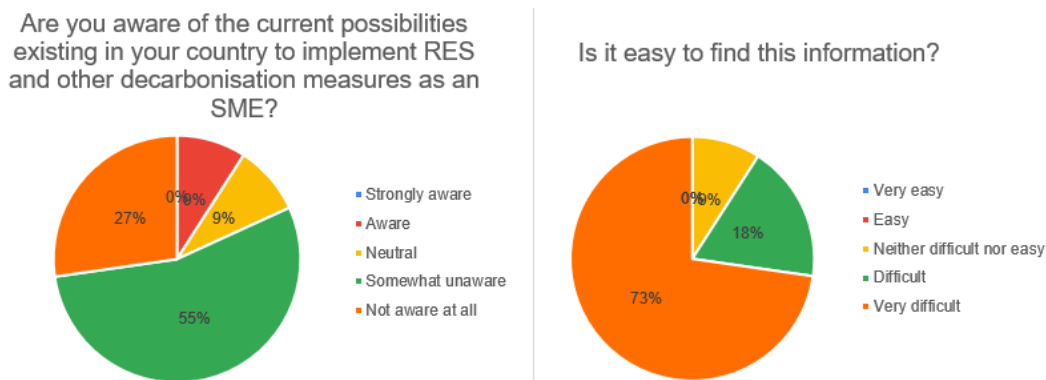


Fig.21: Summary of Romania SMEs responses to the survey (Part 2)

In the same manner, **all the SMEs from Romania stated to be somewhat unaware or not aware at all about the financial schemes available** for businesses to implement the aforementioned measures. As a result, **55% of the companies strongly agree that these incentives are very complex to process** since the information is confusing and there are not clear guidelines on the subject. Therefore, a need for making this information clearer and more accessible for SMEs, providing guidance if required, has been identified in Romania.

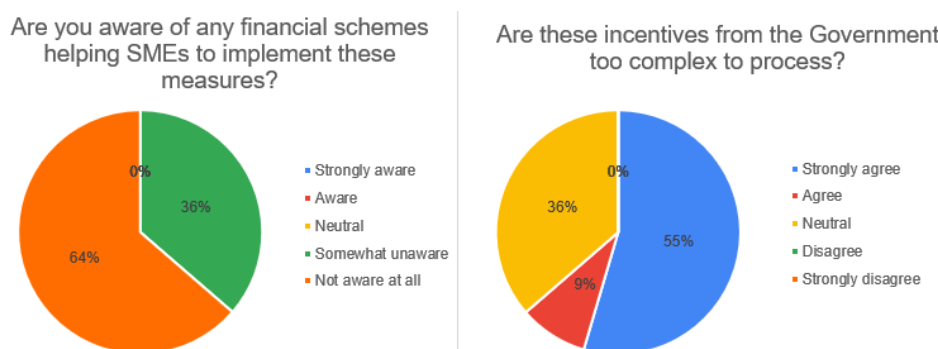


Fig.22: Summary of Romania SMEs responses to the survey (Part 3)



## 6 Action plan to enable the adoption of SPEEDIER in other EU countries

The research in SPEEDIER has previously identified that the main barriers to the implementation of ECMs in the participating SMEs can be summarized as:

1. Lack of finance;
2. Lack of time;
3. Lack of priority;
4. Lack of knowledge.

SPEEDIER has been shown to address these barriers. The action plan proposed below that could enable the SPEEDIER concept would not only support the SPEEDIER concept itself but would also support the energy efficiency in the SME sector.

### 6.1 EU Level

The review, presented earlier in this report, which considered not only the most relevant EU energy and climate policies, but also the NECPs and other ongoing energy plans of the pilot sites participating in SPEEDIER, highlighted that there is a general lack of policies addressing energy efficiency in industry and more specifically, SMEs. However, there is a great number of policies covering other areas of energy efficiency, especially buildings and the residential sector. This also depends on the country, since not all the member states have their industry developed at the same level. Therefore, more specific EU legislation should be needed to establish energy efficiency targets with SMEs, in the same manner that some big companies have them.

The research indicated that there is a lack of support from local and national governments to energy experts to deliver energy audits and advise on other energy efficiency support services. This is critical as access to no or low-cost energy experts for SMEs can address these barriers. This feedback indicates that these support schemes either do not exist, are ineffective, or are not widely known. To solve this problem, EU regulation should be put in place to mandate that member states to enhance (or create, if they do not exist) these support schemes and promote them, in a similar manner to other energy and climate related policies.

It is acknowledged that monitoring and understanding the use of energy in any scenario is a critical first step in beginning an energy efficiency journey. In this context, an energy audit after a certain period of time should be made mandatory for SMEs. It would be vital to offer subsidies and financial mechanisms also from the EU to member states to help to mitigate the lack of finance barrier: such as offering a first free energy auditing, etc. Otherwise, this initial first step could be potentially seen as an imposition rather than something that could support the efficient operation of a business.

To support the objective of increasing the level of knowledge about energy efficiency and other ECMs among business owners, member states could be mandated to launch awareness campaigns regarding programmes that could support SMEs to decarbonise. The launch of projects which share some of the concepts of SPEEDIER, which also includes training and education, could be helpful. Furthermore, a project like SPEEDIER allows customisation to the needs of each business in an individual and personalised way. This provides a greater flexibility for SMEs, helping to relieve the barrier of the lack of time, since energy expert and business





could agree the time and measures that suit better for both, reducing the impact on the business activity as much as possible. As a result, removing totally or partially the barriers of lack of knowledge and lack of time, would lead to a reduction of the lack of priority problem too.

With regard to expanding the scope of SPEEDIER, the results from the survey carried out in the present deliverable have shown that once energy audits have been taken and ECMs implemented, there is still a wide variety of options to adopt in the long path of decarbonisation.

According to the responses, most of SMEs did not have very clear idea what decarbonisation measures and in many cases have confused measures with behaviours. Conversely, some SMEs have considered ECM as decarbonisation measures, whereas others not. This lack of clarity evidences the requirement for further training.

In addition, a lack of targets and a plan when exploiting their energy resources has been observed across pilots. For this reason, the guidance of an energy expert (as SPEEDIER offers) together with the establishment of basic guidelines by the EU, specifically for SMEs, could be a used to tackle this situation.

The results from the SME survey demonstrate that even if there is progress in terms of installation of renewable energy sources and ECM implementation, there can still be a lot of potential for improvements in energy and potentially cost reduction. In particular, the energy associated with heat and transport, which are significant for the industrial and commercial sectors, tend to have less visibility, less awareness and less importance for SMEs.

## 6.2 Regional Level

Even if survey results have shown again similarities and common factors among all the pilot sites, some differences that need to be addressed regionally have been detected too.

For instance, it is striking the difference between SMEs from Spain (and Romania to a lesser extent) and the rest of pilots assessed in terms of generating their own energy. The policy review indicated that self-generation in Spain is being strongly supported and customers have been allowed to discharge excess of electricity generated to the grid since 2019. Nevertheless, none of the Spanish SMEs had any kind of energy generation source installed in their business, in contrast with Ireland and Italy, where 40% of SMEs produce their own electricity through thermal solar or PV panels.

It has been noted that in Spain a larger proportion of SMEs rent the building that they use as their premises. This is a potential barrier to renewable generation and implementation of ECMs and policies should be put in place to address the challenges associated with decarbonisation and improved efficiency in the context of buildings tenanted by SMEs known as the “split incentive” problem.

Survey results also indicated how there is also a matter of lack of awareness regarding regional regulation. Therefore, it is necessary not only to create policies to meet the targets established by the EU, but also to promote them and give them visibility among regional SMEs. In this context, Italy appears to have been very successful, since all the SMEs survey confirmed that they to be aware or completely aware about all these mechanisms. This is probably due to the





closer contact they have with ESCOs, who keep them in touch with all these measures and offer to them the opportunity of being well informed.

On the other hand, in Ireland, despite 40% of SMEs surveyed generated their own energy and are aware about the possibilities they have as businesses, it has been found that there is a lot of contrast with the rest of SMEs, who state not being aware (20%) or just being neutral about these possibilities (40%), which indicates a lack of interest from their side too. Hence, even if the figures are not bad, there is still a lot of potential for improvement in Ireland too.

In this regard, the approach of SPEEDIER could also be useful, given that the energy expert guiding through the process can provide SMEs with tailored options cognisant of their location and the rest of individual circumstances while increasing their knowledge and training them in the ongoing energy and decarbonisation policies.

Moreover, it has been found that there is a correlation between the level of awareness SMEs have to implement RES and other decarbonisation measures in their companies and how easy they think finding this information is. Most SMEs from all the pilots have agreed that this information is neither easy nor difficult to find, except for Romania, which presents an urgent need of making this information more accessible. This indicates it is critical to share knowledge about knowing where to look for this information rather than its accessibility. However, the least informed SMEs in this field have been also the ones claiming this information was difficult to access, as shown in the results from Spain and Romania. Hence, the aforementioned promotion of these policies and the trainings should include bibliography and references about where to find these updated data.

Concerning the awareness of SMEs about financial schemes from the governments that help to implement these measures, the results have been similar. In Italy all the SMEs surveyed declared to know these incentives, whereas in Ireland there is a distinct contrast between 60% of business claiming being aware and the remaining 40% being somewhat unaware. In the same manner, Spain was the second country with the highest rate of unawareness, with financing mechanisms known to 20% of the SMEs asked. Conversely, 20% declared to be “neutral” (neither know or unknown) and the rest assured to be somewhat or completely unaware about these schemes. However, Romania has presented the most worrying situation in this regard, with all the SMEs surveyed saying they were somewhat unaware or not aware at all about these financial mechanisms. Therefore, it is highly unlikely that any of these SMEs would access these financial incentives. Therefore, it is crucial for local and regional governments to not only put these incentives in place but should also be widely disseminated. Potentially they should be included in the agenda of the suggested trainings for SMEs. This is implicit in a project like SPEEDIER with the presence of energy experts.

Finally, with relation to the difficulty of processing these financial incentives, it can be summed up that in countries where there is a greater misinformation about the incentives available, there is also a stronger perception of arduousness when trying to get them. Particularly, for the results from Spain, 75% of SMEs surveyed thought that the paperwork necessary to get the grants was too complicated, whereas in Romania it has been declared that the information was confusing and SMEs were missing guidance in this regard. On the other hand, the SMEs surveyed in Italy and Ireland disagree or remained more neutral towards this statement. However, SMEs from Ireland also added that even if the bureaucracy was not especially difficult to deal with, it took too long to actually receive the money/finance, while Italian SMEs said that simple explanations



of the steps that need to be taken to access the financial schemes should be provided. Therefore, it is critical that regional and local governments simplify these procedures and make them more efficient and accessible and thus enable SPEEDIER Experts and SMEs to access these incentives for ECMs.

To conclude, in spite of the general recommendations at EU and regional level based on the pilot countries, it is essential to consider when trying to expand or implement SPEEDIER in other jurisdictions, that this replication should be tailored in any case to the local environment.



## 7 Conclusion

In this Deliverable, the review of the EU and national most relevant energy and climate policies for SMEs, in addition to the assessment of the decarbonisation measures in place in the different countries involved in SPEEDIER project, has stated the barriers previously identified, bringing some new significant considerations for policy makers.

Overall, it can be concluded that there is a lack of energy efficiency policies focusing on SMEs in both national and EU legislations compared with other sectors. Furthermore, a lack of goals when planning to implement decarbonisation measures and exploiting their energy resources has been noted in most of the surveyed businesses. Thus, specific energy efficiency targets for these companies are required to be set by the EU and the governments.

What is more, concrete policies need to be developed also in the context of buildings rented by SMEs to tackle the “split-incentive” problem, which has been also identified as a barrier for ECM implementation in countries such as Spain.

Nevertheless, in order to encourage the SMEs to achieve these targets, it is vital that these policies come followed by subsidies and financial incentives to undertake mandatory energy audits that allow the deployment of the first zero or low-cost measures.

Throughout this process, the role of an energy expert has proved to be really helpful in SPEEDIER, guiding the SMEs towards the best tailored options according to their own circumstances, relieving their lack of time and improving their awareness in matter of energy efficiency and decarbonisation measures with training. However, the research carried out in this study has shown that there is a lack of support from local and national governments to energy experts. Therefore, it is relevant to establish the corresponding support schemes at EU and national level and promote them.

Moreover, as a result of the closer contact they have with ESCOs, Italian SMEs have evidenced in the survey to be the most aware not only of the current possibilities for SMEs existing in their country to deploy decarbonisation measures, but also of the financial mechanisms into force available to help to implement these ECM. Thanks to the advising of ESCOs too, they know better where to find this information and perceive the bureaucracy to process the incentives less cumbersome.

Nonetheless, in spite of the example of Italy, it is critical that the EU and the governments launch awareness campaigns with regard to programmes that support SMEs’ decarbonisation and foster training in this field. Moreover, regional and local governments should promote where to find guidelines to implement ECM and other decarbonisation options as a small or medium business, making this information the most accessible possible, while simplifying the procedures to get financial incentives.

To conclude, the results of this study show how despite of the progress experienced during the last years in terms of RES deployment and ECM in place in SMEs, there is still a high potential for improvement in this field across the EU. There are crucial barriers detected that have not been addressed yet, which need to be tackled with urgency by policy makers in a tailored approach for each jurisdiction. This will be the only way of not getting stalled in the long path of decarbonisation.



## Bibliography

- [1] L. Contractor, “SPEEDIER SME Program for Energy Efficiency through Delivery and Implementation of EneRgy Audits D2 . 3 – REPORT ON FINDINGS FROM SURVEYS OF BUSINESSES Lead Contractor : IERC,” no. 847034, 2020.
- [2] A. Dubois, “SPEEDIER SME Program for Energy Efficiency through Delivery and Implementation of EneRgy Audits D2 . 4 – REPORT SUMMARISING FINDINGS FROM STAKEHOLDER FOCUS GROUPS Lead Contractor : IERC,” no. 847034, pp. 1–38, 2021.
- [3] V. T. P. B. D. A. P. Z. L. M. Economidou, *Review of 50 years of EU Energy Efficiency Policies for Buildings*. 2020.
- [4] European Commision, “2030 Climate & Energy Framework.”
- [5] European Commission, *Energy Union*. 2020.
- [6] European Commission, *Clean Energy for all Europeans package*. 2021.
- [7] European Commission, “National Energy and Climate Plans (NECPs),” 2021.
- [8] European Commission, “2050 Long-Term Strategy.”
- [9] European Commission, “A European Green Deal.”
- [10] DCCAE, “National Energy & Climate Plan,” 2019.
- [11] International Energy Agency, “IEA Reports,” 2021. [Online]. Available: <https://www.iea.org/countries>.
- [12] Ministerio para la Transición Ecológica, “Plan Nacional Integrado de Energía y Clima ESPAÑA,” *Idae*, p. 25, 2019.
- [13] Italian Government, “Piano nazionale integrato per l’energia e il clima.” [Online]. Available: [www.mise.gov.it](http://www.mise.gov.it).
- [14] Italian Government, “Piano nazionale di ripresa e resilienza.” [Online]. Available: [governo.it](http://governo.it).
- [15] Italian Government, “Strategia Nazionale Idrogeno Linee Guida Preliminari.”
- [16] Romania Government, “The 2021-2030 Integrated National Energy and Climate Plan,” no. April 2020, 2020.
- [17] M. Howley, “Energy in Ireland Energy in Ireland,” no. 2, pp. 1–45, 2020.
- [18] REE, “Las Energías Renovables en el Sistema Eléctrico Español,” 2019.



## Annex 1: Policy Template

<b>Name:</b>		<b>Location:</b>	(Country/Region)
<b>Type:</b>	POLICY	<b>Status</b>	(Current/Past/Future)
<b>Website:</b>			
<b>Description:</b>			
<i>Briefly describe the policy. What is its purpose? Which stakeholders does it target? How has it been implemented?</i>			
<b>Impact</b>			
<i>What is/was the short, medium and long term impact of this policy? Give figures if available on energy/carbon savings achieved or other KPIs. Were there any unintended effects of the policy?</i>			
<b>Costs and Gains</b>			
<i>If known, what was the cost of implementing the policy and/or were any gains made from the policy? Look at the point of view of government and stakeholders.</i>			
<b>Limitations</b>			
<i>What are the limitations of this policy? Did it achieve the intended impacts? If not, why not?</i>			
<b>Relevance to SPEEDIER:</b>			
<i>How is this policy relevant to SPEEDIER?</i>			



## Annex 2: Survey Questions

- 1) Are you aware of the current possibilities existing in your country to implement renewable energy sources and other decarbonisation measures as an SME?

☐ Not aware at all ☐ Somewhat unaware ☐ Neutral ☐ Aware ☐ Strongly aware

If you are aware, please, explain them.

- 2) Is it easy to find this information?

☐ Very difficult ☐ Difficult ☐ Neither difficult nor easy ☐ Easy ☐ Very easy

- 3) Are you aware of any financial schemes helping SMEs to implement these measures? (E.g. Subsidies, feed-in or premium tariffs, etc.)

☐ Not aware at all ☐ Somewhat unaware ☐ Neutral ☐ Aware ☐ Strongly aware

- 4) If you know any financial incentives by the Government, are they too complex to process?

☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree

If they are too complex, how best could they be simplified?

- 5) Do you have installed any kind of energy generation source (either thermal or electrical)?

☐ Yes ☐ No

- If yes, please explain which ones. If not, what could you make consider installing them?

- 6) If you produce your own energy, do you have any targets or plan when exploiting your resources? If yes, please explain them.

☐ Yes ☐ No

- 7) Are there any other decarbonisation measures in place in your SME?

☐ Yes ☐ No

- If yes, please explain which ones and why. If not, what other measures are you currently considering?



## Annex 3: Survey Responses Template

<b>Name:</b>	<i>SMEs energy supply</i>	<b>Location:</b>	<i>Each pilot site country</i>
<b>Description: Energy generation by SMEs</b>			
<i>What percentage of SMEs in your country have installed any kind of energy generation source? (Considering both, thermal and electrical). Indicate which technologies they use. In case they don't have any, explain what could make SMEs consider installing them.</i>			
<b>SMEs energy roadmap</b>			
<i>From the SMEs producing their own energy, what percentage has any targets or plan when exploiting their resources? Explain them.</i>			
<b>Other decarbonisation measures in SMEs</b>			
<i>What percentage of SMEs has any other decarbonisation measures in place? Explain them. In case there aren't any, which ones could they consider?</i>			
<b>Regulation to implement RES and other decarbonisation measures in SMEs</b>			
<i>Indicate and explain the level of awareness of SMEs about the possibilities they have to install renewable energy sources and other decarbonisation measures as businesses. Evaluate the accessibility of this information for SMEs.</i>			
<b>Financial schemes helping SMEs to implement RES and other decarbonisation measures</b>			
<i>Evaluate the level of awareness of SMEs about the existing financial schemes in their countries to implement the aforementioned measures. Indicate the level of complexity to process and get these financial incentives for SMEs and explain how SMEs think they could be simplified.</i>			