WORKSHOP AGENDA

Welcome speech

Workshop presentation

SMEs and energy efficiency. Needs & background discoveries to date

Training proposals based on discoveries

Policies to date for SMEs

Possibilities in this regard for SMEs

Conclusions
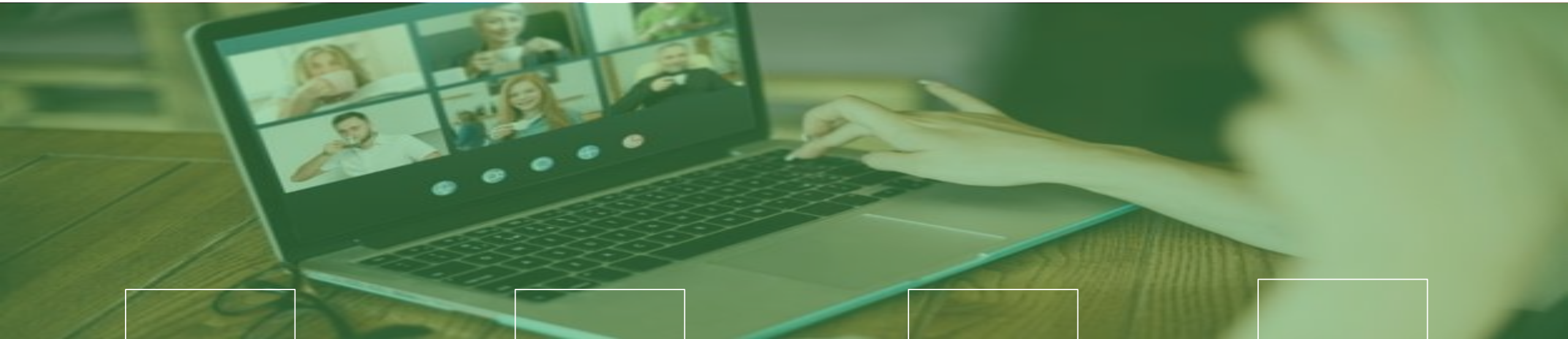
WEBINAR NOTICES

This session is being recorded

Please, make sure your microphone is muted

Use the chat function to enter your questions

This is an interactive session, please, participate on our polls

WELCOME SPEECH

Oronzo Daloiso.
Project Advisor at EASME

00

Sustainable Places 2020

Overview of H2020 EE projects tackling SMEs

27 October 2020

How did H2020 projects tackle energy efficiency in industry and SMEs?

Improving skills and capacities of relevant market stakeholders (staff, energy managers, energy auditors, …)

Fostering the decision makers of the company to embrace the multiple benefits concept

Stakeholder mobilisation, knowledge transfer and awareness raising

Supporting the definition of standards and benchmarks, so as to accelerate the market uptake of BAT and processes

Leveraging investment in sustainable energy (also through PDA)

Supporting policy implementation (e.g. art.8 of the EED)

Which projects have been funded so far?

✓ During the 2014-2020 MFF, The Energy Efficiency part of H2020 has supported EU companies to improve their energy performance accelerating the market uptake of cost-effective energy efficiency measures by leveraging skills, knowledge and investment in sustainable energy.

✓ From the entrance into force of H2020 – up until now – 18 projects have been funded (receiving a cumulative EU contribution of roughly 36 mln €) involving SMEs operating in different sectors (e.g. steel, food and beverage, automotive etc) with the aim to boost their competitiveness through the implementation of energy efficiency solutions.

✓ Continuation of market uptake actions building upon predecessor programmes Intelligent Energy Europe (2003-2013) and Coordination and Support Actions under Horizon 2020 Energy Efficiency (2014-2020).

EE-16-2014 (CSA)	
ENERWATER	**Universidade de Santiago de Compostela** www.enerwater.eu/ *To develop an innovative methodology for assessing, labelling and improving the energy performance of Wastewater Treatment Plants .*
STEAM-UP	**INDUSTRIAL ENERGY EXPERTS BV** www.steam-up.eu/ *To assess the substantial and easy to reach energy-saving potential of steam systems in heavy industries.*

EE-16-2015 (CSA)	
EE-METAL	**Asociación De La Industria Navarra** www.ee-metal.com/ *To increase energy efficiency and savings in SMEs of Metal and Metalworking industry.*
WaterWatt	**DECHEMA e.V.** www.waterwatt.eu/ *To improve energy efficiency in industrial water circuits using gamification.*
SCOoPE	**Cooperativas Agro-Alimentarias De Espana** www.scoope.eu/ *To reduce energy consumption in the crop drying, meat & poultry, dairy, fruit & vegetables transformation sectors.*
EnergyWater	**The Technological Institute of Castilla y León** www.energywater-project.eu/ *To provide support to manufacturing industries by enabling energy efficient water processing.*

EE-15-2017 (CSA)	
INDUCE	**Fundación CIRCE – *Aim:***To increase the energy efficiency through behavioural and organizational change models targeting the food and beverage sector. *https://www.induce2020.eu/*
M-Benefits	**Fraunhofer Institute – *Aim:***To include the Multiple Benefits of energy efficiency in investment decisions of companies. *www.m-benefits.eu*
EUREMnext	**Nuremberg Chamber of Commerce and Industry– *Aim:***To increase the quality of energy audit results through training programs. *www.eurem-next.eu*
IMPAWATT	**PLANAIR SA– *Aim:***To develop staff trainings and capacity building programmes to enhance corporate policy towards energy efficiency, energy culture and sustainable supply-chain initiatives. *www.impawatt.com*

EE-08-2018 (CSA)	
SPEEDIER	**Cork University – *Aim:*** *To foster the market uptake of EE solutions by providing a self-financing outsourced energy management service to SMEs. Not yet available*
SMEmPower Efficiency	**University of Thessaloniki – *Aim:*** *To develop a certified "education and training programme" for SMEs operating in the manufacturing sector. Not yet available*
E2DRIVER	**Fundación CIRCE – *Aim:*** *To develop a collaborative training platform for the SMEs operating throughout the whole automotive supply chain. Not yet available*
ICCEE	**University of Brescia – *Aim:*** *To facilitate SMEs in the cold chains of the food and beverage sector to implement EE measures. Not yet available*
INNOVEAS	**I.I.P.L.E. – *Aim:*** *To address the major non-technical barriers hampering SMEs form undergoing energy audit (focusing on the SMEs size). Not yet available*

EE-08-2019 (CSA)	
LEAP4SME	**ENEA – *Aim:*** To support Member States to develop audit supporting schemes for SMEs. Not yet available
GEAR-at-SME	**TNO – *Aim:*** To bridge the gap between demand and supply of Energy Efficiency (EE) solutions among SMEs through the development of a local collective approach. Not yet available
DEESME	**IEECP – *Aim:*** To support directly 10 National Authorities (NA) to encourage companies to implement energy audits and EMSs (e.g. ISO 50001) Not yet available

Thank you !

Oronzo Daloiso

EASME, Unit B1 H2020 Energy

WORKSHOP PRESENTATION

01

Riccardo Cariani.
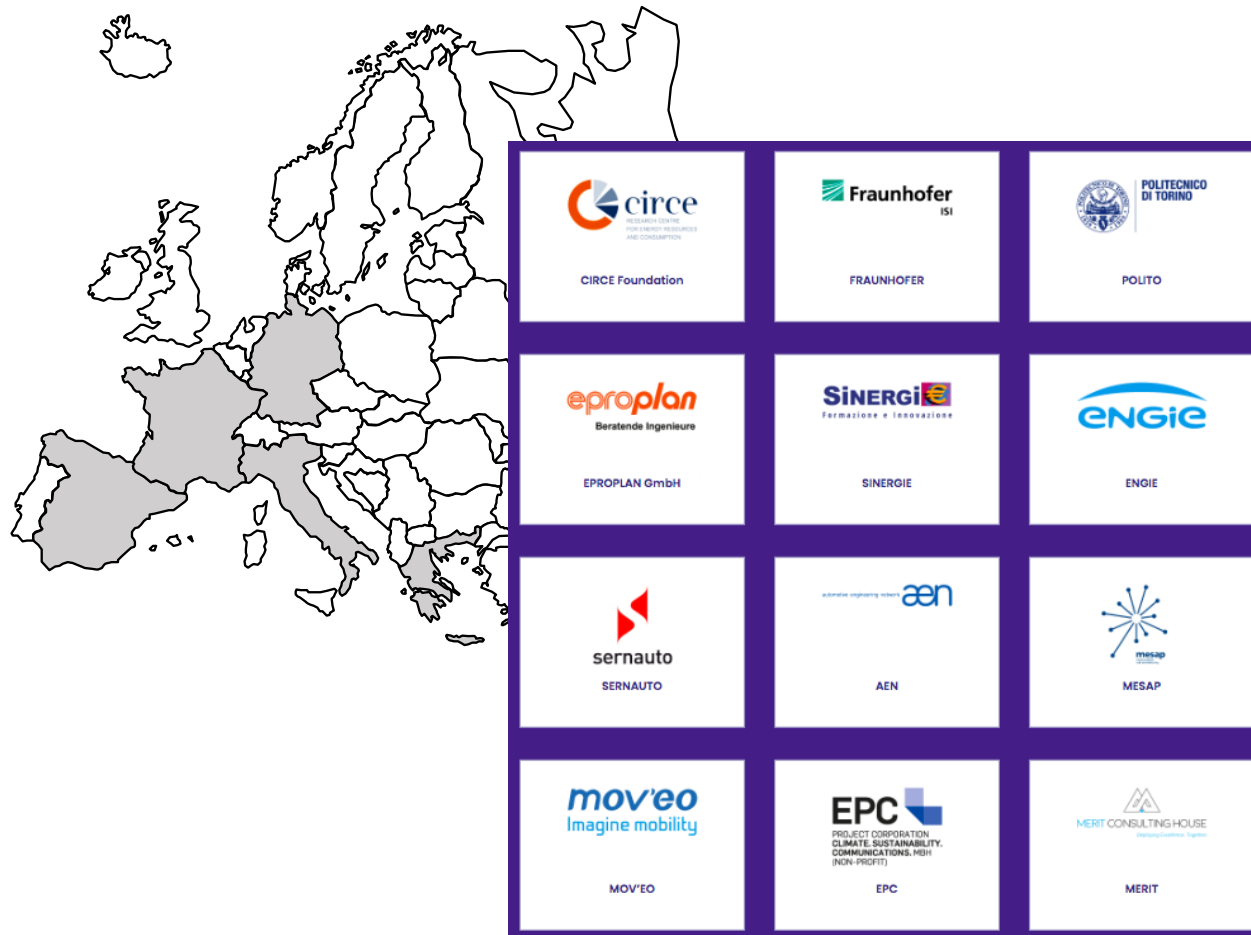Project Manager at Instituto Profesionale Edile

TARGET GROUP

- **40 European companies in _automotive sectors_ to be involved**
- **More than 650 staff members of SMEs to be trained**

SOLUTION/TOOLS

- **An innovative learning platform**
- **A co-operative network**
- **A capacity building programme**

EXPECTED RESULTS/ OUTCOMES

- **The project's integrative approach aims to boost capacity building programmes on energy auditing by establishing an innovative learning platform**
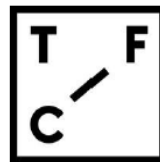
The SME program for energy efficiency through delivery and implementation of energy audits

SPEEDIER

PARTNERSHIPS

PROJECT OBJECTIVES

SO1: To demonstrate the viability of an innovative one-stop-shop solution where SMEs can outsource energy management to a SPEEDIER Expert

SO2: To facilitate the uptake of energy audits and implementation of the resulting energy conservation measures in SMEs

SO3: To demonstrate the effectiveness of the self-financing mechanism.

TARGET GROUP

- **More than 100 SMEs in Europe**
- **650 staff members of SMEs to be trained**
- **50 SPEEDIER experts to be trained**

SOLUTION/TOOLS

- **An outsourced energy manager (SPEEDIER Expert) to guide SMEs**
- **A self-financing solution, through ring-fencing and reinvesting savings**
- **An energy audit tool to speed and standardise audits**
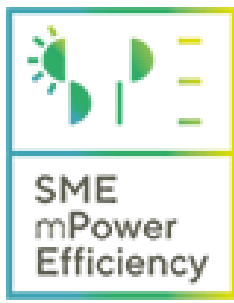- **A mobile app to build capacity in SMEs**

EXPECTED RESULTS/ OUTCOMES

- **Greater uptake of energy audits in SMEs**
- **Greater implementation of recommended measures**
- **Improved energy culture of SMEs**

SMEmPower Efficiency:
A holistic framework for Empowering SME's capacity
to increase their energy efficiency

PARTNERSHIPS
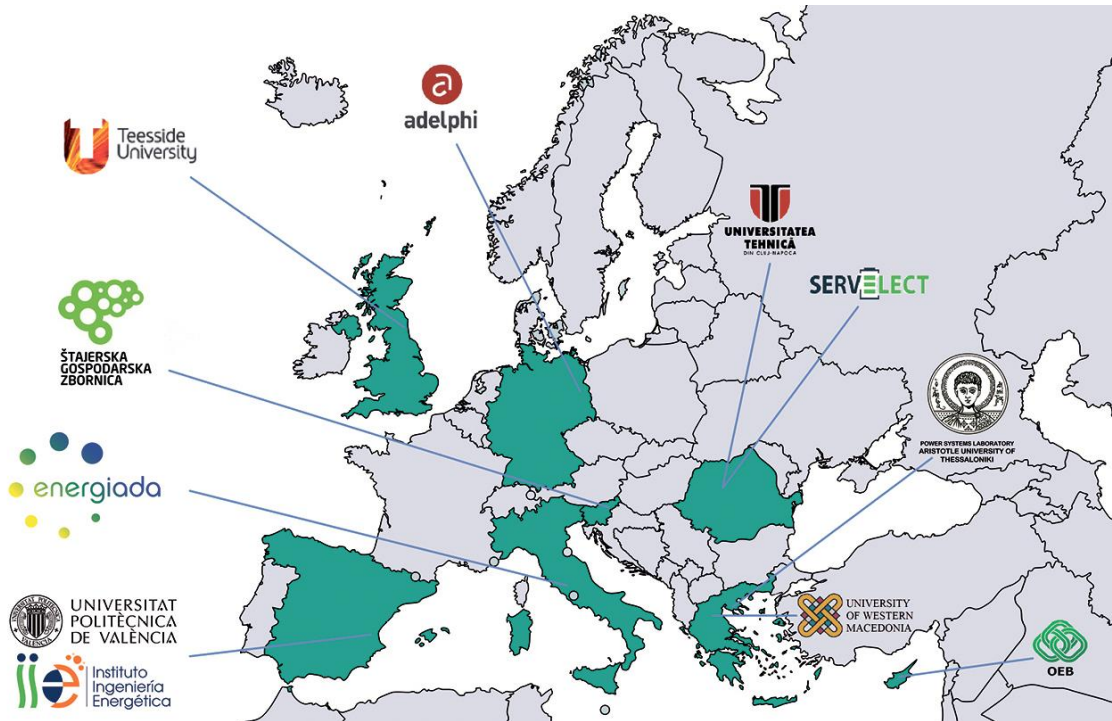
PROJECT OBJECTIVES

SO1: creation of a framework to aid SMEs undergo energy audits

SO2: improve the knowledges and skills of SMEs to implement energy savings measures for increasing their energy efficiency

TARGET GROUP

- **More than 700 energy managers in SMEs to be trained**
- **More than 800 staff members of SMEs to be trained on site**
- **Financing entities to be reached through targeted workshops**

SOLUTION/TOOLS

- **An advanced training handbook in 7 languages**
- **A web platform for energy analytics**
- **A tool for Monitoring & Targeting**
- **A tool for Measurement & Verification**

EXPECTED RESULTS/ OUTCOMES

- **Removal of barriers to energy efficiency projects**
- **Enabling better implementation of energy-efficiency policies and enhancing the digitalization of industry towards the fourth industry revolution**
- **Improve the use of effective tools for energy optimization, new technologies and processes driven by energy efficiency, in a close and improved connection with top decision makers**

INNOVEAS: INNOVativing the uptake of Energy Auditing Schemes for SMEs

PARTNERSHIPS

PROJECT OBJECTIVES

SO1: Advanced analysis of behavioral barriers to energy audits

SO2: Delivery of self-sustainable capacity building programmes

SO3: Creation of an institutional structure to sustain the project's objectives and results

TARGET GROUP

- **European SMEs of <u>Construction, Chemical and Food sectors</u>**
- **Industrial associations**
- **Policy makers**
- **Institutional actors**
- **Financial institutions**

SOLUTION/TOOLS

- **Assessment on on enterprises energy "culture", of non-technical barriers and of existing framework conditions**
- **Capacity Building Programme for SMEs, Stakeholders and Intermediaries**
- **European Alliance for Energy Audits in SMEs**

EXPECTED RESULTS/ OUTCOMES

- **Building capacities and skills, mainly targeting EU industries and service companies**
- **Increase energy culture and create an enabling environment to implement energy saving measures in SMEs**

SMEs and energy efficiency. Needs & background discoveries to date

Grigoris Papagiannis

Professor Power Systems at Aristotle University of Thessaloniki

02

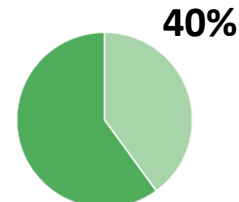# EU climate and energy targets for 2020 and 2030

EU Climate & Energy Targets

EU 2020 Targets

EU 2030 Targets

Reduction of GHG emmision

20%   40%   55% ?   40%

Share of RES

20%   32%
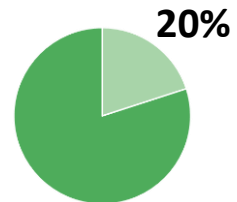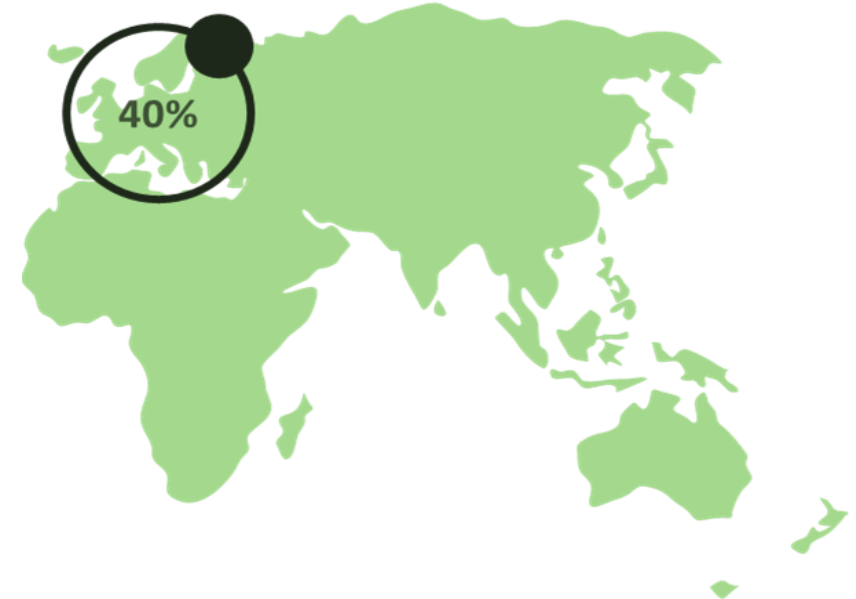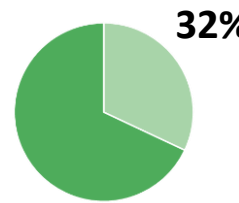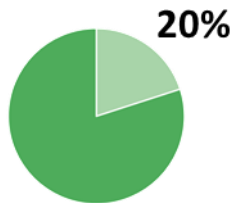
Increase of energy efficiency/energy savings target

20%   32,5%
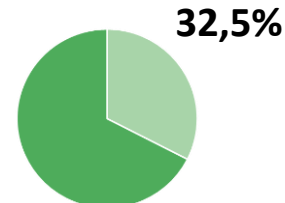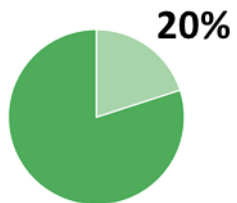
SMEs in the EU – Current situation

99% — Of all businesses

~100 million — People employed in SMEs

13% — Of total energy demand

Improve the energy efficiency of SMEs!
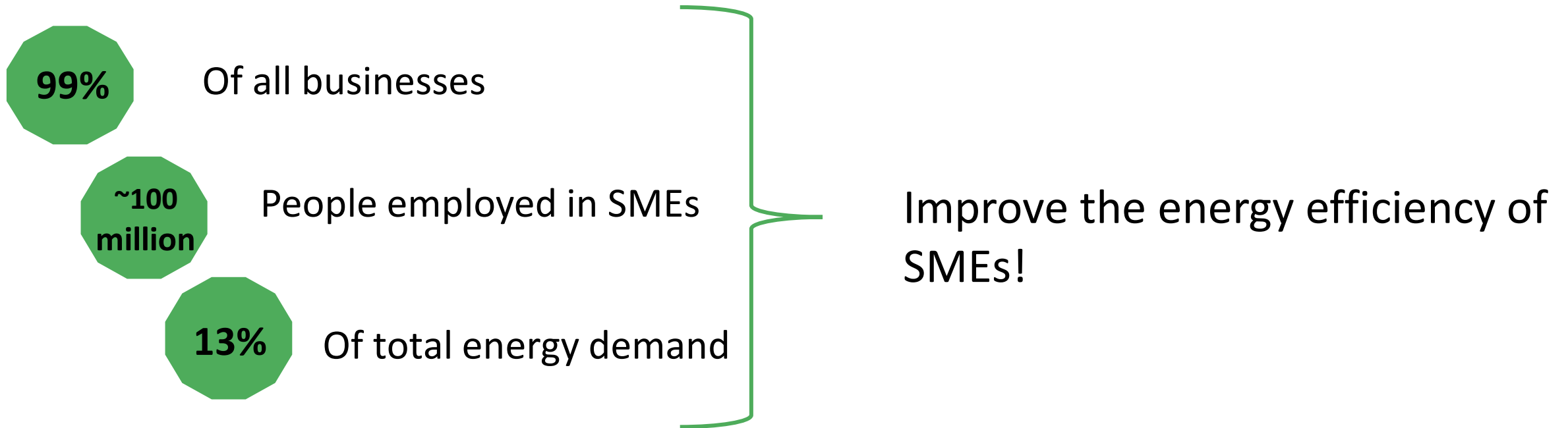
Conducted surveys to identify the current situation and to identify existing **barriers**!

Project surveys – Behind the scenes

- **213** SMEs from **8** countries, i.e. **Cyprus, Germany, Greece, Italy, Romania, Slovenia, Spain, U.K.**

- SMEs in the sectors of **Construction, Food industry, Services, Hospitality, Commercial, Trade, Heavy industry and others**

- **Online surveys** to discover possible expectations, constraints and needs of the SMEs
  - **513** respondents from **5** countries, i.e. **Germany, Italy, Poland, Slovenia, Spain**

- **Interviews** with special focus on target sectors **Construction, Food processing and Manufacture of Chemicals and chemical products**
  - **41** in-depth interviews with representatives of SMEs conducted in the partner countries

Project surveys – Behind the scenes/2

SPEEDIER

- **84** SMEs in **4** countries, i.e. **Ireland, Italy, Spain, Romania**

- SMEs in the sectors of **Services, Manufacturing, Hospitality, Commercial, Energy, Education and others**

e2DRIVER

- **12** companies for the involved countries i.e. **Germany, Spain, France, Italy**

- Targeted specifically at the **automotive industry**

Crunching the outcomes – Energy managers

Energy Managers employed by the SMEs:

- **62 %** of the companies surveyed **do not have an energy manager** in their company

- **18 %** of the companies surveyed have **assigned a staff member for the energy management**

Pie chart:
- 4,04%
- 16,16%
- 17,85%
- 61,95%

Legend:
- ■ Yes-Dedicated
- ■ Yes-Combined
- ■ No
- ■ Don't Know
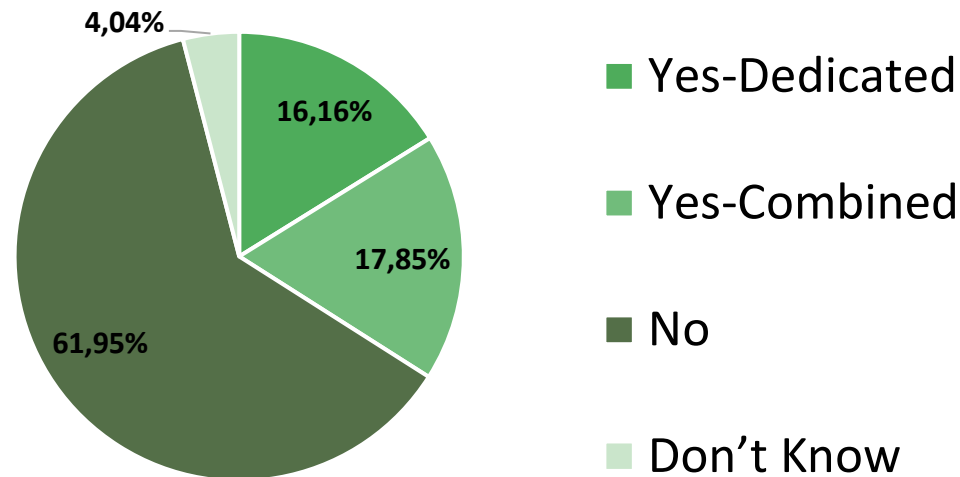
- All **12** companies from the **automotive sector** have energy/maintenance manager or staff responsible for energy management.

Crunching the outcomes – Energy monitoring

- Less than **50%** of the companies **use a complete monitoring system**.

- The others declare not having **available resources**, due to **other priorities,** or they believe that **it is not necessary**!

- The most common methods reported are **energy bills and energy measuring devices**.

- There is a **lack of awareness** within the companies' employees regarding the **measuring procedures**. Mainly the staff related to the companies' management is aware of such procedures.

- There are companies who monitor their energy consumption and simultaneously **compare real data to set targets, previous data etc**, only few of them consider however EE improvements as part of the process.

Crunching the outcomes – Energy monitoring /2

Nevertheless, in most companies

- Energy performance or labeling is used as **decision criterion** when investing in new equipment or systems.

- There is awareness that **the most energy consuming devices must be identified**, and this can be accomplished by energy consumption monitoring in the company sectors.

- Also that monitoring of energy consumption could help in the adaptation of appropriate **key performance indicators** within the company.

Crunching the outcomes – Energy audits

- Conducted **energy audits in SMEs** by country

Bar chart showing conducted energy audits in SMEs by country (yes / no / I don't know):

Country	yes	no	I don't know
Cyprus (N=32)	50,00%	50,00%	0,00%
Germany (N=57)	43,86%	56,14%	0,00%
Greece (N=28)	46,43%	53,57%	0,00%
Ireland (N=20)	15,00%	75,00%	10,00%
Italy (N=96)	23,96%	70,83%	5,21%
Poland (N=87)	25,29%	74,71%	0,00%
Romania (N=91)	32,97%	58,24%	8,79%
Slovenia (N=56)	30,36%	69,64%	0,00%
Spain (N=89)	26,97%	67,42%	5,62%
UK (N=7)	57,14%	42,86%	0,00%
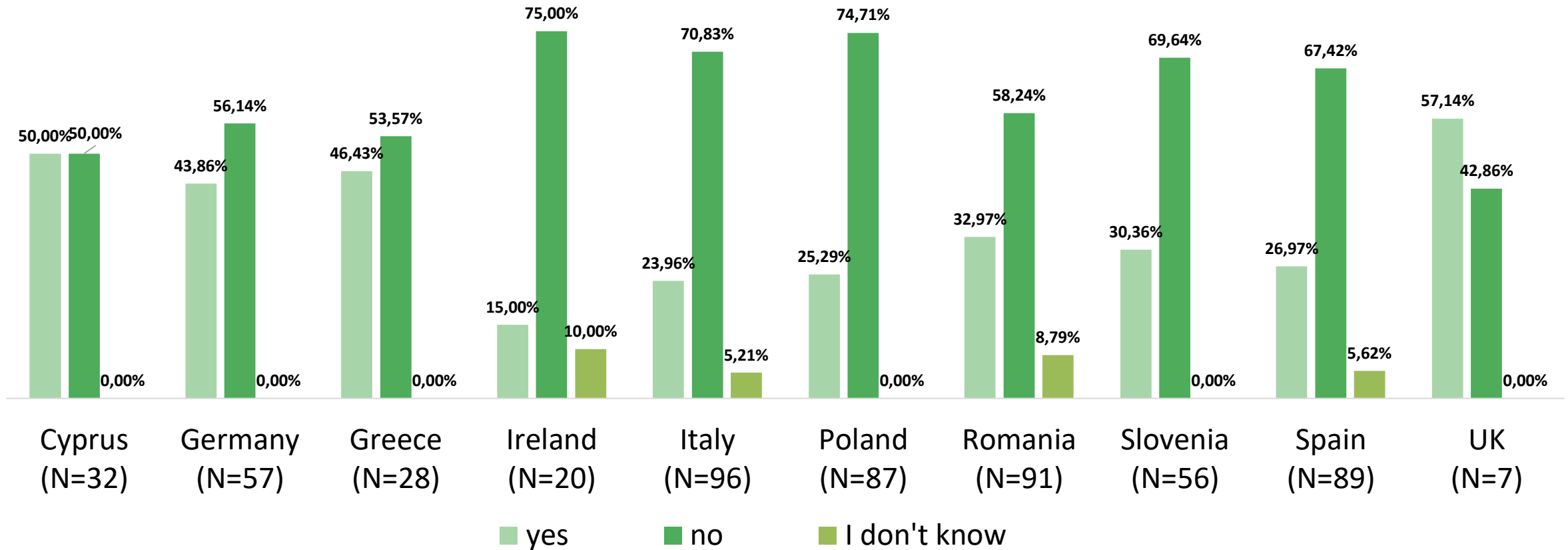
Crunching the outcomes – Adapting Energy monitoring standards

- **Cyprus, France, Germany, Greece, Italy, Romania, Slovenia, Spain, U.K.**

Number of SMEs where Standards have been implemented

Standard	Number of SMEs
ISO 9001	16
ISO 14001	77
ISO 50001	10
Green office	1
EMAS	9
ISO 18001	3
ISO 45001	2
IATF 16949	9
No standard	103
I don't know	24
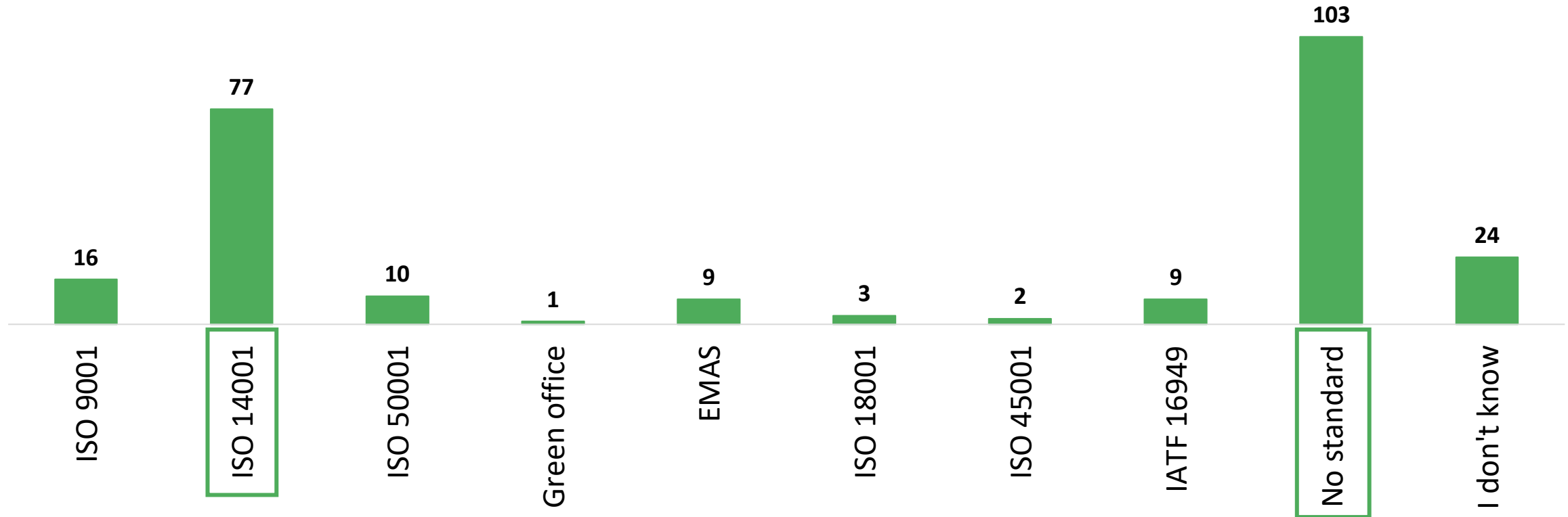
Crunching the outcomes – EE measures implemented

Measures at the building envelope (walls, roof, windows)

Measures at the level of technological processes (production lines)

Demand Response actions (Changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time)

Measures at technical systems (lighting, ventilation, heating, cooling, automation)

Energy management (training, monitoring of energy consumption)
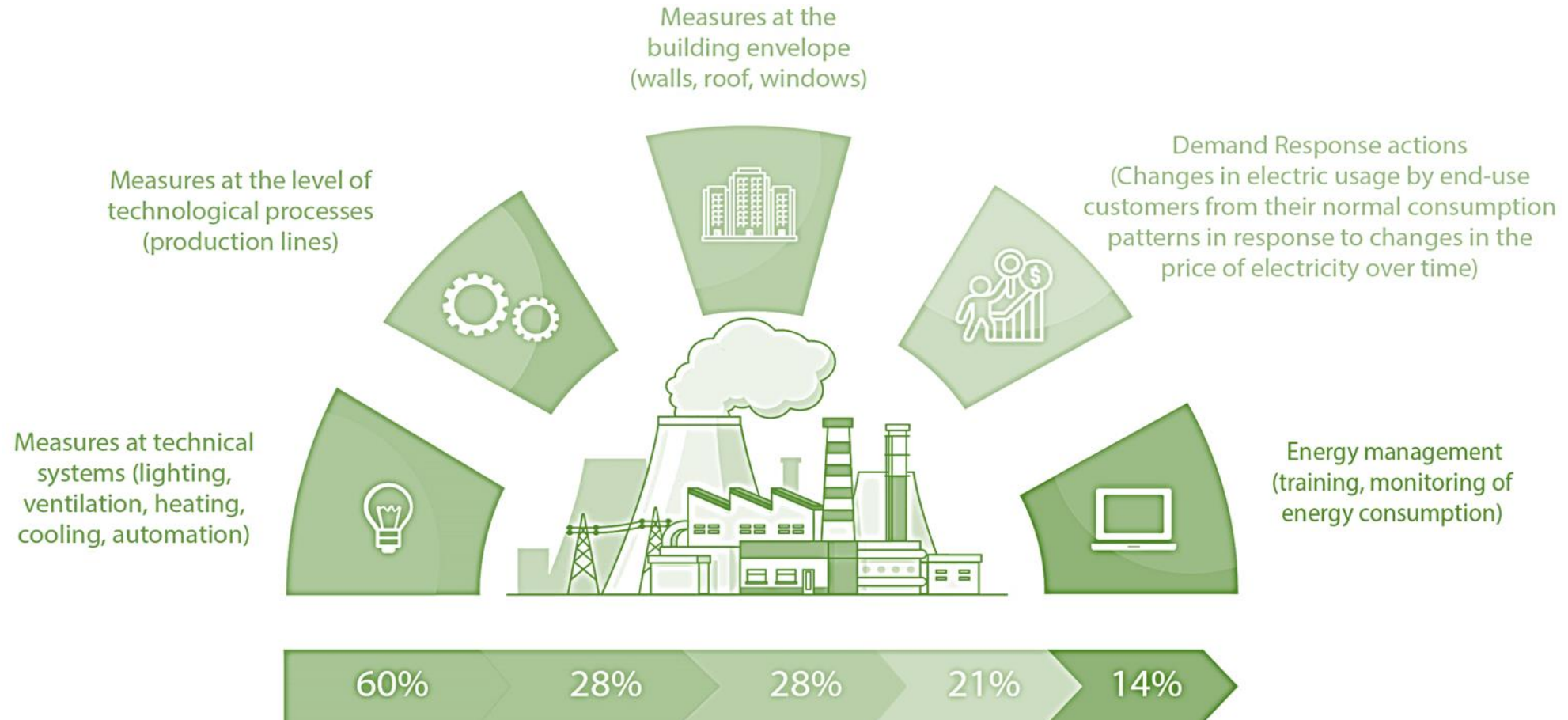
60%   28%   28%   21%   14%

- **72 %** of the energy audits resulted in the implementation of EE improvements in **Cyprus, Germany, Greece, Italy, Poland, Romania, Slovenia, Spain, U.K.**
- Measures at the building envelope mainly by SMEs owning the buildings.

Motivations behind implementing EE measures

Increase the safety of operations
11%

Reduction of the energy bill
87%

Increase the value of building through efficient facilities
19%

Contribute to fighting against climate change
65%

Why would you choose to implement EE solutions?

Improve product quality
20%

Improve the image of the company
47%

Legislative obligations
24%

Prepare for future increase in energy prices
43%

Crunching the outcomes – Use of Renewable Energy

- SMEs and **RES – 513** respondents from **Germany, Italy, Poland, Slovenia and Spain**

  - **53 %** use RES in their companies
  - **12 %** buy renewable energy, either from the community or from the grid
  - **18.5 %** generate energy by a PV system or similar
  - The **larger** the companies, the **more likely** to use or produce renewable energy

- SMEs not using RES believe that renewable energy is **too expensive**, **not needed**, **too complicated** or have **other more important problems/priorities**.
- The most commonly used RES are the **PVs**, followed by **waste heat recovery** and **wood-burning stoves**.

Crunching the outcomes – Future EE strategy of SMEs

- **46%** out of **213** SMEs from **Cyprus, Germany, Greece, Italy, Romania, Slovenia, Spain, U.K.** reported the **absence of any energy strategy** within the SMEs for the next **3** years!

- **45%** out of **33** companies from **Germany, Italy, Poland, Slovenia, Spain** not having yet implemented energy audits stated that they **do not plan to conduct one in the future**!
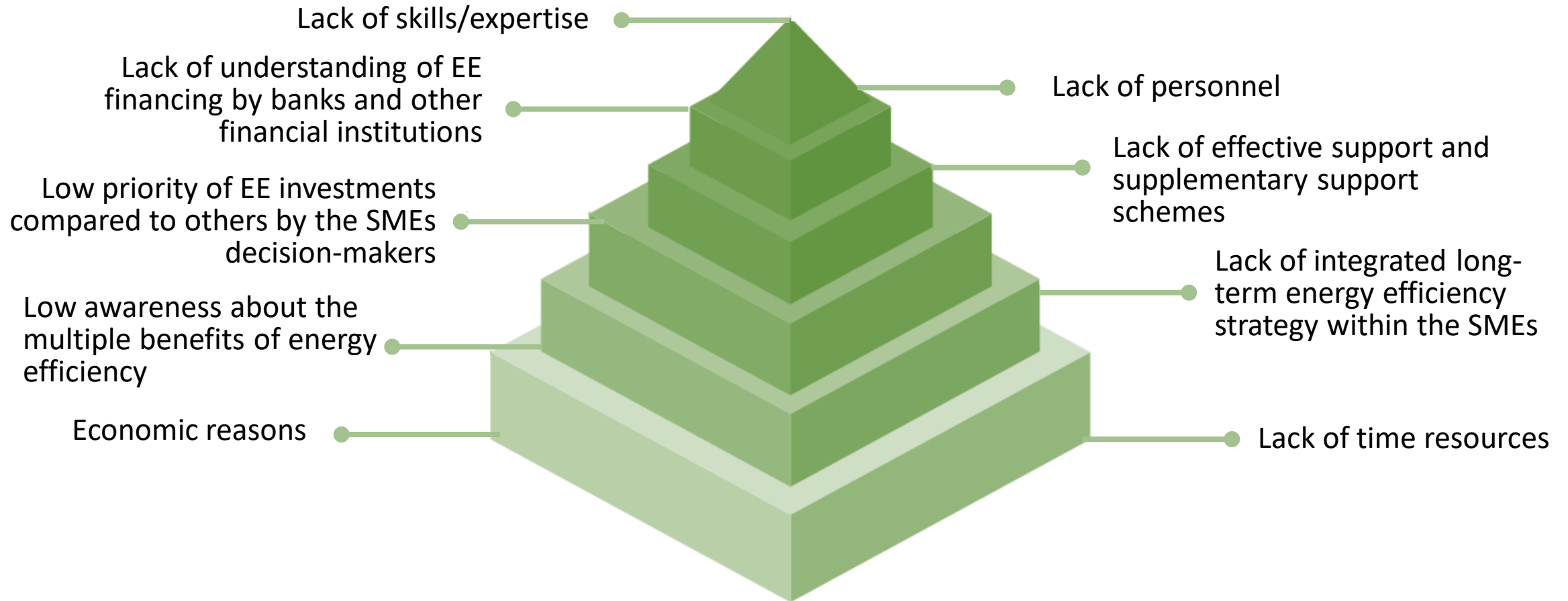
Crunching the outcomes – Identification of support schemes and other financial instruments

Funding sources for EE investments

- Own funds
- European Grants / Other grants
- Bank loans
- National Support Schemes
- No

49%
15%
8%
6%
17%
5%
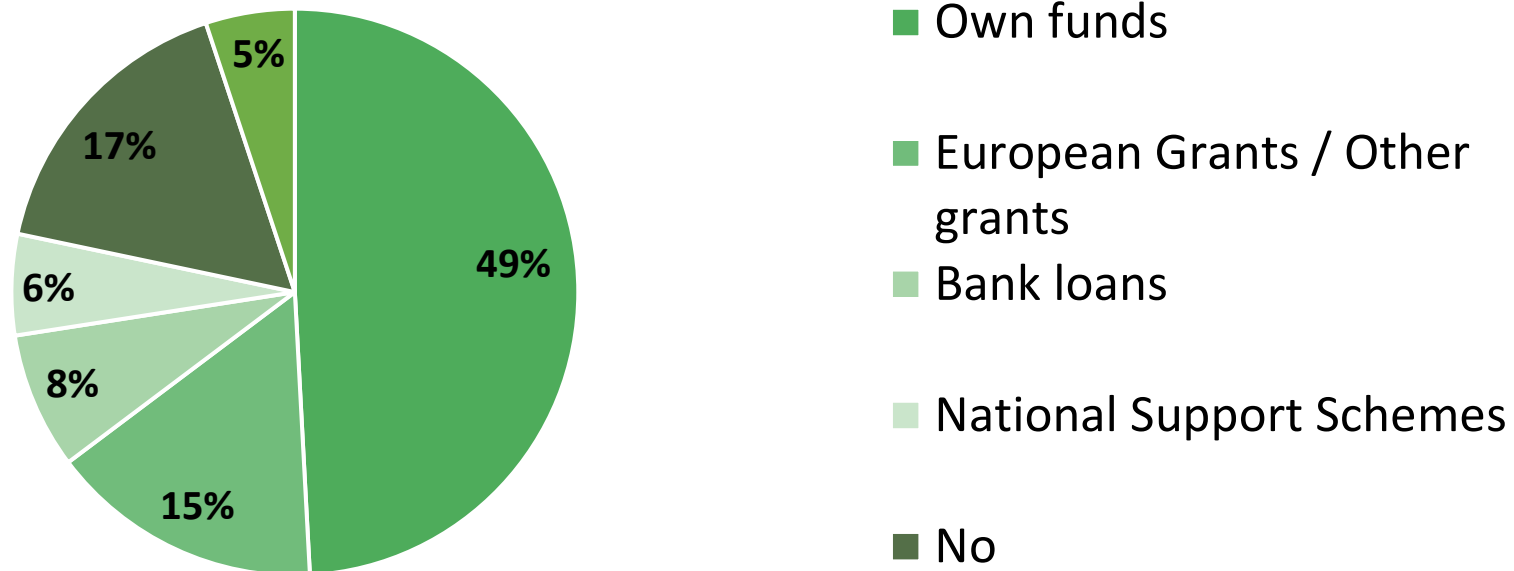
- Need for significant increase in third party financing, through the deployment of financing mechanisms, ESCO contracts and better access to finance.

Common barriers for EE improvement investments in SMEs

- Lack of skills/expertise
- Lack of understanding of EE financing by banks and other financial institutions
- Low priority of EE investments compared to others by the SMEs decision-makers
- Low awareness about the multiple benefits of energy efficiency
- Economic reasons
- Lack of personnel
- Lack of effective support and supplementary support schemes
- Lack of integrated long-term energy efficiency strategy within the SMEs
- Lack of time resources

Conclusions

- All 4 project surveys revealed more or less **similar results** in the identification of barriers for SMEs regarding the implementation of EE improvement measures!

- The main motivation for the implementation of such measures is the **reduction of energy costs**.

- SMEs seem to be **reluctant to invest in energy efficiency measures**, while they consider them as low priority investments.

- There is **a lack of dedicated energy management staff** to get involved in relevant procedures. Also **lack of knowledge** on existing policies and opportunities for SMEs towards energy efficiency on a country or region level.

- Only a small part of the interviewed companies have **implemented energy audits** and **energy efficiency measures**, or plan to do in the future!

- Nevertheless, SMEs **having conducted energy audits** generally proceed to EE investments, showing a potential roadmap.
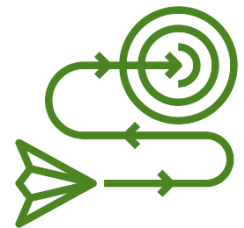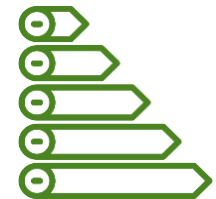
Training proposals based on discoveries

Erudino Llano
Project & Training Manager at Fundación Circe

03

EDUCATION IN 21ST CENTURY

- **Traditionally**,

  - education was centred on learning (theoretical) knowledge → memorization.

  - training was intended for child, teenagers and young adults.

  - the format of the education was mainly master classes.

  - trainees usually perform a training programme in order to get a academic title.

EDUCATION IN 21ST CENTURY

- **Currently**,

  - education is evolving to an holistic paradigm where knowledge, skills and values are considered → Practical.

  - training must be performing during the whole professional life.

  - the format are changing (increased due to the Covid-19) → online format.

  - training becomes something necessary during the whole professional life in order to avoid being outdated.

TRAINING FORMAT PREFERENCES

Figure 8. Preferred training format
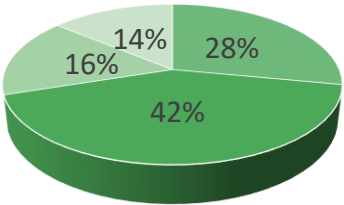
- A. Formal training courses
- B. Workshops
- C. Coaching / Mentoring
- D. Digital content / courses

Table 3. Training preferences according to perceived effectiveness

	Traditional Training	Workshops	Coaching/ Mentoring	Digital content/ courses
Managers	🟡	🔴	🟢	🟢
Science and Engineering Professionals	🟢	🟡	🟢	🟢
Technical Managers	🟢	🟢	🔴	🔴
Technicians	🟡	🟢	🔴	🔴

SPEEDIER

Training for SME staff

- **Awareness** actions where the objective is to create an energy culture inside SMEs and behavioural changes.

- Specific training for **senior management** and other **junior employees**.

- There is **not a rigid format**, but it will be flexible and adapted to the needs of each company → online, face-to-face or blended learning delivered by SPEEDIER Expert.

- **Speedier app** uses gamification to engage staff members.

650 staff to be trained

SPEEDIER

SPEEDIER Expert and SPEEDIER Trainer Training

- The objective is to: (a) **train SPEEDIER Experts** to deliver the SPEEDIER Service and

  (b) **train SPEEDIER Trainers** to train more SPEEDIER Experts.

- **First round of training:**

  - 100 % online in December 2020.

  - After training, attendees will be invited to **'shadow'** the SPEEDIER consortium to learn how to deliver the Service.

- **Second round of training**:

  - Will take place in 2021, either online or face-to-face.

  - The SPEEDIER Trainers trained in Round 1 will train new SPEEDIER Experts in Round 2.

SPEEDIER · SME mPower Efficiency · e2DRIVER · innoveas
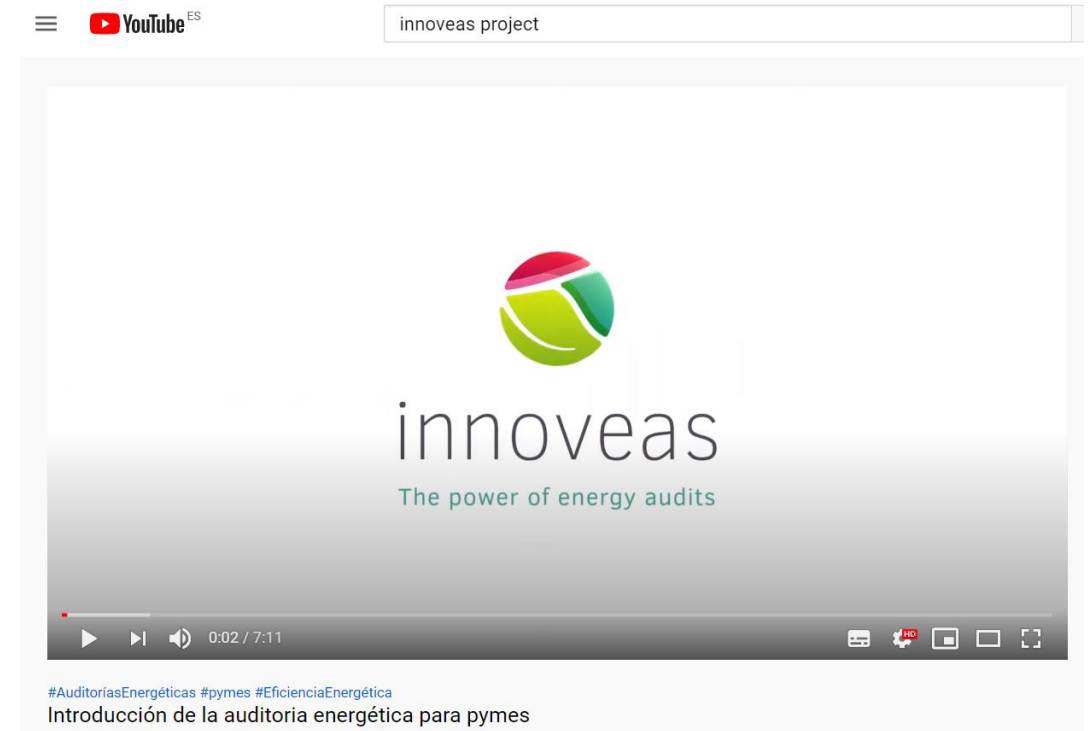
INNOVEAS

General approach of the training

- The INNOVEAS training programme looks for building step by step the **awareness** and **know-how** of SMEs.

- Target group: **construction**, **chemical** and **food** sector.

- They will receive training about **theoretical** information, as well as practical competences about **energy audits** and **energy efficiency measures**.

innoveas is aiming to raise awareness and build capacity in the field of energy auditing and related energy saving measures in Small and Medium Enterprises (SME).

INNOVEAS

Types of INNOVEAS training

- **Web-based modules**: 12 training videos about general and key aspects of energy management.

- **Webinars:** promotion and raising the awareness.

- **In situ training:** 2-days training for companies.

- **In company training**: for companies.

- **Training video**: will be recorded during the sessions and shared for wide spread.

#AuditoríasEnergéticas #pymes #EficienciaEnergética
Introducción de la auditoria energética para pymes

SMEmPower

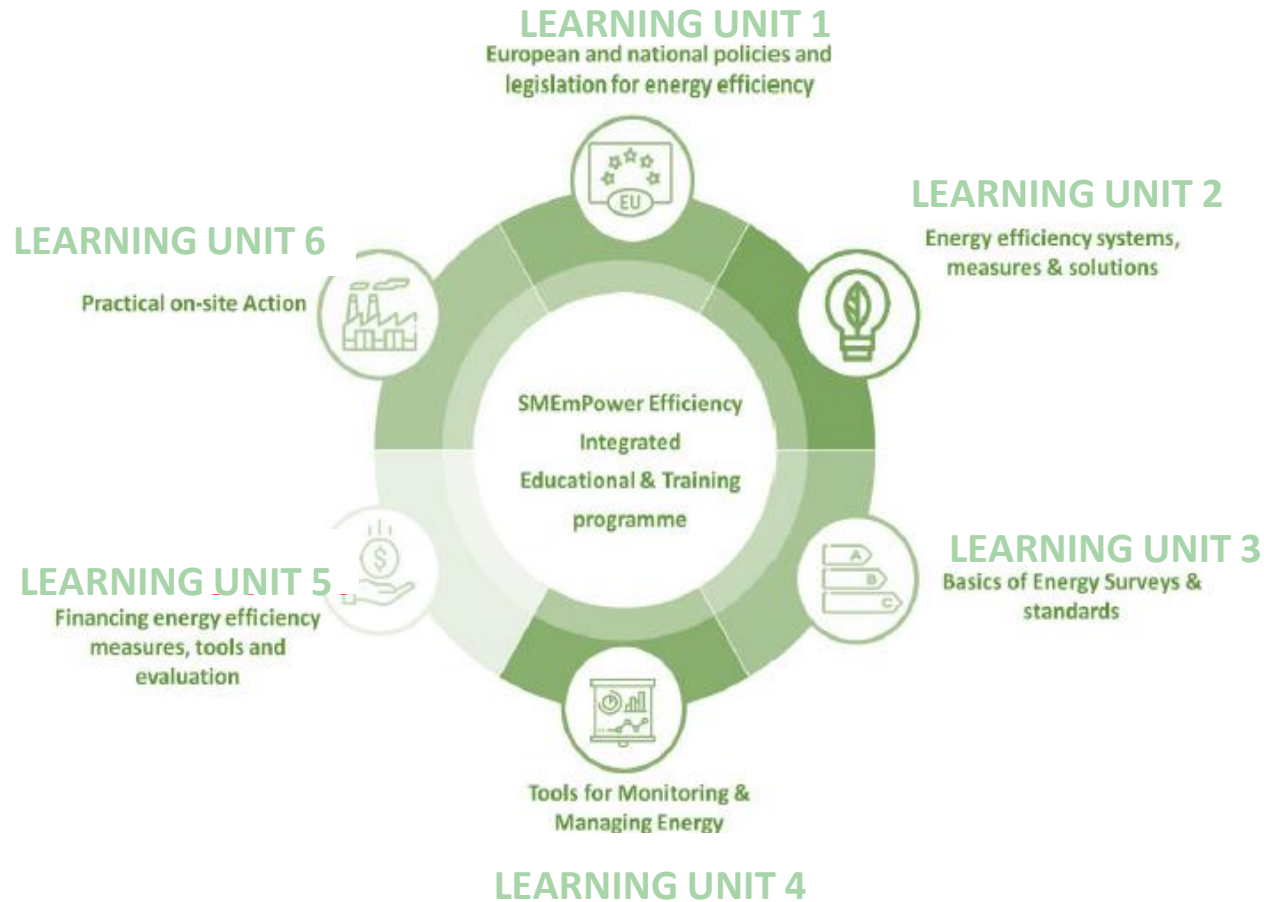## General approach of the training

- **On-site trainings** for SMEs' decision makers and other SME staff.

  - Short.

  - On-site in SMEs site (may vary depending on the evolution of the pandemic).

  - 20 SMEs per country → 160 in total. 800 people trained. (5 per SME).

- **Educational & Training courses** for energy managers (or for candidate energy managers).

  - Blended learning (may vary depending on the evolution of the pandemic).

  - 3 rounds of E&T courses per country. At least, 24 courses in total with an impact of 720 people trained.

  - Beyond the end of the project. (next slide).

SMEmPower

## Educational and training course for energy managers

- SMEmPower is creating the course "*Energy efficiency and sustainability for energy managers and energy professionals (in SMEs)*".

- The training programme has been designed with a common curriculum in 8 European countries.

- This course will be certified by the participating and associated universities.

LEARNING UNIT 1
European and national policies and legislation for energy efficiency

LEARNING UNIT 2
Energy efficiency systems, measures & solutions

LEARNING UNIT 3
Basics of Energy Surveys & standards

LEARNING UNIT 4
Tools for Monitoring & Managing Energy

LEARNING UNIT 5
Financing energy efficiency measures, tools and evaluation

LEARNING UNIT 6
Practical on-site Action

SMEmPower Efficiency Integrated Educational & Training programme

E2DRIVER

Main characteristics

- E2DRIVER seeks to increase the **collective intelligence** of the automotive sector.

- Two main results:

  - **E2DRIVER Methodology**: a guide for trainers in order to ensure an effective implementation of the training.

  - **Collaborative-cooperative E2DRIVER Platform**: where it will be possible to host the training materials and perform the online part of the blended learning.
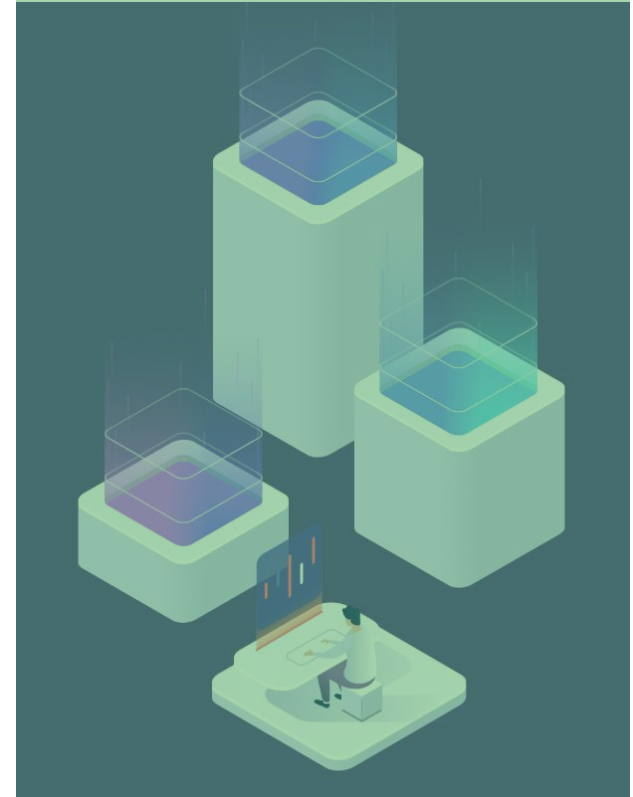
E2DRIVER

Main characteristics

- **40 companies trained.**

- **Customization** of the Capacity building training by considering the needs and interests of the companies.

- **Ontological Flip Teaching** as pedagogical approach.

- **E2DRIVER Community**.

- **Virtual reality** as serious gamification.

How can policies drive uptake of energy efficiency in SMEs

Jo Southernwood
Energy & Research Engineer Consultant at IERC

04

EU wide policies on SME Energy Efficiency

Energy Efficiency Directive 2012
- Amended in 2018 as part of Clean energy for all European Package
- 32.5% energy efficiency target by 2030 for EU
- Article 8: Energy Audits and Energy Management System

National Energy & Climate Plan
- Previously National Energy Efficiency Action Plan
- For the period from 2021-2030
- 10 year integrated plan to achieve 2030 target

Energy Performance of Building Directive 2010
- Highly efficient and decarbonised building stock in EU by 2050
- Amended in 2018
- All new buildings must be NZEB from 31 December 2020

Key Message

Despite these policies, most SMEs have not had an energy audit in the last 5 years, do not have an energy manager or energy policy, and have implemented only "easy" energy

Policy to support energy efficiency in SMEs must be strengthened

Gap Analysis

EU Level

- No quantitative targets for SMEs

- No mandatory obligations for SMEs

- 2020 target likely to be missed

National Level

- Varied transposition of EED Article 8

- Lack of financial support for SMEs

- Support limited to information

Company Level

- Lack of resource (time, money, knowledge)

- Poor understanding of multiple benefits of EE

- Competing business priorities

Each project is developing a different solution...

SPEEDIER
- **Outsource energy management** & self-finance implementation through ring-fencing and re-investing

SMEmPower
- Create training programs that **empower SMEs to implement EE** by improve their knowledge and skills

E2Driver
- **Customize innovative training approaches** to meet the needs of a specific sector
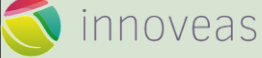
Innoveas
- **Work with industry associations** to reach SMEs, build their internal capacity and enhance energy culture

…to tackle different barriers

Which barriers do the projects tackle?	SPEEDIER	SME mPower Efficiency	e2DRIVER	innoveas
Lack of time	✓			
Lack of finance	✓			
Poor internal knowledge & skills		✓	✓	✓
Poor understanding of multiple benefits of EE	✓	✓	✓	✓
Competing business priorities	✓			
Poor energy culture		✓	✓	✓
Lack of suitable training on EE		✓	✓	✓
No external support for EE implementation	✓		✓	✓
Only 'easy' EE measures are implemented	✓			

Key Message

No single approach will remove all the barriers to SMEs undertaking energy audits and implementing energy efficiency measures

A combination of approaches and solutions are required

Recommendations for policy makers

01 — **Consider mandatory energy audits for SMEs** to create a demand driven-market for both internal capacity building and external energy auditors

02 — **Encourage a range of support mechanisms** to meet different needs. Information alone is not enough, SMEs need support through the implementation phase too.

03 — **Promote the multiple benefits of energy efficiency**. Thermal comfort, staff health, building value, reduced maintenance and brand image also have value for SMEs

04 — **Develop suitable financial mechanisms for SMEs**. Joined up tax incentives, grants, revolving funds and energy tariff structures could incentivise investment

05 — **Training is required at all levels** including SME staff, energy experts, finance providers, industry associations.

Conclusions 05