#GreenFin

Financing the Green Transition

Transnational training

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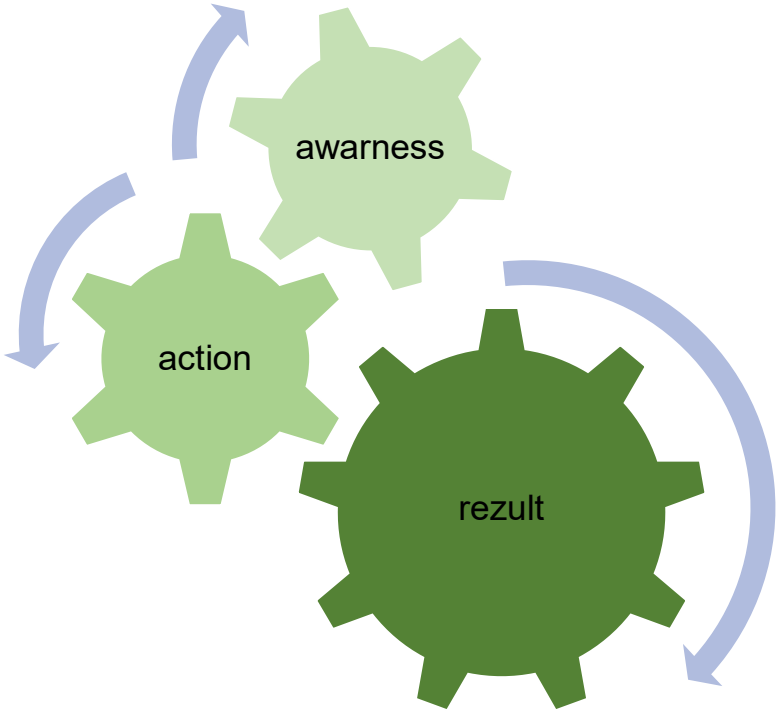
Grant Agreement - 101052465

#Module 1 training objectives

Agenda

- Framing the European strategy towards a green economy
- The sociological and cultural aspects of the green revolution affecting workers and trade union representatives
- The labour market polarisation between new green skills and traditional competences

#Module 1 training objectives



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Framing the European strategy towards a green economy

PART ONE OF TRAINING

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Is the environment important?

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Conserves natural resources
Conserves biodiversity
Minimizes waste&pollution
Reduces Energy costs
Reduces carbon footprint
Keeps air clean&healthy
Helps mitigate climate change
Boosts agricultural growth
Good for healf
Reduces poverty
Increases living standards
Keep your Environment Clean, Safe & Healthy

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1972 - **United Nations Conference** on the Human Environment. The first world conference on the environment in Stockholm

1992 – **Earth Summit**' in Rio de Janeiro

2012 – **Rio+20** resulted in a document containing clear and practical steps for the implementation of sustainable development and develop a set of Sustainable Development Goals (SDGs)

2015 – **Paris agreement** is an action plan to limit global warming.
Its overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels."

2019 - **The European Green Deal (EGD)** is a roadmap for Europe becoming a climate-neutral continent by 2050

2023 - **Fit for 55** is a set of proposals to revise and update EU legislation to reducing EU emissions by at least 55% by 2030

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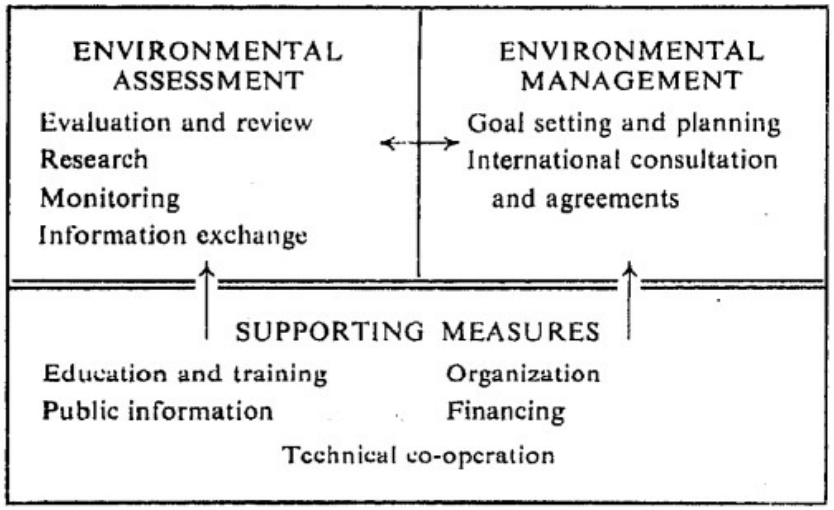
1972 - **United Nations Conference -** Stockholm Declaration and Action Plan for the Human Environment which contained **26 principles**, placed environmental issues at the forefront of international concerns and marked the start of a dialogue between industrialized and developing countries on the link between economic growth, the pollution of the air, water, and oceans and the well-being of people around the world.



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1992 – **Earth Summit' -** This global conference, held on the occasion of the 20th anniversary of the first Human Environment Conference , brought together political leaders, diplomats, scientists, representatives of the media and non-governmental organizations (NGOs) from 179 countries for a massive effort to **focus on the impact of human socio-economic activities on the environment.**

The 'Earth Summit' had many great achievements: the Rio Declaration and its 27 universal principles, the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity; and the Declaration on the principles of forest management .

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2012 – **Rio+20 -** At the Conference, Member States decided to launch a process to develop a set of Sustainable Development Goals (SDGs), building on the eight Millennium Development Goals (MDGs) which range from halving extreme poverty rates to halting the spread of HIV/AIDS and providing universal primary education.

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2015 – **Paris agreement - legally binding international treaty on climate change** adopted by 196 countries.

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Temperatures
2100

- *Keep warming **"well below 2 degrees Celsius".** Continue all efforts to limit the rise in temperatures **to 1.5 degrees Celsius"***

Finance
2020-2025

- *Rich countries must provide **100 billion dollars from** 2020, as a "floor"*
- *Amount to be updated by 2025*

Differentiation

- *Developed countries **must continue to "take the lead"** in the reduction of greenhouse gases*
- *Developing nations are encouraged to "enhance their efforts" and move over time to cuts*

Emissions objectives
2050

- *Aim for greenhouse gases emissions to peak **"as soon as possible"***
- *From 2050: **rapid reductions to achieve a balance between emissions** from human activity and the amount that can be captured by "sinks"*

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2015 – **Paris agreement**

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Burden-sharing

- ***Developed countries*** *must provide financial resources to help developing countries*
- *Other countries are invited to provide support* ***on a voluntary basis***

Review mechanism

2025

- ***A review every five years.*** *First mandatory world review:* ***2025***
- *Each review will show an improvement compared with the previous period*

Climate damage

- *Vulnerable countries have won recognition of the need for "averting, minimising and addressing" losses suffered due to climate change*

AFP

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2019 - **The European Green Deal (EGD) -** resents a roadmap for making the EU's economy sustainable by turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all. EGD provides an action plan, to boost the efficient use of resources by moving to a clean, circular economy and to restore biodiversity and cut pollution.

Policy areas of the EU Green Deal

Source: EC, 2019

Implementing Green Deal

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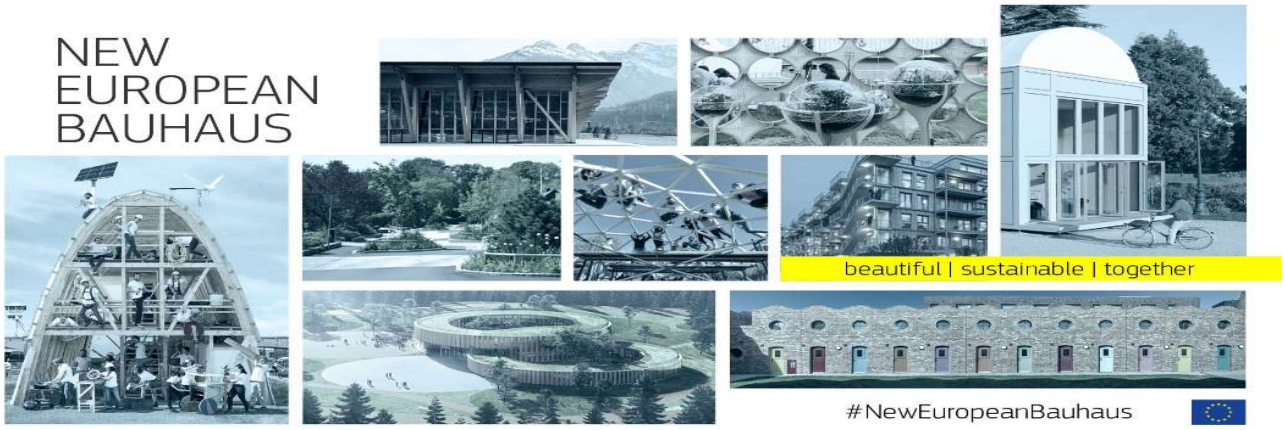
Implementing Green Deal – The New Bauhaus

The New European Bauhaus is a creative and interdisciplinary initiative that connects the European Green Deal to our living spaces and experiences.

The New European Bauhaus is a tool for realising the Green Deal, i.e. climate neutrality by 2050, but also a just transition of regions.



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Implementing Green Deal – The New Bauhaus

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Beautiful are the places, practices, and experiences that are:

- **Enriching**, inspired by art and culture, responding to needs beyond functionality.
- **Sustainable**, in harmony with nature, the environment, and our planet.
- **Inclusive**, encouraging a dialogue across cultures, disciplines, genders and ages.



Implementing Green Deal – The New Bauhaus

European Green Transition Strategy – how?

- **New European Bauhaus** (NEB) → support the green transformation of Europe by **building a community of values** around the assumptions and goals of green transformation (EC, 2021b).
- **New European Bauhaus** → the understanding and socialisation of **climate protection goals** at the **level of local communities** will facilitate the effective implementation of the general concepts and specific programs planned under the green transition.

Implementing Green Deal – The New Bauhaus

European Green Transition Strategy – how?

- **New European Bauhaus** → introduce values such as:
  - sustainable development,
  - rational resource management, and
  - environmental protection into people's daily lives.
- **New European Bauhaus** covers:
  - the EGD, territorial policies, cultural and creative sectors, the social dimension, education and skills, the digital decade, the research and innovation, the industrial and entrepreneurial dimension (EC, 2023a).

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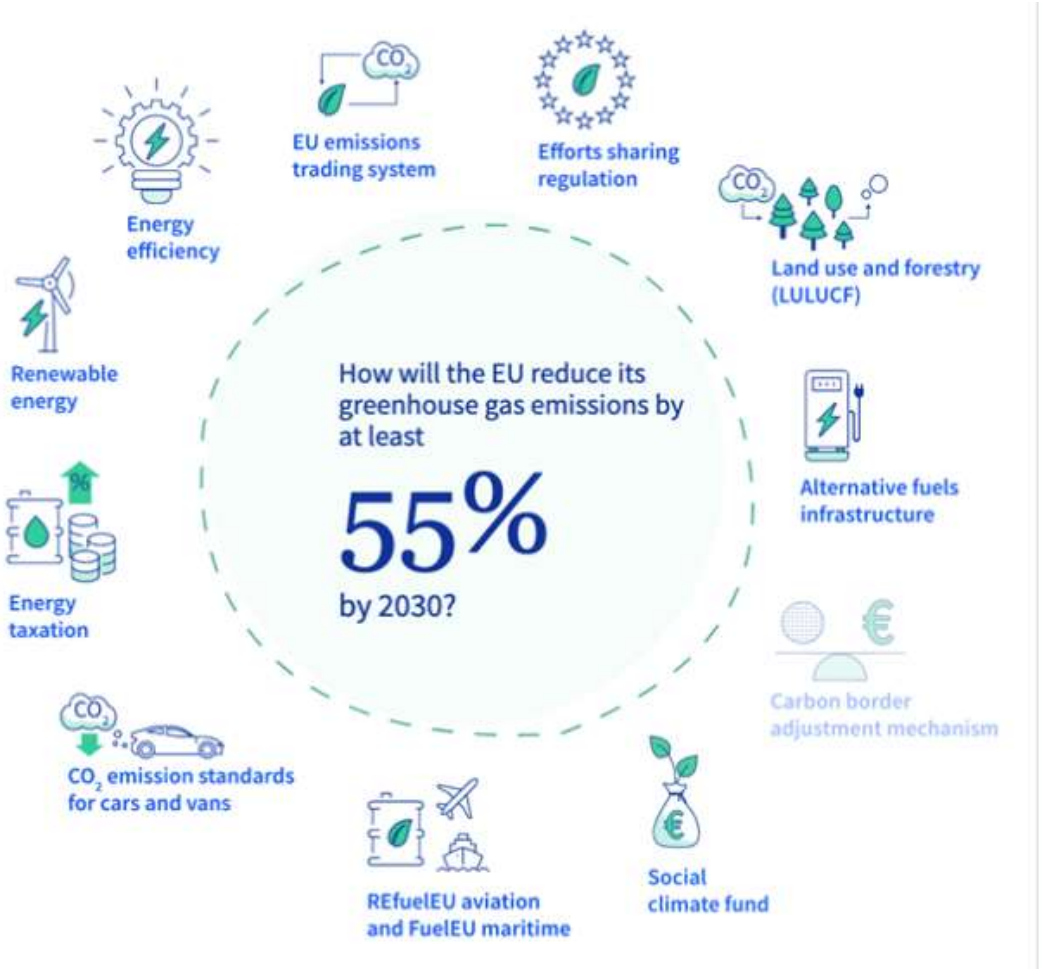
• 2023 - **Fit for 55** a package of legislative proposals as part of the European Green Deal, which aims to strengthen the EU's position as a global climate leader. The package introduce new policy measures to help bring about the transformative changes needed in the economy, society and industry to achieve climate neutrality by 2050 and to support it, **reduce net emissions by at least 55%** (compared to 1990) by 2030.



Green Economy definitions

- **European Commision – Green economy**. Natural resources are limited: they need to be used efficiently. Economic growth must not come at the expense of future generations. A thematic factsheet is dedicated to this area.
- **World Bank - Green growth** is a growth pattern that is efficient in its use of natural resources, clean in that it minimizes pollution and environmental impacts, and resilient in that it accounts for natural hazards and the role of environmental management and natural capital in preventing disasters.
- **The United Nations has defined Green Economy** as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient, and socially inclusive.
- **OECD - Green growth** means fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies

Implementing Green Deal – Just transition

European Green Transition Strategy – how to become green?

- Alarming forecasts have determined European society to implement changes → **European Green Transition Strategy**
- Green growth strategies **will vary across countries**, reflecting local contexts and preferences - but all countries, have opportunities to make their growth greener and more inclusive.

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Implementing Green Deal – Just transition

European Green Transition Strategy – how to become green?

- **The Just Transition Mechanism (JTM)** is a **key tool** to ensure that the transition towards a climate-neutral economy happens in a fair way, **leaving no one behind.**
- **Just transition** → mitigate the adverse effects of implementing the green transition, which may be felt in particular **in industries undergoing structural change and in regions whose economies are based on industry and fossil fuel extraction** (EC, 2023b).
- **The Strategy for Financing the Transition to a Sustainable Economy** → strengthening risk resilience for sustainable development and enhancing the financial sector's contribution to the green transition (EC, 2021a).

Implementing Green Deal – Just transition

European Green Transition Strategy – how to become green?

- **Just Transition Fund (JTF)** → €55 billion by 2027 to alleviate the socio-economic impact of the transition. (EC, 2023c).
- **Who will benefit?**
  - **People and citizens,** most vulnerable to the transition;
  - **Companies and sectors,** active in or comprising carbon-intensive industries;
  - **Member States and regions,** with high dependence on fossil fuel and carbon-intensive industries.

"We must show solidarity with the most affected regions in Europe, such as coal mining regions and others, to make sure the Green Deal gets everyone's full support and has a chance to become a reality."

Frans Timmermans, Executive Vice-President of the European Commission

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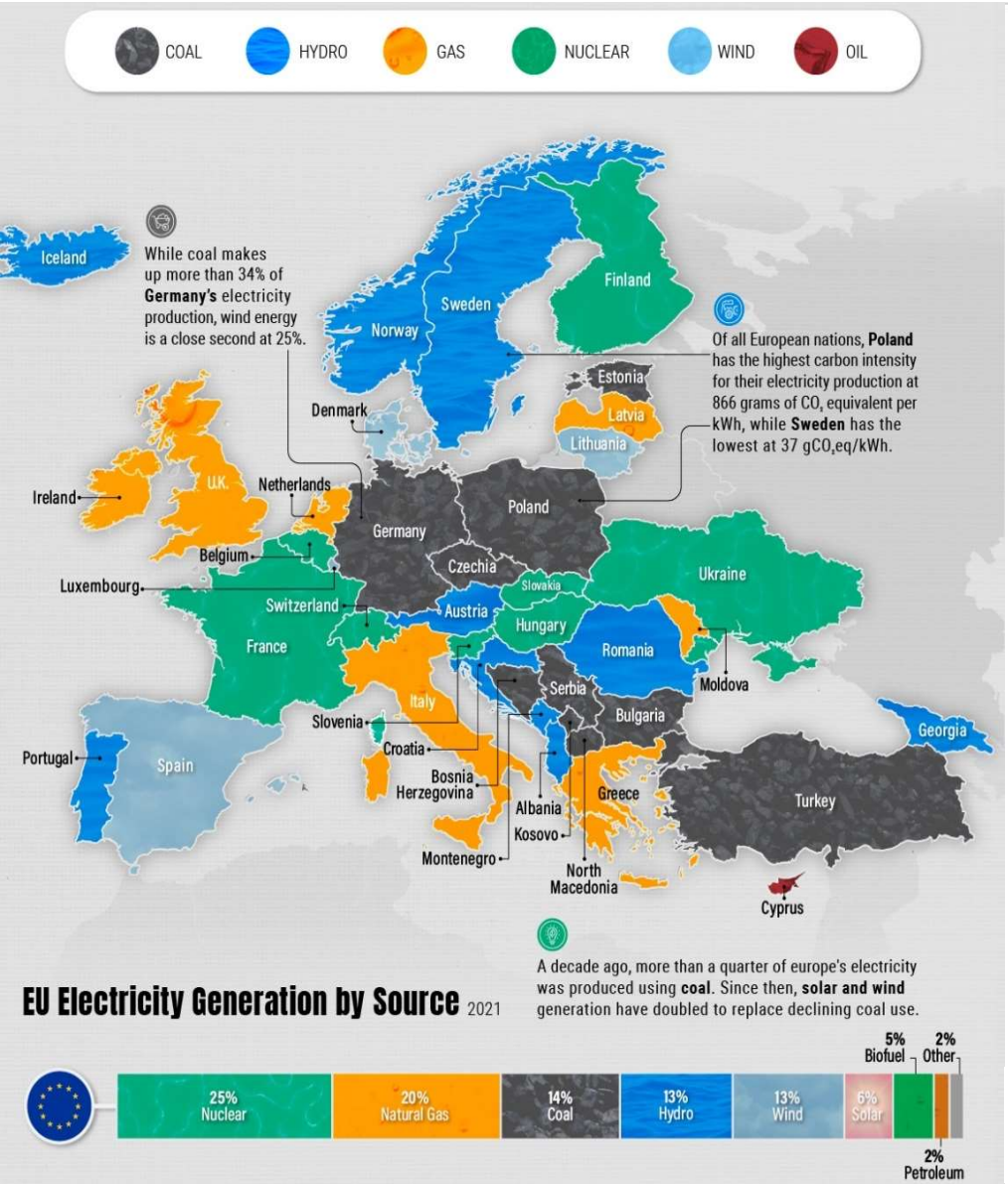

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European Green Deal – challenges

Source: https://www.visualcapitalist.com/mapped-europes-biggest-sources-of-electricity-by-country/

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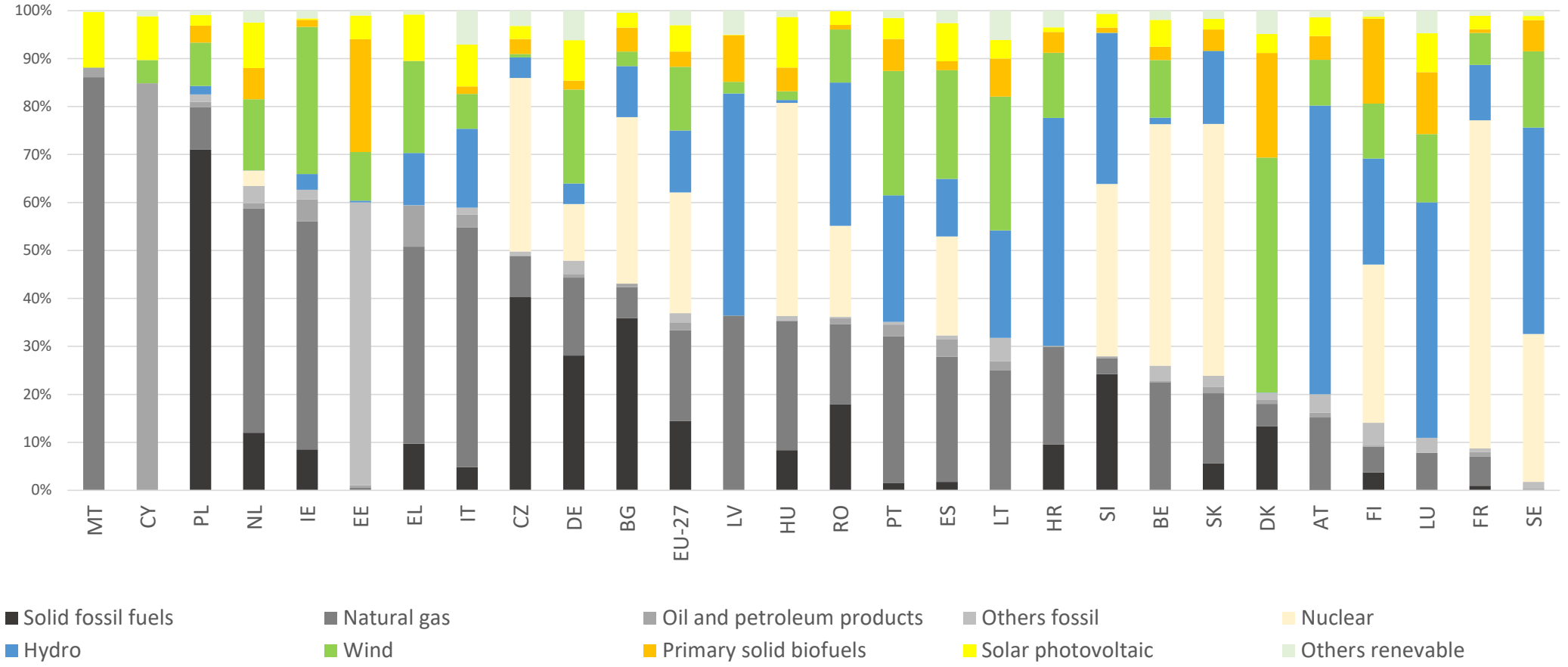
European Green Deal – challenges: Energy mix in the EU countries



Source: Eurostat [NRG_BAL_PEH, last update: 22/01/2023]

European Green Deal – challenges: Energy mix in the EU countries

Source	EU Electricity Generation Share (2011)	EU Electricity Generation Share (2021)
Nuclear	29%	25%
Coal	25%	14%
Natural Gas	19%	20%
Hydropower	10%	13%
Wind	6%	13%
Oil	5%	2%
Solar	2%	6%
Biofuel	4%	5%
Other	n/a	2%

In 2011, **fossil fuels** (oil, natural gas, and coal) made up 49% of the EU's electricity production while renewable energy sources only made up 18%. A decade later, **renewable energy sources** are coming close to equaling fossil fuels, with renewables making up 32% of the EU's electricity generation compared to fossil fuels' 36% in 2021.

Implementing Green Deal – Just transition

European Green Deal – challenges

- **EGD will require significant structural changes in the extractive and energy production sectors**, as well as in the energy-intensive (steel, chemicals, cement production) and resource-intensive (clothing, electronics, plastics manufacturing, construction) sectors.
- Implementing the changes will require ensuring that consumers have an adequate supply of goods, including energy, at acceptable prices → increasing recycling efficiency, developing ICT technologies, and clean manufacturing technologies, e.g. emission-free steel production, hydrogen as a fuel, carbon capture energy production, storage and utilisation.

The sociological and cultural aspects of the green revolution affecting workers and trade union representatives

PART TWO OF TRAINING

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European Green Deal – impact on the labour market

- The impact of the green transition on aggregate employment will be limited, but that shifts are likely to occur between regions, sectors, firms, occupations and task level.
- The social dimension of the European Green Deal includes, among others, **job losses and employment transitions,** as well as **reskilling and upskilling of the workforce**.

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European Green Deal – impact on the labour market

SMEs are particularly important in the context of the Green Transition. SMEs create between 70%-80% of jobs worldwide and face the largest gaps in financing the transition towards the green economy.

The transition to a green economy will cause four types of changes on the labour market:

- **job creation**: new jobs emerge to reduce environmental pressures or increase resource efficiency as well as a result of development of circular business models;
- **job substitution**: shift in economic activity within or across sectors from resource-intensive activities to more circular activities;
- **job destruction**: job loss with no direct replacement, usually in the sectors with significant negative adverse environmental effect;
- **job redefinition**: existing jobs change their day-to-day skillset, work methods, and profiles as part of the transition to a more effective and sustainable economy. (BusinessEurope, 2021).

European Green Deal – impact on the labour market

For example, in **the energy sector** potential labour market consequences are:

- disappearing jobs in the traditional energy production sectors, i.e. coal mines,
- new jobs in the renewable energy sector and related services, i.e. production of subparts for wind turbines and their maintenance,
- changes in the nature of jobs related to the change of technologies, maintenance and used materials.

European Green Deal – impact on the labour market

Green policies can achieve job creation in a number of ‘green’ economic sectors and through a transition of the economy towards more labour-intensive services sectors, while job destruction occurs mainly in ‘brown’ sectors whose activities get replaced by green sectors. The knock-on effects on employment in other sectors can also be significant.

European Green Deal – challenges for the labour market

Green, brown and white jobs specificity [Vandeplas et al., 2022]

Brown jobs – highly polluting activities (e.g. mining, manufacturing, agriculture)

- Approx. 5% of employment in the EU, in some regions – over 25% (in seven regions, located in Greece and in Romania – 25-31% of all jobs)
- Greening of these sectors → the contraction in labour demand (even a full phase-out, e.g. coal mining) or significant structural change

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European Green Deal – challenges for the labour market

Green, brown and white jobs specificity [Vandeplas et al., 2022]

White jobs – relatively neutral in their environmental impact

- The large majority of jobs in the EU
- Small CO2 emissions: construction, wholesale, retail and other services together employ more than 75% of the workforce, while generating less than 12% of CO2 emissions
- The small effect of green transition on total employment, related to task content
- Some of white jobs → an expansion in labour demand is expected, in spite of not involving directly 'green tasks'

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European Green Deal – challenges for the labour market

Green, brown and white jobs specificity [Vandeplas et al., 2022]

Green jobs - activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems. This includes technologies, products and services that reduce environmental risk and minimise pollution and resources (European Commision, 2013)

Green jobs - work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through highefficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution (United Nations Environment Program, 2008)

European Green Deal – challenges for the labour market

Green, brown and white jobs specificity [Vandeplas et al., 2022]

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Green jobs – involve tasks aiming at reducing the impact of economic activity on the environment, ranging from waste recycling to R&D in green innovation. They cannot be performer without extensive knowlegde of green skills.

- Only a few percentages of total employment
- Are expected to grow and to have on average higher skills

European Green Deal – challenges for the labour market

Green jobs specificity

Common approach is to identify 'green' and 'brown' jobs at the occupational level.

Very popular is the green occupational labelling provided in **O*NET** for the US **Standard Occupational Classification** by Dierdorff et al. (2011). This methodology assumes that the green transition will promote employment particularly for three categories of jobs:

- jobs with new tasks and skill requirements, created to meet the needs of the green economy ("Green New and Emerging" jobs),
- existing jobs that require significant changes in tasks, skills, or knowledge ("Green Enhanced skills" jobs),
- existing jobs that do not involve any green/new tasks ("white jobs"), but that see demand grow as a result of the green transition.

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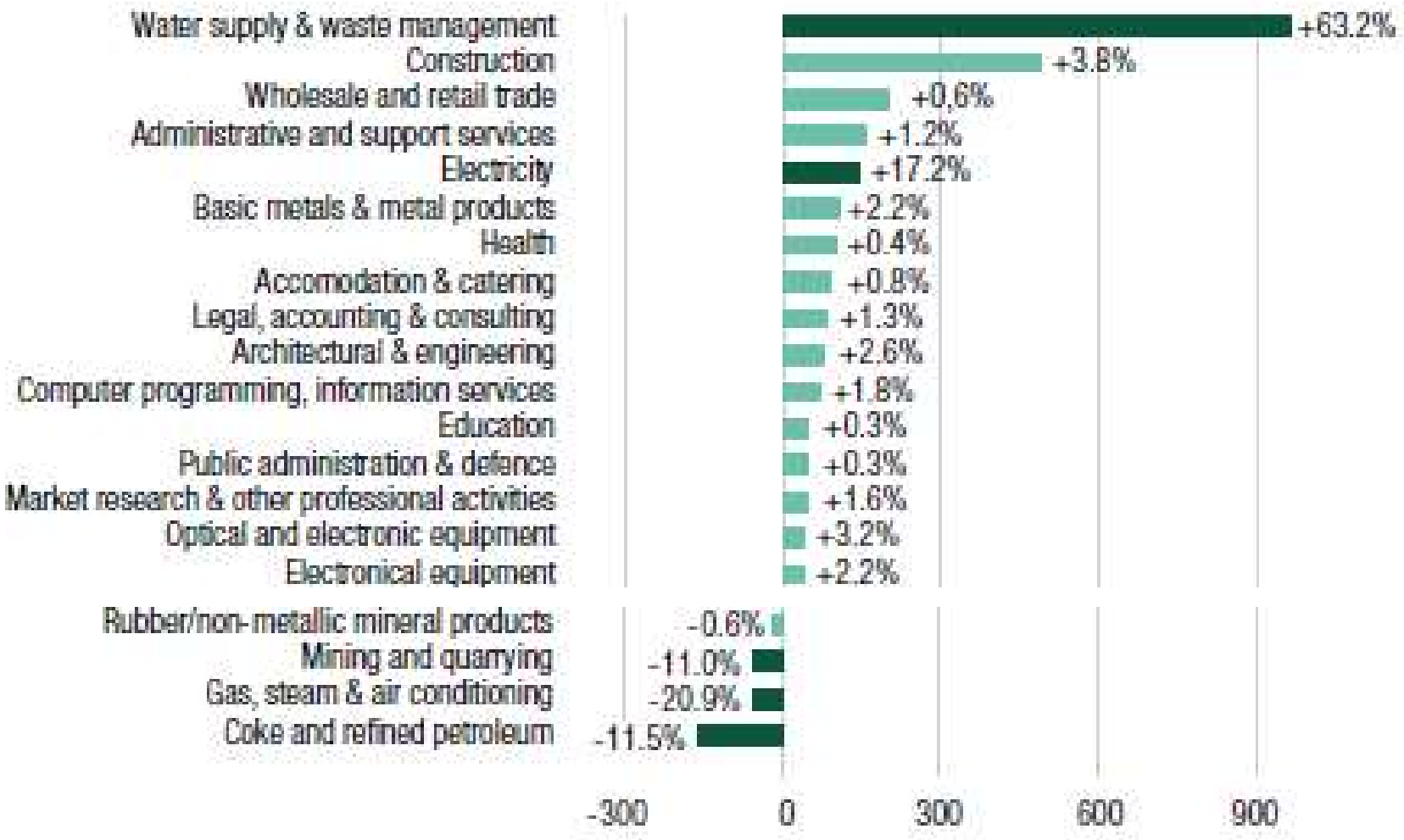
European Green Deal – challenges for the labour market

- **Brown jobs** occur at least 7 times more frequently in brown sectors than in the rest of the economy, what could complicate the transition to other sectors – it won't be easy for workers in pollution-intensive (brown) jobs to move to more green-intensive (green) jobs and neutral (white) jobs (IMF, 2022; Vona et al., 2018).
- The probability of **moving from a brown to a green job** when transitioning is 4-7%, and to neutral ones – 11 percent.
- **Further greening of the labour market** → easier if workers already have the skills needed in more green-intensive jobs.
- **Higher-skilled workers** tend to be in occupations with **higher green** and lower pollution intensities than lower-skilled workers (IMF, 2022b).

Forecast employment impact of the EGD in the EU-27 by sector – difference between EGD skills forecast scenario and baseline in thousands (bars) and in %

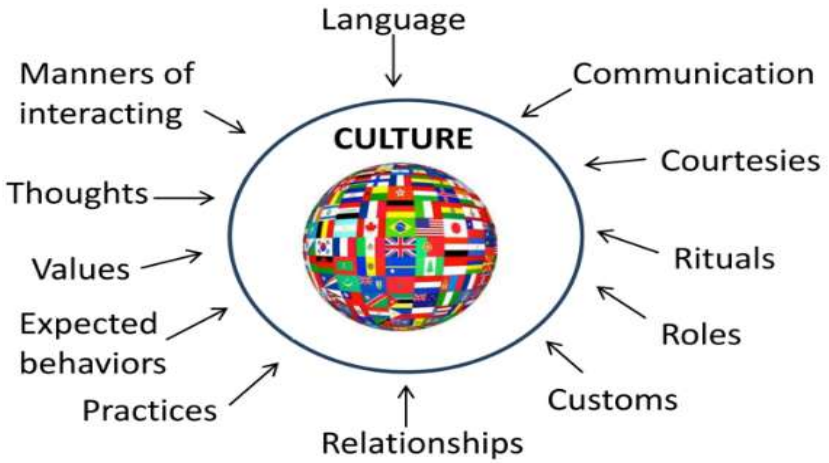


- The percentages indicate the difference in forecast employment growth or decline (in %) between EGD and baseline scenario.
- Dark shaded bars indicate substantial differences (+/- 10% or more).
  - Sectors with low growth are not presented.

[Cedefop skills forecast, 2020]

The cultural aspects of the green revolution affecting workers and trade union representatives

Culture as the ideas, customs, and social behaviour of a particular people or society is one of the most heavily utilized notions in academia and everyday concepts (Oxford…, 2023; Sovacool, Griffiths, 2020).



The cultural aspects of the green revolution affecting workers and trade union representatives

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Culture is important because of three main reasons (Group of Thirty, 2015):

- culture shapes how employees feel about their jobs and the industry they work in, and affects how motivated staff are and the way they work (their efficiency, job satisfaction, retention, and so forth),
- culture has a major effect on public perception, and hence shapes the reputation of an individual bank and of the sector more broadly,
- there can develop cultures which undermine the values and goals of senior management, thereby reducing the effective control a Board and it's its management have over the firm and its employees.

The cultural aspects of the green revolution affecting workers and trade union representatives

- **Green culture** is defined as a collective activity conducted in a public manner to address climate challenges (Cai et al., 2019).
- Developing green culture is the outcome of green knowledge and environmental education (Afridi et al., 2023).

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The cultural aspects of the green revolution affecting workers and trade union representatives

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Internal forces	External forces
• Employee, inwestor and director - create green products and services, as well as make environmentally friendly policies • Board and senior executive leadership - ensure that the just transition is incorporated into institutional strategy and culture • Trade union representative - merging the protection of workers with the protection of nature	• Competitors - building competitive advantage • Customers - green attitude and greater environmental awareness are influencing banks to go for environmentally responsible banking activities • Law regulations – Paris agreement, Green Deal, Fit for 55+

The cultural aspects of the green revolution affecting workers and trade union representatives

Recommendations addressed to policymakers and planners (government, policymaking and planning domains, ministries and statistical agencies)	• to collect data on culture and cultural trends. • to stipulate greater community involvement in licensing • to stipulate greater community involvement in discussions • to make effort to minimize cultural bias • to consider "cultural modification" as a core competence needed within the entities tasked with planning and implementing transitions • to focus not always on individuals but group-based and collective phenomena recognition • to care that policies must be inclusive and avoid unjust, hegemonic or narrow narratives of development and implementation

The cultural aspects of the green revolution affecting workers and trade union representatives

Recommendations addressed to research domain (researchers, modelers, funders	• to recognize and minimize racial, gender, cultural and other forms of bias. • to train research domain actors sensitized to cultural diversity • to complement ongoing calls for “data literacy”, “algorithmic justice” and “data justice” within the modelling , data analytics, and machine learning communities. • to encourage funders of research and the principle investigators to include cultural components and research questions in qualitative projects that collect data via interviews, focus groups and other public fora, helping to make cultural dynamics visible in the designing process • to consider cultural diversity, alongside interdisciplinary diversity and demographic diversity, in the assembling of research teams. • to recognize importance of the artificial intelligence in energy system design and operation.

The cultural aspects of the green revolution affecting workers and trade union representatives

Recommendations addressed to practitioner domain (practitioners of energy development programs, managers)	• to consult with community members and leaders about their needs before implementation begins • to draw from the insights of previous policies, projects, and greening campaigns • to catalogue an inventory of options and suggestions instead of directing efforts almost exclusively at lowering costs and improving technology • to consider strengthening the institutional capacity of local community-based organizations and informing and educating end users about the technologies that they will encounter • to organized training and maintenance sessions • to use locally designed, manufactured, and distributed technologies • to use programs developed by local contractors who understand the cultural dynamics of the customers they are supposed to serve.

The sociological aspects of the green revolution affecting workers and trade union representatives

- The success of an organisation's programme is conditioned by the **involvement of its employee** (Dhar et al., 2008).
- **Employee awareness** development and training on environmental and social risk and the relevant issues should be a continuous process as part of the bank's Human Recourse Development (Rahman, Perves, 2016).
- Training and development of relevant skills within bank employees are important to speed up the acceptance of green banking culture (Narang, 2015).

The sociological aspects of the green revolution affecting workers and trade union representatives

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Workers advocating for a just transition are looking for a solution that is for mutual benefit – both '**saving the planet**' and '**saving jobs'**.

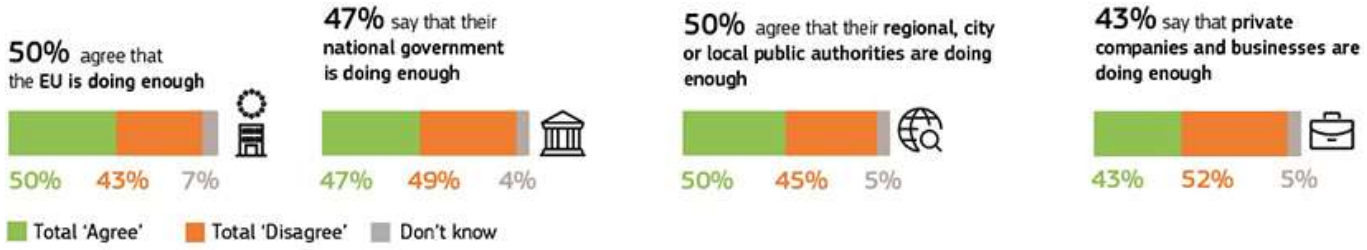
The sociological aspects of the green revolution affecting workers and trade union representatives

- **Resistance to change** is stronger in the sectors which are considerably affected by changes on the labour market caused by green transition. As pointed earlier, such changes will affect mainly energy sector, in particular coal mining.
- The high resistance for change in **minig sector** is related to the scale of job transition, expected retraining, mobility etc. in the context of their current high renumeration and social.
- In many countries, for example in Germany and Poland, coal mining has a central place in the cultural histories and identities of the labour movement so that we may speak of a 'coal heritage'. Coal workers have strong collective identities and take pride in being coal miners (Lewin, 2019; Sobiesiak-Penszko et al., 2022).

The sociological aspects of the green revolution affecting workers and trade union representatives

- **Resistance to change of workers stay in line with general public opinion on climate change and green transition**.
- In countries with high share of coal in energy mix, with high coal mining meaning, opinions on climate change and green transitions are low optimistic than in others.

The need for a fair and green transition



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The sociological aspects of the green revolution affecting workers and trade union representatives

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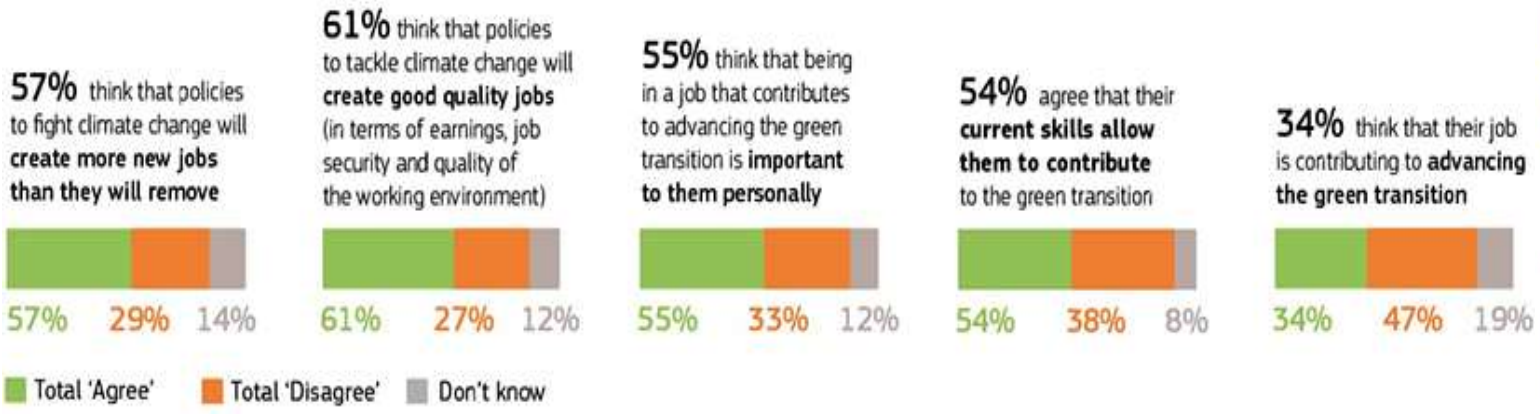
Job opportunities and skills in the green transition



The sociological aspects of the green revolution affecting workers and trade union representatives

- **Resistance to change of workers stay in line with general public opinion on climate change and green transition**.
- In the Eurobarometer 2022 **climate change is perceived as the threat** by 72% of Poles, 64% of Bulgarians, 53% Czechs, 62% Romanians and 63% Germans. For comparison, in Mediterranean countries and Sweden this percentage is much higher – over 80%.
- Although 88% of EU citizens support the goal of having a green transition that leaves no one behind, only 46% of Europeans are currently confident that by 2050, sustainable energy, products and services will be affordable for everyone. Furthermore, 43% think that private companies and businesses are not doing enough.
- In “coal mining” countries opinions regarding current jobs are lower than UE-27 average in Czech Republic, Bulgaria, Greece and Germany.

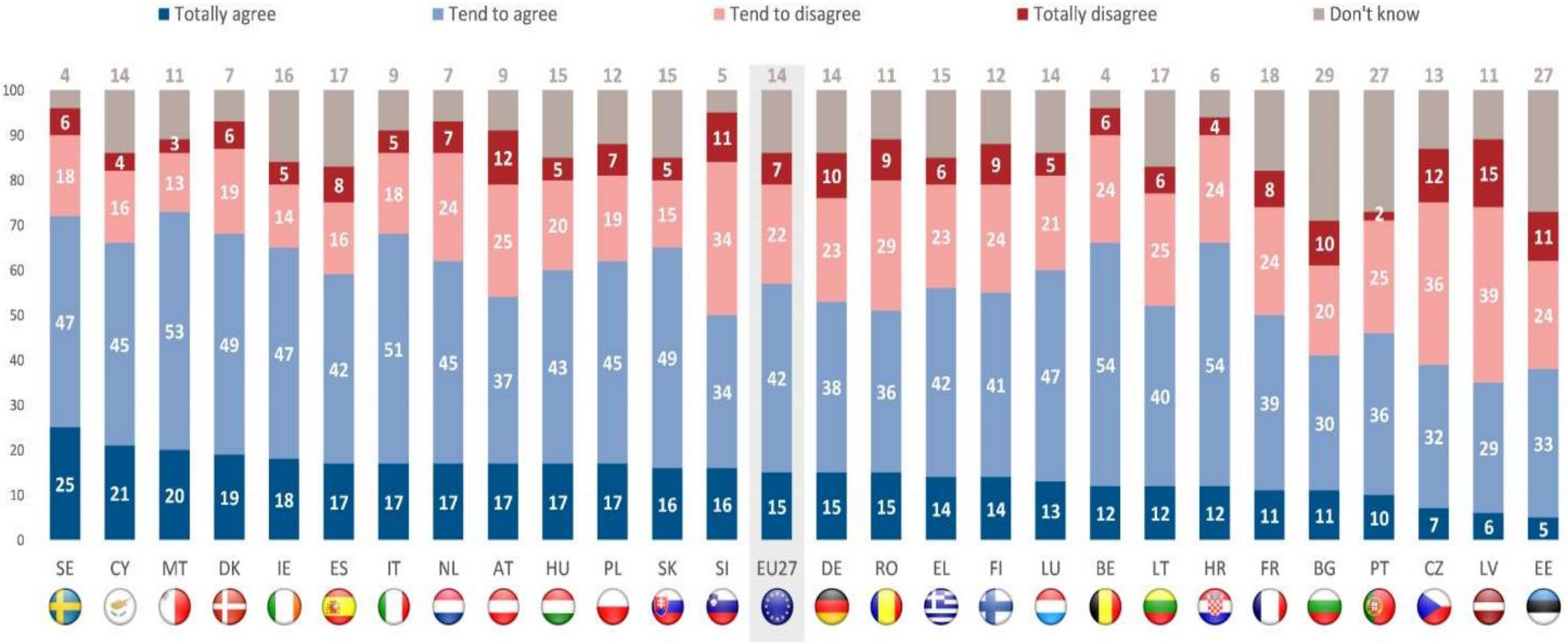
The sociological aspects of the green revolution affecting workers and trade union representatives

In "coal mining" countries opinions regarding current jobs are lower than UE-27 average in Czech Republic, Bulgaria, Greece and Germany

- Approx. 50% people are disagreed regarding job's contribution to advancing green transition (among these five countries, only in Poland these opinions are more optimistic).
- In Greece people are more often agreed than average regarding "being in a job that contributes to advancing the green transition is important to you personally".
- Greeks are in the last position regarding "current skills allow them to contribute to the green transition" (among these five countries, only in Germany results are over the UE-27 mean).

Opinions on job related issues in the green transition context – sociological aspects

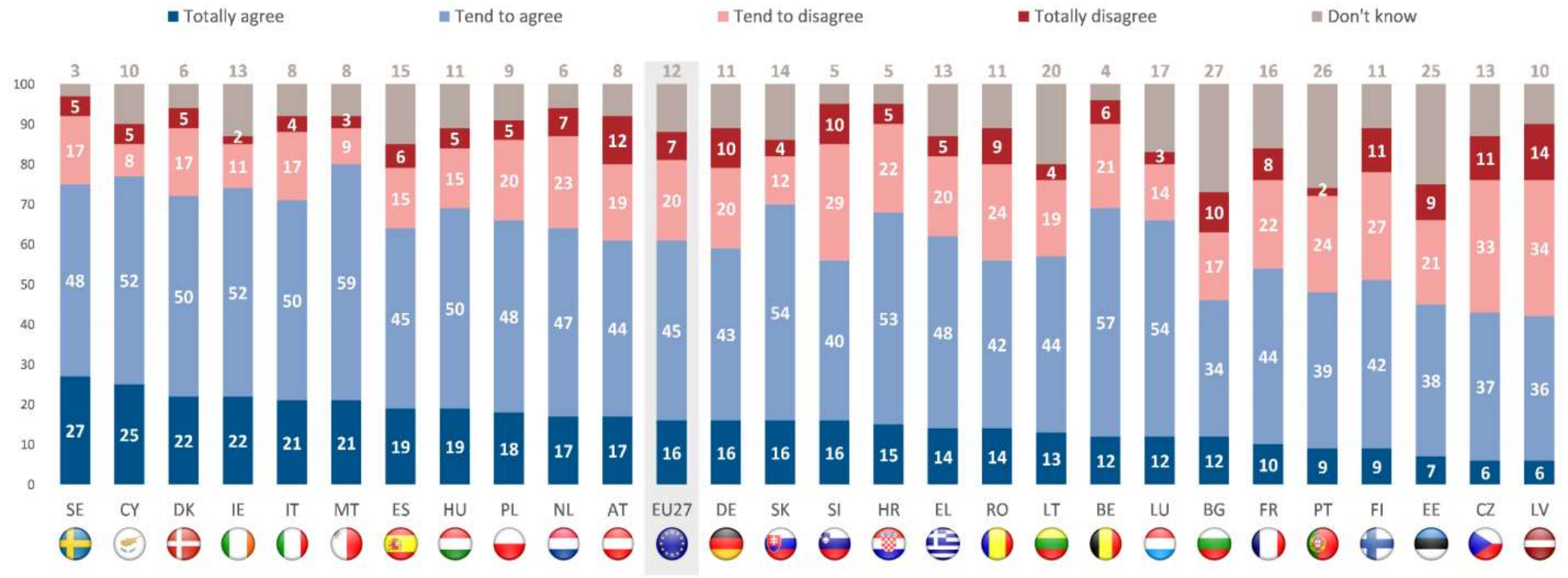
Policies to fight climate change will create more new jobs than they will remove UE 57%, Spain 59%



Source: Eurobarometer, 2022

Opinions on job related issues in the green transition context – sociological aspects

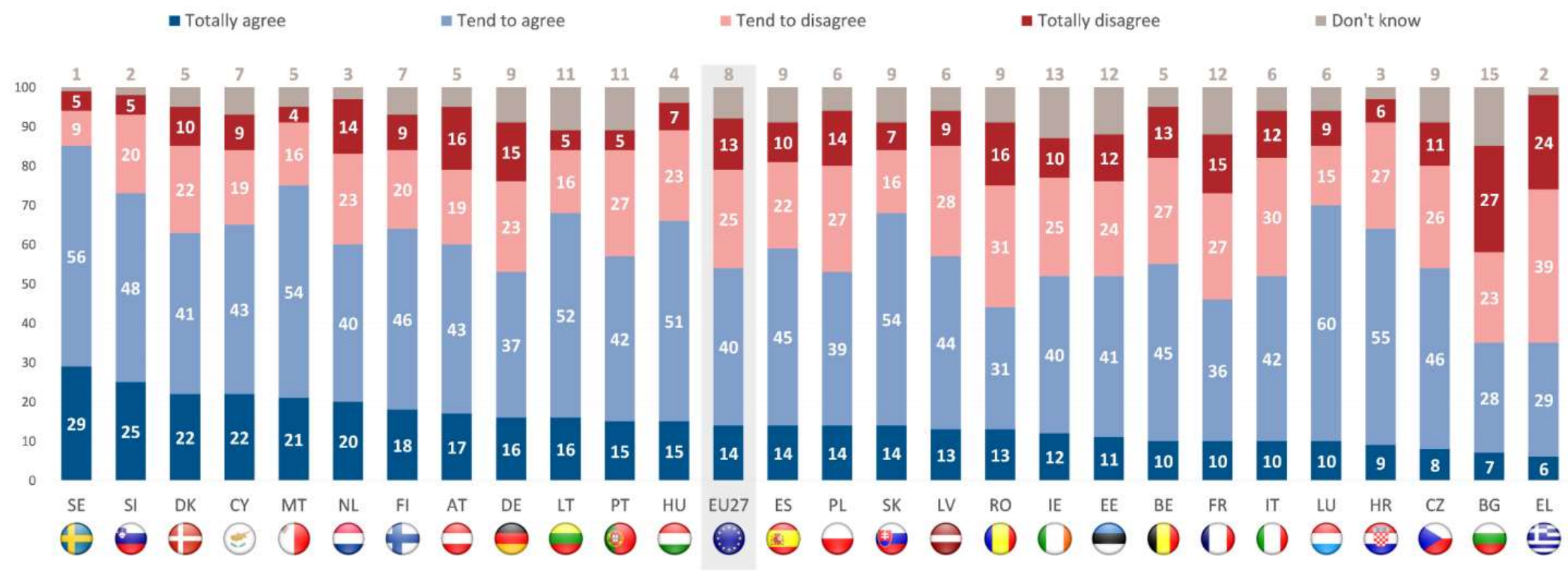
Policies to tackle climate change will create good quality jobs (in terms of earnings, job security and quality of the working environment) UE 61%, Spain 64%



Source: Eurobarometer, 2022

Opinions on job related issues in the green transition context – sociological aspects

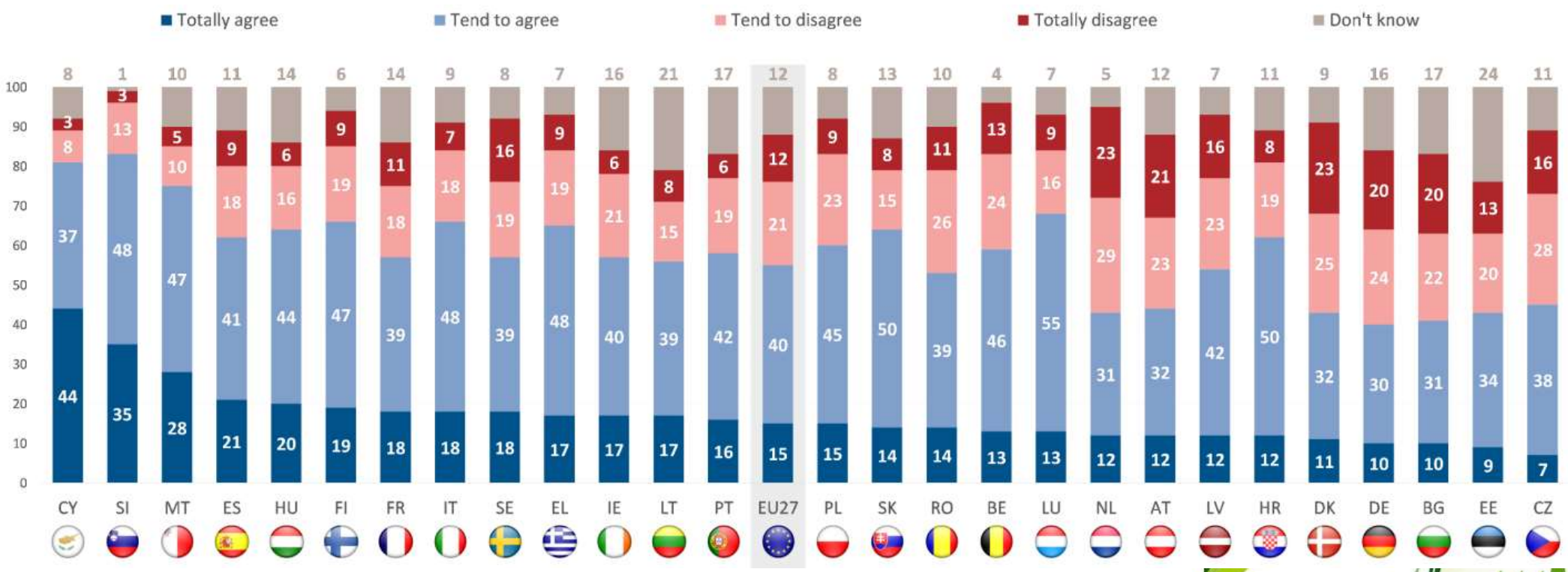
Your current skills allow you to contribute to the green transition UE 54%, Spain 59%



Source: Eurobarometer, 2022

Opinions on job related issues in the green transition context – sociological aspects

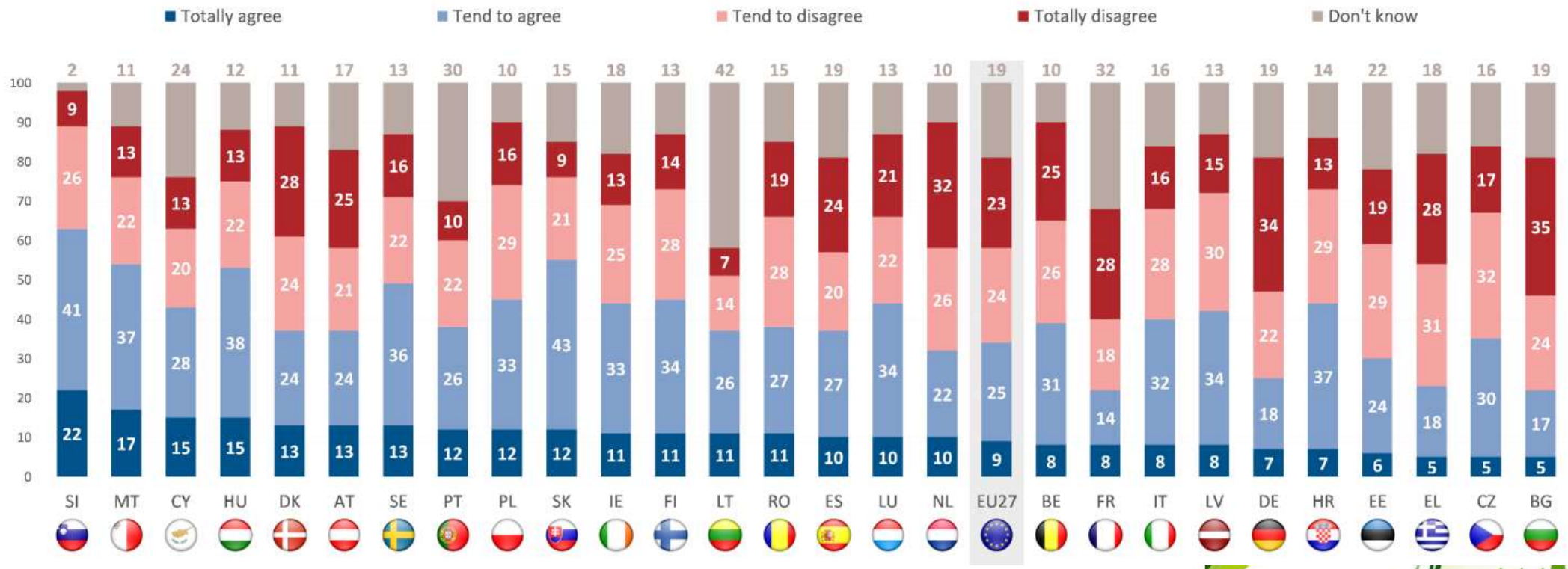
Being in a job that contributes to advancing the green transition is important to you personally UE 55%, Spain 62%



Source: Eurobarometer, 2022

Opinions on job related issues in the green transition context – sociological aspects

Your job is contributing to advancing the green transition UE 34%, Spain 37%



Source: Eurobarometer, 2022

The sociological aspects of the green revolution affecting workers and trade union representatives

- Considerations regarding green transition is related to the **culture of a country** (for example, Hofstede country-level culture measures (2010)).
- The **level of economic and financial development** influences the relationship between national culture and the green economy (Chien-ChiangLee et al., 2022).

The sociological aspects of the green revolution affecting workers and trade union representatives

- **Individualism, uncertainty avoidance, and long-term orientation** positively influences green economy. By contrast, power distance, masculinity, and indulgence have negative and robust impact on all measures of a green economy.
- **Legislating environmental regulations** or focusing on green technologies can be harmful for a green economy in countries with high levels of individualism, power distance, and indulgence.
- In more masculine countries, green economies can be promoted **through technology** rather than regulation.

The labour market polarisation between new green skills and traditional competences

PART THREE OF TRAINING

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Skills polarization on the labour market

- **Implementing the EGD tends to ease rather than exacerbate job polarisation** (Cedefop, 2011; Cedefop, 2012).
- Not all sectors and industries will face the same challenges in their turn towards more sustainable business models and jobs will not automatically reappear in the same industries they were lost in.
- The transition to a greener economy also requires **new skills**, both for newly emerging jobs and for existing jobs that are evolving. Without a suitably trained workforce the transition will be impossible.

Skills polarization on the labour market

- Greening the EU economy will not rely solely on high-skilled workers. The employment benefits of the EGD will be diffused across almost all occupational categories (Cedefop, 2021).
- In the line of green transition **the employment gains are slightly more pronounced for some of the medium- and low-skilled occupations**. Some occupations (e.g. in coal mining) will face employment decline while others (e.g. emerging occupations in hydrogen production) will see growth (EC, DG ENER, 2021).
- One of the impacts of the EGD is 400,000 medium-level jobs not being lost because of increased labour market needs spearheaded by EGD policies. These additional jobs may concern assembling new technology (such as electric vehicle engines) or its implementation (building renovation and installing clean energy-based heating systems) (Cedefop, 2021).

Skills polarization on the labour market

- The analysis of changes on the occupational level points towards the importance of **highly skilled non-manual occupations** in driving (as with scientists) and supporting (public officials and managers) EGD implementation → prognosed significant employment increases for science and engineering (associate) professionals, business and administration professionals, chief executives, senior officials and legislators, administrative and commercial managers, and information and communications technology professionals.

Skills polarization on the labour market

- The EGD-driven employment trends are likely to benefit a broad range of **medium-skill occupations**. In relative terms, the highest impact is expected for refuse workers, building and related trades workers, electrical and electronic trades workers and drivers as well as for customer service clerks and assemblers (Cedefop, 2021).

Skills polarization on the labour market

- In the energy sector on each level of skills high decreasing is expected.
- For the coke and refined petroleum products because of EGD the decreasing of the highly skilled non-manual occupations will be lower by -62.7 thousands, for skilled non-manual: -14.5 thousands, for elementary occupations – by 13.7 thousands, but the highest will be for skilled manual occupations: -76.8 thousands in the EU-27.
- In gas, steam and air conditioning the highest decreasing is expected for highly skilled non-manual occupation (36,000 from 60,300 loss jobs).
- It the mining and quarrying decreasing scale is similar (-58,200), especially for skilled manual occupations (-31,400) (Cedefop, 2021).

Skills polarization on the labour market

- **In mining, the energy transition calls for mobility-oriented up- and re-skilling, so that workers can make the transition to greener sectors or occupations.** Workers extracting coal can acquire new skills to find employment in renewable energy technologies – the developing their technical knowledge for application of energy efficiency measures and for application of renewable energy technologies; as well as upgrade their skills for emergent energy markets is important (BusinessEurope, 2022).
- On the other hand, workers in coal and other fossil fuels have many of the skills needed to fill positions in growing clean energy sectors (IEA, 2022).

Skills polarization on the labour market

- The European Commission has launched the **Pact for Skills,** a shared engagement model for skills development in Europe.
- The green transition requires investments in skills of people to increase the number of professionals who:
  - build and master green technologies, including digital, develop green products, services and business models,
  - create innovative nature-based solutions and help minimise the environmental footprint of activities.

Skills polarization on the labour market

‘**Skills for the green transition**’ include skills and competences but also knowledge, abilities, values and attitudes needed to live, work and act in resource-efficient and sustainable economies and societies. They are:

- **technical:** required to adapt or implement standards, processes, services, products and technologies to protect ecosystems and biodiversity, and to reduce energy, materials and water consumption. Technical skills can be occupation-specific or cross-sectoral;
- **transversal:** linked to sustainable thinking and acting, relevant to work (in all economic sectors and occupations) and life. Alternatively referred to as ‘sustainability competences’, ‘life skills’, ‘soft skills’ or ‘core skills’.

Skills polarization on the labour market

- The European Commission has published a taxonomy (classification system) of skills for the green transition in European Skills, Competences, Qualifications and Occupations (ESCO). It includes **381 skills**, **185 knowledge concepts** and **5 transversal skills** considered most relevant for a greener labour market.
- Examples of 'green skills' include how to conduct energy audits, measure the sustainability of tourism activities, as well as training staff on recycling programmes.

Skills polarization on the labour market

ESCO green skills specific to finance, banking and insurance

Preferred Label	Skill Type	Reuse Level
sustainable finance	knowledge	sector-specific
global standards for sustainability reporting	knowledge	sector-specific
impact investing	knowledge	sector-specific
green bonds	knowledge	sector-specific
inform customers environmental protection	skill/competence	cross-sector
provide information on solar panels	skill/competence	cross-sector
advise on waste management procedures	skill/competence	cross-sector
develop management plans	skill/competence	sector-specific
develop waste management processes	skill/competence	sector-specific
develop energy policy	skill/competence	sector-specific
implement environmental action plans	skill/competence	sector-specific
advise on environmental risk management systems	skill/competence	cross-sector
corporate social responsibility	knowledge	sector-specific
manage recycling program budget	skill/competence	cross-sector
provide information on hydrogen	skill/competence	sector-specific
provide information on wind turbines	skill/competence	sector-specific
provide information on geothermal heat pumps	skill/competence	sector-specific

Skills polarization on the labour market

The **Green General Skill index** identifies four groups of work tasks that are especially important for green occupations (UNIDO 2022):

- **Engineering and technical skills:** hard skills encompassing competences involved with the design, construction and assessment of technology usually mastered by engineers and technicians. This know-how is needed for eco-buildings, renewable energy design and energy-saving research and development (R&D) projects.
- **Science skills:** competences stemming from bodies of knowledge broad in scope and essential to innovation activities, for example physics and biology. These skills are especially in high demand in each stage of value chains and in the utility sector, which provides basic amenities such as water, sewage services and electricity.

Skills polarization on the labour market

- **Operation management skills:** know-how related to change in organizational structure required to support green activities and an integrated view of the firm through life-cycle management, lean production and cooperation with external actors, including customers. Such skills are important, for example, for sales engineers, climate change analysts, sustainability specialists, chief sustainability officers and transportation planners.
- **Monitoring skills:** technical and legal aspects of business activities that are fundamentally different way from the remit of engineering or of science. They refer to skills required to assess the observance of technical criteria and legal standards. Examples are environmental compliance inspectors, nuclear monitoring technicians, emergency management directors and legal assistants.

THANK YOU FOR YOUR ATTENTION

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