

EU-ANSA

mapping report:

Socioeconomic

aspects

of sustainable

development



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EU-ANSA

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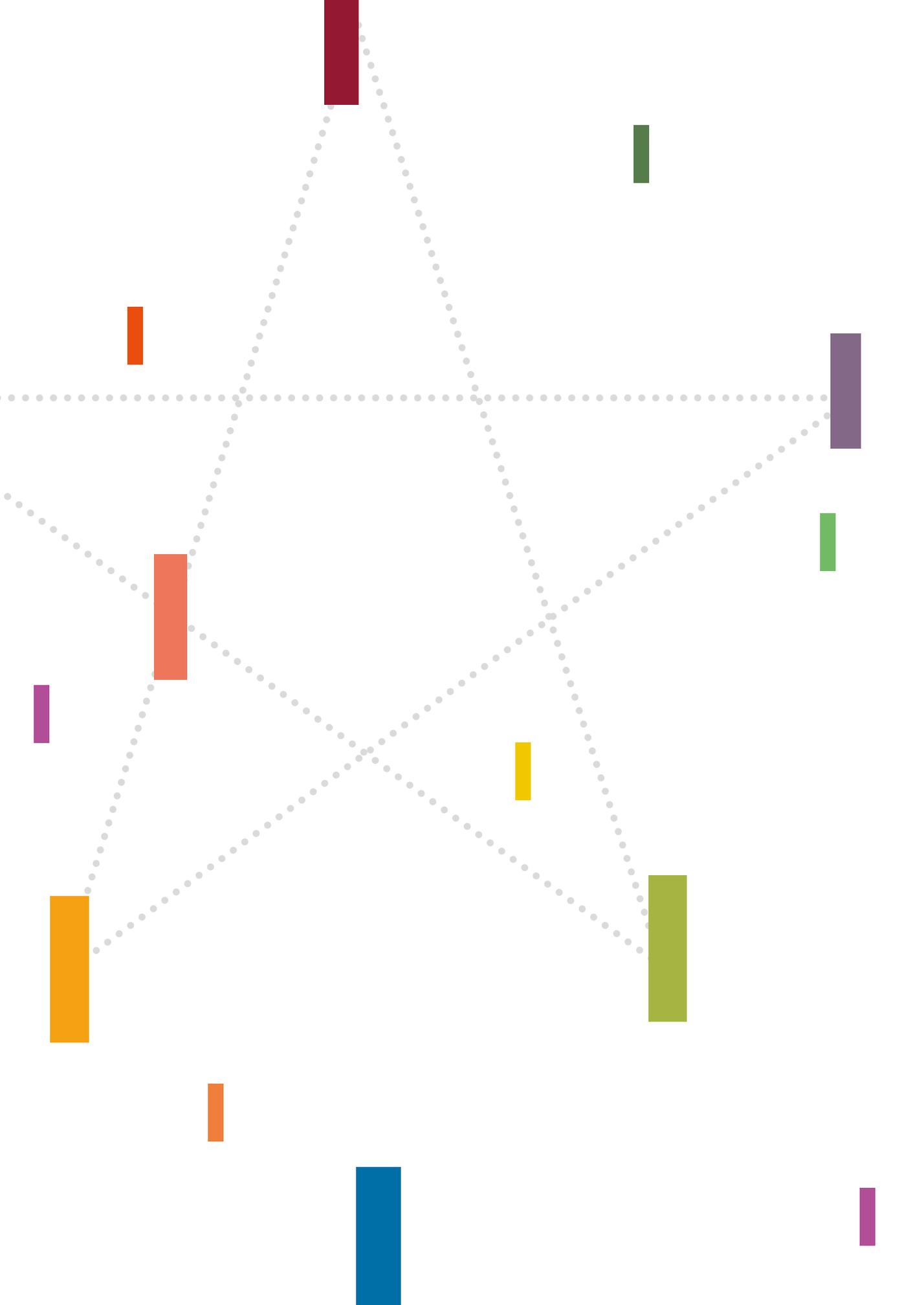
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Executive summary

The European Union Agencies Network on Scientific Advice (EU-ANSA) consists of technical and regulatory agencies that provide scientific advice to EU policymakers. The research evidence provided addresses real-world problems and identifies knowledge gaps that need to be filled. Having unique access to research and expert networks as well as policymakers and practitioners at both EU and national level, and conducting their own surveys and analysis, the EU Agencies produce outputs based on facts and evidence.

This short report was produced to demonstrate how EU-ANSA member Agencies address the topic of the socioeconomic effects of sustainable development. Motivated by the ambitious EU actions to address the challenges of climate change, it shows the engagement of Agencies in this knowledge field and their potential contribution in a policy area that is expanding and in need of evidence.

Information about relevant research on the socioeconomic effects of sustainable development was collected through two small surveys conducted among the EU-ANSA members, and reflected the state of play until May 2020. The findings of these two surveys were analysed and discussed among the members. Overall, they reveal a wide breadth of knowledge and research activities conducted through various research methods, such as surveys, statistical analysis, foresight analysis, case studies, skills forecasting and stakeholder workshops. The most researched areas include economy, employment, skills and training, gender inequalities, health and safety, social aspects (for instance, disadvantaged or vulnerable groups), the role of regulation and social dialogue. While most of the Agencies' work was carried out prior to the launch of the European Green Deal (EGD), their research has already covered all or some of the EGD dimensions (as specified in the communication). Furthermore, all participating Agencies plan to expand work in this field and within the context of their mandate. This means that EU institutions can draw on the findings of this body of research and in anticipation of future research.

Agencies have also identified knowledge gaps and needs for further research with a view to providing more holistic perspectives. With the EGD being communicated shortly before the surveys were launched, it became clear that there is a need for more data and information on 'just transition'. Additionally, sectoral and regional dimensions of the just transition and climate policies need to be fully investigated. Since green growth creates new business opportunities, employment, jobs and skills are also affected. Conceptual clarity about green jobs and taxonomies can lead to better measurements regarding the number of jobs, type of skills, training needs and the like. Similarly, challenges for health and safety need to be taken into consideration. Collaboration with Eurostat could address some of the data gaps identified (for instance, in sectoral data and employment statistics).

Implementing the EGD calls for more holistic and coordinated approaches as regards its socioeconomic dimensions. Since various regions, businesses, workers, communities and citizens might be affected in different ways, Member States designing climate policies should consider potential socioeconomic impacts. An agreed definition of just transition and its measurement could be an important step towards an assessment of policies. National experiences in drawing up and implementing climate policies, good example cases in just transitions and data

analyses at national level provide valuable information to all Member States as well as EU institutions designing relevant actions. Such input provided through the EU-ANSA members can facilitate the work of the policymakers, as it is a rich source of knowledge.

Involvement of EU-ANSA members in the EU research agenda could increase complementarities and added value.

Lastly, collaboration between Agencies, members of the EU-ANSA subnetwork, strengthens synergies, enables research and scientific knowledge exchange, as some of the examples have shown, and enhances the quality of the research recommendations.

Background and objectives of the report

This report reflects recent work of the Agencies related to sustainable development and the European Green Deal (EGD). It aims to present research outcomes that address socioeconomic aspects of the transition to a green and low-carbon economy and society (for instance, sectoral perspectives, workforce upskilling, regulatory framework, changing production models).

The objective of this report is to highlight the expert capacity of the EU Agencies and their potential to support policymakers in the implementation of the EGD. Through an ambitious action plan, the EGD aims to make the European economy sustainable and address climate and environmental challenges. Drawing on lessons learnt from projects already completed, currently running or in the pipeline, and with a focus on socioeconomic aspects, the analysis aims to raise awareness of the Agencies' research experience and, hence, their potential in addressing policy questions pertinent to specific elements of the EGD.

At the time of writing, the European Parliament and Member States have reached an agreement on the European Climate Law which will bring the EU closer to its climate neutrality objectives. It has been agreed that net greenhouse-gas (GHG) emissions will be reduced by at least 55% by 2030, compared to 1990 levels. The Climate Law thus writes into law the EGD climate neutrality goal. The Commission will assess the consistency of EU and national measures with the climate neutrality objective and the 2030-50 trajectory. Recommendations will be made to Member States whose actions are inconsistent with the climate neutrality objective.

The complexity of the policy challenges and opportunities posed by EGD implementation demands a more synthetic approach, using the Agencies' expertise in complementary ways. The wealth of data and information and the broad range of the Agencies' research tools could be used in responding to niche policy questions on just transition and beyond. The ramifications of the COVID-19 pandemic have highlighted the need for different aspects of expertise to respond to multiple and diverse policy challenges. Although this report discusses only the results of the specific surveys, the aspiration is to ignite discussion on synergies to support evidence-based policy options and approach wider common challenges at EU, Member State and regional/local level.

For the purposes of this report, two brief surveys were carried out in the first two quarters of 2020 among the EU-ANSA members to identify projects related to the EGD's broad objectives. The first investigated whether the responding Agencies had carried out any projects relevant to the 'main elements' of the EGD. The second wave explored the socioeconomic aspects of sustainable development projects. A key focus area of the two surveys concerned the socioeconomic aspects addressed by the projects identified as relevant to the EGD. In total, nine Agencies and two other EU-ANSA members, DG R&I (Group of Chief Scientific Advisors) and the Scientific

Committee on Health, Environmental and Emerging Risks (SCHEER) took part in the surveys. The analysis followed in this paper does not present a comprehensive list of all projects implemented by the Agencies, but a snapshot of activities as reported up to May 2020. Developments in running projects and detailed descriptions of future projects are not included in this brief report.

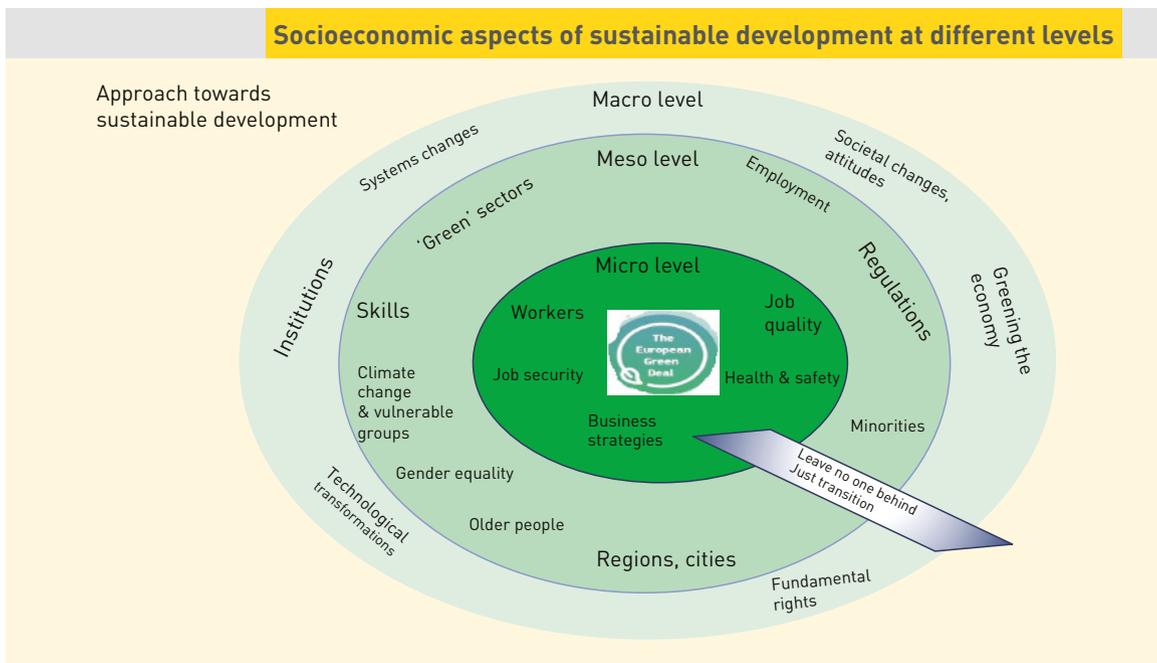
1. Sustainable development approach and its socioeconomic effects

A large body of literature covers the topic of sustainable development and its socioeconomic effects emphasising various dimensions. The EU Agencies contribute to this by conducting comparative research supporting the EU-level strategies and objectives of environmental policies.

This section provides an overview of the general approach taken by the EU Agencies in their work on sustainability and its socioeconomic aspects. The work of the Agencies presented in this report was conducted prior to the EGD launch. It is notable that some of the EGD dimensions are within the scope of some Agencies' mandate (for instance, EEA, EFSA) while in others such work was carried out because of its relevance to the particular Agency's remit (associated with its mandate).

The participating Agencies and EU institutions have approached the issue of sustainable development from different perspectives and covered a wide range of topics. The socioeconomic aspects of sustainable development have been investigated at macro, meso and micro levels, as shown in Figure 1. The macro level refers to systemic changes and country-level effects; the meso level focuses on industries, regions, cities, vulnerable groups, minorities, and other demographic groups; and the micro level includes the company level, workers, and green business strategies. While the distinction between the various levels is a conceptual construct, several of the research reports presented below address more than one level.

FIGURE 1



Source: EU-ANSA, socioeconomic cluster

At the macro level, systems and economy-wide analyses, either at national or EU level, have been conducted. Agencies conducting research at this level examine the role of institutions, policies and regulations; analyse trends; investigate the role of education, training, social norms, attitudes and environmental rights; examine mega trends; and develop foresights and scenarios (Table 1).

TABLE 1

Examples of relevant projects at macro level

Agency	Project	Highlights of findings
Cedefop	Green skills and environmental awareness in vocational education and training (VET)	Limited evidence was found that green policies have become part of the mainstream of skills development and hiring policies.
EEA	Sustainability transition in Europe in an age of demographic and technological change	The technological transition is neither guided by nor primarily concerned with sustainability issues. In particular, some of the key IT-based sectors are increasingly very resource- and energy-intensive, and may also be characterised by significant rebound effects as prices fall and consumption rises.
EIGE	Gender equality and climate change	The research shows that women’s involvement in climate change decision-making at local, national and international level is still low. Higher numbers of women were found among the heads of sectoral departments of national ministries than at higher political and administrative levels.
EIGE	Beijing+25	Different gender roles and responsibilities are not considered, with environmental policies often blind to their impact on the gender division of labour and care work, on the social organisation of human reproduction and health, and on the accessibility of public goods and services.
Eurofound	Energy scenario	The E3ME model estimates that the Green Deal may reduce some wage polarisation. While overall the energy scenario implies more employment in Europe, much of the employment created is at the bottom and middle of the wage distribution. The European Green Deal policies and finances allocated to them are gender-blind.
Eurofound	Distributional impacts of climate policies in Europe	There is a need to identify the distributional effects of policy measures other than carbon taxes. Some of the regressive effects of climate policies can be addressed by tackling energy poverty. National stakeholder engagement is vital for the successful implementation of climate policies.
EU-OSHA	Green jobs and occupational safety and health: foresight on new and emerging risks associated with new technologies	Green jobs are linked with different socioeconomic contexts. When devising a prevention strategy for green jobs, the specificities of the different types of green jobs have to be taken into account. Fundamental transformation in business processes and skillsets may trigger new health and safety risks. A sectoral approach may be preferable. A potential conflict between the pursuit of green objectives and occupational safety and health (OSH) is a challenge to be addressed.
EU-OSHA	Foresight study on the circular economy and its effect on OSH – Phase1: macro scenarios (ongoing)	The objective of this project is the delivery of macro scenarios for the future of the circular economy in the EU and its effects on OSH, based on a review of existing (future-oriented) knowledge on this topic.

Agency	Project	Highlights of findings
DG R&I (SAM)	Adaptation to climate change-related health effects in Europe	Recommendations: integration of health aspects in all policies, across all sectors and governance levels, affected by the climate change adaptation strategies and plans; inclusion of climate change considerations in public health policies to enhance the preparedness and capacity of the health services as part of broader disaster and emergency risk strategies.

Source: *EU-ANSA, socioeconomic cluster*

Note: *Project findings depict the state of play at the time of project completion.*

The meso level approaches examine, among other issues, industries, certain sectors and companies and their responses to environmental or climate change challenges, regulations, development of business models, technologies and organisation of work, sectoral studies, health and safety risks (Table 2).

TABLE 2

Examples of relevant projects at meso level		
Agency	Project	Highlights
Cedefop	Greening VET and skills development	Structural change in employment, anticipated in specific sectors (mining, fossil fuel-based energy generation, manufacturing (including the automobile industry), forestry and agriculture), will be considerable.
Cedefop	Skills for a low-carbon Europe	Future changes in labour demand and skills requirements in four domains of strategic importance for a low-carbon transition: wind power, solar thermal heating, public buildings, and road freight transport and logistics. Projections of employment in low-carbon domains clearly underestimate the demand for training, since they do not include skills obsolescence as workers age or new technology is introduced, or the need to meet replacement demand as individuals exit the workforce.
EEA	Unequal exposure and unequal impacts	Regions with lower average socioeconomic status and higher elderly percentages in southern/south-eastern Europe experience greater exposure to ground-level ozone and high temperatures. Children and those in poor health tend to be more adversely affected by such environmental health hazards than the general population.
EIGE	Gender equality and climate change	Women's participation in decision-making in the energy and transport sectors, both public and private, is relatively low compared to their overall participation in the workforce.
Eurofound	Energy scenario	Energy scenario employment projections: Agriculture +0.5 Mining -16.6 Manufacturing +0.7 Utilities -2.4 Construction +1.1 Distribution, retail and hotels and catering +0.6 Transport and communications +0.5 Business services +0.7 Non-business services +0.3
Eurofound	Greening of industries in the EU	Key variables that lead to the successful implementation of green business strategies and technologies are: regulations, funding, building of know-how, organisation of logistics and staff training.

Agency	Project	Highlights
EU-OSHA	The future of agriculture and forestry: implications for managing worker safety and health	GHGs and environmental regulations (e.g. relating to pesticides) will lead to changes in farming and forestry practices, which in some cases may result in increased risks for workers' safety and health. The administrative burden, as well as changing processes and perceptions as a consequence of the EGD, can be stressful, especially for small and medium-sized enterprises.
FRA	Business-related human rights abuses and remedies in the EU	The majority of human rights issues covered concerned environmental violations, ranging from compliance with labour standards to displacement of indigenous populations and pollution.
FRA	Roma and Travellers survey (2019/20)	Regarding the environmental aspects of this population, 21% of respondents across the six EU countries covered said their housing was affected by pollution and grime, as the local area was affected by smoke, dust, unpleasant smells or polluted water.

Source: *EU-ANSA, socioeconomic cluster*

Lastly, at the micro level, developments at company or workplace level are reported. Some Agencies address specific aspects such as employment risks and opportunities linked to the greening of the workplace, health and safety issues, involvement in decision-making, and transition towards a green production model. For example, the Eurofound project exploring the greening of industries in the EU investigated the impact of greening on job quality and, in particular, employment security, training and career development, wages, working hours, workers' representation and so forth.

2. Socioeconomic aspects addressed

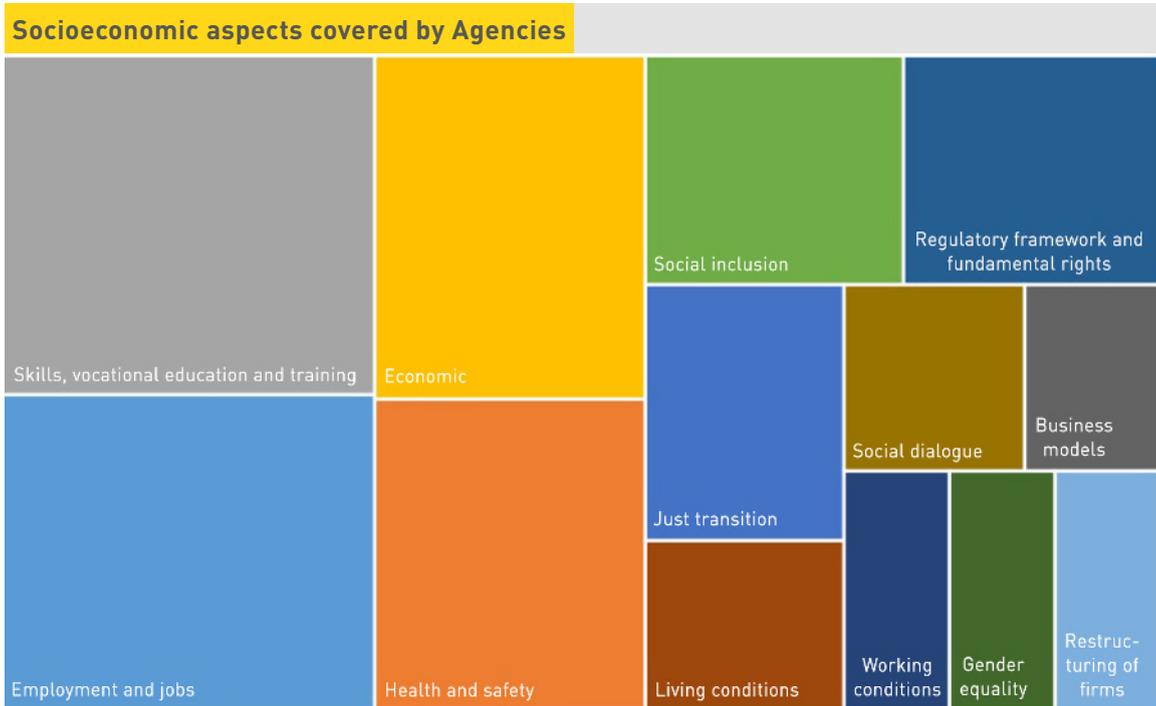
The vast majority of previous and current projects were designed and launched before the EGD (December 2019), which means they were shaped to meet different policy priorities and a different framework. Arguably, the EGD, being the growth strategy of the EU as of early 2020, can be expected to greatly affect the objectives and focus areas of projects conducted by the EU-ANSA members in the future. The survey attempted to delve into the projects with socioeconomic aspects and identify their contribution to the EGD elements. Respondents were asked to identify socioeconomic aspects their projects have addressed, which could be any of the following:

Socioeconomic aspects

- Economic
- Business models
- Restructuring of firms
- Regulatory framework and fundamental rights
- Social dialogue
- Just transition
- Employment and jobs
- Working conditions
- Health and safety
- Skills, vocational education and training
- Gender equality
- Organisation of work
- Social inclusion

The findings suggest that projects cover all of the above-mentioned socioeconomic aspects except for organisation of work. Most of the projects have covered the following aspects: skills, vocational training and education, employment and jobs; economic; and health and safety (Figure 2). Good practices at national, sectoral and even company level provide more insights into national experiences in implementing policies and enhance learning.

FIGURE 2



Source: EU-ANSA socioeconomic cluster

Note: Box sizes reflect the number of projects per aspect.

Focus of the socioeconomic aspects

This section highlights some of the socioeconomic aspects mentioned above.

Employment impact and skills mismatches. Research work has investigated topics such as employment and jobs, skills, vocational education and training, health and safety, social dialogue and working conditions. Overall, the Agencies display a rich array of approaches: the respective projects discussed range from sector-specific (e.g. Eurofound’s *Greening of industries* and *Energy scenario: Employment implications of the Paris Climate Agreement*), Member State-level developments (e.g. Cedefop’s *Green skills and environmental awareness in vocational education and training*) to implications for vulnerable groups and gender equality (FRA and EIGE work).

The Agencies, depending on their mandate, take very different approaches to employment and jobs research; however, investigating green jobs and employment as well as job quality has predominated. Health and safety discussion benefits from the coexistence of projects with a more scientific orientation (e.g. EFSA’s projects *CLEFSA* and *Identification of chemical emerging risks*⁽¹⁾), as well as the work of EU-OSHA.

(1) The project is to run until 2023.

**BOX 1****Greening of industries in the EU: Anticipating and managing the effects on quantity and quality of jobs (Eurofound)**

This *study* shows that the most important challenge arising from climate change, identified during the literature review and interviews with experts and stakeholders, is the ‘employment challenge’: how to simultaneously mitigate climate change, maintain or even increase employment levels and secure or improve job quality standards. The implementation of green business practices may have a twofold impact on jobs. It may affect the quantity of jobs by creating new jobs, eliminating inefficient current jobs or substituting them with greener ones, and by transforming current jobs by introducing new types of environment-related responsibilities. Green business practices may also affect the quality of jobs. The online survey confirmed the importance of employment, regulatory and energy challenges.

The results indicate that companies tended to manage rather than anticipate green change. Most companies were likely to use conventional approaches and not make use of eco-innovations. The two main motivations of businesses to mitigate climate change are related to: i) availability and economic feasibility of new technologies and ii) awareness of climate change among or pressure from internal and external business stakeholders.

Companies engaged in greening mainly through the following two groups of practices: energy-saving (e.g. improvement in the energy efficiency of buildings or transport, reducing energy use in the workplace); greener products or services (e.g. production of electric vehicles, provision of electric engine installation services, providing sophisticated recycling services).

Source: *Eurofound (2013)*

**BOX 2****Green jobs and occupational safety and health: Foresight on new and emerging risks associated with new technologies by 2020 (EU-OSHA study)**

‘Green jobs’ encompass a broad range of workplaces in different sectors, with different working conditions, working processes and workers’ groups involved. Scenarios were developed to explore a range of technologies in green jobs and their occupational safety and health (OSH) risks in three possible futures for Europe. When devising a prevention strategy for green jobs, the specificities of the different types of green jobs and the diversity of the workforce have to be taken into account, as there are a number of challenges:

- decentralised work processes: as workplaces are getting more dispersed and more difficult to reach, monitoring and enforcement of good OSH conditions and safe working practices is likely to become more challenging;
- growing use of subcontracted work, as well as an increase in self-employment, micro and small enterprises: such structures may have less awareness of OSH and a less-developed culture of OSH;
- new skills and the need for adequate worker training: there are many new green technologies and working processes where specific knowledge is needed but has not yet been fully developed;
- skill shortages and polarisation of the workforce: low-skilled workers are pushed to accept poorer working conditions and more difficult jobs;
- increased automation: this may improve OSH but also bring human-machine interface issues as well as issues of over-reliance on the technology;
- conflicts between green objectives and OSH: there is a risk of OSH being overlooked.

Source: *EU-OSHA (2013)*

Targeted and relevant upskilling and reskilling are a prerequisite for achieving the significant sectoral restructuring and the shift to cleaner and smarter technologies that the EGD introduces. More than half of the projects reported upon in the survey have dealt with skills, vocational education and training. Agencies have analysed different areas of this aspect, discussing various types and levels of VET and higher education at national and regional level (e.g. Cedefop's *Skills for green jobs*) or providing analysis and good examples at sectoral level (e.g. DG R&I's *Adaptation to climate change-related health effects in Europe*) or with regard to vulnerable learners' groups (FRA's *EU-MIDIS II – Roma*). Skill implications and the importance of training are also discussed in a more synthetic approach, taking into consideration other mega-trends, such as demographics and technological change (EEA's *Sustainability transition in Europe in the age of demographic and technological change: Implications for fiscal and financial strategies*).

BOX 3

Skills, vocational education and training – examples of EU-ANSA work

Adaptation to climate change-related health effects in Europe (DG R&I, scientific opinion)

Increase the preparedness and general ability of the health sector: to some extent, preparedness deals with increasing the resources (funding, knowledge and skills, organisation) in the system, with the aim of building in redundancy or backup capacity.

Green economy (Cedefop, 2008-09)

The **case studies** identified policy initiatives in EU countries that are relevant to boosting the green economy and the emergence of specific and generic skills that would be necessary for greening the economy. They also identified the need to green all occupations, ranging from new jobs focused solely on the delivery of green goods or services to those that will require more limited changes to improve energy efficiency and reduce resource use.

Greening of the economy will demand changes in curricula and qualifications. The importance of strengthening social dialogue was highlighted, as was the need for better coordination between those developing environmental policy and managing the transition to a low-carbon economy and those developing skills training.

Skills for green jobs (Cedefop, 2017-19)

The **research** work showed that there is no common definition of green skills and jobs. Carbon reduction targets and associated incentives and subsidies have had a particular effect on green jobs and skills. Training programmes for unemployed people or people who are in work, and active labour market programmes (ALMPs) do not have a specific focus on green skills. Additionally, there is a weak connection between organisations involved in national policymaking on environmental topics and those involved in labour markets and skills policy, including skills anticipation (and policies).

Social dialogue. The importance of social partners' involvement for achieving the green transition is emphasised in the EGD. *Social dialogue* is recognised as an aspect in only two projects by two Agencies. This could signal an area of further development for the Agencies' future work and collaboration. For example, Eurofound's work *Industrial relations and sustainability: the role of social partners in the transition towards a green economy* discussed how industrial relations could support the implementation of the [European Commission's climate actions plan for 2020](#); this could be inspiring for the implementation of the EGD.

Some EU-ANSA members have also carried out research projects which indirectly address socioeconomic effects. Such projects include the European Environment Agency's (EEA) project on natural capital and the ecosystem, the restoration of the ecosystem and the establishment of a green infrastructure, and the ECDC work related to the European Environment and Epidemiology Network. Furthermore, the DG Research & Innovation's *Biodegradability of Plastics in the Open Environment* project analyses socioeconomic aspects of the waste management systems and EU-OSHA's *Worker exposure survey on cancer-causing factors*.

The findings of these projects would be useful for informing the actions planned within the context of the EGD and in particular, the just transition.

Gender equality. Climate change and its impacts on women and men is an area less elaborated in the literature and policy documents.

Research carried out by EIGE revealed important gender differences. For example, gender-specific consumption patterns affect gender-specific contributions to GHG emissions. Additionally, women depend more on access to public transport due to lower levels of car ownership. Due to their lower average income, women are at greater risk of energy poverty than men and have fewer options for investing in low-carbon options such as energy efficiency and renewable energies. Women's employment in the energy and transport sectors is relatively low compared to their overall participation in the workforce.

Implications for gender equality have also been identified in FRA's *EU-MIDIS II – Roma and Travellers survey*.

BOX 4

Climate change and impacts on women and men (EIGE)

All aspects of climate change, responses to climate change and environmental policy affect women and men differently, also depending on their age, income, education, household composition, etc. People most vulnerable to the consequences of climate change tend often to be women because of their persisting unequal position in society. For instance, energy poverty disproportionately affects single women (especially older women with low pensions) and single mothers, and can be aggravated by climate policy interventions.

Women remain under-represented in environmental policymaking, planning and implementation. They are also substantially under-represented in key sectors such as energy; transport; water and waste; and agriculture, forestry and fishery. The low level of gender diversity in the energy sector is considered to affect innovation and restrict efforts to address climate change. Yet there are some new opportunities for women to get more involved in this sector, for example through decentralised energy production.

Following a statistical analysis, new gender-sensitive indicators for EU countries have been developed and endorsed by the EPSCO Council (as part of the regular monitoring of the implementation of the Beijing Platform for Action in the EU).

Source: *EIGE (2020)*

Economic aspects, business models and restructuring of firms. With regard to economic aspects, economy-wide or sectoral approaches are explored. When sectors hold a key role in the project's focus, the analysis examines employment and training/skills challenges stemming from climate change and/or relevant mitigating actions (for example, Eurofound's *Energy scenario: Employment implications of the Paris Climate Agreement*).

However, several projects addressed sectoral dimensions, discussing aspects such as female representation in the energy and transport, water and waste, and agriculture, forestry and fishery sectors; information on green activities (e.g. in renewable energy such as wind turbines, construction of thermoelectric generators, photovoltaics) in selected Member States; job and skill trends in sectors expected to be more affected by the 'greening' of the economy (mining, fossil fuel-based energy generation, manufacturing, forestry and agriculture), as well as the effect of new technologies on green jobs (energy; transport; manufacturing; construction; agriculture, forestry and food; waste, recycling and environmental remediation; and medicine and healthcare technologies).

DG R&I's projects, such as *A systemic approach to energy in Europe*, offer solid examples of a scientific validation process/input that could shape EU policy for top priority and environmental impact sectors, thus directly affecting these sectors economically.



BOX 5

Energy scenario: Employment implications of the Paris Climate Agreement (Eurofound)

This analysis assesses the potential employment and economic impacts on the EU, and other parts of the world, of a transition towards a low-carbon economy by 2030. The transition envisaged is in line with the 'below 2 degrees' temperature change target and the associated reduction in carbon emissions. The energy scenario discusses the impacts across sectors and occupations, with a particular focus on manufacturing.

The impact of a transition to a low-carbon economy is positive for the EU as a whole. The positive impact on the number employed is largely due to the investment activity required to achieve such a transition, together with the impact of lower spending on the import of fossil fuels. The impacts vary considerably among sectors. For example, jobs are lost in fossil fuel extraction and processing, but gained in the construction and manufacturing of renewable and energy efficiency equipment, and in the associated supply chains. This shift in production has implications for labour market demand. For example, the expected shift towards production of capital goods, such as equipment, machinery and buildings, will result in increased demand for construction and labour from the associated occupations, as well as increased demand for metal and machinery, and related labour.

Estimates for EU GDP and employment show growth of 1.1% and 0.5%, respectively. Similarly, estimates for China are positive, whereas for the US there may be a drop in both growth and employment.

Source: Eurofound (2019)

Certain sectors are more frequently researched due to their central role in the green transition or to potential impacts of energy transitions on employment structure (e.g. jobs, skills, working conditions, wages). Such sectors include energy, transport, construction, water and waste, agriculture, forestry and fishery, services, and mining.

Sectors more often investigated in projects carried out by EU-ANSA members: energy, transport, construction, water and waste, agriculture, forestry and fishery, services, and mining.

In Cedefop's *Skills for green jobs*, the role of sectoral skills anticipation activities and sectoral organisations in developing green skills was also addressed.

Developments in sectors are more often touched upon through an analysis of trends and developments in occupations, particularly in terms of the employment, skills and training impact of the greening of the economy (e.g. Cedefop's *Green skills and environmental*

awareness in vocational education and training). Building on its Skills Forecast framework, Cedefop (*Digital, greener and more resilient*) assessed the potential employment effects of policies similar to the EGD on selected sectors. Its aim was to gain a better understanding of the sectors that can be expected to be affected by the implementation of the EGD.

There are employment implications related to economic changes and sector restructuring. It is worth noting that restructuring of sectors due to the greening of the economy will also affect business strategies, activities and relevant corporate policies. Restructuring of firms has been addressed mainly by Eurofound through a number of projects (e.g. *Energy scenario: Employment implications of the Paris Climate Agreement; Greening of industries in the EU: Anticipating and managing the effects on quantity and quality of jobs; Industrial relations and sustainability: the role of social partners in the transition towards a green economy*).

Although employment implications are discussed in several projects, business models have been addressed by only two projects (Eurofound's *Greening of industries in the EU: Anticipating and managing the effects on quantity and quality of jobs* and DG R&I's *A systemic approach to energy in Europe*). This observation could highlight the potential of exploring the employment effects of EGD implementation in future projects concerning changes in businesses/ workplaces that are less obtrusive yet of significant magnitude.

Just transition. With regard to socioeconomic aspects, just transition is perhaps the EGD element that has drawn most policy attention. The term just transition is not precisely defined in the EGD⁽²⁾ but it refers to investments and supports to 'provide affordable solutions to those affected by carbon pricing policies, (...) as well as measures to address energy poverty and promote re-skilling'. It clearly refers to regions and sectors most affected by the transition because of their dependence on fossil fuels or carbon-intensive processes, and to ensuring that no one is left behind (Eurofound, 2021). The ILO concept (ILO, 2018) considers just transition as an integral part of the sustainable development policy framework. It encompasses two dimensions of just transition: outcomes (new employment and social landscape in a decarbonised economy) and process (how to get there).

A pragmatic approach was taken to just transition in this mapping report, which included projects that largely fit with the broad dimension of the term. The variety of the participating Agencies' fields of expertise offered a wide view of these blocks: for example, the EEA's *Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe*

(2) https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/just-transition-mechanism_en

examines both living conditions, in relation to environmental health hazards, and social inclusion for the more vulnerable; DG R&I's results are expected to affect policies relevant, among others, to the living conditions of all Europeans.

As discussed in the section on knowledge gaps, regional aspects are an area that will require further investigation in the future, as a number of policy actions to implement the EGD will be implemented at local and regional level (e.g. redeployment of workers, training activities during the energy transition phase).

BOX 6

Just transition example – Eurofound

Several Member States have put in place programmes to ensure just transition, often with a strong sectoral and regional focus. These include Estonia, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Romania and Slovakia. Some illustrative examples of just transition plans are presented below:

- In Ireland, a programme to support the Midlands region is mostly funded by earmarked revenue from carbon tax (around EUR 130 million per annum). The Just Transition Fund, with a total of EUR 11 million, is designed to support retraining and reskilling of workers and to assist local communities and businesses in the Midlands to adjust to the transition to a low-carbon economy.
- Germany adopted the Transformation of Coal Regions Act in August 2020. It provides EUR 40 billion in funding to support structural change in the affected regions until 2038; of this, EUR 14 billion will be given to the affected Länder and municipalities in the regions of Rheinisches Revier, the central Germany mining district (Saxony, Saxony-Anhalt) and Lausitz in eastern Germany.
- Greece developed a lignite phase-out plan for power generation which involves adopting integrated programmes for supporting lignite-producing areas to smooth the transition to the post-lignite era in a 'fair way', in particular for the regions of Western Macedonia and Megalopolis. An integrated, multifaceted and front-loaded plan, the [Just Transition Development Plan](#), was published in September 2020 and constitutes a roadmap for the post-lignite era.

Source: *Eurofound (2021)*

BOX 7

Just transition example – EEA

Some of the key findings of the [study](#) are listed here.

- The uneven distribution of the impacts of air pollution, noise and extreme temperatures on the health of Europeans closely reflects the socio-demographic differences within our society.
- There are pronounced regional differences in social vulnerability and exposure to environmental health hazards across Europe.
- Inequalities in exposure to environmental health hazards and their impacts on European society are only somewhat addressed by current policy and practice.
- The social inequalities in the impacts of and exposure to environmental health hazards are likely to continue in the future and require increased recognition in policy across governance levels.

Source: *EEA (2018)*

The regulatory framework and fundamental rights are the core business of some Agencies, as part of their mandates (e.g. FRA). The regulatory framework element deals with implications for policies or industrial relations relevant to green issues. For example, DG R&I shares its scientific opinion on the development of a sustainable food system in the EU (*Towards a sustainable food system*) and scientific recommendations on the conditions under which possible applications of biodegradable plastics can be desirable (*Biodegradability of plastics in the open environment*).

Regulation of the employment relationship through social dialogue is an area that Eurofound explored with regard to the greening of the economy (*Industrial relations and sustainability: the role of social partners in the transition towards a green economy*). Additionally, some Agencies have examined the implications of pollution, environmental violations and climate change issues for disadvantaged groups (e.g. FRA's *Business-related human rights abuses and remedies in the EU; EU MIDIS II – Roma*, a survey of Roma and Travellers). The findings of the latter survey across six EU countries indicate that the housing of 21% of respondents is affected by pollution and grime because of smoke, dust, unpleasant smells or polluted water in their local area.

Geographical and regional dimensions. Depending on the scope of the project, some projects provide a cross-EU analysis while others focus on selected Member States (e.g. Cedefop's *Skills for the green economy*, FRA's *EU-MIDIS II – Roma* (survey of selected countries with significant Roma/Traveller populations)). Some of these projects include good practices. A comparison of the EU with non-EU countries is rather rare (Eurofound's *Energy scenario: Employment implications of the Paris Climate Agreement* offers a comparison with the US and China), although such comparison could reveal steps for future activities and collaboration.

Climate change already disproportionately affects certain regions and cities. It is worth noting that there are regional differences in social vulnerability and exposure to environmental health hazards across Europe, as mentioned in the EEA report *Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe*. Additionally, environmental policies and energy transitions may have diverse regional effects, which need to be accounted for at the stage of policy design.



BOX 8

Good practice example – Cedefop

The ECECLI project focused on the ecological and energy transition in the Greater Paris area. Working together, regional representatives of the Ministries of Employment and Ecology, the regional authorities, and the Seine-Normandie Water Agency identified the evolution of skills in 35 professions. These included emerging professions and professions subject to transformation (such as bus drivers who will have to master eco-driving as well as computerised vehicles, and site managers in construction who will have to organise the sorting of materials).

Source: Cedefop (2019)

Meeting the EGD priorities

The research work mentioned above responds directly or indirectly to the various EGD elements. Table 3 shows that there is available research and information which covers all the EGD dimensions, albeit with not equal intensity. Environmental and climate change topics are at the heart of the EEA, which naturally covers all aspects of the EGD. Similarly, the Group of Chief Scientific Advisors, under DG R&I and the Scientific Committee on Health, Environmental and Emerging Risks (SCHEER), covers nearly all EGD dimensions. Among the rest of the Agencies shown in Table 3, a large number of projects have already been carried out that could be of use to policymakers. Several projects address the EGD element ‘just transition – leave no one behind’, even though they were conceived and implemented prior to the EGD publication. These projects cover subjects including the social equity of energy poverty in the transition of energy systems, the unequal distribution of pollution, climate impacts and access to natural resources, the impact of climate change on women and men, green sectors, green jobs and skills and the role of social partners in accelerating the transition.

TABLE 3

Work of EU-ANSA members (respondents to the survey) relevant to EGD dimensions

Agency/ EU institution	Increasing the EU's climate ambition	Supplying clean, affordable and secure energy	Mobilising industry for a clean and circular economy	Building and renovating in an energy- and resource- efficient way	Accelerating the shift to sustainable and smart mobility	'Farm to Fork'	Preserving and restoring ecosystems and biodiversity	A zero- pollution ambition for a toxic-free environment	Financing the transition	Mobilising research and fostering innovation	Leave no one behind
Cedefop											
ECDC											
EEA											
EFSA											
EIGE											
EMCDDA											
Eurofound											
FRA											
EU-OSHA											
DG R&I*											
SCHEER**											

Note: *DG R&I Group of Chief Scientific Advisors,** SCHEER= Scientific Committee on Health, Environmental and Emerging Risks.

3. Knowledge gaps and methods

Agencies were asked to report on knowledge gaps identified through their research. The findings demonstrate that half of the responses identified a lack of data in several sectoral dimensions and also in geographical dimensions (regional and national). It was highlighted that regional dimensions need to be systematically addressed in future research, particularly in the context of the just transition actions.

In terms of socioeconomic aspects, the respondent Agencies highlighted that the areas with the largest knowledge gaps were:

- employment, jobs and skills
- sectoral and regional dimensions
- just transition
- health and safety

Gaps were identified with regard to data availability that would allow research on employment and green jobs, job tasks, skills, health and safety, and working conditions. Gender-disaggregated data would be needed to analyse gender effects. A lack of disaggregated data can hinder a more holistic approach and understanding of the just transition dimensions, such as monitoring of climate policies and their effects on certain societal groups, and progress in respect to equal treatment in a range of areas of life, including employment, education, health and housing. The distributional effects of climate policies on different income categories and societal groups are crucial in the just transition assessments and need to be closely monitored to avoid unintended effects which could weaken public support for the EGD targets. Additionally, further research needs to explore the contribution of social dialogue, gender inequalities, regulation and fundamental rights and changes in business models (such as the circular economy).

The research work reported in the previous sections has used a variety of methods: survey work, data analysis, qualitative analysis, foresight analysis, skills forecast, and the like. Large-scale surveys (*EU MIDIS II* – Roma, FRA), smaller-scale surveys (on green skills, Cedefop) and online surveys (on the greening of industries in the EU and anticipating and managing the effects on the quantity and quality of jobs, Eurofound) have been used to capture effects on specific parts of the population. Data analysis has been used for several research projects: EIGE's gender equality and climate change project; Eurofound's energy scenario report, using the E3ME macro-econometric model; Cedefop's research work on sustainable energy; EEA's analysis of social vulnerability to air pollution, which used two modelling frameworks (a quantitative computable general equilibrium (CGE) model and a qualitative systemic model); EMCDDA's social cost analysis (costs associated with dismantling and cleaning up synthetic drug production and dumping sites). Notably, foresight work and scenario-building has been carried out (EU-OSHA, EFSA and EMCDDA) or is underway (Cedefop). Foresight work is of great value in exploring future changes and supporting stakeholders in actively shaping the future vision for policies and actions. It is clear that comparing the EU with other (non-EU) countries (e.g. as in Eurofound's energy scenario

report, which provides a comparison with the US and China), could support policymakers and the EU ambition to become a global leader in climate, environment and energy policies.



BOX 9

Knowledge gaps identified by Agencies relating to socioeconomic aspects and dimensions

- Several agencies underlined the need to better integrate the environmental and the social dimensions. Involving civil society actors in the design and implementation of environmental measures and the process of greening the economy is crucial for the effectiveness of policies.
- There is a lack of comprehensive and consistent data related to jobs created by different energy technologies. There is a need to investigate the greening effects on employment at the subsector level, the sustainability of future green jobs and their geographical trends, as well as links between greening and the job quality dimensions. Direct, indirect, induced employment and type of employment created need to be monitored. Regarding the role of social dialogue in the transition towards a green economy, some innovative practices have started to emerge in some Member States; these need to be mapped.
- Regarding gender equality and environment-related sectors, there is a lack of comprehensive EU-wide data on the representation of women (e.g. employment data broken down by sex) in the renewable energy sector, which is of interest in relation to the environment and climate change mitigation. There is also a lack of recognition in policymaking and a small share of women in decision-making in some sectors such as transport.
- It is suggested that more research is needed into the societal aspects of the green economy and to assess the scale and significance of potential shortages in green skills. Development of a closer working relationship between the needs of industry and formal education and training was also proposed.
- Relevant data gaps were identified in social vulnerability to climate change, for example, parts of the population in poor health, living in social housing or reliant on welfare. The need for better access to socio-demographic data was emphasised, as well as the need to reform the fiscal and social security systems to ensure they remain viable, support transitions, and continue providing the preconditions for inclusive and sustainable wellbeing.
- Sustainable development research should consider the human rights compliance of EU business, in particular in the agricultural and construction sectors and in the supply chains of diverse EU businesses.

4. Future work contributing to the European Green Deal

Agencies were asked to indicate whether their future work is likely to be developed with a view to feeding into policy debate and addressing EGD dimensions. The responses (Table 4), while tentative, suggest that the Agencies intend to cover a large number of the EGD elements, with the just transition dimension being a clear priority. With potential inputs from at least seven EU Agencies, EU policymakers can avail of the research contributions to better shape EU policies.

TABLE 4

Potential future work to address the main elements of the EGD, as identified by respondent Agencies	
EGD elements	No. of Agencies
Increasing the EU's climate ambition for 2030 and 2050	2
Supplying clean, affordable and secure energy	2
Mobilising industry for a clean and circular economy	6
Building and renovating in an energy- and resource-efficient way	3
Accelerating the shift to sustainable and smart mobility	4
'Farm to Fork': designing a fair, healthy and environmentally friendly food system	2
Preserving and restoring ecosystems and biodiversity	3
A zero-pollution ambition for a toxic-free environment	4
Financing the transition	2
Mobilising research and fostering innovation	4
Leave no one behind	7

Source: EU-ANSA socioeconomic cluster

Future research by the Agencies will combine quantitative and qualitative methodologies, using foresight methods, case studies and expert workshops with key stakeholders.

A more detailed presentation (Table 5) of some potential areas for future work suggests that the EGD drives the ambition of the Agencies while embracing the relevant European Social Pillar principles. For instance, the Agencies are interested in exploring the following in their future work: the relationship between health and environment, specific environmental aspects (e.g. interlinkages between air pollution, noise and extreme temperatures) and inequalities. Nearly all the Agencies that identified potential areas for future work emphasised the sectoral dimension of their work. Having identified the regional level as a knowledge gap, this dimension will be further explored to provide policymakers with more data and analysis. The relationship between climate change (including climate policies) and employment, impacts on future skills, impacts on different workforce groups,

occupations, job profiles, health and safety and business models is of importance to Cedefop, Eurofound and EU-OSHA. Additionally, Eurofound believes that the social impacts of climate policies and institutions play a big role in the new green growth model. EIGE emphasises the need for gender-disaggregated data in some sectors (e.g. transport). Through its survey data on specific populations (e.g. Roma and migrants), FRA will investigate their environmental conditions.

TABLE 5

Future projects or plans, as identified by the Agencies	
Agencies	Future work or plans
Cedefop	<ul style="list-style-type: none"> • EGD implications in sectors: identify employment and skills implications stemming from the implementation of the EGD in a set of selected sectors through a skills foresight exercise. The aim is to identify skills and training needs and challenges in growing occupations in these sectors, as well as expected risks and opportunities, from skills anticipation to the VET offering for these occupations. • EGD Skills Forecast scenario: explore the impact of the EGD in terms of employment, through a Cedefop Skills Forecast scenario.
EEA	<p>According to the new EEA strategy adopted in December 2020, the EGD dimensions are key elements of the Agency's future work activities.</p> <p>Methodologically, it is suggested that the qualitative modelling framework be combined with the quantitative modelling framework in the following way.</p> <p>Bearing in mind the structure of the two model types, CGE models provide reliable results in the long term but are constrained by rigidity in modelling assumptions. Examples of such rigidity include fixed technical coefficients, homogeneous agents and no feedback loops, which can change behavioural parameters, such as demand elasticity to price and income, substitution elasticity across inputs in the production function, or substitution elasticity in consumer (households) basket expenditure.</p> <p>All these sources of rigidity might be smoothed by first running a system dynamic (SD) model and assessing changes in selected parameters derived from the evolution of complex systems due to ageing, robotisation and environmental policies. Such changes in parameters can be used as inputs for additional simulation design in a CGE by introducing them as exogenous shocks, directly driven by behavioural changes in the SD framework.</p>
EIGE	<p>Feasibility analysis assessing the possibility of further disaggregation of decision-making data related to the transport sector as well as environment and climate change.</p> <p>The Gender Equality Index 2023 will have a thematic focus on the EGD.</p>
EMCDDA	Futures exercise: how climate change may affect vulnerable populations
Eurofound	<p>Research areas of interest:</p> <ul style="list-style-type: none"> • Investigating jointly with the EEA the topic of environmental and socioeconomic convergence (planned activity for 2021-2022) • Societal impacts of climate change (e.g. impacts on different population groups, regions) • Labour market impacts of climate change (e.g. declining and growing sectors, changes in business models, occupations and job profiles) • Working conditions/job quality impact of climate change (e.g. working time, work organisation, flexibility, autonomy) • Climate change and role of institutions (e.g. social partners, NGOs, governments) • National practices in implementing just transitions
FRA	<ul style="list-style-type: none"> • Migrants survey: Ethnically disaggregated data on a range of socioeconomic indicators, including environmental issues in housing/living conditions and work • Roma survey: Ethnically disaggregated data on a range of socioeconomic indicators, including environmental issues in housing/living conditions and work
EU-OSHA	Investigation of market influences, including supply chain effects, on enterprises' compliance with regulations on occupational safety and health in the agri-food sector

5. Support for EU policymaking

The aim in this section is to identify how the Agencies' work supports EU policymaking in thematic areas pertinent to the greening of the economy. This should not be perceived as an attempt at an ex-post impact assessment or evaluation of the projects as parts of any policy cycle, but rather as contributions in the policy cycle. Such contributions were provided in the form of inputs to EU policy documents and international publications and projects. Some indicative contributions are presented below:

- EU Staff Working Documents (e.g. Eurofound's *Energy scenario: Employment implications of the Paris Climate Agreement*); the EEA's *Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe*
- Reports by international organisations (e.g. Cedefop's *Skills for green jobs* in the ILO's global synthesis and country reports; the EEA's *Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe*)
- Citations in scientific articles (e.g. *Greening of industries in the EU: Anticipating and managing the effects on quantity and quality of jobs* (Eurofound), cited in Zachmann et al (2018): The distributional effects of climate policies. Bruegel Blueprint)
- Events of international organisations (e.g. Cedefop's *Skills for green jobs* in ILO's 2019 Global Forum, Boosting Skills for a Just Transition and the Future of Work)
- Support for the EU's international commitments: EIGE's work supports the EU's commitment to the Beijing Platform for Action (BPfA) by providing annual progress reports in the areas selected by the Council Presidencies. 'Women and the environment' is one of 12 areas of concern
- Beyond the contributions at EU level, the outputs of Agencies' work are also communicated in Member States

6. Collaboration between the Agencies, EU institutions and the international community

The Agencies indicated that they had cooperated with other Agencies and international organisations in carrying out some of their sustainable development projects with socioeconomic aspects. Key collaborators were other Agencies with complementary areas of expertise. There have been close links with the Commission (e.g. DGs ENV, JUST, CLIMA, SANTE), the European External Action Service and other bodies. In some cases, the work of the Agencies was coordinated with other EU-level organisations such as the EPSCO Council and the European Parliament. There have been recent initiatives by EU-ANSA members to engage more closely on socioeconomic aspects of climate policies (for instance, EEA-Eurofound).

International organisations joined forces with EU Agencies in their ‘green’ work, in drafting joint reports, contributing to working groups and co-organising joint events. EU Agencies reported having mainly collaborated with the ILO and the OECD, which can be attributed to the core area of research of these organisations. Collaborations have also taken place with UNEP, UNESCO/UNESCO-UNEVOC, IOE, ITUC, FAO, WHO, UN-IPPC, OIE and the WMO. Such forms of collaboration further enhance the evidence base and strengthen the policy messages stemming from the jointly produced reports.

7. Conclusions and the way forward

The EU ambition to achieve climate neutrality by 2050 has set in motion multiple actions to transform the European economy. In implementing these actions, the Commission and other EU institutions can make use of the scientific and research work of the EU-ANSA members related to the EGD objectives. This mapping report shows that EU-ANSA members have conducted scientific work that can contribute to the EGD elements, such as mobilising industry for a clean and circular economy, the Farm to Fork strategy, preserving and restoring ecosystems and biodiversity, and a zero-pollution ambition for a toxic-free environment. Additionally, social Agencies, members of the EU-ANSA subnetwork, have explored the socioeconomic dimensions of sustainable growth (at the heart of this report) and provided facts, data and analysis, and good practices to assist the gathering of evidence related to the EGD elements, such as just transition and ‘leave no one behind’, mobilising industry for a clean and circular economy and accelerating the shift to sustainable and smart mobility. The launch of the EGD and the subsequent EU actions have stimulated the Agencies’ interest in meeting these objectives within their remit. At the same time, there are gaps in knowledge and research on green growth where the Agencies could contribute, for example, in the areas of jobs, business models, measurement and indicators, value chain effects and green growth innovation concepts.

Further development of the socioeconomic dimensions of the EGD

The socioeconomic dimensions of the EGD need to be developed. The EU-ANSA members’ expertise can greatly contribute towards this. The findings of this report show that the Agencies have conducted research covering a wide range of topics, including economics, employment and jobs, skills and training, health and safety, gender equality, regulation and rights, the role of social dialogue and the impacts of environmental policies on certain groups. Sectoral considerations are of importance, given that some of the scenarios developed point to employment implications stemming from the green transition (e.g. an increase in employment in construction business services, distribution, retail and catering, transport and communications, and a decrease in employment in mining and the utilities sector).

Workers affected will need to get trained while the training providers need to offer training curricula matching the needs of the companies. Others may need to upgrade their skills to adapt to business needs. As a range of technologies in green jobs are developed, they may entail new OSH risks that need to be foreseen and addressed. To ensure a socially responsible transition, concerted efforts by governments, employers and workers are needed in managing and anticipating the change. Concrete plans should be agreed about workers switching tasks or jobs, about new work organisation models adapted to the new business models, and ensuring good-quality jobs. Innovative solutions for collective agreements and legislation for social aspects of the transition will also be needed. At the same time, the low level of gender diversity in sectors such as the energy sector is considered to affect innovation; this needs to be addressed. The EGD foresees that reaching the ambitious goal of climate neutrality will mean changes in production models,

consumer behaviour and lifestyles. Agreement on these changes and concrete policy measures requires engagement and broad stakeholder participation (NGOs, social partners, regional actors, industry representatives, the academic community and so forth) at all levels (national, regional, local, city).

Filling the data and knowledge gaps

To fully meet the objectives of the EGD, there is a need to fill the data gaps and conduct further research. For instance, there is a lack of comprehensive and consistent data related to jobs created by different energy technologies. While Eurostat provides statistical data for job figures by sector and detailed economic activity, there is a focus mainly on conventional energy sectors, such as coal mining, oil and gas extraction and the manufacture of gas. Renewable energy data were recently added but there is a need to differentiate jobs by technology to allow comparison with labour force survey (LFS) data. In that way, the labour intensity of technologies could be properly captured. Comprehensive EU-wide data on the representation of women (e.g. employment data broken down by sex) in the renewable energy sector are also missing. Similarly, social vulnerability data are essential for socioeconomic analysis. A collaboration of EU-ANSA with Eurostat should be considered as a future action to discuss data collection needs, particularly in the context of the EGD, which is among Eurostat's priorities.

Additionally, conceptual clarity of definitions and terms used across Member States is needed to provide more consistency and meaningful comparisons. For instance, more harmonised definitions of green jobs, greening of jobs, green skills, just transition, etc. would lead to better measurement. Ongoing and future research by the Agencies can contribute to achieving the clarity required.

Comprehensive approaches towards just transition

Just transition has not been given a watertight definition. However, it would be of benefit to adopt a wider approach than the one included in the EGD communication. The transition affects certain industries, businesses, workers, income groups, disadvantaged groups and communities in different ways; this needs to be taken into consideration when investigating just transition. Climate change and environmental health hazards also affect various groups in society in different ways and climate policies will attempt to tackle these challenges. The uneven distribution of the impacts of air pollution, noise and extreme temperatures on the health of Europeans closely reflects the socio-demographic differences within EU society. Certain groups, such as older citizens and minority groups (for instance, Roma), tend to be more negatively affected due to their age and location in relatively poorer and more polluted areas, respectively. Additionally, the implementation of climate policies is likely to have disproportionate effects on different groups. For instance, carbon taxes, subsidies and changes in the energy mix in a country or region may affect certain groups differently. This needs to be considered at the stage of policy design. It is important to investigate the 'just' dimension in the just transition actions. Social policies to support affected groups will play a significant role; for instance, training funds to support retraining and reskilling of workers likely to lose their jobs, and assistance to families. Support to businesses in the transition phase is also important. Tackling energy poverty for vulnerable groups should be among the priorities of public policies.

In terms of involvement, the transition to green growth models requires policymakers to consider the role of all relevant socioeconomic actors, including industries, businesses, workers, local communities, public authorities, NGOs, universities and research institutes. Public policy measures shaped following wide consultation can ensure public support for the transitions and climate policies.

More information at regional level on developments and needs as a response to climate change and the greening of the economy policies would help to distil the relevant effects and support the implementation of the EGD. The lack of relevant data, as highlighted in this report, could be a significant hindering factor.

Complementarities at EU level

The wealth of information and evidence provided by the Agencies on the subject would support the argument of further complementarities at EU level. Planning EU-wide actions and national policies to implement the EGD, climate law, and the National and Energy Climate Plans, for example, would immensely benefit from the EU-ANSA members' research findings. The European Commission and other EU institutions could tap into the scientific, research and empirical evidence of the EU Agencies with a view to making efficient use of all available resources in support of EGD policies and actions.

The Foresight Network of the European Commission and DG R&I (in particular, the expert group on the economic and societal impact of research and innovation) should consider tapping into the expertise of the Agencies on sustainability and socioeconomic matters, when shaping their policy recommendations.

Systematic involvement of the EU Agencies in the EU research agenda

More importantly, the EU institutions should seek systematic involvement by the Agencies in EU research agenda-setting with a view to maximising the synergies of EU policies.

The Agencies should consider creating a knowledge platform on socioeconomic aspects of sustainability and link up with the EU-level mission-oriented innovation boards.

The EU-ANSA subnetwork as a platform for collaboration

The collaboration of the Agencies within the context of the EU-ANSA subnetwork is immensely beneficial for avoiding duplication of work and, more importantly, for ensuring synergies. The EU-ANSA subnetwork provides a platform for exchange and knowledge-sharing. Participation in seminars and working groups for sharing knowledge and the research findings of projects on sustainable development, just transition and related topics can benefit participating Agencies. Social Agencies can engage in research exchange to investigate complementary socioeconomic aspects (e.g. skill trends with gender issues; training opportunities with living and working conditions). Agencies with a more scientific orientation could partner with those that traditionally work on socioeconomic aspects to explore the implications and expected impact of technological and scientific developments. Such collaboration is already taking shape, with specific initiatives recently undertaken by some of the EU-ANSA members (EEA-Eurofound).

References (selective list)

- Cedefop (2008), Green economy. Available at: <https://www.cedefop.europa.eu/en/events-and-projects/projects/skills-green-economy>
- Cedefop (2019), Skills for green jobs: Regional cooperation on green skills in France. Available at: <https://www.cedefop.europa.eu/en/publications/3078>
- DG R&I (2020), Adaptation to climate change-related health effects in Europe. Available at: https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/scientific-support-eu-policies/group-chief-scientific-advisors/adaptation-climate-change-related-health-effects_en
- DG R&I (2020), Scoping paper, A systemic approach to the energy transition in Europe. Available at: https://ec.europa.eu/info/sites/default/files/research_and_innovation/groups/sam/scoping_paper-energy_march_2020.pdf
- EEA (2018), Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe. Available at: <https://www.eea.europa.eu/publications/unequal-exposure-and-unequal-impacts>
- EIGE (2012), Gender equality and climate change. Available at: <https://eige.europa.eu/publications/gender-equality-and-climate-change-report>
- EIGE (2020), Beijing+25, The fifth review of the implementation of the Beijing Platform for Action in the EU Member States. Available at: <https://eige.europa.eu/publications/beijing-25-fifth-review-implementation-beijing-platform-action-eu-member-states>
- EU-OSHA (2013), Green jobs and occupational safety and health: Foresight on new and emerging risks associated with new technologies by 2020. Available at: <https://osha.europa.eu/en/publications/green-jobs-and-occupational-safety-and-health-foresight-new-and-emerging-risks/view>
- Eurofound (2021), Distributional impacts of climate policies in Europe. Available at: <https://www.eurofound.europa.eu/publications/report/2021/distributional-impacts-of-climate-policies-in-europe>
- Eurofound (2019), Energy scenario: Employment implications of the Paris Climate Agreement. Available at: <https://www.eurofound.europa.eu/publications/report/2019/energy-scenario-employment-implications-of-the-paris-climate-agreement>
- Eurofound (2013), Greening of industries in the EU: Anticipating and managing the effects on quantity and quality of jobs. Available at: <https://www.eurofound.europa.eu/publications/report/2013/labour-market/greening-of-industries-in-the-eu-anticipating-and-managing-the-effects-on-quantity-and-quality-of>
- FRA (2016), Second European Union Minorities and Discrimination Survey Roma. Available at: [EU-MIDIS II – Roma](https://fra.europa.eu/en/infographic/eu-minorities-and-discrimination-survey-roma)
- ILO, (2018), Just transition towards environmentally sustainable economies and societies for all – ILO ACTRAV Policy Brief. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---actrav/documents/publication/wcms_647648.pdf

Annex 1: EU-ANSA members participating in the surveys

European Centre for the Development of Vocational Training (Cedefop)
European Centre for Disease Prevention and Control (ECDC)
European Environment Agency (EEA)
European Food Safety Authority (EFSA)
European Foundation for the Improvement of Living and Working Conditions (Eurofound)
European Institute for Gender Equality (EIGE)
European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)
Fundamental Rights Agency (FRA)
European Agency for Safety and Health at Work (EU-OSHA)
DG R&I (Group of Chief Scientific Advisors)
Scientific Committee on Health, Environmental and Emerging Risks (SCHEER)

Annex 2: Questionnaires

Questionnaire 1

EU-ANSA NETWORK SOCIOECONOMIC CLUSTER

Survey on research work on sustainable development: towards a just transition to a green, low-carbon economy – Survey 1

Following the European Union's commitment to the UN Sustainable Development Goals (SDGs) as part of the Europe 2030 strategy, and the 2019 Communication of the Commission on the European Green Deal ('the Green Deal'), the newly established EU-ANSA cluster on sustainable development will explore:

i) how EU Agencies could contribute to the implementation of the Green Deal and ii) how their deliverables (e.g. research, surveys, studies and analyses) could best support this work.

Mapping the Agencies' work relevant to the Green Deal priorities is the first step towards achieving these objectives.



In the context of the EU-ANSA activities, a socioeconomic cluster was set up with a view to explore sustainable development aspects. The cluster consists of Eurofound (Stavroula Demetriades); the EEA (Stefania Minestrini); Cedefop (Antonio Ranieri); EU-OSHA (William Cockburn); FRA (Ioannis Dimitrakopoulos); EIGE (Jolanta Reingarde), and two observers, DG RTD (Sigrid Weiland) and the JRC (Joachim Kreysa).

This short questionnaire aims to capture basic information on the work of EU-ANSA Agencies on the topic, with a view to provide the EU-ANSA network with an overview of Agencies' activities and approach to sustainable development.

We would appreciate it if all EU-ANSA Agencies could fill out this short questionnaire **by 28 February**.

Kindly note that all Agencies will have access to the results. Cedefop will analyse the survey outcomes, which will be shared with the EU-ANSA network.

For any questions on the survey, please contact Stelina Chatzichristou (Stelina.CHATZICHRISTOU@cedefop.europa.eu).

Please send your responses to Antonio Ranieri (Antonio.Ranieri@cedefop.europa.eu), Stelina Chatzichristou (Stelina.CHATZICHRISTOU@cedefop.europa.eu) and Stavroula Demetriades (Stavroula.Demetriades@eurofound.europa.eu).

Questionnaire

1. Does your Agency's mandate or more recent strategic documents (founding regulation, programming documents, etc.) mention areas of work relevant to the 'main elements' of the European Green Deal (see attached document on the European Green Deal)?

Main elements of the European Green Deal ⁽³⁾	Mentioned in the Agency's mandate/ strategic documents	Not mentioned but are relevant areas of the Agency's work
Increasing the EU's climate ambition for 2030 and 2050		
Supplying clean, affordable and secure energy		
Mobilising industry for a clean and circular economy		
Building and renovating in an energy- and resource-efficient way		
Accelerating the shift to sustainable and smart mobility		
From 'Farm to Fork': designing a fair, healthy and environmentally friendly food system		
Preserving and restoring ecosystems and biodiversity		
A zero-pollution ambition for a toxic-free environment		
Financing the transition		
Mobilising research and fostering innovation		
Leave no one behind (Just Transition)		

2. Has your Agency been involved and/or currently has in the pipeline specific project(s) relevant to the 'main elements' of the European Green Deal?

If yes, for all relevant projects please fill in the table below.

1. Title of the project		
2. Project objectives		
3. Relevance to the European Green Deal (please choose any of the options in question 1)		
4. Socioeconomic aspects (if considered in the project, please briefly describe them)		
5. Duration (specific if still running)		
6. Cooperation with:		
a) Another EU Agency? If yes, which one(s)?		
b) An EU institution? If yes, which one(s)?		
c) One or more international organisations? If yes, which one(s)?		

Please add lines/columns for other projects, if needed

⁽³⁾ https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf

3. Looking ahead and at the potential contribution of your Agency to the European Green Deal, in which of the following your Agency's work is more relevant/could contribute to:

Main elements of the European Green Deal ⁽⁴⁾	Please choose (Y/N)	If yes, indicate the relevant type of activity (*)
Increasing the EU's climate ambition for 2030 and 2050		
Supplying clean, affordable and secure energy		
Mobilising industry for a clean and circular economy		
Building and renovating in an energy- and resource-efficient way		
Accelerating the shift to sustainable and smart mobility		
From 'Farm to Fork': designing a fair, healthy and environmentally friendly food system		
Preserving and restoring ecosystems and biodiversity		
A zero-pollution ambition for a toxic-free environment		
Financing the transition		
Mobilising research and fostering innovation		
Leave no one behind (Just Transition)		

(*) Type of activity, e.g.: policy learning activities; fundamental scientific research; applied research; cross-country comparative analysis; scenario analysis; foresight studies; forecasting studies; futures studies; data collection; impact assessment; survey; recommendation/advice; seminar/conference.

⁽⁴⁾ https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf

Questionnaire 2

EU-ANSA NETWORK SOCIOECONOMIC CLUSTER

Specific survey on socioeconomic aspects – Survey 2

Introduction

The socioeconomic cluster has launched a survey to capture the current and future activities of all EU-ANSA members with regard to sustainable development. Work is carried out under the heading sustainable development: towards a just transition to a green, low-carbon economy.

The cluster Agencies have committed to identify in detail the socioeconomic dimensions of their sustainable development activities with a view to contributing to the European Green Deal initiative. The purpose of this specific follow-up survey is to explore in detail all socioeconomic aspects researched by the cluster and their relevance to the Green Deal.

We would appreciate it if all cluster Agencies and any EU-ANSA Agencies with socioeconomic aspects in their sustainable work activities could fill out this short questionnaire by 30 April.

Kindly note that all Agencies will have access to the results. Eurofound will analyse the survey outcomes, which will be shared with the EU-ANSA network.

For any questions on the survey, please contact Stavroula Demetriades (Stavroula.Demetriades@eurofound.europa.eu), copied to Antonio Ranieri (Antonio.Ranieri@cedefop.europa.eu) and Stelina Chatzichristou (Stelina.CHATZICHRISTOU@cedefop.europa.eu).

What socioeconomic aspects?

It is suggested that the following socioeconomic aspects and dimensions are investigated for each of the most relevant reports on sustainable development produced:

TABLE 1

Socioeconomic topics and dimensions	
Socioeconomic aspects	
•	Economic
•	Business models
•	Restructuring of firms
•	Regulatory framework and fundamental rights
•	Social dialogue
•	Just transition
•	Employment and jobs
•	Working conditions
•	Health and safety
•	Skills, vocational education and training
•	Gender equality
•	Organisation of work
•	Social inclusion
•	Living conditions
Socioeconomic dimensions	
•	Sectoral dimensions
•	Geographical dimensions (country, regions, etc)
•	Good practices
•	General

Agency (please add the name of your Agency here):	
Name or respondent:	
Date (date of response):	

Question 1: For each of your Agency’s sustainable development projects (concluded or on-going) with socioeconomic considerations please identify their specific socioeconomic aspects and dimensions:

Title of the project	Socioeconomic aspects (please choose from Table 1 above. More than one aspect can be chosen)	Dimension (please choose from Table 1 above)

Question 2: Please provide details for each of the above projects:

Project (title and hyperlink):
1. Findings (max 300 words):

2. Methodology, including countries covered (max 200 words)

3. Impact assessment (in policy and research). Please quote policy and/or relevant research papers and relevant activities (see note at the end) (max 300 words)
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For the purposes of this survey, policy impacts of a given project refer to: i) various administration levels (EU, national, regional/local), ii) different actors, such as relevant departments (e.g. health and safety bodies), social partners (EU, national, sectoral, regional level), iii) other EU/international agencies/organisations etc.

4. Knowledge gaps identified and suggestions for future work (max 300 words):

PLEASE COPY QUESTION 2 FIELDS FOR OTHER PROJECTS

Question 3: What are the future projects or plans of the Agency and which socioeconomic aspects and dimensions will be covered?

Provisional title	Objectives	Socioeconomic aspects to be covered (please select from the list above)	Dimension (general, sectoral, country, good practices)	Methodology	Collaboration with other Agencies, EU institutions	Expected launch date & duration of project	Relevance to Green Deal (specify dimension)

Question 4: Comments/additional information (if any)



EU-ANSA
mapping report:
Socioeconomic
aspects
of sustainable
development

