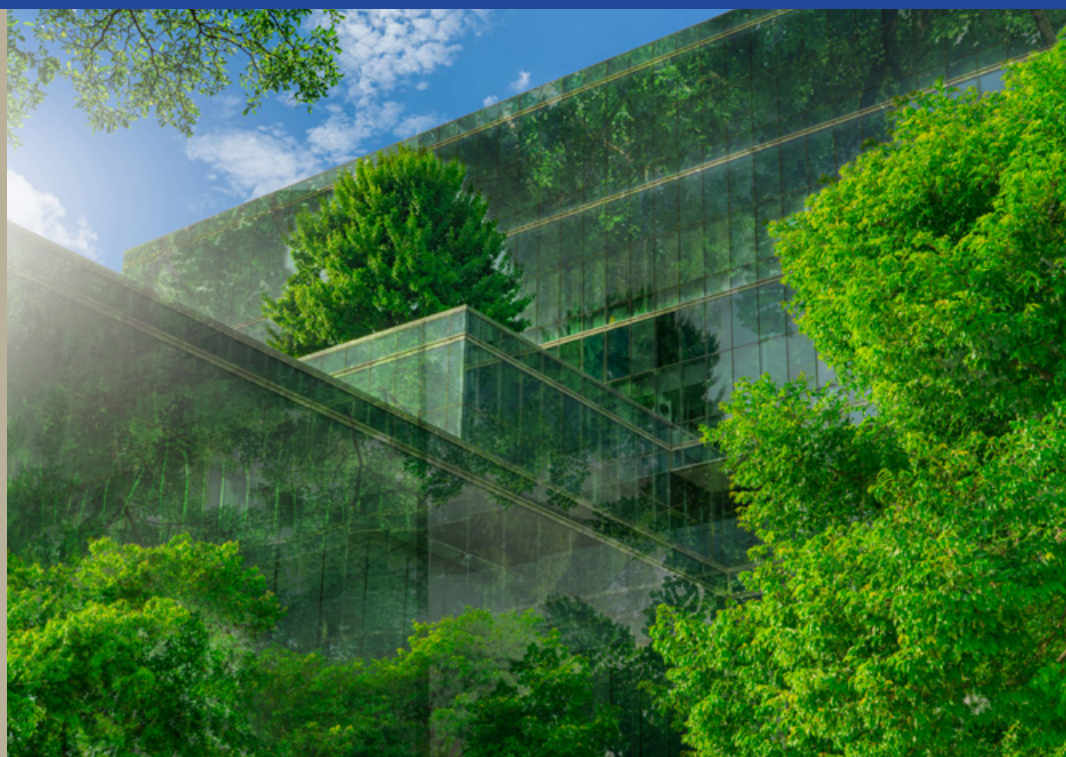
KOMMERSKOLLEGIUM
NATIONAL BOARD OF TRADE SWEDEN

Green Services in the Single Market

Facilitating the transition of the EU's industrial ecosystems



2022

Foreword

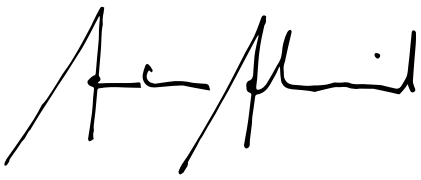
In the past few years, the European Union has been and is still facing multiple crises. Coming out of these crises, finding ways to facilitate and speed up the transition to a more circular and green economy should be a key priority for policy makers.

In this report, we analyse the role played by services in achieving the green transition. We compile a list of services that could be considered as "green services" since they contribute, either directly or indirectly, to making industrial ecosystems in the EU less carbon intensive, more circular and more protective of the natural environment. We then identify barriers to the free movement of these services on the Single Market and discuss how the nature of different barriers – their "root cause" – affect policy makers' ability to address them. Finally, we make recommendations on the way forward for addressing these barriers on the Single Market.

While there have been other studies made on the role played by services in achieving environmental and climate related goals, very few have focused on the EU context. More specifically, and to the best of our knowledge, no other reports have taken the European Green Deal as a starting point to look at how services can contribute to achieving the green transition within the EU's industrial ecosystem. This report aims to fill this gap.

The report was written by Anna Graneli and Hanna Pettersson. It was reviewed by Lena Nordquist and Sophia Tannergård.

Stockholm, November 2022



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Summary

This study has two objectives. The first objective is to analyse the role of services in achieving the green transition of the EU's industrial ecosystems. The second objective is to identify barriers to the free movement of the services identified as contributing to the achievement of the green transition.

The first part of this study sets the stage by accounting for the content and goals of the European Green Deal and the new industrial strategy of the EU. The industrial strategy introduces a new approach to competitiveness and Single Market issues, in which the concept of industrial ecosystems plays a key role. We discuss some of the possible challenges and opportunities of this approach.

The second part of the study aims to highlight the importance of services in achieving the green transition as it is understood in the EU. It takes the objectives set out in the European Green Deal as a starting point and defines "green services" as all services that could potentially contribute to making the productions systems of the EU's industrial ecosystems less carbon intensive, more circular and more protective of the natural environment. Based on a review of the existing literature, the study then identifies a broad, indicative list of services that all provide "greening" functions within the EU's industrial ecosystems.

In order to provide a deeper understanding, we illustrate the types of services that are needed to achieve the green transition and the functions they provide using examples from the energy-intensive industries ecosystem (EII ecosystem) and the construction ecosystem

For the EII ecosystem, a broad range of services are referred to in the literature. This includes, for example, installation, maintenance and repair services, design and engineering services, waste handling and recycling services, data analytics services and environmental consulting services.

In the construction ecosystem, engineering, architectural and various types of specialised construction services feature prominently. We also see examples of how design services, project management services, installation maintenance and monitoring services as well as information technology and telecommunication services are used to achieve environmental goals.

The study shows that services contribute to the green transition in different ways; both as key facilitators of the green transition in particular ecosystems and also by providing

horizontal greening functions throughout several ecosystems. For example, construction, architectural and engineering services, as well as maintenance, repair and installation services, play a key role in making the European building stock more energy efficient and reducing emissions related to the construction, renovation and demolition of buildings. At the same time, services such as energy distribution services, waste services, business services and telecommunication services contribute to the green transition of all ecosystems by providing, for example, important inputs to other services or in the manufacture of goods.

In the third part of the study, we list barriers for the provision of green services as reported in other studies. We find that many of the services in our broad list of green services are faced with barriers such as restrictive market entry and exercise requirements, complex administrative procedures, lack of information on rules and divergent rules and regulations (often referred to as regulatory heterogeneity). Barriers often cause additional costs for trading and may limit the cross-border sale of green services.

We note that service providers in the business services sector (including for example the legal, engineering, architectural and accountant sectors) and the construction sector often encounter barriers in the Single Market. Business services are often subject to different types of market entry rules, such as rules on professional qualifications, authorisation schemes and rules relating to the establishment of a company. Providers of construction services are often subject to authorisation requirements. The fact that these rules can differ amongst the Member States means that service providers have to adapt to different sets of rules, which increases the administrative burden imposed on these actors. Finding information about the applicable rules can also be an obstacle in itself.

We also briefly look at how different types of barriers can be addressed on a general level. This is done against the background of a discussion on the "root causes" of barriers. These root causes include regulatory choices at EU level, inadequate transposition or enforcement of EU rules, national rules that are contrary to EU law, and fragmentation (or regulatory heterogeneity).

We conclude that services play a key role in achieving the green transition of the EU's industrial ecosystems. It follows that barriers to cross-border service provision risk slowing down the green transition. Many of the reported barriers are either themselves regulatory in nature or are closely connected to a regulation on either the EU or national level. Consequently, we emphasise the importance of policy makers remaining committed to removing remaining barriers to the free movement of services in the Single Market and to ensuring that the regulatory environment is conducive to the development of new, innovative applications of green services and their cross-border provision.

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1. Introduction

In December 2019, the European Commission presented the European Green Deal – a roadmap for making the EU's economy sustainable:

The European Green Deal is our new growth strategy – for a growth that gives back more than it takes away. It shows how to transform our way of living and working, of producing and consuming so that we live healthier and make our businesses innovative.

Ursula Von der Leyen, President of the European Commission

A few months later, just at the outset of the COVID-19 pandemic, the Commission presented a new industrial strategy. The strategy aims to achieve "a new industrial way for Europe, fit for the ambitions of today and the realities of tomorrow".[1] At the heart of the strategy lies the ability of Europe's industry to lead the green and digital transitions ("twin transition").

A key ingredient of the new industrial strategy is the concept of industrial ecosystems. According to the Commission, focusing on industrial ecosystems will help make the strategy "entrepreneurial in spirit and in action".[2]

In tandem with the industrial strategy, the Commission also published a report on barriers to the Single Market. The report showed that businesses and consumers continue to experience barriers that prevent them from fully exploiting the potential of the Single Market.[3]

As emphasised by multiple stakeholders, from business organisations and academics to Member States, the largest unrealised potential of the Single Market lies in services. To illustrate this point, estimates have shown that the unrealised, potential economic benefits of deeper integration of the Single Market for services amount to some EUR 389 billion, or approximately 2.3 percent of EU GDP.[4]

Furthermore, European business leaders rate the completion of the single market for services lowest amongst the four freedoms.[5]

In its updated industrial strategy, the Commission has acknowledged that progress in addressing barriers to the free movement of services has been too slow and that in future efforts, the services sector deserves particular attention.[6] Recently, it also recognised that a well-functioning services sector will play an important role in supporting the green and digital transitions of industrial ecosystems.[7]

1.1 Purpose of the study

The purpose of this study is twofold. First, to analyse the role of services in achieving the green transition of the EU's industrial ecosystems. Second, to identify barriers to the free movement of the services identified as contributing to the achievement of the green transition. We also briefly look at how the identified barriers can be addressed on a general level and thus how free movement can be further facilitated.

1 European Commission (2020a), p. 1.
2 European Commission (2020a), p. 1 and 2.
3 European Commission (2020e).
4 Pelkmans (2019), p. 9.
5 When CEOs and chairs of over 50 large European companies were asked to rate the completion of the Single Market for each of the four freedoms, they considered the Single Market for services to be only 66 percent complete, as compared to 79 percent for goods, 78 percent for persons and 77 percent for capital. ERT (2021), p.15.
6 European Commission (2021), p. 7 and 8.
7 European Commission (2022a), p. 19.

This will be done against the backdrop of the current Commission's new approach to competitiveness and Single Market issues, in which the concept of industrial ecosystems plays a key role. This new approach entails both challenges and opportunities, which we will discuss.

There have been other studies on the importance of services for mitigating climate change and protecting the environment. However, these studies have mainly been conducted within the context of WTO negotiations on environmental goods and services or by the OECD. This study focuses on the EU context.

It should be emphasised that the purpose of the study is not to identify or delineate the specific, detailed services categories that should be classified as environmental or green services within the context of any regulatory process or trade negotiation. Rather, the purpose is to identify some broad categories of services that are likely to be important for the green transition in several of the EU's industrial ecosystems and to identify barriers to these in the Single Market (at an overarching level). This will illustrate the role services play in the green transition.

To provide a deeper understanding, we will place additional focus on two of the industrial ecosystems identified by the Commission: the energy-intensive industries (EII) ecosystem and the construction ecosystem. Within these ecosystems, we provide some examples of how different types of services contribute to achieving the various dimensions of the green transition.

1.2 Method, scope and definitions

This study is based on the findings in existing economic and legal studies and reports. Regarding the discussion on how to identify and define services of relevance to the green transition, some statistical guidance documents and relevant EU legal texts have also been used.

While there is a longstanding discussion on how to define and classify environmental services, particularly within the context of the WTO, the concept of "green services" is relatively new. In this study, we will apply a broad definition of green services, which will be elaborated on in Section 3.2.

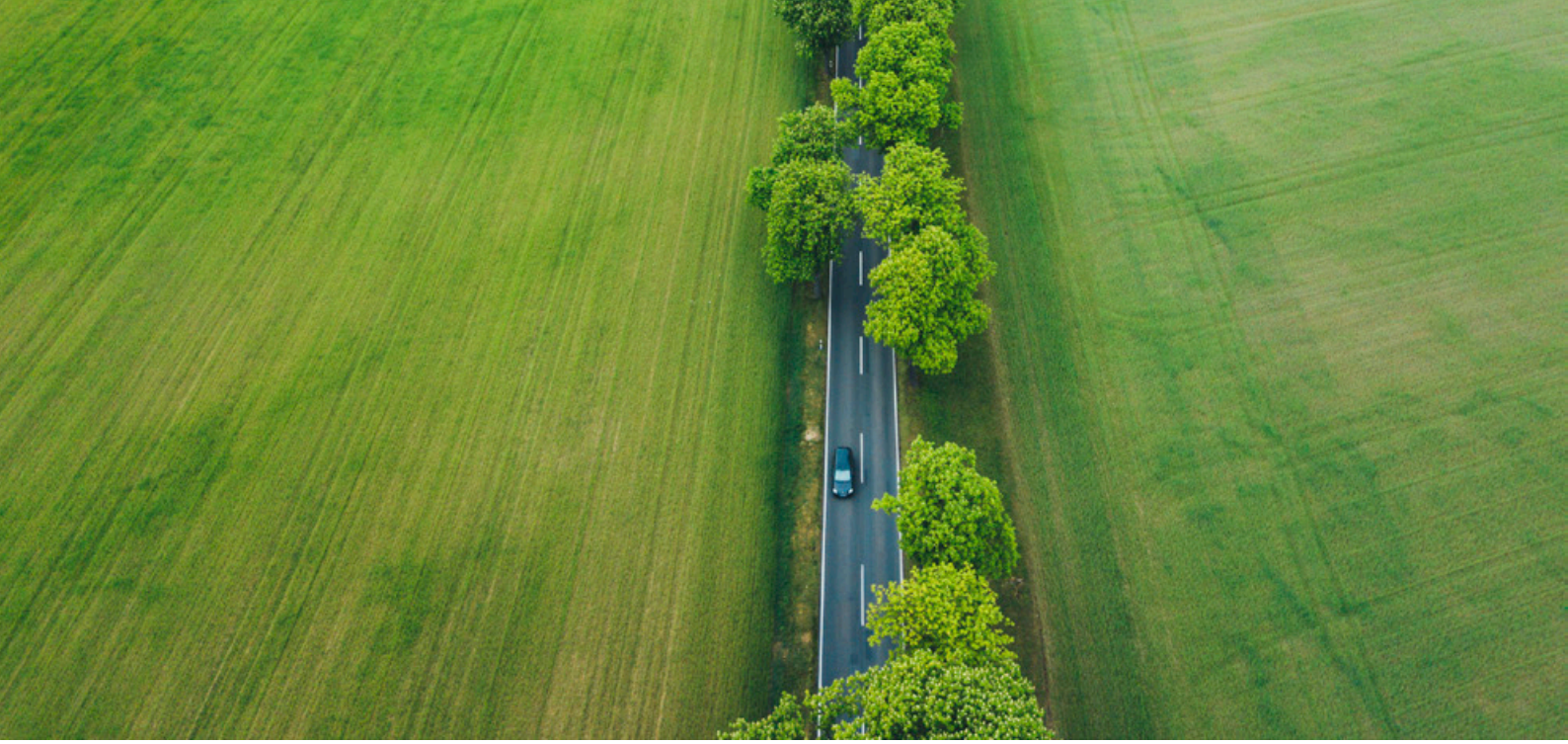
This study uses a broad, business-oriented definition of the term "barrier".[8] This means we list all types of barriers that we have found (regulatory barriers, non-regulatory barriers etc.), regardless of their root causes.[9] The fact that we describe a certain measure or phenomenon that has been reported by European companies or other actors as a "barrier", does not necessarily mean that we consider that the barrier is unlawful under current EU rules.

The method used to identify barriers is a desk study of existing studies on barriers to services and to European companies in the Single Market. The studies we have relied on all use different methods for collecting information, such as qualitative interviews with b usinesses or business leaders, quantitative surveys or desk studies of other reports.

We have been unable to find studies that report barriers for all the services we have identified as green in this study. We have included both reports that specifically focus on certain green services (such as architectural, engineering and construction services) and reports that identify barriers to service provision regardless of sector.

8 It should be noted that internationally, there are many different approaches to determine when a public measure that affects trade becomes a "trade barrier". The terminology can differ greatly depending on the context.

9 A similar approach was also adopted by the Commission in its 2020 study of barriers in the Single Market (European Commission [2020e]).



2. The policy context

2.1 The European Green Deal

The European Green Deal is the EU's response to the current environmental and climate challenges. The Green Deal constitutes a new growth strategy for the Union, aiming to transform it into a "fair and prosperous society, with a modern, resource-efficient and competitive economy…".[10]

The EU Member States have committed to achieving climate neutrality by 2050. To reach this goal, in 2021 they pledged to reduce carbon emissions by at least 55 percent by 2030, compared to 1990. Through the European Climate Law, this target has been made binding.

Apart from the goal of achieving zero net emissions of greenhouse gases in 2050, the Green Deal also envisions a society in which "economic growth is decoupled from resource use" and sets the ambition to "protect, conserve and enhance" the EU's natural capital. At the same time, this transition should be achieved in a fair and inclusive manner.[11]

In order to achieve these goals, the Green Deal spells out regulatory reviews and other policy initiatives in eight policy areas: increasing the EU's climate ambition, biodiversity, sustainable food systems, clean energy, sustainable industry, building and renovating, eliminating pollution and sustainable and smart mobility. It also underlines that all policy areas are expected to contribute to the Green Deal and that all policies must be in line with the goals set out in it.

Achieving a more circular economy is an important part of the Green Deal strategy. In 2020, the Commission adopted an updated "Circular Economy Action Plan". The action plan presents a set of initiatives aimed at making sustainable products, services and business models the norm and reducing waste. It focuses on seven key product value chains: electronics and ICT, batteries and vehicles, packaging, plastics, textiles, construction and buildings and food, water and nutrients.[12]

10 European Commission (2019a), p. 2.
11 European Commission (2019a), p. 2.
12 European Commission (2020c), p. 6—12.

2.2 EU industrial strategy

Following a period of "industrial policy fatigue" in the 1980s and 1990s, industrial policy is now back on the agenda in many countries. In 2018, the United Nations Conference on Trade and Development (UNCTAD) reported that since 2013 no fewer than 84 countries had adopted formal industrial policy strategies.

In the EU, a number of factors have contributed to a changing view on industrial policy. These factors include concerns about de-industrialisation in several Member States, a changing global context (including the rise of the digital economy, climate change and the geopolitically charged economic competition with China), the experiences of persistent regional disparities and the uneven impact of the financial and economic crisis after 2008.[13] [14]

The industrial[15] strategy, presented by the Commission in March 2020, states that the European industry's ability to lead the twin transition and drive competitiveness is at the heart of the "new industrial way" envisioned for Europe. It also emphasises that the new industrial strategy must be based on competition, open markets, world-leading research and technologies and a strong Single Market.

The strategy also underlines that Europe must avoid "the simplistic temptations that come with protectionism or market distortions, while not being naïve in the face of unfair competition". In other words, the strategy incorporates the idea of a "level playing field" and discusses measures to achieve this in relation to other major economies.

In light of the economic developments following the spread of COVID-19, the industrial strategy was updated in May 2021. The updated strategy points out that the pandemic has illustrated the essential need to uphold the free movement of persons, goods, services, and capital in the Single Market. It emphasises that the Single Market is the EU's most important asset as it offers certainty, scale, a global springboard for companies and a wide availability of quality products for consumers. [16]

It also points out that the crisis has revealed the interdependence of global value chains and the value of a globally integrated Single Market.[17]

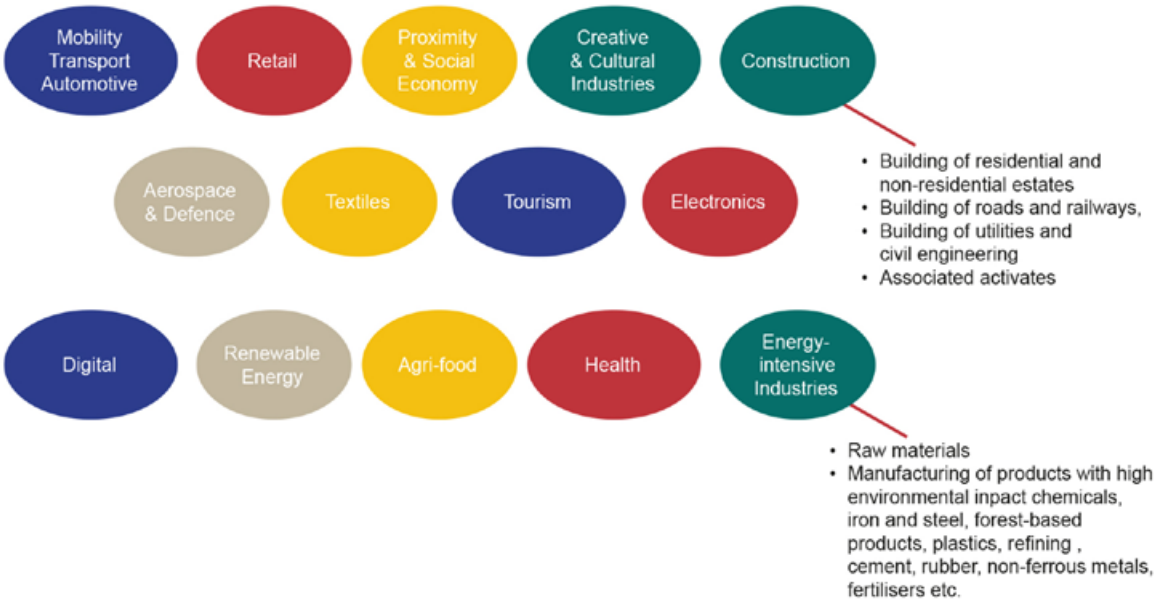
2.3 The concept of industrial ecosystems

In the updated industrial strategy, industrial ecosystems are defined as "all players involved in the achievement of a certain socio-economic goal: from the smallest start-ups and the largest companies cooperating to satisfy a new market need, the research activities supporting industrial innovation, the regulators steering economic activity through conducive polices, to the services providers and suppliers".[18]

It is emphasised that the ecosystem approach incorporates the systemic importance of all the horizontal and vertical links amongst economic actors and that it recognises the importance of "ancillary activities", such as the supply of raw materials, research and innovation, the provision of business services, or access to distribution networks.[19]

13 Landesmann and Stöllinger (2020), p. 1.
14 Mollet and Pilati (2021), p. 2.
15 In other contexts, "industrial" or "industry" might refer mainly to the manufacturing and basic industries, which mainly produce materials and goods. In the context of the EU industrial strategy, these terms refer to the broader business economy, including the services and agri-food sectors.
16 European Commission (2021a), p. 6.
17 European Commission (2021a), p. 1—4.
18 European Commission (2021b), p. 72.
19 European Commission (2021b), p. 72.

Figure 1. The 14 industrial ecosystems identified by the Commission



The Commission has identified 14 industrial ecosystems (see figure 1 above). Together, these ecosystems represent approximately 80 percent of the EU's business economy.

The Commission points out that the boundaries and scope of the ecosystems are dynamic and that the ecosystems are also linked to each other. They overlap with each other, as some activities are relevant to more than one ecosystem.[20]

In the updated industrial strategy, the Commission has provided an initial analysis of the challenges and needs of the industrial ecosystems for post-pandemic recovery and renewed competition in light of the twin transitions. The initial analysis is expected to be followed by the formulation of so-called "transition pathways", that are meant to be co-created in partnership with industry, public authorities, social partners and other stake-holders.[21] Members of the Industrial Forum, a mechanism initiated by the Commission, have been tasked with developing a blueprint for the content of these transition pathways.[22]

2.3.1 Measurement issues

To be able to monitor progress in the industrial ecosystems, in terms of economic recovery and competitiveness, the Commission has used existing statistical classifications to map economic activities in the 14 ecosystems. This exercise entails a significant degree of approximation and subjective choices, as most of the data is not available at a level that is detailed enough to identify all the relevant elements of each ecosystem.

It is interesting to note that in their methodology, the Commission has taken into account that some sectors are horizontal in nature and therefore contribute to the well-functioning of all the ecosystems. Some examples of sectors considered horizontal in nature are repair and installation of machinery and equipment, sewerage, waste collection and water treatment services, professional services such as legal and accounting services, architectural and engineering services, management services and research, and leasing and rental services.

20 European Commission (2021b), p. 73.
21 Consultative processes with industry on "scenarios for transition pathways" have thus far been held for the Energy Intensive Industries, Construction, Mobility, Social and Proximity, Textiles and Tourism ecosystems. For the Tourism ecosystem, a final version of the transition pathway has been published.
22 Industrial Forum (2022).

At the same time, we note that other sectors that could be characterised as horizontal, based on the functions they provide, have not been designated as such. One example is telecommunications, which has been placed in the digital ecosystem together with specialised services such as software publishing and computer programming, data processing, hosting and web portals.[23]

2.3.2 Related concepts and implications of the approach

The concept of industrial ecosystems is not entirely new.[24] For example, it bears a resemblance to other ongoing initiatives at a European level, such as industrial alliances. Industrial alliances also include all actors along the value chain – both private and public – and aim to achieve resilience, competitiveness and green and digital transition. These industrial alliances however appear to be narrower in scope than the ecosystems.[25]

As an analytical tool, industrial ecosystems could be compared to the concept of global value chains.[26] While the concept of industrial ecosystems includes both public and private actors, global value chain analysis usually focuses on private actors.

Another difference is that value chain analysis usually has a global perspective, while the industrial ecosystems, as they have been described thus far by the Commission, are focused on actors and linkages within the Single Market. This entails a risk that important linkages to actors outside the Single Market could be missed when analysing the challenges and needs of the ecosystem.

It can also be noted that the Commission's use of the concept of industrial ecosystems does not appear to be limited to analytical purposes. The Directorate General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) has now organised its units to represent the different ecosystems.[27] Taking into account the Commission's important role as the principal initiator of new legislation in the EU, it cannot be ruled out that this new organisation will have an impact on the Commission's policy choices in the future.

On the one hand, it is possible that this new approach and organisation will lead to new policy proposals that aim to improve conditions for service providers within the ecosystems. Particular challenges facing a certain sector might receive new attention from the Commission. On the other hand, there is a risk that services that do not fall within one specific ecosystem will be left behind.

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23 European Commission (2020b), p.5 and European Commission (2021b), p.106.

24 A closely related concept is industrial clusters or business clusters. The concept was introduced in the 1990's by business economist Michel Porter. Like the industrial ecosystems, these clusters also include goods and services producers, public actors and research institutions. Clusters are believed to have positive effects on companies' ability to compete, both nationally and globally. Unlike the ecosystems and industrial alliances, industrial clusters are usually a market driven initiative.

25 Industrial alliances (europa.eu), accessed on 2022-05-03.

26 The concept is used to describe an international production and delivery chain, where different steps of the production process take place in different countries. When the value chain is used as a point of departure for economic analysis, the main unit of analysis shifts from "sectors" to "tasks".

27 See DG GROW's organisational chart, Internal Market, Industry, Entrepreneurship and SMEs | European Commission (europa.eu), accessed on 2022-07-14.

3. The role of services in supporting the green transition

In this section, we identify a list of services that play an important role in supporting the green transition of the EU's industrial ecosystems. The list is derived from a review of the existing literature on trade in services related to the environment and is formulated in terms of broad service categories.

Before approaching the task of identifying the relevant range of services, we first set the stage by providing a brief overview of some important global trends affecting trade in services and some insights into the discussion on how to define "environmental" or "green" services. Based on this discussion, we arrive at our own definition of the concept of "green services" and specify how we will use it.

After identifying the relevant range of "green services", we provide some examples of how these services relate to the actions required to achieve the green transition of the energy-intensive and construction ecosystems.

3.1 Global trends affecting trade in services

The benefits to society from trade in services are manifold. Trade in services facilitates the spread of knowledge and innovation and the use of more resource and climate-friendly technologies.[28] It can help increase the productivity of companies, in both the services and manufacturing sectors. In addition, some service sectors, such as infrastructural services, play a critical role in the functioning of the entire economy. [29]

In the 21st century, manufacturing and services have become increasingly intertwined in the business models and production processes of firms. This process is known as servicification; describing a situation in which companies buy, produce, and sell increasingly more services.[30] Many firms that are traditionally viewed as "manufacturing firms", i.e. as producing manufactured goods, currently regard themselves as "solution providers".[31]

Furthermore, the transition to a more circular economy can be expected to boost service sectors relative to manufacturing sectors. As manufacturers substitute secondary raw materials for primary raw materials, sectors such as waste management, recycling, refurbishment and remanufacturing, reuse and repair are expected to grow.[32]

In addition, many goods can be replaced by product service systems, meaning that the consumer or business end user buys a service instead of the good itself. For example, some lighting companies have started to provide lighting services, meaning they maintain ownership of the product (light bulbs and other equipment) while leasing it to the customer along with assuming responsibility for installation, maintenance and end-of-life recovery.[33] Services are also integral to sharing economy business models.[34]

An important point to make here is that digitalisation enables many of the services provided in connection with circular economy business models. For example, tracking and

28 National Board of Trade (2021), p. 29.
29 WTO (2019), p. 80.
30 National Board of Trade (2021), p. 29.
31 Ström (2020), p. 4.
32 Yamaguchi (2021), p. 32.
33 Yamaguchi (2021), p. 32.
34 Tamminen et al. (2020), p. 5 and 6.

monitoring via sensors or bar codes could play an important role in reducing energy consumption and extending the life span of products, components and materials. The digital revolution has also made it possible to deliver more traditional services, such as engineering services, digitally.[35]

3.2 Defining the concept of green services

There is no universally agreed definition of environmental or "green" services. The concept is applied differently depending on the context. For example, the definition might differ depending on which environmental goals a discussion is focused on (only climate related or all environmental goals) or on the intended use of the concept (i.e. for statistical purposes, trade negotiations, or a more general discussion).

Within the WTO, the statistical classification system for services which is generally used as a basis for negotiations includes a section on "environmental services". However, its scope is very limited. For example, the most recent update of the Central Product Classification (CPS, version 2.1) only contains six classes of environmental services under its main heading for environmental services[36] and there is no reference to climate or greenhouse gas emissions.[37] There have been discussions about expanding the scope of environmental services, but with limited progress.[38]

In relation to these discussions, a study by the OECD concludes that "the environmental purpose of a service is eventually a matter of degree".[39] In fact, insofar as services assist with the implementation of environmentally friendly projects and increased resource efficiency, a plethora of services could be classified as being environmentally beneficial.[40]

In the WTO context, it is a challenge for negotiators that so many different services can be considered relevant to solving environmental problems. Furthermore, negotiators are faced with the issue of "dual use". This refers to the fact that, for example, engineering services can be used for environmentally beneficial solar power projects but also for oil extraction.[41]

As a solution to these challenges, a "cluster" approach to negotiations has been suggested. This would entail organising discussions around some "core" environmental services (such as wastewater treatment) together with a broader "cluster" or "checklist" of ancillary services (such as environmental-, design-, engineering- and consulting services).[42]

The cluster approach is supported by the National Board of Trade, which in a climate context has also proposed three distinct categories that could be used to identify the climate purpose of a service.[43]

In the EU, the EU Treaties state that the Single Market shall work for the sustainable development of Europe, including through "a high level of protection and improvement of the quality of the environment" .[44] However, there is no specific reference to environmental services or the role of services in supporting environmental goals more generally.

35 Tamminen et al. (2020), p. 40 and 41.
36 Eurostat (2022a).
37 National Board of Trade (2021), p. 29.
38 WTO (2022).
39 Sauvage and Timiliotis (2017), p.17.
40 Jacob and Møller (2017), p. 33.
41 National Board of Trade (2021), p. 30.
42 WTO (2022).
43 See National Board of Trade (2021) for a description of these categories and for a more in-depth analysis of the WTO-related discussions on environmental and climate relevant services.
44 Article 3 of the TEU.

Against this background, Ström suggests that a definition of green services is needed in the EU. Such a definition would need to include a connection the Sustainable Development Goals (SDGs), the value added, the sustainable business model, the measurement of productivity increase and a clear connection to the product-life cycle perspective.[45]

Interestingly, Ström's criteria for a definition bears a resemblance to the approach taken in the recently adopted EU regulation[46] that establishes a framework to facilitate sustainable investment – the so-called EU taxonomy. With the aim of directing investment towards sustainable projects and activities, the taxonomy establishes a classification system for what should be considered as environmentally sustainable economic activities (including both goods and services). In essence, an economic activity should be considered as environmentally sustainable when it contributes substantially to at least one of the following goals:

1. Climate change mitigation
2. Climate change adaptation
3. The sustainable use and protection of water and marine resources
4. The transition to a circular economy
5. Pollution prevention and control
6. The protection and restoration of biodiversity and ecosystems

In the statistical domain, the EU adheres to a well-established international practice of publishing "environmental accounts".[47] One of the modules in the European environmental accounts is "environmental goods and services sector" (EGSS) accounts. This module reports information on the production of goods and services that have been "specifically designed and produced for the purpose of environmental protection or resource management".[48] Here, "environmental protection" refers to activities and actions whose main purpose the prevention, reduction and elimination of pollution and of any other degradation of the environment. "Resource management" refers to the preservation, maintenance and enhancement of the stock of natural resources and therefore the safeguarding of such resources from depletion.

While the EU taxonomy and the EGSS accounts contain definitions of sustainable activities and environmental services (and goods) respectively, these are not directly applicable for our purpose of identifying broad categories of services that are important for the green transition of the EU's industrial ecosystems.

Against the background of this discussion, and with the overarching goals of the Green Deal in mind, this study will define green services as follows:

All services that can potentially contribute to making the production systems of the EU's industrial ecosystems less carbon intensive, more circular and more protective of the natural environment can be considered as "green services". This is regardless of whether the contribution is direct or indirect.

While the term "green services" may have other, more distinct and narrow definitions in other contexts, we will use it in this study to refer to services of importance to the green transition in a broad sense.

45 Ström (2020), p. 4 and p. 7.
46 Regulation (EU) 2020/852.
47 Environmental accounts are a statistical system bringing together economic and environmental information in a common framework to measure the contribution of the environment to the economy and the impact of the economy on the environment.
48 Eurostat (2022b).

3.3 Identifying the range of green services

There are several different approaches to identifying services of importance to the green transition. Existing studies can broadly be categorized into three groups, namely, studies that focus on:

1. Identifying services that are complementary to the diffusion of climate change mitigation technologies
2. Identifying services related to environmental goals defined broadly, including in increased circularity
3. Illustrating the complementarity between environmental goods and services, either qualitatively or quantitatively

In the existing literature, the identification of green services is conducted at different levels of detail and using different classifications – depending on the purpose of the study. The methods also vary. Where some studies rely on surveys or interviews with companies, others rely on the analysis of statistical or legal classifications. Against this background, it is not possible to systematically compare the services identified in the different studies.

Table 1 below summarises the key features of some selected studies in the three categories mentioned above.

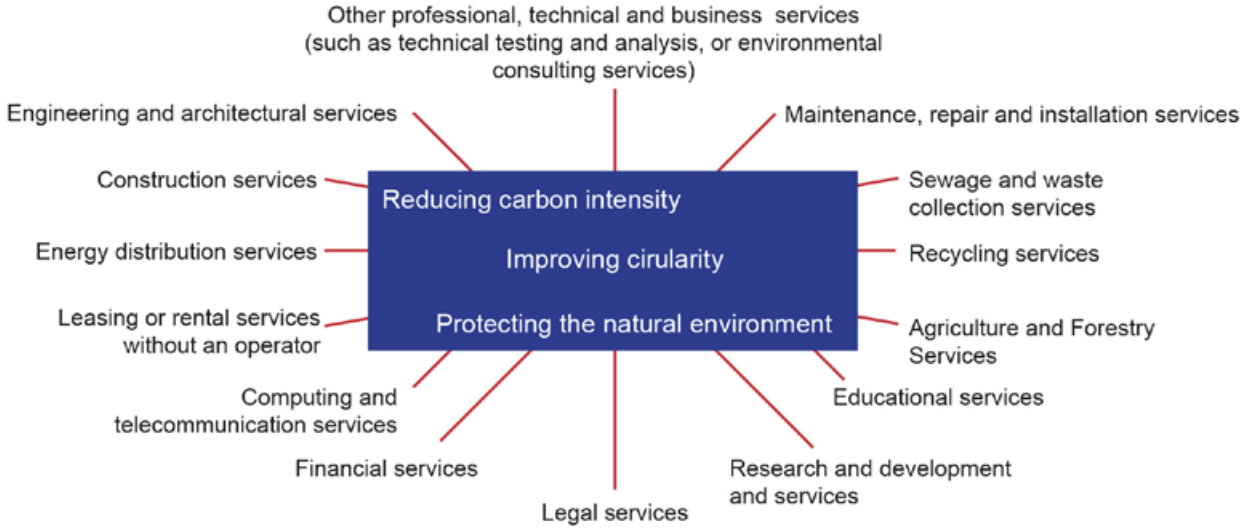
Table 1. Key features of some important studies on trade in services and the green transition

Author(s)	Year	Aspect of the Green Transition to which the services relate	Method	Includes a list of identified services	Specifies services at a detailed (sub-class) level
Kim	2011	Climate change mitigation	Literature review, services are linked to the climate change mitigation technologies identified in the fourth IPCC assessment report	Yes	Yes
Steenblik and Geloso Grosso	2011	Climate change mitigation	Literature review, case studies based on firm interviews	Yes (but in the form of a graphical cluster)	No
National Board of Trade	2014	Not specified, but mainly focused on climate change mitigation.	Case studies based on firm interviews. Services are linked to products on the APEC list of environmental goods	Yes	No
Sauvage and Timiliotis	2017	All aspects	Literature review, multivariate data analysis of firm-level data	No	No
Tamminen et al.	2020	Circular economy	Firm survey and interviews	Yes	No
Nordås and Steenblik	2021	All aspects	Comparison of statistical classifications, gravity analysis	Yes	Yes

The studies by Kim and Steenblik and Geloso Grosso provide sector-level examples of services that could be complementary to key climate change mitigation technologies. The services mentioned in both these studies are business services (such as legal, architecture, engineering, consulting, technical testing and analysis and maintenance and repairs of equipment), telecommunications, computer services, financial services, construction services and support services to agriculture, hunting, forestry, fishing, mining and utilities.

The study by Kim also mentions sewage and waste collection services, passenger transport services and supporting transport services, while the study by Steenblik and Gelelo Grosso mentions research and development services, educational services and energy distribution services.

Figure 2. Green services for the transition of the EU's industrial ecosystems



The study by Kim further concludes that construction services and other professional, technical and business services are the two service categories that appear most frequently across the sectors analysed. Telecommunication, broadcasting and information supply services also appear in several sectors. Steenblik and Geloso Grosso reach a similar conclusion, stating that business services, telecommunications services, and construction and related engineering services figure prominently in the firm-level case studies.

The study by the National Board of Trade looks at services linked to the sale of environmental goods and arrives at a list of eight types of services that are "indispensable" to trade in environmental goods. The list includes assembly and installation services, technical testing and analysis, educational services, advisory and consultative services, maintenance and repair services, computer services, research and development and services, environmental protection services.[49]

Tamminen et al. provide an indicative list of key services that are either used as input by companies engaged in circular economy business models or sold to customers as an integral part of their product offering. Compared to the services mentioned in the studies above, this list also includes leasing or rental services without an operator.

Nordås and Steenblik take a much broader view of environmental services, not only including services related to climate mitigation or the transition to a more circular economy, but also services related to climate adaptation and more traditional applications such as noise control and insulation services (other than for energy-saving purposes). They propose a detailed list of environmental services that should be classified according to 12 different environmental purposes. The list covers a total of 64 environmentally relevant services, identified at the most detailed level of the CPC (version 2.1).

Against the background of the reviewed studies, and our definition of green services, we have identified an indicative, broad list of services that could contribute to making the production systems of EU industrial ecosystems less carbon intensive, more circular and more protective of the natural environment. The list is non-exhaustive and have been based on the selection criteria that the relevant services category should feature substantially in at least two of the reviewed studies. Our identified green services are listed in the figure 2:[50]

49 National Board of Trade (2014).

50 We have excluded transport services on the grounds that the sector is only specifically mentioned in one of our reviewed studies (Kim [2011]). Furthermore, the sector faces its own challenges related to the green transition. In the EU, transport services are subject to a specific set of rules in the Treaties and in secondary law.

Although there is a significant overlap between the services identified by the studies mentioned above, some categories are more intimately connected to the environmental challenges of a particular industry or specific to a certain type of business model than others. For example, agriculture and forestry services or environmental protection services are likely to be particularly geared towards protecting biodiversity. On a similar note, leasing or rental services without an operator or repairing services are likely to be important services categories in circular economy business models, such as product service systems or product life extension models.

Other services provide "greening" functions that are more generic across industries, such as research and development, computing and telecommunication services or various professional and business services.

3.3.1 Making the green transition just and inclusive — a role for services?

The Green Deal states that the green transition must be just and inclusive. It must put people first, and pay attention to the regions, industries and workers who will face the greatest challenges.

There are several potential channels through which services, and trade in services, could contribute to a more just and inclusive green transition. For example, an increased role for services in the economy may contribute to a wider spread of economic opportunities. As services have lower fixed costs of production, it may be easier for small and medium-sized companies (SMEs) to enter the markets and compete. Also, the relatively low physical investments necessary to run a business in services imply that restricted access to finance is less limiting to SMEs in the services sector than to SMEs in manufacturing.[51]

Another area in which services may contribute to a more just transition is in the labour market, through job creation. In this regard, some interesting conclusions can be drawn from a study by the OECD on the connection between trade and diffusion of environmental technologies in the wind turbine manufacturing industry. The study finds that technological expertise is a significant driver of trade in wind turbines and that the efficiency of wind power generation is positively related to the share of imported wind turbines. These results suggest that significant local job creation hinges on the continued development – rather than the manufacture – of wind energy. This also means that barriers to trade in wind turbines can also be an obstacle to non-manufacturing job creation.[52]

Furthermore, it has been noted that services trade may benefit women in the labour market, as services sectors are more balanced in terms of gender compared to the manufacturing sector.[53]

As illustrated by an example from the construction sector, in Section 3.4.2, services may also contribute to addressing challenges related to the working environment.

With regards to more specific service categories, educational services may be important to re-skilling for the green and digital transition. Re-skilling is not only necessary to maintain competitiveness in sectors of importance to the twin transition, but is also important to achieving the transition in an inclusive manner.

51 WTO (2019), p. 9.
52 Garsous and Worack (2021), p. 20.
53 WTO (2019), p. 9.

3.4 Examples of green services in two industrial ecosystems

The energy-intensive industries (EII) ecosystem and the construction ecosystems were amongst the first ecosystems for which the Commission initiated a consultative process for formulating transition pathways. Both ecosystems are responsible for a large proportion of emissions of CO2 in the EU and are intensive in their resource use. They also have important links to other industrial ecosystems.

In terms of total value added and employment, the construction ecosystem is amongst the largest in the EU, while the EII ecosystem represents a much smaller share.[54]

Looking at trade patterns, both ecosystems rely to a high degree on intra-EU trade (representing around 65 percent of total trade for both of these ecosystems). However, while the extra-EU exports of the EII ecosystem represent around 90 percent of the ecosystem's value added, extra-EU exports only represent 10 percent of value added in the construction ecosystem.[55]

3.4.1 Energy-Intensive Industries

According to the Commission's definition of this ecosystem, it comprises industries in chemicals, steel, pulp and paper, plastics, mining, extraction and quarrying, cement, wood, rubber, non-ferrous metals, ferro-alloys, industrial gases, glass and ceramics and refineries. The sectors included in the ecosystem are often at the starting point of value chains, providing raw, processed and intermediate materials rather than finished goods.

The ecosystem is characterised by high energy and carbon intensity. In 2019, the ecosystem's share of the EU's total CO2 emissions stood at 22 percent. Several technical options are available to achieve net-zero emissions, albeit at different levels of maturity, such as more energy-efficient and digitalised processes, electrification, carbon capture and storage, as well as the use of clean hydrogen, sustainable biomass and sustainable bioenergy.

54 European Commission (2022a), p. 59. Such figures may however underestimate the importance of the EII ecosystem as this ecosystem is characterized by industries that are very far "upstream" in the value chains and supply the basic materials used across our economy.

55 European Commission (2022a), p. 65.

Considering the diversity of the EII ecosystem, and the related environmental challenges, it is likely that there is a broad range of services of importance to the green transition. Below, we give examples of how services may contribute to reducing carbon intensity and to protecting the environment by helping companies comply with environmental regulations.

Reducing carbon intensity

Starting with the challenge of reducing carbon intensity, more efficient electric motors and motor-driven systems, high efficiency boilers and process heaters, fuel switching (including the use of waste materials) and recycling are some of the options for improving energy efficiency, thereby reducing greenhouse gas emissions.[56] The successful application of these technologies requires a number of services, such as engineering services, industrial design, electrical installation (including smart sensor networks) services, as well as information technology and telecommunication services.[57]

In the steel industry, which is a major consumer of energy and the main industrial source of CO2 emissions, a number of technologies have been invented that can improve energy efficiency. Typically, the installation of these technologies is associated with a number of services, such as design and engineering services, analytical services, maintenance services, as well as the sale of carbon credits.[58]

Furthermore, the successful application of carbon capture and storage could play a key role in achieving significant reductions of CO2 emissions in a number of energy-intensive industrial sectors, such as iron and steel, cement, chemical, petrochemical and pulp and paper.[59] With regards to carbon capture and storage projects, the services associated with such projects may include feasibility studies with expertise within geological and geophysical matters as well as the technical, economic, financial, environmental and institutional feasibility of the respective project. Finally, monitoring services may also be relevant.

Achieving environmental goals such as improved energy efficiency or increased circularity in an ecosystem will often require a re-evaluation of business models and collaboration. A firm-level example of such an initiative is provided by the collaboration between Swedish companies ABB and Stena Recycling to offer their customers energy optimisation, replacement and end-of-life recycling of their industrial motors (see Box 1 below). Data analytics services and recycling services play a key role in this sustainability initiative.

56 Kim (2011), p. 8.
57 Ibid.
58 Steenblik and Gelelo Grosso (2011), p. 16.
59 Kim (2011), p. 8.

Box 1. A service partnership for increased circularity in energy-intensive industries

Electric motors are an indispensable component in several industries, with applications ranging from pumps to compressors, conveyors and handlings systems. It is estimated that roughly 70 percent of electricity consumed by industry worldwide is used by electric motor systems.[60]

In Sweden alone, there are more than 500,000 industrial motors, many of which are old and inefficient, using significantly more energy than necessary.[61] The potential energy-savings from replacing old motors are substantial. If all older electric motors in Swedish industry were replaced with efficient new motors, this would result in an energy-saving equivalent to the output of 900 wind turbines.[62]

Against this background, Swedish companies ABB and Stena Recycling have entered into a collaboration with the aim to assist industry in upgrading their electrical motors, while also ensuring that the materials of the old motors are recycled. A pilot project conducted with the Swedish pulp and paper producer SCA illustrates the setup of the business model, and the key role played by services in it.

The project started with ABB installing smart sensors for energy analysis in some of the motors at SCA in Munksund, Sweden. The smart sensors are part of ABB's portfolio of digital solutions, called ABB Ability, a service which generates insights from data. At SCA, the sensors measure and provide information about the condition of the motors and how efficiently they work.

Outdated motors will be replaced, put in special containers and transported to Stena's recycling plant outside Linköping. The recycled metals are mainly resold in Sweden, where they go back into the cycle to become new iron, copper, and aluminium products.

According to ABB, the results of the project have been very positive in terms of the reduced environmental impact. By recycling metals from 11-tonne engines in the cycle, CO2emissions were reduced by almost 34 tonnes: this corresponds to three times the weight of the engines. In addition, 326 MWh of energy and over 100,000 m3 of water were saved compared to mining new metals.[63]

Source: Interview with representatives of ABB.

Adhering to environmental regulations

Other green services used in the ecosystem relate to the need to adhere to environmental regulations – for example, regarding air pollution. Industrial plants have since long been required to remove soot or dust from gas streams. Depending on the volumes of the gas streams and the level of required particulate removal, current techniques that are available range from cyclone dust collectors to high efficiency particulate arresting (HEPA) filters, fabric filters and electrostatic precipitators. While the former three are fairly straightforward to install and operate, electrostatic precipitators are considerably more complex.[64] Installation services may therefore be needed.

In addition, the cleaning of particulates and sulphur oxides results in hazardous waste in the form of liquid solution, solid paste or powder. This requires another environmental service: the management of solid or hazardous wastes.[65]

60 Motor Systems | Industrial Efficiency Technology and Measures (iipinetwork.org), accessed on 2022-07-01.
61 ABB (2021).
62 Stena Recycling (2019).
63 Stena Recycling (2019).
64 Nordås and Steenblik (2021), p. 18.
65 Ibid.

Another area in which industrial companies rely on services in order to adhere to environmental regulations is the treatment of liquid waste. Effluents from small factories are usually discharged directly into municipal sewage systems. However, if they contain a high concentration of organic chemicals or heavy metals, waste streams have to be pre-treated before they can be discharged. For such companies, consulting services involving a review of the plant's operations may be needed.

For larger industrial plants, bigger and more targeted treatment plants may be necessary, and many companies outsource the operation of such plants to companies specialised in industrial water treatment.[66]

3.4.2 Construction

The construction ecosystem covers activities carried out during the entire life cycle of buildings and infrastructures. It includes on-site activities such as construction of buildings and infrastructure, renovation, refurbishment and demolition. The on-site components also include specialised activities such as site preparation, electrical, plumbing and other installation services. Off-site activities may include engineering and architectural services and the development of building projects (e.g., buying land, project initiation, obtaining permits). There are also ancillary services such as facility management and landscaping activities.[67]

As emphasised by the Commission, the construction ecosystem has strong links to other ecosystems. For example, the manufacturing of most essential building materials, such as steel, cement, wood, plastic products, glass and ceramic products, insulating materials etc. is part of the EII ecosystem. Also, with respect to the twin transitions, there are strong links to the digital ecosystem and the renewable energy ecosystem.[68]

The link to the renewable energy ecosystem is clearly illustrated by the example in Box 2 below, in which a public real estate company equipped one of its office-buildings with solar-panels and constructed a hydrogen facility to become self-sufficient on clean energy.

66 Nordås and Steenblik (2021), p. 21.

67 According to the definition of the construction ecosystem in the updated Industrial Strategy, the following horizontal services have been deemed to contribute substantially to the output of the ecosystem: repair and installation of machinery and equipment; waste collection, treatment, disposal and management; water collection, treatment and supply; legal and accounting activities; management consulting; scientific research and development; rental and leasing activities and employment activities. See Annex 4 in European Commission (2021b).

68 European Commission (2021e), p. 8.

Box 2. Service providers working together to achieve energy self-sufficiency and constructing a hydrogen facility

Sjöbohem is a Swedish public real estate company, owned by the Swedish municipality of Sjöbo. Along with other Swedish public real estate companies, Sjöbohem has signed up to become fossil-fuel free by 2030 and to reduce its energy consumption by 30 percent.[69] To achieve these goals, the company hired Swedish engineering consultancy firm Rejlers to help manage a new project to make its office building self-sufficient on clean energy. The plan was to produce and transform solar energy into hydrogen, which can be stored and used when the sun is not shining.

The project was one of the first of its kind in Sweden. Realising Sjöbohem's vision required input from a wide range of service providers: from fire engineers performing risk analysis, designers, and software programmers programming the monitoring software, to electricians and builders. The fact that this was unknown territory for many of those involved meant solutions had to be worked out by the service providers together, on site during the project. Constructing this type of hydrogen facility also meant breaking new ground for the permitting authorities: there were no regulations in place governing this specific type of project. A good dialogue and exchange of knowledge between Sjöbohem, Rejlers and the permitting authority ensured that the necessary permits could be issued.

Today, the Sjöbohem office building is running on solar panels that produce power and hydrogen. A small room in the office building, re-built to comply with fire regulations, now accommodates equipment that produces hydrogen. The hydrogen is stored outside the office building and can be transformed into electricity when needed. The heat produced during this process is taken care of — it is brought into the building's existing heating system. A small windmill, manufactured in and imported from Finland, supports the system with additional power. The entire system is monitored and controlled by a software specifically programmed to retrieve and use data from all its components. The hydrogen is also used to fuel Sjöbohem's vehicle fleet.

The project has inspired plans for similar projects both inside and outside Sjöbo municipality.

Source: Interview with representatives of Rejlers.

The environmental challenges of the construction ecosystem are manifold. Construction activity accounts for around one half of the weight of Europe's extracted resources and over one third of the EU's total waste weight generated per year.[70] Furthermore, the built environment is the single largest consumer of energy in the EU and one of the largest emitters of CO2. Collectively, buildings in the EU are responsible for 40 percent of the Union's energy consumption and 36 percent of greenhouse gas emissions, which mainly stem from construction, usage, renovation and demolition.[71]

Improving the energy efficiency of buildings

Several techniques are available to improve the energy efficiency of buildings, including, but not limited to; passive solar design, high-efficiency lighting and appliances, more efficient ventilation and cooling systems, solar water heaters, more efficient insulation materials, high reflectivity building materials and multiple glazing.[72]

69 Allmännyttans klimatinitiativ | Sveriges Allmännytta (sverigesallmannytta.se), accessed on 2022-09-05.
70 Ibid, p. 21.
71 European Commission (2020d).
72 Kim (2011), p. 7.

More recently, a number of digitally assisted technologies, such as building information modelling and digital twins [73], have emerged as promising solutions to improving energy efficiency in the ecosystem. These technologies simulate real-life environments and can help those involved in the design and construction of a building to anticipate potential problems and help building managers manage the building's assets in a more optimal and energy efficient way.[74]

The application of the technologies mentioned involve several services. For example, the energy efficient operation of a buildings requires services related to electrical installation, including smart sensor networks, along with information technology and telecommunication services. When designing and constructing new and energy-efficient buildings, architectural and engineering services to design and construct so-called "smart buildings" may be of particular importance.[75]

In order to achieve a reduction in the energy use of the built environment, renovation of the existing building stock is crucial. Currently, around 75 percent of the EU building stock is energy inefficient, suggesting that much of the energy used goes to waste. The renovation of existing buildings could reduce the EU's total energy consumption by 5-6 percent and lower CO2emissions by around 5 percent.

An example of energy saving measures could be the retrofitting of the insulation and/or windows of old buildings. A well-known example of such a project is the deep retrofit of the (then) 81-year-old Empire State Building in New York. The energy savings from this project have been estimated to be USD 4.4 million.[76]

A particular type of business model for improved energy efficiency in buildings is Energy Performance Contracting (EPC). EPC is a turn-key service that covers the entire project life cycle, from the initial energy audit of the building through the long-term monitoring and verification of project savings. The EPC model is based on delivering energy savings in relation to a predefined baseline. The service usually includes a comprehensive set of

73 A digital twin is a virtual replica of the physical environment, ranging from individual buildings to industrial parks and municipal living areas.
74 ERT (2021), p. 90-93
75 Kim (2011), p. 7-8.
76 Nordås and Steenblik (2021), p. 22.

measures to improve the energy performance of a building, covering aspects such as building envelope improvements (e.g. insulation, roofs, windows), heating, air conditioning and ventilation, lighting, domestic hot water systems, renewable energy and control systems.[77]

Consumers of EPC services include owners and operators of public buildings as well as private owners or managers of residential, commercial or industrial buildings.

Improving circularity and providing a healthy working environment

In view of improved circularity, designers have an important role to play in making the best use of resources and improving circularity. This can be achieved via material specifications, and by allowing for future refurbishments, repurposing and deconstruction. Furthermore, measures that increase the service life of built assets, such as regular monitoring, maintenance and infrastructure repairs can avoid premature demolition and landfill.[78]

As mentioned in Section 3.3.1, services may also contribute to achieving the green transition in a just and equitable way. For example, services could provide important functions with regards to protecting the health of workers in industries that are facing environmental challenges. An interesting example of this is provided by the partnering between a manufacturing company producing eco-labelled wooden houses and a company providing air cleaners as a service. The wooden houses are built at indoor construction sites. The indoor construction sites have advantages such as moisture-proof production and a readily accessible overview of the entire process. However, indoor work has its challenges. Handling wood and plaster causes many particles to be released into the air, thereby creating a dusty and unhealthy working environment. In order to provide a healthy working environment for its workers, the manufacturer therefore signed a contract with a supplier to provide air cleaners tailored to its needs. The contract included a comprehensive service agreement.[79]

77 Steenblik and Gelelo Grosso (2011), p. 26.
78 European Commission (2021e), p. 21.
79 Wooden house manufacturer reduced air particles with air cleaners (qleanair.com), accessed on 2022-08-10.

4 Barriers to the free movement of green services

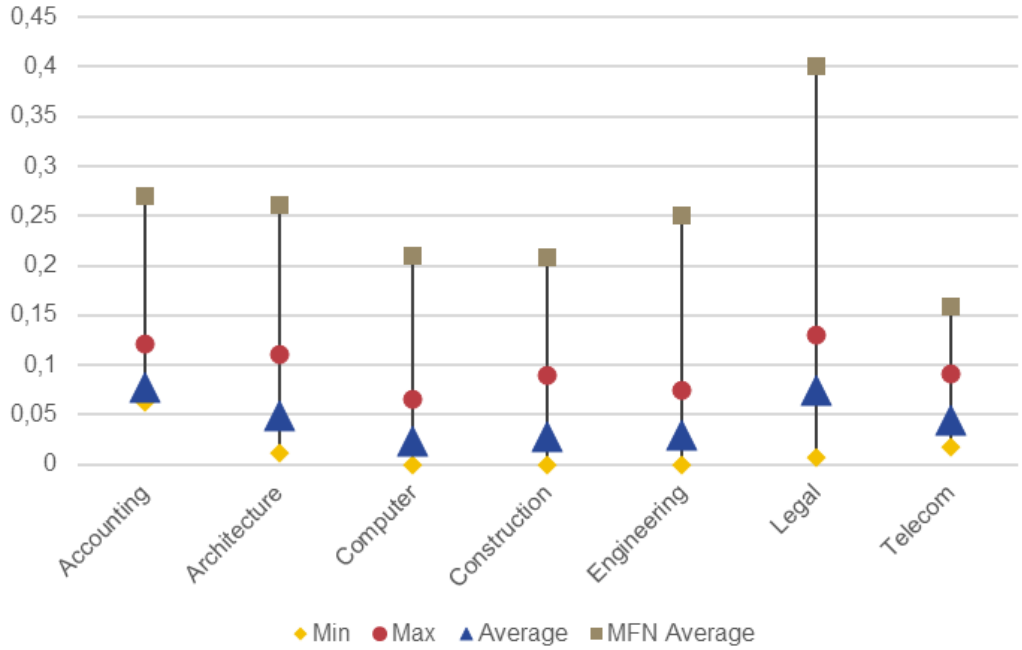
As we have seen in the previous section, several green services are highly relevant to the green transition of the EU's industrial ecosystems. Some services, such as architectural and engineering services, different types of specialised construction services, as well as maintenance, repair and installation services, are particularly relevant to the green transition of the construction and energy-intensive ecosystems.

Also, several horizontal services are relevant to the transition of all ecosystems, not least because they provide valuable input to other products and services. These types of services include environmental consulting services, accounting, auditing and legal services as well as waste management and waste transportation services, computer and IT services, digital services and telecommunication services.

This chapter aims to give an illustrative and non-exhaustive overview of the types of barriers that exist for green services. Because we have compiled findings from existing reports on barriers to trade, we have been unable to list barriers to the free movement of all green services identified in Section 3.3.

The barriers listed in this study are barriers reported at sector level. For example, we list barriers reported by companies in the construction sector generally, but we do not identify barriers on a more detailed level, such as for electrical, plumbing and installation services.

Figure 3. Trade Restrictiveness in the Single Market and towards third countries in selected sectors, 2021



Source: IntraEEA Services Trade Restrictiveness Index and Services Trade Restrictiveness Index, OECD. National Board of Trade calculations.
Note: The Services Trade Restrictiveness Index can take values between 0 and 1, with 0 indicating complete openness to cross-border provision and establishment for foreign service providers, while 1 indicates that the country/sector is completely closed to foreign service providers.

To put this chapter into perspective, it should be noted that the overall level of restrictiveness[80] between the countries in the Single Market is relatively low compared to the level of restrictiveness towards service providers from WTO countries. Figure 3 shows the level of restrictiveness in the Single Market[81] in a selection of green service sectors.

European businesses enjoy many benefits through the Single Market, particularly in an international perspective. As we will see, there are still barriers to the free movement of services in the Single Market.

To increase readability, we have chosen to group the reported barriers into five categories. However, it must be noted that many barriers are closely interconnected and could fall into several of the categories below. An example is a requirement on a service provider to obtain an authorisation. Such a requirement is a market entry requirement, but could also mean that an administrative burden has been imposed on the service provider.

4.1 Regulatory requirements affecting entry to market and the exercise of a service activity

There is a wide range of rules that affect access to markets and the exercise of a service activity. The nature and impact of such rules may vary significantly. In general, overly restrictive regulation can reduce competition and lead to higher prices.[82]

4.1.1 Market entry requirements

A market entry requirement, as defined in this study, is a requirement that makes access to the market subject to conditions that the service provider must fulfil. A typical example of a market entry requirement is a requirement on a service provider to obtain a permit before it may offer its services on the market.

The pursuit of many **business services**, such as engineering, architecture, accounting, auditing and legal services is subject to rules in most Member States. Professions in these areas are often regulated professions.[83] Additionally, several construction services, including carpentry and plumbing, are regulated in about one third of the Member States.[84]

Access to and pursuit of a regulated profession is conditional upon the possession of professional qualifications. Such rules typically include requirements on education and training, exams, mandatory traineeships etc.[85] There are common EU rules on the cross-border recognition of professional qualifications, but the procedures that have to be completed for such cross-border recognition can be costly.[86]

80 In Figures 3 and 4 in this chapter, we present data from the OECD IntraEEA Services Trade Restrictiveness Index (IntraEEA STRI). The term restrictiveness used in the STRI is different from this study's definition of "barrier". For example, the restrictiveness index only covers regulatory measures. The scores in the IntraEAA STRI are broken down into five policy areas, namely "restrictions on market entry conditions", "restrictions on the movement of people", "other discriminatory measures," "barriers to competition" and "regulatory transparency". For further information, see Benz and Gonzales (2019).

81 In the figure, the "Single Market" encompasses Norway, Lichtenstein and Iceland who are all contracting parties to The Agreement on the European Economic Area (the EEA).

82 Pelkmans, (2019), p. 21 and 22.

83 Across the EU, there are 51 regulated professions registered under the generic title 'Architect', 29 under the generic title of 'Civil engineer', 42 under the generic titles of 'Lawyer/Barrister/Solicitor' and 45 under the titles of "accountant or tax advisor" (European Commission [2020f] p. 102, 106, 110 and 142.) The professions of "lawyer" and "auditors" are regulated in all Member States, European Commission (2017a) p. 17 and European Commission (2020f), p. 109.

84 European Commission (2020f), p. 116.

85 European Commission (2020f), p. 101 and 102, 105 and 106, 141 and 142.

86 European Commission (2020e), p. 9 and DIHK (2019), p. 9. See also Dahlberg. et al., (2020), p. 84.

The Member States can also impose other types of requirements relating to professional knowledge. Some Member States for example require continuous professional development, especially for **architects** and **lawyers**.[87] In the auditing sector, EU rules require auditors to pass an aptitude test before they can establish themselves and provide auditing services in another Member State.[88] EU law allows for this test to be held in the local language of the Member State. This can deter the cross-border provision of auditing services.[89] In the accounting sector, some Member States require shareholders or legal representatives of **accounting** companies to be interviewed or pass an exam before the company can provide services in the Member State.[90]

Perhaps unsurprisingly, many Member States require professionals, such as **architects**, **engineers** or **accountants** to have an authorisation to establish themselves on their territory. Sometimes a legal person, i.e. a company, must also hold an authorisation.[91] In the **architecture** sector, a company may in some Member States only be eligible to obtain an authorisation if the shareholders, partners or managers of architect companies also become authorised.[92] The Member States can also impose requirements on service providers to be registered in a professional register or to be authorised by a professional body.[93] Some Member States also require **engineers** and **architects** or companies that only provide engineering or architectural services on a temporary basis to hold an authorisation.[94]

In the **construction** sector, the Member States often have authorisation or permit schemes in place.[95] Some Member States subject either all or certain construction service providers to horizontal authorisation schemes. This requirement can apply to establishments as well as to temporary activity.[96] Sometimes mandatory authorisations must be issued on both a national and regional level, may be restricted in time and only valid in a defined geographical area.[97]

For **business services**, the Member States often impose requirements relating to the legal form[98] of companies that want to establish themselves in their territory. There may also be rules regarding shareholding and voting rights, as well as rules on the management of business service companies.[99] For example, some Member States impose nominative shareholding requirements[100] on **architects** and **engineers**, and many Member States require managers of **accountancy** companies to be professional accountants.[101]

One prominent barrier for **computer and IT services** –although not specific to that sector – appears to be capital requirements, i.e. legal requirements that oblige a company to have a predetermined starting capital equal to a certain amount.[102]

87 European Commission (2021f) p. 7 and 18, European Commission (2020f), p. 105 and 141.
88 Article 14 of Directive 2006/43/EC.
89 CASE (2018), p. 23.
90 European Commission (2017b), p. 82.
91 European Commission (2017b), p. 27 and 28, 54 and 78.
92 European Commission (2017b), p. 33.
93 European Commission (2020f), p. 101, 105, 141.
94 European Commission (2017b), p. 28 and 54 and 55. See also European Commission (2021g), p. 13.
95 CASE (2018), p. 26 and 27.
96 European Commission (2016a) p. 8 and 22 and 23. See also European Commission (2021g), p. 13.
97 CASE (2018), p. 26 and 27.
98 The legal form of a company determines what national rules are applicable to the company. Commonly used types of legal forms are sole trades and limited liability companies.
99 European Commission (2021f) p. 12 and 13, 14-16, 17–19. See also European Commission (2017b), p. 80–82, p. 29–32, p. 55–58. European Commission (2021g), p.
100 European Commission (2017b), p. 56 and 30. A "nominative share" is a share registered in the name of its owner. If such a share is sold, the new owner must be registered.
101 European Commission (2017b), p. 80.
102 CASE (2018), p. 33.

Lastly, **European businesses** generally report restricted access to public tenders in other Member States.[103]

4.1.2 Exercise requirements

An exercise requirement, as defined in this study, is a requirement that affects the pursuit or the exercise of the service activity once the service provider has already entered the market.

One example especially relevant to **business services**, is that many Member States reserve activities to persons who hold certain qualifications. This means that persons who do not hold the required qualifications are banned from engaging in such activities. For example, many Member States reserve activities relating to architectural design and planning activities, preparation, submission and signing of technical control and compliance documentation to those holding the title of "**architect**".[104] Similarly, in the **legal** sector, it is not uncommon for the Member States to reserve giving legal advice or appearing in court to those holding a professional title. This has an impact on the digitalisation of the legal sector, as such restrictions may lead to difficulties in providing online legal consultation and in the digital automation of legal documents by non-lawyers.[105] There is a similar problem in the **accounting** sector in which the Member States sometimes reserve even basic tasks to those holding a specific title. This can impede the development of digital accounting tools.[106]

Conversely, many Member States also ban those holding a professional title from engaging in certain activities. One example is prohibiting lawyers from taking up salaried employment, for example, as an in-house **lawyer** for a company. [107] The purpose of such rules is to avoid conflicts of interest. Such restrictions exist for **accountants**, **architects**, **engineers** and **lawyers**.[108]

Other types of exercise restrictions on providers of **business services** include restrictions on using a professional title (such as "architect") in a company name,[109] mandatory professional indemnity insurance requirements[110] and other liability insurance requirements[111], restrictions on advertising[112] and rules on tariffs, fees and pricing.[113] An example of rules relating to pricing is the prohibition on prices at below cost for design services.[114]

The **construction** sector seems to suffer from the inadequate application of the principle of mutual recognition. For example, construction service providers may be required to adapt to technical and professional rules or rules on health and safety regardless of whether they comply with similar rules in the home state.[115] They may also be required to purchase a local insurance.[116]

103 European Commission (2020e), p. 5 and Danish Business Authority (2018) p. 21. This was also reported as an obstacle by Swedish companies in 2016, National Board of Trade (2016a) p. 16.
104 European Commission (2021f) p. 7 and 8.
105 European Commission (2017a), p. 18 and European Commission (2021f) p. 8.
106 European Commission (2021f), p. 14.
107 European Commission (2021f), p. 18.
108 European Commission (2021f), p. 9, 12,15 and 18. European Commission (2017b), p.31 and 81. See also European Commission (2021g), p. 11.
109 European Commission (2017b), p. 29.
110 European Commission (2020f), p. 101, 105 and 141. See also European Commission (2017b), p. 32, 58 and 81 and 82 and European Commission (2021f), p. 13.
111 European Commission (2017b), p. 58 and 81 and 82.
112 European Commission (2021f) p. 10,13 and 19. Five Member States still have a total ban on advertising for lawyers, European Commission (2021f), p. 19. See also European Commission (2021g), p. 12.
113 European Commission (2021f) p. 9 and 10, 13,16—19. See also European Commission (2021g), p. 10.
114 European Commission (2021f) p. 10.
115 European Commission (2016a), p. 23, CASE (2018), p. 28.
116 European Commission (2016a), p. 23, p. 207.

In the **energy** sector, businesses report price regulation, often also paired with minimum service obligations, as a barrier.[117]

In the **telecommunications** sector, some Member States impose coverage obligations in spectrum awards in the mobile or wireless sector. This can be very costly.[118]

4.2 Regulatory heterogeneity or fragmentation

The terms "regulatory heterogeneity" or "fragmentation" refer to different ways of regulating the same thing in different Member States. Regulatory heterogeneity requires service providers to inform themselves about and comply with several different sets of rules regulating their business activities. This leads to additional trading costs and may limit the export of services to the markets of other Member States.[119] Economic studies suggest that reducing regulatory heterogeneity could boost intra-EU trade by between 30 and 60 percent.[120]

As is the case with restrictiveness in the Single Market, the general level of regulatory heterogeneity is low, but varies depending on sector.

Figure 4 shows that there is a high level of regulatory heterogeneity in legal services while the level of regulatory heterogeneity for computer services is relatively low. For the computer sector, this could be explained by the fact that this sector has been relatively free from regulation.[121]

Even if the general level of heterogeneity for green services in the EU is modest, "different national service rules" was still amongst the most reported obstacles by businesses in the Single Market in 2019.[122]

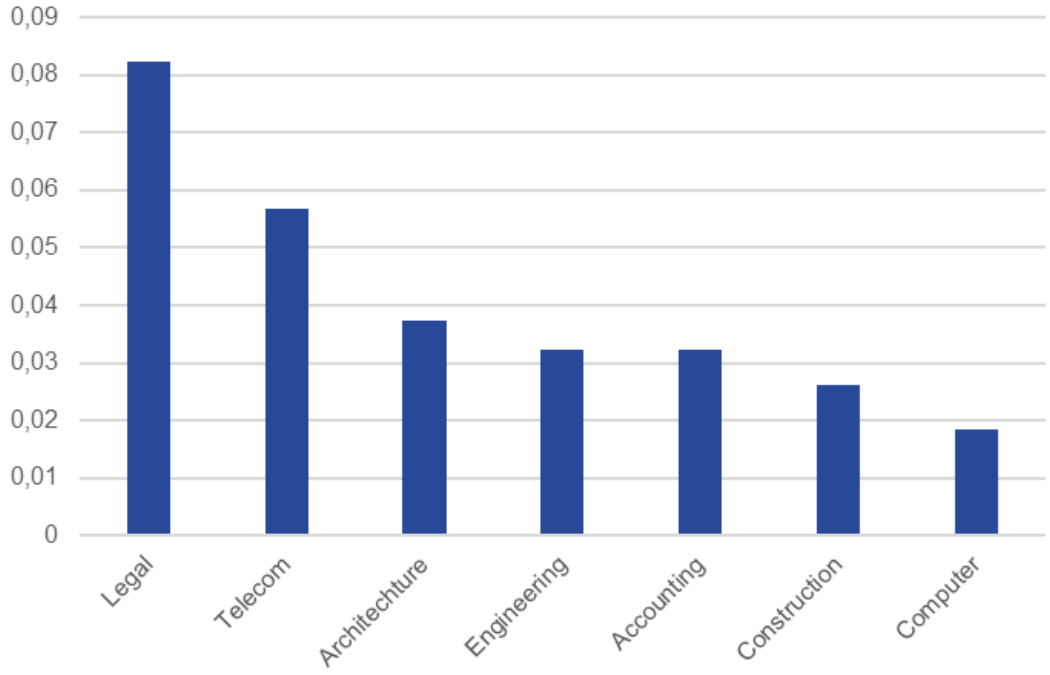
The previous section on regulatory requirements shows that the Member States regulate **business services** in different ways. While many similarities can be found in the type of rules adopted by the Member States (e.g. rules on professional qualifications, legal form and insurance requirements), it is important to note that the content of those rules can be very diverse and result in a significant administrative burden for service providers. The approach to the regulation of professions also differs between the Member States. Some Member States do not regulate professions as such but instead regulate certain activities commonly performed by professionals through certification schemes and/or competence checks.

For **accountants**, it has been reported that the differences in national accounting and tax standards impede the provision of cross-border accounting services.[123] Heterogeneity of accounting standards also creates barriers to the automation of accounting systems, particularly for SMEs.[124]

The **waste transport** sector has been described as a "patchwork of national waste rules".[125] This could negatively impact the goal of achieving a circular economy.[126] There are diver-

117 European Commission (2020f), p. 128.
118 European Commission (2020f), p. 122.
119 CASE (2018), p. 23. See also Dahlberg et al. (2020), p. 69.
120 Pelkmans (2019), p. 24.
121 CASE (2018), p. 33.
122 Eurochambres (2019), p. 6. This was also one of the most prominent responses by Swedish services providers in a survey conducted by the Board in 2016. See National Board of Trade (2016a) p. 13.
123 European Commission (2020f) p. 101.
124 CASE (2018), p. 24.
125 ERT (2021), p. 97.
126 ERT (2021), p. 94 and 95. See also BusinessEurope (2020a) and BusinessEurope (2022a).

Figure 4. Regulatory heterogeneity in the Single Market for selected sectors, 2021



Source: Intra-EEA STRI Heterogeneity Indices, OECD. National Board of Trade calculations.
Note: The bars represent the simple average of the regulatory heterogeneity of all country pairs belonging to the European Economic Area (EEA) for which data exist. The pairwise heterogeneity index can take values between 0 and 1. If two countries have the same answer on all the measures included in the SRI database, their bilateral heterogeneity index is zero. If they have different answers to all measures they have a heterogeneity index of one.

gent rules on secondary materials and trade in, as well as differences in CO2 accounting standards and collection of statistics.[127]

Other sectors that have been described as fragmented are the **energy** and **electricity retail** sectors. The Member States have very different procedures and processes in place in the energy retail market, which makes cross-border entry more difficult even for established energy suppliers and service companies.[128]

In the **construction** sector, the use of digital tools such as building information modelling and digital twins is hampered by the lack of joint technical standards. The absence of EU-wide technical standards leads to projects being developed based on different patent-protected software, which increases the risk of issues with interoperability, making investment in such technologies unattractive to smaller businesses.[129]

Companies that post their staff to other Member States have reported that diverging national rules on benefits in different Member States make it difficult to calculate the total remuneration for posted workers. This in turn makes it difficult to calculate the total cost of the posting.[130]

Diverging tax and VAT rules have also been reported as an obstacle to cross-border activity by **European companies** more generally.[131]

127 Tamminen et al. (2020), p. 43–44.
128 European Commission (2020f), p. 125 and 126.
129 ERT (2021), p. 90–93.
130 BusinessEurope (2022b).
131 European Commission (2020e), p. 7–8. See also Eurochambres (2019), p. 6.

4.3 Administrative burdens

In surveys conducted among European businesses from different sectors, complex administrative procedures are often quoted as being one of the most serious obstacles in the Single Market. This is particularly the case for SMEs.[132] In a business survey conducted by Eurochambres in 2019, almost 80 percent of the respondents cited "complex administrative procedures" as a barrier in the Single Market. [133]

Burdensome administrative procedures are costly for service providers and can negatively impact on the willingness to provide cross-border services. To illustrate, costs for complying with national administrative procedures connected to an authorisation requirement in the **construction** sector can amount to over EUR 10 000.[134] Establishing a business in another Member State can drive up administrative costs to between EUR 5,000 and 10,000.[135]

In some instances, it is evident what the administrative costs are. This is the case with different types of fees,[136] such as registration fees or application fees for building permits.[137] However, in most cases, the costs relate to the time spent collecting and submitting documents, [138] sometimes to several different authorities at different levels, [139] or even to hiring external consultants to assist with this process.[140]

Often, the administrative burden imposed on services providers is attributable to the need to show compliance with market entry rules, not least for providers of **business services**.[141]

Another type of administrative obstacle is the case-handling rules and procedures of public authorities. Complex and time-consuming permitting procedures have been reported as a barrier in the **construction**,[142] **energy production** and **distribution**[143] and **electronic communications** sectors.[144] The lack of available online procedures, for example registering a company online,[145] is reported as a barrier in several sectors. [146]

Another issue affecting multiple service sectors is the requirement to translate documents.[147] In the **construction** sector, in some Member States, translations must be made by locally certified and registered professionals. [148]

Many businesses in the **construction** sector and in sectors in which **installation**, **repair and maintenance services** are offered as part of the sale of a product, report administra-

132 European Commission (2020e), p. 4.
133 Eurochambres (2019) p. 6.
134 European Commission (2020f), p. 116. For further information, see European Commission (2018).
135 Dahlberg et. al. (2020), p. 65.
136 European Commission (2017b), p. 40—42, 66—68, 88 and 89, 111 and 112.
137 European Commission (2020f), p. 117 and 118.
138 Some countries require documents to be submitted by post or even in person, which naturally incurs additional costs. European Commission (2017b) p. 43—52, 69—76, 90—97 and 109—110, European Commission (2020f), p. 116, CASE (2018), p. 27, European Commission (2016a), p. 23.
139 In a few Member States, architects and engineers can be required to contact several different authorities and professional chambers in order to register correctly, see European Commission (2017b), p. 33—36 and 59—63.
140 This is not uncommon in the construction sector, see European Commission (2016a), p. 207.
141 European Commission (2017b), p. 106 and 107.
142 European Commission (2020f), p. 117 and 118.
143 ERT (2021), p. 115—117.
144 European Commission (2020f), p. 122. European Commission (2020e), p. 4.
145 European Commission (2020e), p. 8 and 9.
146 See, for example, European Commission (2021g) p. 12 (figure 8).
147 European Commission (2017b), p. 104 and 105, European Commission (2020f), p. 116 and European Commission (2016a), p. 207.
148 CASE (2018), p. 28.

tive obstacles in relation to the posting of workers. [149] Examples of such barriers include the requirement to submit several documents for each posting to the national authorities, rules on prior notifications of postings and on when such notifications need to be made as well as procuring documents that show social security coverage in the home state and procuring them within a reasonable time frame. Many businesses also complain that these administrative procedures need to be performed even for business trips and short-term postings.[150]

An administrative barrier specific to the **construction** sector is the requirement to obtain a building permit before starting construction. Many Member States impose a number of administrative controls as part of the application process for a building permit.[151] There are also reports of Member States only allowing locally registered professionals to submit designs in the permit procedure.[152]

4.4 Insufficient information about regulatory requirements

European businesses struggle to find information on the applicable regulatory requirements. A lack of high-quality information is often reported as one of the main barriers to cross-border trade.[153] The European business organisation BusinessEurope has also highlighted the large number of contact points provided for by European legislation as contributing to the difficulty of finding information. The organisation has also highlighted that these contact points do not cover all business-related aspects or contain information about all requirements with which a company must comply.[154]

As we have seen, market access for **accountants**, **engineers** and **architects** is often subject to a multitude of rules. Finding information about such rules in different Member States can be very cumbersome, and service providers may even have to contract external advisers in order to identify the relevant rules. Difficulty in finding the correct information increases in Member States and sectors that have sequential administrative procedures, including both local and central authorities.[155] The problem is exacerbated if the information is not available in a language that the service provider can understand.[156]

In the **construction** sector, economic operators lack online information on applicable local rules, for example, on building permit rules and procedures.[157] Furthermore, insufficient knowledge of planning and building regulation is reported as a major obstacle to offering construction services abroad.[158]

Lack of information on posting has generally been reported as an obstacle to the cross-border provision of services. **European businesses** claim that posting is made more difficult due to a lack of information, or information that is fragmented or unclear.[159]

149 European Commission (2020f), p. 45 and 119. See also European Commission (2020e), p. 4.
150 European Commission (2020f) p. 46. See also BusinessEurope (2020b) and BusinessEurope (2022b).
151 European Commission (2016a), p. 15—17.
152 European Commission (2016a), p. 21.
153 European Commission (2020e), p. 3 and 4. In the business survey by Eurochambres in 2019, "inaccessibility to information on rules and requirements" was ranked as an obstacle by around 70 percent of the respondents, Eurochambres (2019) p. 6.
154 BusinessEurope (2020c), BusinessEurope (2022c).
155 European Commission (2017b), p. 100. Difficulties with finding information about foreign rules was also reported as a problem by Swedish service providers in 2016, National Board of Trade (2016a), p. 15.
156 European Commission (2017b), p. 109. See also DIHK (2019), p. 10.
157 European Commission (2020f), p. 118 and European Commission (2016a), p. 21 and 22.
158 European Commission (2020f), p. 118.
159 European Commission (2020f), p. 45 and 46. See also BusinessEurope (2022b).

4.5 General market conditions

This section lists barriers that are not the consequence of a rule imposed by a State or the EU but rather the result of the behaviour or practice of private entities, such as competitors, customers or consumers.

4.5.1 Barriers in network industries — competition and infrastructure concerns

In network industries, such as telecommunications or energy distribution, there is generally a higher risk of low competition since there tends to be natural monopolies in those sectors. Most often, a network is controlled by one or a few large operators (the incumbent), often competing on downstream supply markets. In the **electricity** sector, unbundling (the separation of distribution and supply activities) is sometimes incomplete. This gives existing suppliers of electricity an advantage over new entrants. In extreme cases, distribution system operators have obstructed the switching process when customers have wanted to change to another electricity supplier.[160] Similarly, in the **telecommunications** sector, prices and conditions imposed by network operators can constitute a barrier to market access for companies that provide electronic communications services.[161]

Practices employed by distribution system operators that do not limit competition can still create difficulties in other markets. For example, in the **electricity** sector, cross-border transmission rights, i.e. rights to transmit energy across the border, are only sold for one year at a time. This prevents the conclusion of long-term cross-border contracts to buy renewable energy. According to industry representatives, such contracts should ideally run for at least 10 to 15 years to mitigate the risk of price fluctuations.[162]

For obvious reasons, the ability to provide cross-border network services is heavily dependent on the existence and availability of a network infrastructure. In the **energy** sector, there are general complaints about the difficulty of transferring energy between the Member States, partly because of grid bottlenecks and a lack of cross-border interconnectors.[163]

160 European Commission (2020f), p. 126.
161 European Commission (2020f), p. 124.
162 ERT (2021), p. 110 and 111.
163 ERT (2021), p. 26 and 30.

Barriers related to infrastructure in the **telecommunications** sector include limited use of measures intended to further the sharing and reuse of existing physical infrastructure and limited access to buildings for the installation of in-building infrastructure.[164]

4.5.2 Lack of information about market conditions and data sharing

In addition to insufficient information about market access rules and exercise requirements, companies also report difficulties in finding relevant data about market conditions in other Member States.[165] For example, **energy retailers** have complained about the difficulty in finding high-quality and aggregated market information. This lack of information may deter new market entrants and impede the development of innovative service models.[166] In the **construction** sector, inadequate sharing of building data stalls the development of digital twins and building information modelling software. The necessary software applications are often patent protected, which make the exchange of data between systems difficult.[167]

In the **accounting** sector, differences in the way information is published in financial statements make it difficult to compare information. In turn, this makes it more difficult, especially for SMEs, to engage in cross-border activities.[168]

4.5.3 Customer behaviour and skills shortages

One often reported obstacle to cross-border trade relates to payment for services provided. **Many businesses** report recovering debts in other Member States as an obstacle to providing cross-border services. Some businesses even report that they avoid doing business cross-border due to diverging national rules on insolvency and uncertainty about the functioning of those rules.[169] **Construction** companies are deterred from participating in public tenders in other Member States for fear of late payments.[170] A related issue often reported by European businesses is problems relating to solving commercial or civil disputes.[171]

SMEs may be required to open local bank accounts since they are otherwise met with suspicion from customers.[172]

Several providers of services related to the **circular economy** report constraints because legislation or funding schemes are often based on linear thinking and are not necessarily conducive to circular business models. Such linear thinking can also affect the demand side, making customers or business partners suspicious about new circular business models.[173]

Several sectors report skills shortages and mismatches. **SMEs** are particularly affected by the lack of skilled staff or experienced managers.[174]

164 European Commission (2020f), p. 122.
165 In the Eurochambres (2019), "insufficient legal/financial information about potential business partners in other countries" was considered as an obstacle by almost 60 percent of the respondents.
166 European Commission (2020f), p. 128 and 129.
167 ERT (2021), p. 90—93
168 European Commission (2020f), p. 104.
169 European Commission (2020f), p. 69 and 70.
170 European Commission (2020f), p. 120.
171 European Commission (2020e), p. 8. See also Eurochambres (2019), p.6.
172 Danish Business Authority (2018) p. 21.
173 Tamminen et al., p. 44 and 45.
174 European Commission (2020e), p. 9.

5 Addressing barriers to trade in green services in the EU

The aim of this chapter is to discuss on a general level how barriers in the EU can be addressed. Its main objective is to describe the complex regulatory landscape within which European providers of green services operate and what possibilities exist for the EU institutions or the Member States to change this landscape.

This chapter draws on the Commission's discussion of root causes in 2020[175] and uses the same approach. Understanding the root cause of a barrier is important as, in principle, it will determine how that barrier can be addressed.

5.1 Addressing general market conditions

When it comes to addressing the barriers that result from the general market conditions that we have identified, which are non-regulatory barriers, the first question that must be asked is whether the barrier is of such a nature that a public actor or policy maker *can* address it. The fact that a barrier is created by a private actor, such as a competitor acting in an anti-competitive manner or a customer refusing to pay their bills on time, does not automatically exclude a policy solution. Rules on, *inter alia*, fair competition[176] or late payments[177] can be adopted to prohibit or encourage certain behaviours in the market. To illustrate, business leaders in the construction ecosystem have suggested the introduction of rules that make simulation testing and data sharing mandatory in order to encourage the use of digital twins in construction.[178]

At EU level, the EU Treaties will define the legal limitations of the Union's legislative powers. In addition, any common legal action must have sufficient political support amongst the Member States and, in most cases, from the European Parliament.

If "regulating away" a barrier is not an option, the second question to be raised is whether there is anything else that the EU or the Member States can (or should) do to remove or mitigate the perceived barrier. One example is investment in essential infrastructure. The energy industry has stated that there is a need to remove grid bottlenecks and install cross-border interconnectors to expand cross-border capacities in electricity, hydrogen and CO2.[179] Such changes will require support from public or private investors. In the transition pathways for the industrial ecosystems, the Commission has listed different funding and financing instruments that can support the transition of the ecosystems.[180]

175 European Commission (2020e), p. 10–21.
176 Cf. Articles 101 and 102 TFEU.
177 Cf. Directive 2011/7/EU.
178 ERT (2021), p. 93.
179 ERT (2021), p. 30. Examples of such instruments include The EU Innovation Fund, the Just Transition Fund, the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, the Connecting Europe Facility, the Social Climate Fund and the LIFE programme.
180 See for example European Commission (2021d) and European Commission (2021e).

5.2 Addressing regulatory barriers in the harmonised areas

Many green services are subject to harmonising EU measures to varying degrees. Network services, such as gas distribution services,[181] electricity transmission,[182] and telecommunications services[183] are all at least partially regulated at EU level. Harmonising legislation is also in place concerning waste,[184] shipments of waste,[185] urban wastewater treatment,[186] certain aspects of accounting[187] and auditing[188].

In addition to these rules that directly regulate green services, there is a host of other EU legal acts that indirectly affect the provision of services in many, if not all service sectors. These include rules on energy efficiency,[189] the energy-efficiency performance of buildings, [190] clean air,[191] minimum requirements for water reuse,[192] eco-design for products, [193] social security,[194] rules on health and safety in the workplace,[195] posting of workers,[196] VAT[197] etc.

In areas in which harmonising EU legislation is in place, such EU legislation must be the starting point for addressing barriers in those areas. There are generally two root causes to Single Market barriers in the harmonised area. They are both connected to the EU legislation in different ways.

The first root cause is regulatory choices at EU level. For example, EU legislation can be difficult to interpret or apply, or is inadequate to address the objectives being sought. These deficiencies must be addressed at EU level. In this context, it is important to remember that regulatory barriers to trade are the result of a compromise between different and potentially conflicting policy objectives. The public interest of service providers to freely provide their services in the EU market needs to be squared with other legitimate policy objectives, such as those of consumer, labour or environmental protection. [198] Not every measure perceived as problematic by service providers should be removed.

There have been calls to revise EU legislation in several areas. This includes revising EU legislation on social security related to the posting of workers,[199] allowing for temporary licensing for auditors to facilitate cross-border trade,[200] improving permitting procedures

181 Directive 2009/73/EC.
182 See for example Directive (EU) 2019/944 and Regulation (EU) 2019/943.
183 Directive (EU) 2018/1972.
184 Directive 2008/98/EC and Directive 2010/75/EU.
185 Regulation (EC) No 1013/2006 Council Directive 2006/117/Euratom.
186 Council Directive 91/271/EEC.
187 Directive 2013/34/EU.
188 Directive 2006/43/EC and Directive 2013/34/EU.
189 Directive 2012/27/EU and COM/2021/558 final.
190 Directive 2010/31/EU and COM/2021/802 final.
191 Directive 2008/50/EC.
192 Regulation (EU) 2020/741.
193 Directive 2009/125/EC and COM (2022) 142 final.
194 Regulation (EC) No 883/2004 and Regulation (EC) No 987/2009.
195 Council Directive 89/391/EEC Council Directive 89/654/EEC.
196 Directive 96/71/EC and Directive 2014/67/EU.
197 See for example Council Directive 2006/112/EC.
198 Cf. European Commission (2020e) p. 13.
199 Eurochambres (2019), p. 14. There have been attempts to revise the relevant social security rules, see for example Dahlberg et al. (2020) p. 99.
200 CASE (2018), p. 23.

under the Renewable Energy[201] Directive and including certain elements in the on-going revision[202] of rules on the shipment of waste.[203]

It may not always be necessary to change EU legislation in order to address a barrier. A less intrusive measure is for EU institutions to adopt non-binding guidance or in other ways try to facilitate the proper application of EU rules. For instance, European businesses have stated that they would find it useful to have a standardised EU-wide VAT declaration available in all EU languages.[204] Another example is the proposal from the energy industry that the Commission should encourage transmission system operators to issue cross-border transmission rights for a longer duration than one year.[205] Companies have also expressed a desire for more guidance on how to interpret rules on posting.[206]

The second root cause of barriers in the harmonised area relates to inadequate transposition or enforcement of EU rules. While the Commission certainly has a role to play in ensuring compliance with EU rules, this is primarily the responsibility of the Member States institutions –not least the national courts. When questioned about what would be the most helpful solutions to Single Market barriers, European businesses highly ranked the improved implementation of EU law via increased cooperation on enforcement between the Member States and the Commission and better legal protection before national and European authorities in cases of breaches of EU rules.[207]

We note that the Single Market Enforcement Task Force (SMET),[208] have discussed barriers such as complex permitting procedures for renewable energy installations, burdensome requirements for wind and solar energy installations and cross-border barriers for professionals.[209] See also Section 5.3 regarding the work of the SMET thus far.

201 Directive (EU) 2018/2001. See ERT (2021), p. 116.
202 COM (2021) 709 final.
203 BusinessEurope (2022a).
204 Eurochambres (2019), p. 14.
205 ERT (2021), p. 112 and 113.
206 BusinessEurope(2022b).
207 Eurochambres (2019) p. 14.
208 The SMET is a high-level forum in which the Commission and Member States meet to discuss barriers on the Single Market and how these can be addressed. See European Commission (2022d).
209 European Commission (2022d).

Box 3. Root causes interplay to create barriers: the case of insufficient information

Insufficient information about the conditions for market entry or the subsequent exercise of a service is a good example of how the two root causes "regulatory choices" and "inadequate transposition" can interplay to create obstacles to the free movement of services.

Many EU acts require the Member States to put in place national contact points that provide information on how to sell goods and services in their territory. This regulatory choice to introduce a multitude of contact points is, as we have seen, itself considered problematic by European businesses.

Complexity in finding the right contact point is not the only issue: service providers also have to deal with contact points that are not up to par. For example, some contact points do not make all relevant information available online and cross-border users are not always able to complete necessary procedures online. In 2019, a decade after the deadline for transposition of the Services Directive,[210] the Commission requested that all Member States improve their contact points and comply with the requirements of the Services Directive and the Recognition of Professional Qualifications Directive.[211]

This situation illustrates how both EU action and national (in)action can together create an unfavourable environment for cross-border service providers, ultimately failing to achieve the objective of improving conditions for them.

Regulatory work is currently underway at EU level to make it easier to find information. The Single Digital Gateway Regulation[212] aims to establish a single information gateway, through which national information websites can be accessed. The Member States must still ensure that the information provided on these websites is relevant and of high quality.

5.3 Addressing regulatory barriers in the non-harmonised areas

In areas in which no harmonising legislation is in place, or where the harmonising measure allows for national deviations, there are also typically two root causes for regulatory barriers to trade.

The first root cause is that a Member State, while formally competent to adopt its own rules, has introduced rules that are contrary to EU law in a more general sense. When the Member States regulate services or in other ways deal with the cross-border provision of services, they must respect, inter alia, the principles laid down in EU Treaties, as well as through EU legislation. EU legislation particularly relevant to the free movement of services include the Services Directive, the two Directives on the Free Movement of Lawyers,[213] the E-commerce Directive,[214] the Recognition of Professional Qualifications Directive[215] and the Proportionality Test Directive.[216]

These Directives do not lay down substantive rules on market entry or the exercise of a service activity. Instead, they regulate how the Member States should deal with service providers from other EU Member States. These Directives contain rules on how to regulate services, how to apply the principle of mutual recognition, how and when to recognise

210 Directive 2006/123/EC.
211 European Commission (2019b).
212 Regulation (EU) 2018/1724.
213 Council 77/249/EEC and Directive 98/5/EC.
214 Directive 2000/31/EC.
215 Directive 2005/36/EC.
216 Directive (EU) 2018/958.

professional qualifications etc. If the Member States correctly apply these rules and principles, their national rules are lawful under EU law and may be retained.

There are many examples of when the Member States do not respect these acts or the EU Treaties when they regulate cross-border service provision. For example, in recent years, the Court of Justice of the EU has found Member State legislation to be in breach of the Services Directive in several cases.[217] The Commission, for its part, has recently questioned the appropriateness of national measures regulating the provision of legal, architectural, auditing and engineering services.[218] There are also ongoing infringement proceedings against several Member States for not correctly implementing the Proportionality Test Directive.[219]

The National Board of Trade has previously discussed the compliance deficit in the EU and how it can be addressed.[220] Recently, the SMET has chosen to focus on, *inter alia*, prior checks of professional qualifications and insurance requirements for temporary service provision, excessive document requirements in relation to the recognition of professional qualifications and excessive administrative burdens associated with the posting of workers. In 2021, the SMET reported that requirements for prior checks of qualifications had been removed for over 150 professions. Some Member States had also taken measures to remove unnecessarily burdensome document requirements for professionals providing cross-border services.[221]

The second root cause to barriers in the non-harmonised area is also a barrier in itself. Fragmentation or regulatory heterogeneity can be lawful, but as we have seen, it is still perceived as problematic by service providers. The most efficient way to reduce fragmentation is to adopt common rules. Harmonisation can result in economies of scale and increase competitiveness.[222]

European businesses have ranked the harmonisation of national regulations and standards such as licensing requirements as a helpful tool to reduce barriers.[223] There have been calls for harmonisation of electricity taxation.[224] Another potential area of harmonisation that has been suggested by the business community, is to create a new European company law form for SMEs,[225] similar to the Societas Europaea.[226]

However, adopting common rules comes with its own set of challenges. First and foremost, the EU must have the mandate to adopt legislation in the relevant area, and common rules must be the most appropriate measure. Second, there must be sufficient support for the substantive rules in the Union's legislative bodies. For example, the Commission has attempted to create a new company law form for SMEs. However, political consensus could not be reached, and the proposal never became a reality.[227] Lastly, harmonisation is not in itself a guarantee for improving conditions for services providers. As we have seen, regulatory choices on EU level and the inadequate transposition of EU rules may create new obstacles to the free movement of services.

217 See for example C-377/17 *Commission v. Germany* on architects and engineers, C-384/18 *Commission v Belgium* (Accountants) on accountants and C-209/18 *Commission v Austria (Ingénieurs civils, agents de brevets et vétérinaires)* on civil engineers.
218 European Commission (2017a and European Commission (2021f).
219 European Commission (2021h).
220 See for example, National Board of Trade (2016b), National Board of Trade (2019) and National Board of Trade (2022).
221 European Commission (2021i), p. 9 and 11.
222 CASE (2018), p. 40.
223 Eurochambres (2019), p. 14.
224 ERT (2021), p. 31.
225 BusinessEurope (2022d).
226 A "Societas Europaea" (SE) is a European public limited-liability company formed by at least two companies governed by the laws of different Member States, for example through a merger. An SE is governed directly by EU rules, specifically Council Regulation (EC) No 2157/2001. See also Setting up a European Company (SE) - Your Europe (europa.eu), accessed on 2022-0906.
227 European Commission (2020e), p. 12.

Box 4. Addressing heterogeneity through service standardisation?

Ever since 1985 and the introduction of the "new approach" the EU has relied on standardisation as a complement to harmonised rules for products and product safety. The new approach means that framework EU legislation lays down the essential requirements with which product must comply. The detailed technical requirements, however, are found in harmonised European standards. If a manufacturer can show that its product conforms to a harmonised European standard, the product is presumed to comply with the essential requirements of EU legislation.

Studies have shown that standardisation contributes to productivity and has considerable added value for the EU. There are also indications that standards contribute to innovation, to the achievement of the UN Sustainable Development Goals[228] and to the development of a circular economy.[229]

Standards in the services sector are not as common as standards for goods. It is estimated that only around two percent of all European standards are standards for services.[230] Efforts have been made to change this. Notably, in 2016 the Commission undertook to promote standards for services in its Standardisation package.[231] In the same year, the Commission, the European and national standardisation organisations and the European business community signed a common initiative, vowing, inter alia, to encourage the greater development and use of European service standards.[232]

Since the revision of the industrial strategy in 2021, the Commission has renewed its efforts in the standardisation of services. An action to develop standards for, inter alia, engineering and architectural services and services related to the energy efficiency of buildings has been included in the 2022 Annual Work Programme for Union Standardisation.[233]

The Standardisation Regulation,[234] which governs the functioning of the European standardisation system, also foresees the creation of standards for services. The Services Directive (Article 26) contains one provision on the development of standards for services. However, in contrast to many directives on goods, in which standards support EU legislation, the Services Directive does not contain any substantive rules on services, such as rules on service quality etc. It is not yet clear whether the Commission envisages the future adoption of substantive rules, for example on the quality of services, that can be supported by standards. It is also possible that the Commission will continue to promote the development of European services standards without linking them to secondary legislation.

228 European Commission (2021c), p. 9, 22 and 59.
229 Yamaguchi (2021), p. 56–66.
230 European Commission (2022b) p. 3.
231 European Commission (2016b) and European Commission (2016c).
232 Joint initiative on standardisation under the single market strategy | BusinessEurope, accessed on 2022-07-06).
233 European Commission (2022c).
234 Regulation (EU) 1025/2012.

6 Conclusions and Recommendations

This study has shown that services play a key role for the green transition of the 14 industrial ecosystems defined by the European Commission. There is a broad range of services that can be considered as green services in the sense that they contribute, either directly or indirectly, to making the EU's industrial ecosystems less carbon intensive, more circular and more protective of the natural environment.

The study has also shown that services contribute to the green transition in different ways. Some services are of particular importance to the green transition of specific eco-systems. Construction, architectural and engineering services, as well as maintenance, repair and installation services, contribute to making the European building stock more energy-efficient and reducing emissions related to the construction, renovation and demolition of buildings. Other services provide vital input to the green transition of all ecosystems. Examples include energy distribution services, waste services, business services and telecommunication services.

As we have seen from the business examples provided in this study, services play an important role in facilitating more energy efficient and circular production systems (such as in the collaboration between ABB and Stena Recycling). They are also indispensable for the completion of many environmentally friendly projects (such as the project in Sjöbo municipality).

By international comparison, the general level of restrictiveness for the cross-border provision of services in the Single Market is low. Nonetheless, European service providers still report barriers to the free movement of services. There is a risk that these remaining barriers hamper the Union's growth as well as the green transition of the EU industrial ecosystems.

Policy makers attempting to address barriers to the free movement of services must remain aware of their root cause. A careful analysis of the best way to address barriers should be conducted, and questions must be asked on **what** should be addressed, **who** is best placed to address it and **how** it should be addressed.

Considering the importance of services for the green transition, we make the following recommendations:

- The Commission and the Member States should reinvigorate efforts to remove remaining barriers to the free movement of services on the Single Market.
- More specifically, and within the context of the green deal and the industrial ecosystem approach, we propose that the Commission and the Member States seek to address barriers identified in chapter 4 of this report. While these barriers do not constitute an exhaustive list of barriers whose removal could facilitate the green transition, they represent a useful point of departure for the work ahead.
- Many of the barriers we have identified stem from either EU or national regulation. This means that there is room for the EU legislature as well as the Member State legislatures to address many of the reported barriers. In this context, we would also like to emphasise the importance of compliance with existing EU rules and the proper enforcement of those rules in and by the Member States. We recommend taking an ambitious approach to strengthening compliance management, not least within the services sector.
- The work conducted thus far by the Member States and the Commission in the Single Market Enforcement Task Force (SMET) seems to have been fruitful, especially regarding the requirements on professionals providing cross-border services. We also note that work is on-going as regards certain barriers in, for example, the construction sector and the energy sector. We believe that the SMET should continue, if not increase, its efforts to remove barriers in these sectors. We would also like to encourage members of the SMET to initiate discussions on barriers in the Single Market for other green services.
- The transition pathways could provide an important tool to analyse and address barriers to green services that are of particular importance in each ecosystem. However, the scenarios for transition pathways that have been presented thus far, have seen very limited discussions on regulation in general and on regulation and barriers affecting green services in particular. It is therefore encouraging that the blueprint for transition pathways developed by the Industrial Forum includes the heading "Regulation and Public Governance", with the aim to, *inter alia*, map regulatory enablers and barriers to the green transition. We encourage the Commission to make use of this heading to discuss how barriers to the cross-border provision of relevant green services can be addressed. The transition pathways should contribute to a well-functioning single market.
- While it is important to note that there is no inherent contradiction between the ecosystems approach and ensuring the free movement of services in the EU, we see some risks from a Single Market perspective. Considering the horizontal nature of many services, including green services, one of the risks is that services that do not fall within a specific ecosystem are left aside and not given due attention. There is also a risk, more generally, that the importance of a well-functioning Single Market, with the free movement of capital, goods, persons and services, is eclipsed by other policy objectives within the industrial strategy.
- Against this background, any legislative measures proposed by the Commission to promote and facilitate the green transition in a specific ecosystem should take into account the role played by services. The Commission must also ensure that the measures do not create barriers to the free movement of related green services. Conversely, any proposals to revise or further harmonise regulations related to services (including digital services) should take into account the horizontal and cross-ecosystems functions of services. Measures that limit or prevent new and innovative applications of green services should be avoided.

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See also Proposal for a Regulation of the European Parliament and of the Council establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC, COM (2022) 142 final

Sammanfattning på svenska

Summary in Swedish

Denna studie har två syften. Det ena är att analysera tjänsters roll i att uppnå grön omställning inom EU:s industriella ekosystem. Det andra är att identifiera vilka hinder som finns för den fria rörligheten för de tjänster som identifierats som betydelsefulla för att uppnå den gröna omställningen av ekosystemen.

I den första delen av studien redogör vi för innehållet och målsättningarna i EU:s gröna giv samt i EU:s nya industristrategi. Med industristrategin följer ett nytt angreppsätt till konkurrenskrafts- och inre marknadsfrågor, i vilket begreppet industriella ekosystem spelar en viktig roll. Vi diskuterar några tänkbara utmaningar och möjligheter med detta angreppssätt.

Studiens andra del syftar till att belysa tjänsters roll i att uppnå den gröna omställningen, såsom den förstås inom EU. Vi tar målsättningarna i EU:s gröna giv som utgångspunkt och definierar ”gröna tjänster” som alla tjänster som potentiellt kan bidra till att göra produktionssystemen i EU:s industriella ekosystem mindre koldioxidintensiva och mer cirkulära samt se till att de i högre grad skyddar naturen. Vi tar sedan fram en bred, indikativ lista – vilken baseras på en genomgång av existerande litteratur – av tjänster som alla bidrar till att göra EU:s industriella ekosystem grönare.

I syfte att ge en djupare förståelse för vilken typ av tjänster som bidrar till den gröna omställningen och på vilket sätt det sker, illustrerar vi med exempel från två industriella ekosystem. Dessa två är ekosystemet för energiintensiva industrier och ekosystemet för bygg och anläggning.

Vad avser ekosystemet för energi-intensiva industrier nämns ett flertal tjänster i litteraturen som bidragande till den gröna omställningen. Exempel på sådana tjänster är installations-, underhålls-, och reparationstjänster, design- och ingenjörstjänster, tjänster för avfallshantering och återvinning, dataanalystjänster och miljökonsulttjänster.

När det gäller ekosystemet för bygg och anläggning ser vi att ingenjörs- och arkitekttjänster samt olika typer av specialiserade byggtjänster spelar en framträdande roll för att nå ekosystemets miljömål. Andra exempel på tjänster som nämns är designtjänster, projektledningstjänster, installations-, underhålls-, reparations-, och övervakningstjänster samt tjänster inom informationsteknologi och telekommunikation.

Vår studie visar att tjänster bidrar till den gröna omställningen på olika sätt. Dels spelar vissa tjänster en nyckelroll för att underlätta den gröna omställningen i enskilda ekosystem, dels fyller många tjänster en horisontell funktion och bidrar till att göra flera ekosystem grönare. För att illustrera spelar arkitekt-, ingenjörs-, och byggtjänster samt underhålls-, reparations- och installationstjänster, en stor roll för att göra Europas fastighetsbestånd mer energieffektivt och för att minska utsläppen relaterade till konstruktion, renovering och rivning av byggnader. Samtidigt bidrar tjänster som energidistributionstjänster, avfallshanteringstjänster, affärstjänster och telekommunikationstjänster till att samtliga ekosystem kan ställa om, till exempel genom att bidra med viktiga insatser till andra tjänster eller i tillverkning av produkter.

I studiens tredje del listar vi de hinder för den fria rörligheten för gröna tjänster som identifierats i andra studier. Vi kan se att många av tjänsterna i vår lista över gröna tjänster stöter på hinder för marknadstillträde, hinder för fritt utövande av tjänsteverksamhet och hinder i form av komplexa administrativa förfaranden, bristande information och skillnader i lagar och regler (det senare benämns ofta som regulativ heterogenitet). Hinder medför ofta ökade kostnader för handel och kan begränsa den gränsöverskridande handeln med gröna tjänster.

Vi ser att de som tillhandahåller affärstjänster (inbegripet till exempel juridiska tjänster, arkitekt- och ingenjörstjänster och bokförings- och revisorstjänster), och byggtjänster ofta möter hinder på den inre marknaden. Företag som tillhandahåller affärstjänster måste ofta förhålla sig till olika typer av hinder för marknadstillträde, såsom krav på yrkeskvalifikationer, tillståndskrav och regler som rör etablering. Tillhandahållare av byggtjänster möter inte sällan olika typer av tillståndskrav. Det faktum att denna typ av regler ofta skiljer sig mellan medlemsstaterna innebär att företag måste anpassa sig efter olika regelverk. Detta ökar den administrativa börda som läggs på företagen. Om informationen om vilka regler som är tillämpliga dessutom är bristfällig kan det bli ett hinder i sig.

Vi tittar också översiktligt på hur olika typer av hinder kan angripas. Detta görs mot bakgrund av en diskussion om olika ”grundorsaker” (root causes) till att hinder uppstår. Sådana grundorsaker omfattar politiska eller regulativa vägval på EU-nivå, ofullständigt eller felaktigt genomförande av EU-regler, nationella regler som är oförenliga med EU-rätten och fragmentering (eller regulativ heterogenitet).

Vår slutsats är att tjänster har en nyckelroll i att uppnå den gröna omställningen av EU:s industriella ekosystem. Det följer att hinder för gränsöverskridande handel med tjänster riskerar att sakta ner omställningen. Många av de hinder som rapporterats av europeiska företag är antingen s.k. regulativa hinder (dvs. de härrör från en lag eller regel) eller hinder med nära koppling till en reglering på EU-nivå eller nationell nivå. Därför understryker vi vikten av att beslutsfattare fortsätter att aktivt verka för att återstående hinder för den fria rörligheten för tjänster undanröjs samt för att den regulatoriska miljön är gynnsam för utvecklingen av nya, innovativa gröna tjänster och deras fria rörlighet på den inre marknaden.

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The National Board of Trade, via SOLVIT, helps businesses and citizens encountering obstacles to free movement. We also host several networks with business organisations and authorities which aim to facilitate trade.

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Our analyses and reports aim to increase the knowledge on the importance of trade for the international economy and for the global sustainable development. Publications issued by the National Board of Trade only reflect the views of the Board.

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