# digital for green

## How Vodafone can support Europe's green recovery goals

**The EU has pledged to become climate neutral by 2050 and a global climate leader in the coming years.**

Achieving these goals and managing Europe's green transition in a socially equitable way puts digital innovations at the forefront of Europe's approach.

**In particular the ICT sector is a key enabler and multiplier for improved energy-efficiency, the decarbonisation of transport and agriculture, plus the restoration of biodiversity. It should play a central role in the post-pandemic economic recovery.**

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> **"We are shaping the world we want to live in. A world where we use digital solutions to build a healthier, greener society."**

**Commission President Ursula von der Leyen**

Digital tools can also contribute to the social fairness of the green transition by helping individuals and small businesses to adapt quickly to the deep structural changes of the coming years. Innovation in digital tools supports sustainable job creation, the resilience of SMEs and the transition to circular business models. This is why the interaction of the green and digital transitions is critical for relaunching and modernising the EU economy.

The European Commission and Member States have recognised this. Digital green solutions are at the very heart of the Commission's NextGenerationEU guidance and 24 Member States have pledged in the **'Declaration on a Green and Digital Transformation'** to use NextGenerationEU funds to accelerate the use of digital technologies for the benefit of the environment.

Vodafone is committed to supporting this effort and has developed a range of proposals on how the EU's ambitious targets can be translated into reality within the next five years.

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# National recovery & resilience plans for the green and digital relaunch

**NextGenerationEU funds are providing a once in a generation chance for a deep digital and green transformation of the EU's economy.**

This is why Vodafone is working hand in glove with EU governments to maximise the opportunity and is working with the EU institutions to ensure Member States' national recovery plans support the EU's twin digital and green transition.

Member States must make sure that the digital component of the plans contributes to the EU's Green Deal and Digital Decade goals. **'Digital for green' measures can contribute at the same time to the green (37%) and digital (20%) spending targets.**

## 37%
Green

## 20%
Digital spending targets

> "The digital component will also be key in reaching the ambitions of the European Green Deal and the Sustainable Development Goals. As powerful enablers for the sustainability transition, digital solutions can advance the circular economy, support the decarbonisation of all sectors and reduce the environmental and social footprint of products placed on the EU market. For example, key sectors such as precision agriculture, transport and energy can benefit immensely from digital solutions in pursuing the ambitious sustainability objectives of the European Green Deal

**Commission Recovery & Resilience Fund guidance to Member States**

**An important focus of the national recovery & resilience plans is to support the EU's strategic autonomy.**

This includes strengthening the resilience of critical supply chains and investments in digital technologies to increase the EU's competitiveness on the global level.

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# Vodafone 'digital for green' solutions for NextGenerationEU

**Vodafone is helping Member States identify practical proposals to make the most out of NextGenerationEU. The potential is huge: the Commission estimates that ICT solutions alone can achieve a 10% reduction of total CO2 emissions by 2025.**

**The Declaration on a Green and Digital Transformation** sets out the objective of increased energy and resource efficiency, reduced pollution and restored biodiversity through digital tools. We are signatories of the European Green Digital Coalition and have pledged to help achieve these goals with our digital for green tools.
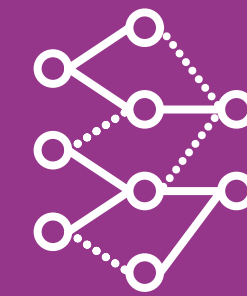
Energy production is the main contributor to the EU's carbon footprint, **accounting for more than 75% of the EU's CO² emissions.** We can use data to trace where and when it is best to use electricity. This reduces wasteful and unnecessary consumption in agriculture, manufacturing, buildings and cities. Our use cases also support **smart grid integration helping the transition to renewable energy.**
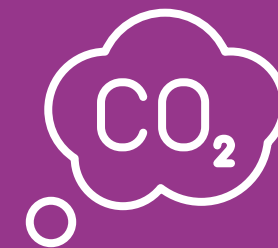
Our digital solutions can **reduce emissions by up to 37% in emission-intense sectors** such as transport, agriculture and local transport.

We help the restoration of biodiversity and the EU's transition to a circular economy with **digital tools leading to smarter manufacturing** significantly reducing the use of fuel, pesticides and fertilisers in agriculture.

## Vodafone is also committed to reducing our own carbon footprint and taking the lead in the sector.

Vodafone's European networks will be powered by 100% renewable energy from July 2021 and Vodafone will reach global net zero by 2040. We continue to increase the use of low-carbon and recycled materials for our devices and will be an early adopter of the EU's new rules under the Eco-Design Directive.

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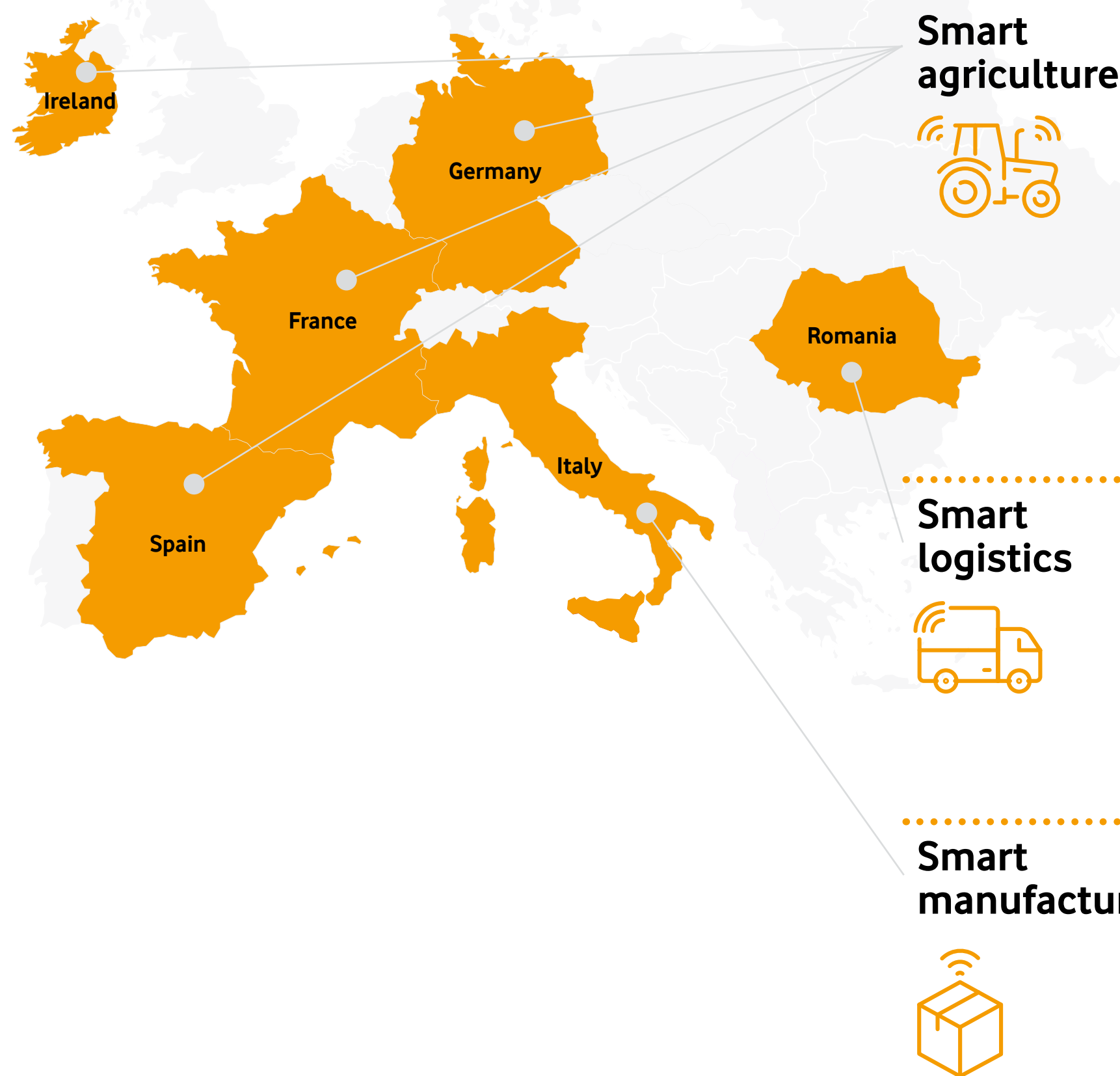
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# Vodafone's 'digital for green' applications as critical enablers for Recovery & Resilience Facility objectives

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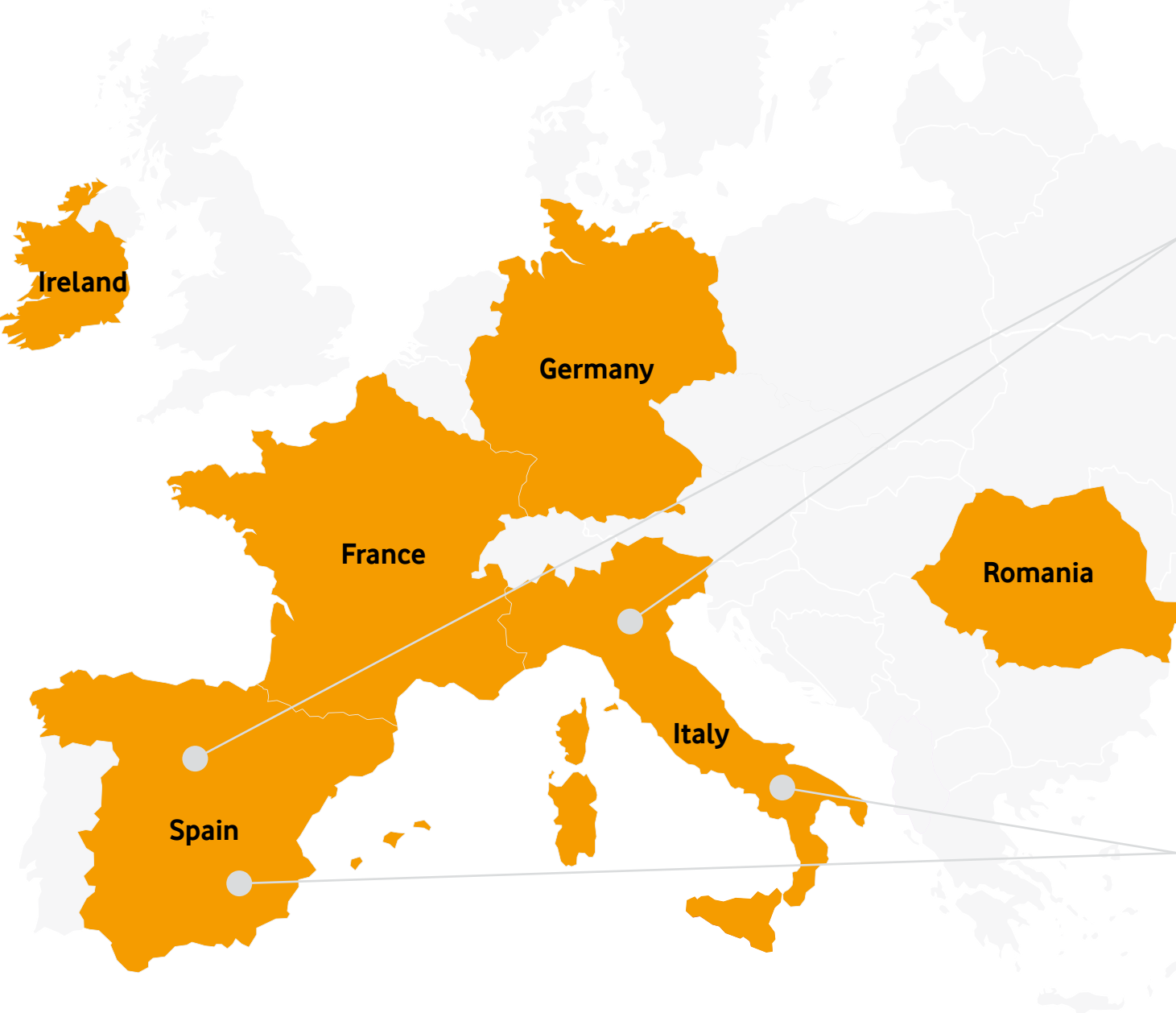| | Proposal | Impact | Specific RRF green objectives addressed | EU Taxonomy objectives addressed | Specific RRF digital objectives addressed | RRF horizontal objectives addressed |
|---|---|---|---|---|---|---|
| **Smart agriculture** | Connected monitoring devices and farming equipment enable farmers to manage their crops and livestock more efficiently | Lower emissions from fertilisers; lower impact on natural resources; restoration of biodiversity | Reducing greenhouse gas emissions; Reducing waste; Improving water management and reducing pollution; Restoration of ecosystems and biodiversity; Investments into a circular economy; Promoting sustainable food production | 1) Climate change mitigation; 3) Sustainable use of water; 5) Pollution prevention; 6) Protection and Restoration of biodiversity | Bridging the digital divide between rural and urban areas; Digitalisation of businesses: speeding up decision-making and execution through automation | Strengthening strategic autonomy by increasing the resilience of critical supply chains and investments in digital technologies to increase the EU's competitiveness |
| **Smart logistics** | IoT technologies in vehicles optimise route management, maintenance and driver behaviour | Cuts in fuel consumption of up to 30%; reduced emissions; less waste; supply chain traceability | Reducing greenhouse gas emissions; Increasing the use of sustainable and environmentally friendly transport; Reducing waste | 1) Climate change mitigation | Digitalisation of businesses: speeding up decision-making and execution through automation; Investment in digital capacities to optimise resilience of supply chains | Strengthening strategic autonomy by increasing the resilience of critical supply chains and investments in digital technologies to increase the EU's competitiveness |
| **Smart manufacturing** | Connected machinery can be continuously monitored to reduce maintenance and downtime, as well as allowing remote monitoring to reduce engineer callouts. NB-IoT networks also enable low-power sensors to reduce energy consumption | Increased energy efficiency; reduced wastage and pollution; lower emissions | Reducing greenhouse gas emissions; Reducing waste; Investments into a circular economy | 1) Climate change mitigation; 5) Pollution prevention | Digitalisation of businesses: speeding up decision-making and execution through automation | Strengthening strategic autonomy through investments in digital technologies to increase the EU's global competitiveness; Strengthening economic resilience |

Ireland

Germany

France

Romania

Spain

Italy

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# Vodafone's 'digital for green' applications as critical enablers for Recovery & Resilience Facility objectives

| | | Proposal | Impact | Specific RRF green objectives addressed | EU Taxonomy objectives addressed | Specific RRF digital objectives addressed | RRF horizontal objectives addressed |
|---|---|---|---|---|---|---|---|
| **Smart cities** | | Optimising municipal services using Vodafone's Smart Cities Platform to deliver energy savings, reduce water waste and improve public transport | More energy-efficient delivery of services such as public transport and street lighting (savings of up to 68% in past projects); better traffic flows and reduced congestion and emissions; less pollution and waste | Reducing greenhouse gas emissions; Improving the energy and resource efficiency of public infrastructures; Increasing the use of sustainable and environmentally friendly transport; Reducing waste; Improving waste management systems and water management; Reducing pollution; Investments into a circular economy | 1) Climate change mitigation; 3) Sustainable use and protection of water; 5) Pollution prevention and control | E-government, digital public services and local digital ecosystems: modernising public administration using key digital enablers | Investment under flagship area 'Reshape + Refuel' with focus on making urban mobility cleaner; Promoting the EU's economic and social cohesion |
| **Smart energy meters** | | Enabling households and businesses to monitor and reduce their energy use | Reduced energy consumption through behavioural change and next generation grid management | Reducing greenhouse gas emissions; Improving carbon pricing; Improving the energy and resource efficiency of public infrastructure; Improving energy performance of building stock; Improving water management, ; Investments into a circular economy | 1) Climate change mitigation; 2) Sustainable use of water | Digitalisation of businesses; Greening the digital sector by reducing energy consumption | Promoting the EU's economic and social cohesion and mitigating the socio-economic impact of the crisis |

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# Case study
# 'Digital for Green in Agriculture'

Smart agriculture is one of the areas where Vodafone's 'Digital for Green' tools can deliver on a range of core objectives for the Recovery & Resilience Facility and Europe's green and digital recovery more broadly. Agriculture currently accounts for 10% of total EU greenhouse gas emissions and 44% of total water abstraction in Europe and is a key sector where the transition to a smart ecosystem will be integral to promoting and delivering greater sustainability and strategic autonomy.

**Based on our analysis, we have concluded that we have the potential to abate 90 million tCO2e and improve 20 million farmer lives by 2025.**

Connectivity providers such as Vodafone are already enabling a greener approach, with more efficient use of resources via real-time monitoring and aid the transition to a circular economy. However, to realise the full benefit, digital technology will need to be deployed at scale. The Recovery & Resilience Facility creates the ideal conditions for partnerships between the agricultural industry, governments and connectivity providers to deliver on the EU's objectives of greener, smarter and digital ways of working in agriculture, allowing for reduced emissions, less waste and pollution, enhanced protections for biodiversity and more sustainable and resilient food production chains within the EU.

## Sensing4Farming with Emilio Moro in Spain

Emilio Moro, a Spanish wine producer, is aiming to maximise efficiency and minimise the environmental impact of its wine production. Through Vodafone's Sensing4Farming solution, a network of sensors has been installed in Moro's vineyards which, combined with high-resolution satellite images obtained in real time, allow for the measurement of key environmental factors such as humidity, temperature, soil conductivity, water absorption and the health of the grapevines. This data is sent to the winery oenologists and technicians so that the winery can identify the ideal quantity of irrigation and fertiliser needed by the vines, as well as the best windows for pruning and harvesting.
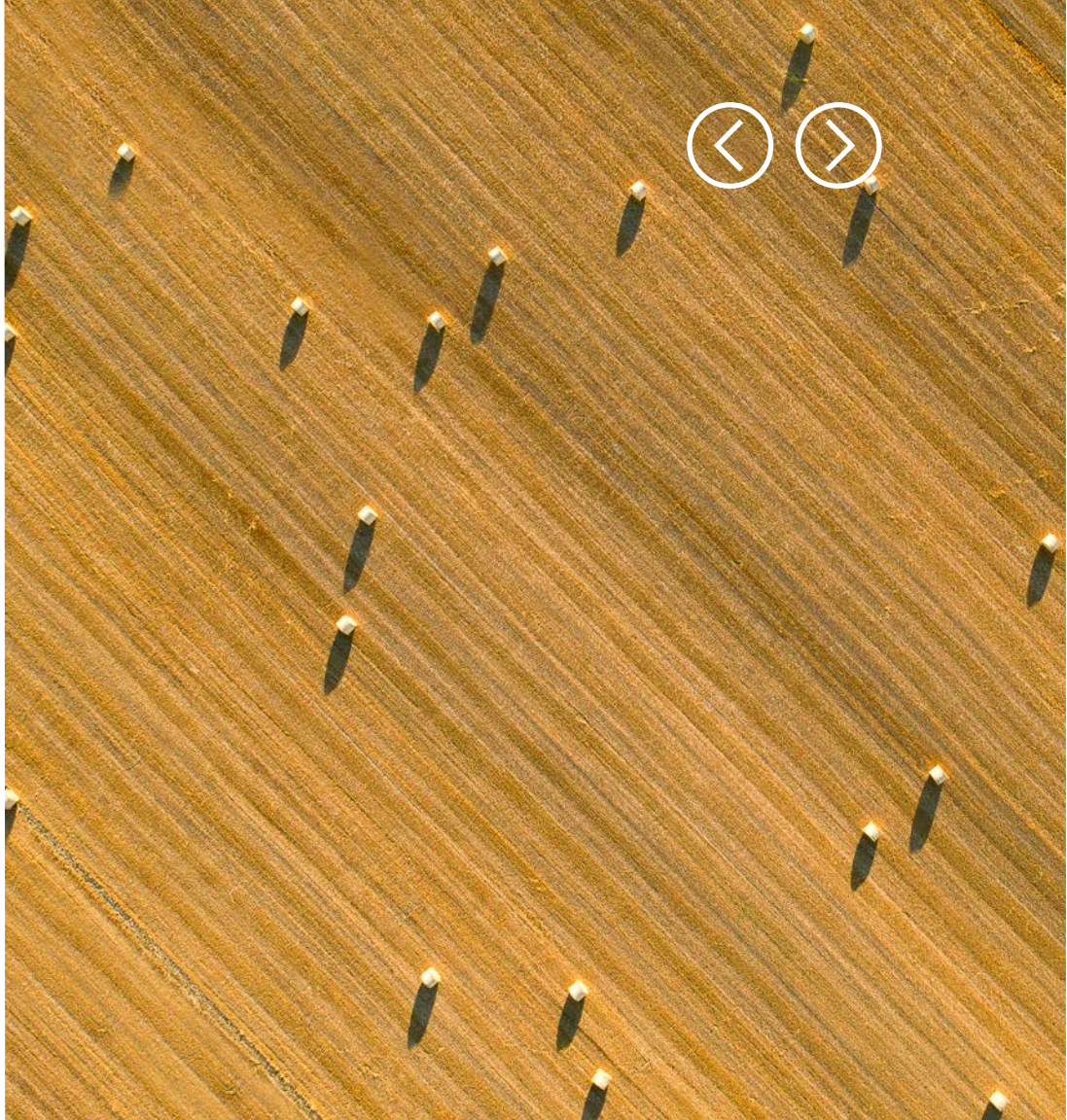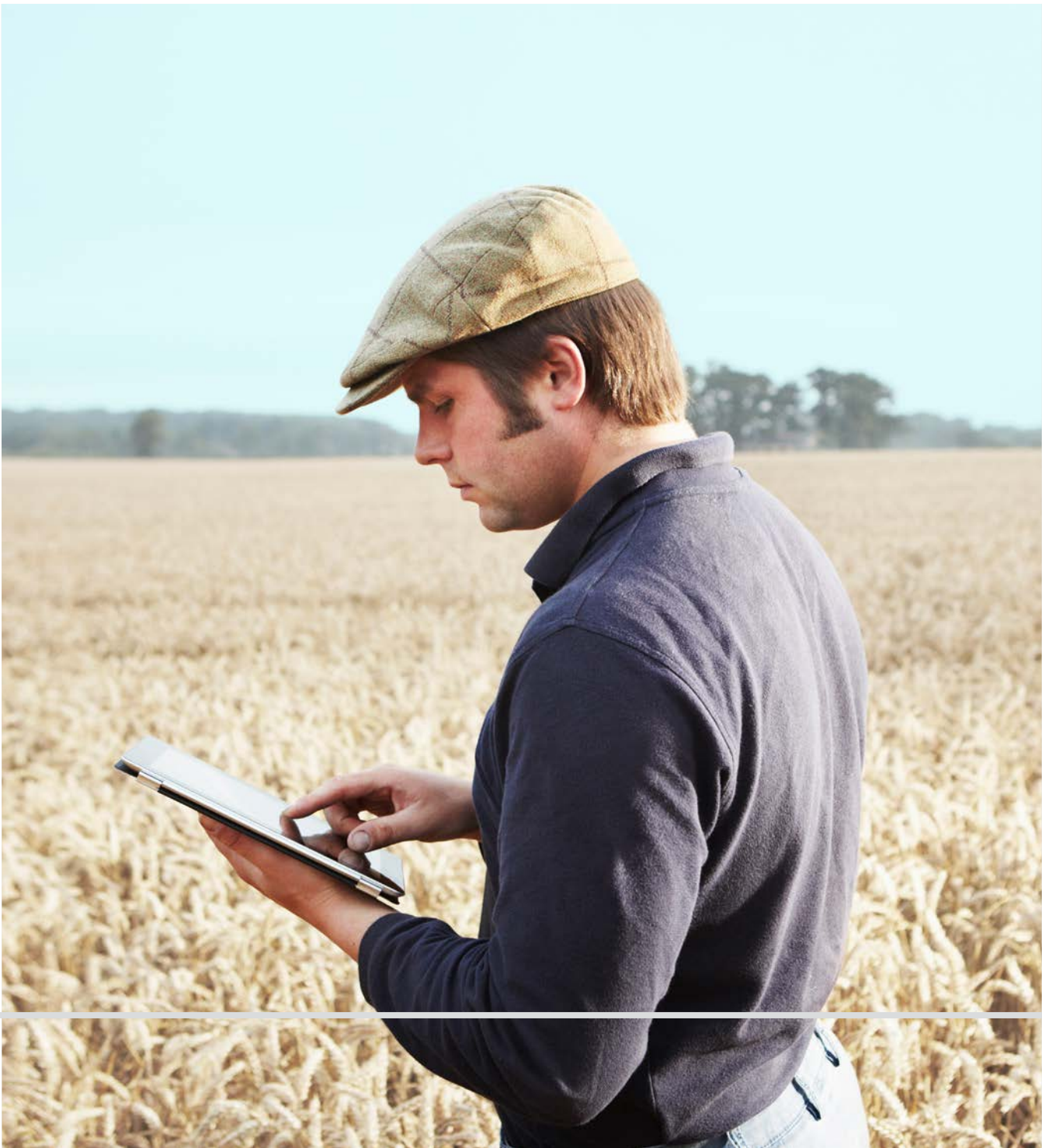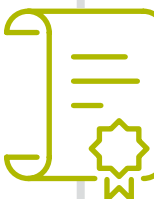
### The key benefits of the project include:
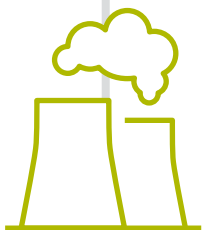
**Reduced greenhouse gas emissions** through reduced energy consumption;
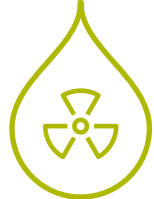
**Reduced water-waste and pollution;**

**Enhanced protection of biodiversity and transition** to a circular economy;

**Strengthened competitiveness** through reduced costs and increased quantity and quality of production.

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# 'Digital for Green in Smart Cities'

Many of the challenges the Recovery & Resilience Facility seeks to address are accentuated in European cities. European cities also account for the majority of the EU's overall energy use and 72% of greenhouse gas emissions.

**Digital tools can provide solutions to issues ranging from high urban energy consumption to making urban transport cleaner and improving water and waste management.**

Vodafone's approach is an integrated smart cities platform, making cities more efficient, sustainable, and adaptable. To achieve these benefits, it is not enough for cities to be connected; rather, cities need to be holistically 'smart'. Cities will need to be able to use a variety of data gathered from different sources and sensors to improve services, ensuring seamless integration of different city services, and evolving with citizens' changing demands. The need for a centralised data structure has been made especially clear by the experience of COVID-19. During the crisis, to respond to the rapid shifts in citizen flows and demands on public services, a centralised view of the data available was needed so that officials and market participants could digest the data, generate critical insights, make decisions quickly and take action. This need is likely to become more pressing with the expected evolution of European post-pandemic structures, and the need to continue to respond to the threat of climate change. The Recovery & Resilience Facility gives Member States the chance to make decisive steps forward in the digitalisation of cities and public services.

## The 'Smart Sevilla Council'

Given its needs as a growing metropolitan area and economic centre, Sevilla received €19m in EU funding to implement solutions promoting integrated and sustainable urban development. Vodafone is working with the Sevilla municipal government to integrate the Vodafone Smart Cities Platform, creating a single platform to monitor a wide range of its services. The Platform is designed to provide transparency to public bodies, and by combining analytical capabilities with the integration of multiple data sources, it enables efficiency improvements and higher-quality municipal services:

**Energy:** Using mobility data in different areas to adapt lighting needs, optimising energy usage to demand patterns and improving efficiency;

**Mobility:** Using citizen mobility data to identify required changes to bus frequencies or stops, making the most of limited public transport resources, reducing emissions and air pollution;

**Environment:** Using consumption data and patterns to reduce waste and predict breakdowns / faults, ensuring efficient and effective continuity of services and investment into circular business models.

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# Case study
# 'Digital for Green in Smart Logistics'

Smart logistics is one of the most straightforward cases where digital solutions remove unnecessary $CO_2$ emissions from day one, delivering on the core green objective of climate change mitigation where alternative fuels are not yet available.

**Transport is responsible for 22% of EU greenhouse gas emissions and smart logistics improve vehicle and route efficiency, reducing fuel consumption by up to 30% and lowering congestion, resulting in improved air quality for EU citizens on top of a tangible climate effect. Based on an illustrative 50% adoption across commercial vehicles and an average impact of 15% across the EU, IoT-enabled smart logistics could save as much as 16.5m tonnes of $CO_2$ emissions annually in the EU.**

The advantages go beyond reducing emissions. IoT solutions in transport can act as a key booster for the digitalisation of businesses, including smaller transport companies, thus strengthening the EU's economic cohesion and resilience and mitigating the socio-economic impact of the climate crisis. Tools such as vehicle tracking also lead to more resilient and stable supply chains, improving Europe's industrial competitiveness and strategic autonomy.
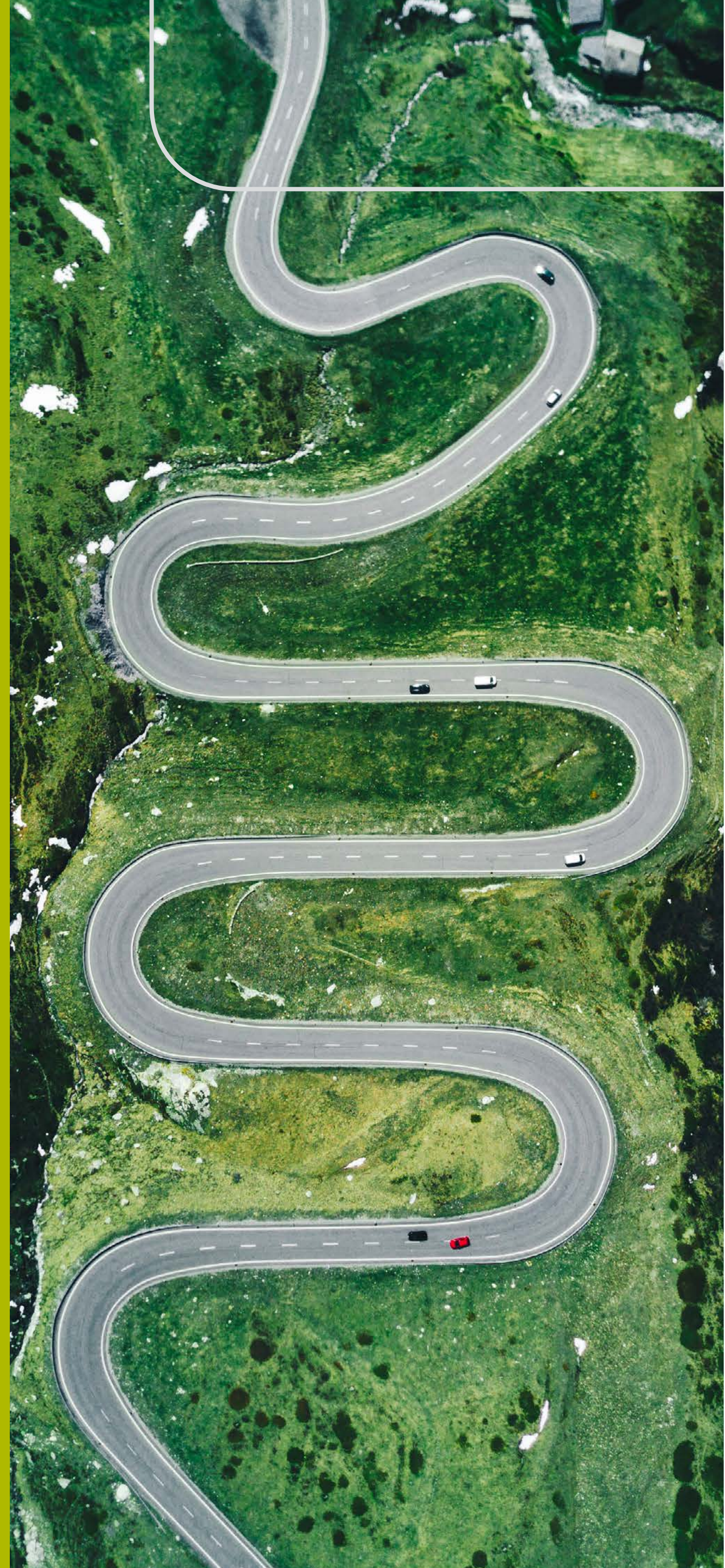
## Vehicle tracking for a Romanian transport company

A Romanian company carrying out deliveries of goods across the EU single market for clients relying on just-in-time service has equipped their fleet with IoT solutions for location data and cross-company coordination. The use of smart logistics has substantially reduced the distances travelled and the fuel consumption of vehicles, while also providing more predictability for drivers' driving schedules.
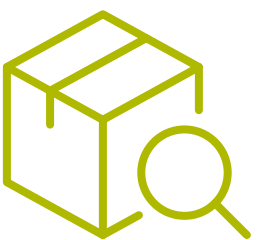
### The key benefits of the project include:

**Reduced greenhouse gas emissions** through reduced fuel consumption;
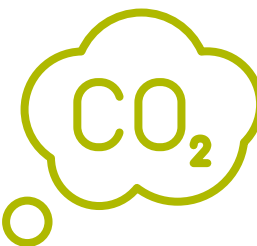
**Reduced air pollution** through avoiding congestion and unnecessary distance travelled;

**Optimised supply chains,** strengthening the resilience and competitiveness of the EU's industrial base and EU strategic autonomy.

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Digital for green is no longer a 'nice to have' for governments, it has become a key enabler to achieve the EU's strategic goals and respond to citizens' needs. This is why we want to work with governments to ensure we have the right investments, targets, policies and measurements to deliver on the Green Deal European citizens' deserve.

We have clear timelines and accountabilities to deliver on the Green Deal – let's make sure we do it in the most efficient way. Digital skills and tools have the ability to unlock the green transition of many sectors. The EU's green transformation can be accelerated thanks to energy and resource savings enabled by digitisation. Europe becoming the leader of human-centered digital technologies needs sustainable networks and connectivity. Europe becoming an industrial leader needs smart solutions.

Recovery funds and ongoing sustainable finance discussions are the first step on the path to a green transition.

## We stand ready to partner in national efforts for a profound recovery and digital and green transitions.

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