GREEN AND DIGITAL: EUROPE'S TWIN TRANSITIONS

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The European Commission is placing its hopes on digital innovation as one of the driving forces behind the EU's shift to a zero-carbon economy. In this special report, EURACTIV looks at the opportunities and challenges related to the EU's "twin green and digital transitions".

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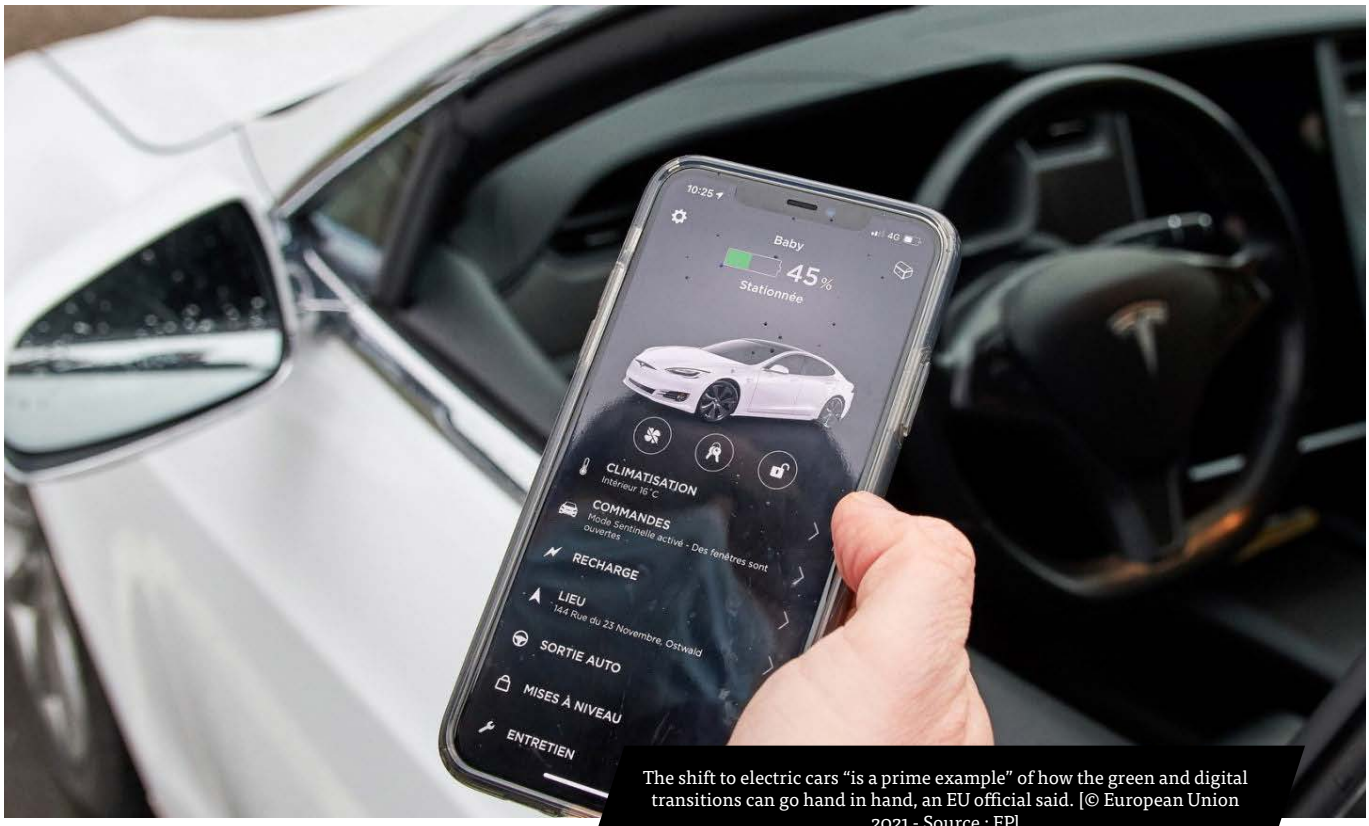
No Green Deal without digital,' EU official says

By Frédéric Simon | EURACTIV.com



The shift to electric cars "is a prime example" of how the green and digital transitions can go hand in hand, an EU official said. [© European Union 2021 - Source : EP]

Digital technologies have the potential to unlock carbon emissions cuts in sectors that were previously considered hard-to-abate, such as buildings, industry and agriculture, a European Commission official said.

"There is no Green Deal without digital – there is no doubt about this," said Daniel Mes, an official who works on the staff of Frans Timmermans, the European Commission vice-president in charge of the Green Deal.

In a landmark climate law agreed earlier this year, the European Union adopted ambitious goals to become climate neutral by 2050 and cut carbon emissions by 55% before the end of this decade.

Those targets "are a call to arms" for the tech industry "to help us achieve these very ambitious goals," Mes told participants at an online event hosted last week by trade organisation DigitalEurope.

The shift to electric mobility "is a prime example of how the two transitions can go hand in hand," Mes said, citing automation features and software that is needed to charge up electric vehicles.

Turning to agriculture, he mentioned novel "fertilisers-as-a-service" contracts where farmers get the exact amount of fertilisers they need delivered automatically, eliminating the need for stockpiles.

In terms of buildings, automation and control equipment allow

optimisation of lighting, heating and cooling, and ventilation systems.

"No policymaker working on the Green Deal – whether in cities, on building renovations, on the transport system or farming of the future – can work seriously on this without a plan for digital," Mes emphasised.

"We need these transitions to go together," he said, adding: "Digital is a big weapon – if not the biggest weapon – to help us achieve our climate goals".

MEASUREMENTS

But for that to happen, Mes said reliable metrics were needed – both to measure the amount of avoided emissions and to evaluate the carbon footprint of the digital sector itself.

"You can't manage what you can't measure," said Jill Duggan from the Environmental Defense Fund (EDF), a non-profit advocacy group based in the US.

According to Duggan, technology now allows measuring greenhouse gas emissions with a level of accuracy that was previously unthinkable 15-20 years ago.

One example is the international methane emissions observatory, which uses satellites to measure methane emissions from oil and gas infrastructure and agriculture. Similar satellites are now being rolled out to measure CO2 concentrations in the atmosphere.

"We used to have to rely on states to report on their emissions, but it's becoming more and more possible using digital technologies and satellites to understand exactly where the large sources of emissions are and to verify what is happening," she said.

Digital technologies can also help improve resource efficiency in the construction sector or industries like automotive, she said.

"The estimate is that we can use just 30% of the steel in buildings or in cars that we needed previously because digital technologies allow us to measure at a far more granular level exactly what is needed to be safe," Duggan said.

EUROPEAN DATA SPACES

The importance of measurements and having reliable data on carbon emissions was also emphasised by Marc Nézet from French tech company Schneider Electric.

For him, this will require clear standards from regulators on the methodologies applied to measure carbon emissions in different sectors of the economy.

"We need to be precise on what we want to measure," Nézet said – whether it is in sectors like buildings, transport, or farming. Getting those measurements "across the life cycle of each of those processes is extremely important," he stressed.

The European Commission has started reflecting on this as part of its proposed regulation on data governance put forward in November last year. The regulation includes proposals to create "common European data spaces" in healthcare, the environment, energy, agriculture, mobility, finance, manufacturing, public administration, and skills.

"We face here a unique opportunity to promote the pooling of sustainability data," Nézet said. "And that would really define the singularity of a European sustainability data space to the benefit of society," he said.

According to Nézet, this is "not a defensive approach but a very offensive approach" where better sustainability measurements support faster and better decisions in all sectors of the economy.

EIGHT IDEAS FOR THE GREEN AND DIGITAL TRANSITION

On Thursday (27 October), DigitalEurope released a report putting forward eight ideas to accelerate the twin digital and green transitions.

"By 2030, digital technologies have the potential to help other industries save 20% of global CO2 emissions," said Cecilia Bonefeld-Dahl, DigitalEurope's director-general, in a foreword to the report.

Examples cited in the report include Vienna, where buildings' emissions were reduced by 71% through a combination of digital technologies and data analytics. In the Netherlands, the Port of Rotterdam is on track to halve its emissions by 2030, thanks to route planning optimisation. In Belgium, thanks to AI-based tools, a 5-6% increase in renewable power was integrated in the country's electricity grid.

But there are challenges in

implementation, with skills shortages ranking at the top of concerns for the IT sector. In Belgium, for instance, there are 8,000 positions for digital experts that are currently still to be filled.

In the private sector, companies are also reluctant to share data because it is seen as commercially sensitive information, Duggan said, calling for "a culture shift" with regards to transparency.

The IT world itself needs to be more conscious of its carbon footprint. A recent study estimates that electricity demand from the ICT sector will grow by 50% by 2030, reaching 3,200TWh. According to the study, 75% of that growth is expected to come from data centres and networks, including cloud storage for mobile applications, streaming and gaming.

But the sector is also improving. A survey carried out by Schneider Electric in 2020 showed data centres could cut their energy consumption by 24% thanks to digital technologies. With growing shares of renewables in the energy mix, this led to a 50% reduction in the CO2 footprint across the 50 data centres surveyed, Nézet said.

Worldwide, the share of the IT sector in electricity demand is 8.7%, "which I would say is reasonable given the impact it has on our life," Nézet said.

GREEN FINANCE TAXONOMY

At the EU level, there are also incentives for the digital industry to improve its carbon footprint. For instance, data centres that follow the EU code of conduct on energy efficiency are already eligible for a green investment label under the EU's sustainable finance taxonomy.

Some in the industry are now pushing for 5G telecom infrastructure to be added to the taxonomy, but Mes said it is still too early for that.

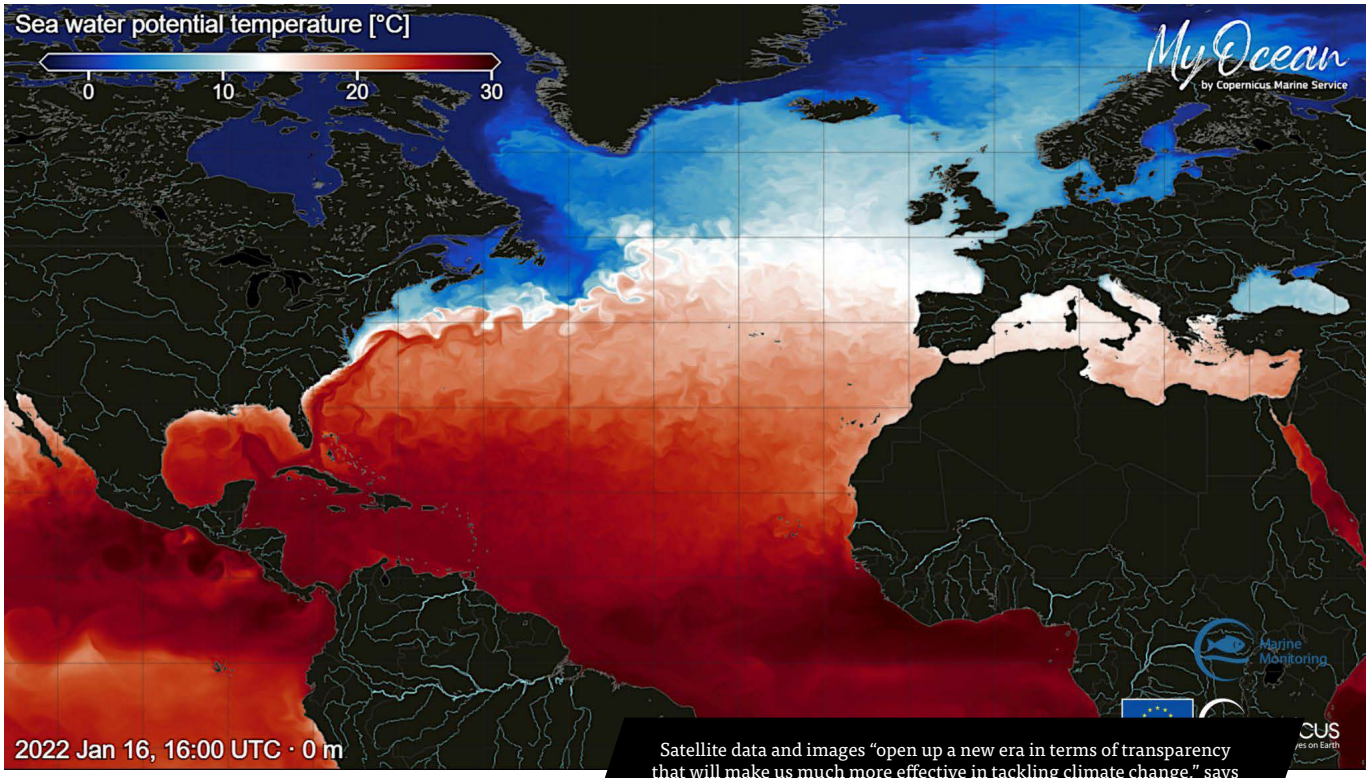
"We just didn't have enough meat on the bones yet" to define sustainability criteria for telecoms equipment, he said. A 5G network, for instance, is not something that is laid out purely to cut emissions, he remarked – it is meant to achieve other things. He added that there is not yet an EU code of conduct for telecom networks comparable to what has been put in place for data centres.

But he did not rule out the possibility, saying "there will be a new round" of EU taxonomy rules where the inclusion of telecoms networks can be envisaged.

INTERVIEW

Campaigner: Digitalisation opens 'new era of transparency' for climate policy

By Frédéric Simon | EURACTIV.com



Satellite data and images "open up a new era in terms of transparency that will make us much more effective in tackling climate change," says Jill Duggan of the Environmental Defense Fund Europe. [Copernicus.eu]

Digital technologies like earth monitoring satellites allow for real-time automatic data collection on things like greenhouse gas emissions, opening up a new world of possibilities for policymakers, says Jill Duggan.

Jill Duggan is the executive director of the Environmental Defense Fund Europe, a non-profit charitable organisation.

Digitalisation is sometimes portrayed as an enabler of the green transition because it allows measuring things more accurately. What do you think are the implications for environmental policymaking? Is it another tool, or do you believe this is something transformational?

I think it could potentially be transformational, but as with all innovations, you have to be careful what you wish for and what to expect.

There is an adage that 'you can't

manage what you don't measure'. And one of the main things that has improved considerably over the last 20 years is the ability to use digital technology to measure things like environmental pollution more accurately.

I was a UK official when the EU carbon market was launched in 2005. And very quickly, we discovered that information about the source of CO2 emissions was not nearly granular enough. With today's technology, things might have looked quite different.

On carbon emissions, do we now have the desired granularity level when it comes to the data?

What happened very quickly in the setup of carbon markets was an understanding of what needed to be tightened up. So the measurement got better almost instantaneously within the first few years, and I would expect this process to continue.

Similarly, on methane, 10 years ago, leakage measurement was pretty poor. Since then, new tools like satellites have developed to meet those needs, which informed recent decisions like the global methane pledge at COP26.

Environmental Defense Fund, through its non-profit subsidiary MethaneSAT LLC is leading the effort to build MethaneSAT, a very high precision satellite capable of quantifying methane emissions around the world in near real-time and which will be launched in about a year from now.

Currently, we have to rely on countries to submit inventories of their emissions. But increasingly, new technologies enable emissions to be tracked and measured through the deployment of ever-better technologies.

And I think there is work to do on other greenhouse gases in that respect. One of the issues we are concerned about at the moment is hydrogen, an indirect greenhouse gas, and recognising that we do not yet have the tools to measure hydrogen leakage with the precision we need to quantify leakage.

Certainly, what digital technologies help us do is to understand better the problem and how to tackle it, which will open up a new era in terms of transparency that will make us much more effective in tackling climate change.

Environmental Defense Fund has been involved in measuring emissions of methane with satellites. How accurate are those measurements? And what kind of information does that bring to policymakers that they did not have before?

It is the level of precision as well as accuracy that matters. While identifying and quantifying the large emission sources is very important, a large proportion of the emissions occur from smaller sources, we need to be able to identify and quantify both.

If you don't have granular enough information, you can miss important things such as the aggregate effects of methane emissions that can be overlooked or feedback loops that might happen, such as methane emissions associated with melting of the permafrost in the Arctic.

These measurements have improved tremendously in the 11 years that Environmental Defense Fund has been involved in quantifying methane emissions, and improving data quality as well as quantity is certainly something we'd want to see with hydrogen as well.

Hydrogen is a volatile gas so measurements for safety have rightly been a priority, but we're also concerned about measuring leakage from different uses of hydrogen in order to ensure that there is not an unintended global warming impact.

Will MethaneSAT be able to identify where leakage is happening in gas infrastructure and how much?

I believe it will, in a way that has not been possible before. But it is not yet possible with all greenhouse gases.

Over the next 30 years, we're going to be increasingly concerned with free-rider states that don't take action on their own emissions, and yet cause a problem for the rest of the world. And I think that transparency issue is one of the things that satellite technology can solve.

In Europe, we have taken an approach where we look at the emissions from production of industrial processes, goods and energy, but we are often criticised for having exported emissions abroad – meaning we have to look at our consumption as well.

In order to look at consumption, you've got to have a much clearer idea and more transparency on emissions in places of production. And one of the things that is likely to happen over the coming decades is those states that are taking action are going to want to make sure that they are importing from other states that are taking action.

I believe digital technologies will increasingly make that much more transparent, and much easier to manage.

The European Commission has said it will start collecting data on methane leaks before the EU can envisage regulating gas imports from foreign countries, with a review planned in 2025 to see whether measures will be imposed on gas imports. By that time, do you believe there will be sufficient data to say for example that gas imported from Russia is more or less carbon intensive than gas imported from Algeria, Norway or the US?

That information is already available to EU member states, maybe not at the level of detail that they might want, but certainly enough to be able to tell good producers.

For example, we can reasonably say that gas imported from Norway has lower methane emissions than gas imported from other places.

Digital technologies will make this much more accessible, much more real-time for them in the future. So it will get easier and easier to discriminate which countries Europe gets its gas from.

Digital technologies are often put forward as a way of managing energy demand on the consumer side. Can you describe the different areas in which this can apply? Has the energy saving potential been quantified?

The most obvious example is electricity, where consumers – both industrial and residential – can be paid to not use it at particular times in order to help manage intermittency of renewable sources.

Now, some of those are more automated than others. But increasingly residential customers will be able to sell back to the grid at the right time to get the best price. As a producer, you're getting the highest price when the grid is in most need of it.

And as we increase the share of renewables in the grid, the problem of intermittency can be somewhat mitigated by using demand side response at 30-minute intervals or even at shorter intervals.

It's one of those things that will benefit consumers and reduce costs, especially for those who are lucky enough to have solar PV and can sell power back to the grid. As we go increasingly to electrification, it's going to be a very important part of the solution to a net-zero energy system, which will help balance energy usage.

With the kind of high electricity prices we're seeing at the moment, it would have been convenient to have demand-side management deployed at scale right now, I guess....

Indeed, but it's not available in sufficient volumes to make a significant difference.

Personally, I'm quite pleased I got off gas entirely – I now have solar PV and a fully electrified heating system – through a heat pump. But not everyone can afford this and it looks like 2022 is going to be equally challenging for energy supply, so the faster we can implement demand side management solutions, the more confidence we can have in the grid.

These problems are also becoming increasingly solvable. So they shouldn't be obstacles to decarbonisation, or electrification, because there are solutions that are coming along with the problems.

One area where digitalisation is expected to play a role in the energy transition is in the building sector. What are the new possibilities in that area? And what can policymakers do to reap the benefits in terms of energy savings?

The smart meter is probably one of those – every EU member state is trying to promote them. But we live in an age of conspiracy theories, and people worry that the smart meter is going to be reporting on them.

Personally, I am a happy owner of a smart meter because it allows me to look at my daily usage, turn the heating down a degree if necessary. However, I do recognise that the benefits of smart meters haven't been fully communicated. It's an educational process, I think, which will happen over time.

In France, there is resistance to the installation of the Linky smart meters, even mayors have resisted their deployment. What are the lessons there when it comes to consumer acceptance of new technologies? Can we expect people to adopt these technologies on a massive scale sufficiently fast to make a significant impact on climate change?

Selling the idea of smart meters to people on the basis of climate change is too ethereal for them. But if you sell it on the basis, for example, that you don't have to let strangers in your home to read the meter anymore, this may make it more palatable to them from a convenience and security point of view.

And being able to take greater control of your energy costs at a time when energy prices are rising is something that should make it more interesting for consumers as well.

We've got to find the right messages that resonate with the public and also recognise that worrying about the internet and potential hacking issues is not an unreasonable fear. We need to take those steps to reassure people and to protect them from the consequences of unintended use of their data.

PROMOTED CONTENT

DISCLAIMER: All opinions in this column reflect the views of the author(s), not of EURACTIV Media network.

Digital must be at the centre of our climate action plan

By Cecilia Bonefeld-Dahl | DIGITALEUROPE

[Digital Europe]

We urgently need to take bold actions to counter the global existential threat of climate change and to promote a green economic recovery.

By Cecilia Bonefeld-Dahl, Director-General, DIGITALEUROPE

COP26, the international climate conference bringing together world leaders next week, will be a landmark event to take action.

Together, Europe has set an ambitious target of reducing our emissions by 55% compared to 1990 levels. If we are serious about reaching that goal, governments, businesses and citizens need to think digital.

It is clear that technology will have a vital role to play in cutting our emissions to sustainable levels. Studies have found that, by 2030, digital technologies have the potential to help other industries save 20% of global CO_2 emissions.

For example, the City of Vienna implemented a smart city project

through digital solutions and data analytics, enabling, amongst other environmental benefits, a reduction of 71% of CO2 emissions in large residential buildings.

The Port of Rotterdam uses a combination of innovative digital technologies, including artificial intelligence (AI), to optimise route planning and berthing of ships, meaning that it is on track to cut 50% of their carbon emissions by 2030.

Increasing the amount of renewable energy production into the power grid will be crucial for decarbonisation, and digital is helping here too. An AI-based tool developed and deployed in a Belgian windfarm increased the amount of renewable energy injected on the grid by 5-6%.

These are just a few examples of the many ways that digital technologies can help other sectors of the economy – like construction, transport, and energy – to become greener.

In collaboration with our member network, DIGITALEUROPE has gathered over 20 of these success stories. We have set them out in our latest report Digital action = Climate action, which we will present on 27 October at our launch event "Uniting the twin transitions".

DIGITAL ACTION *IS* CLIMATE ACTION

To realise this green potential, digital technologies need investment and legislation that encourages them to flourish. Europe therefore needs to step up its digitalisation efforts – such as boosting connectivity and increasing funding for research and development.

In addition, Europe's data strategy needs to include a plan for the public and private sectors to be able to share sustainability data with one another. There is a vast amount of data out there, for example on the weather, water usage, as well as energy consumption. If we harness it, we can provide insights for those businesses and individuals looking to create the next innovative green solution.

And by investing in skills and education, we can ensure that these societal transitions are inclusive. We need to make sure that we empower citizens to succeed in this greener, more digital world.

But for this to happen, Europe must look at digital and climate action together, rather than separate policy areas. Too often, the EU works on them in isolation. The reality is that we cannot achieve one without the other.

We also recommend setting ambitious goals for the adoption of new technologies across our most polluting sectors. This KPI-led approach comes from our 2019 manifesto for a stronger digital Europe, and was adopted by the European Commission in its Digital Decade targets. Now it's time for a digital and green plan in manufacturing, transport and each sector of the economy.

THE INTERNATIONAL DIMENSION

DIGITALEUROPE's vision is for Europe to embrace digital in climate action, to bring benefits in the to society at large and to continue its global leadership by collaborating with our international partners.

Earlier this month, I met with leaders from the EU and the US at the transatlantic Trade and Technology Council in Pittsburgh. Together, we make up a third of global GDP, and we can influence the direction of the global economy if we commit to a joint green and digital economic recovery.

Likewise, we simply cannot reach the global goal of keeping global warming to 1.5 degrees without cooperation with China. Working together on digital standards is an important piece of that jigsaw.

It is our common responsibility towards future generations to do what it takes to protect the environment. It is also our common duty to create a strong and competitive European economy, where people have the means to develop and put into practice the innovative solutions that we need.

Our future depends on it.

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