

Green growth

TMT's contribution to net zero

Panel:

Dr Stephen Unger, *Senior Advisor, Flint Global UK, Director, IIC (Moderator)*

Daniel Mes, *Cabinet Member, Executive Vice-President Frans Timmermans, European Commission*

Dorothee d'Herde, *Head of Sustainable Business, Vodafone Group*

Mats Pellbäck Scharp, *Head of Sustainability, Ericsson*

David Scuderi, *Senior Manager, Public Policy, Amazon*

Nina Beebe, *Head of Region, UK & Europe, Access Partnership*

Daniel Mes

Daniel Mes set out the EU perspective on the subject of sustainable growth. It is a global issue and opportunity, and in Europe the focus is on growth, especially post Covid-19. This is 'Europe's moment', with the opportunity to build back stronger, but is also technology's moment to tackle climate change. Europe wants to be a leader in the discussion about technology 'with a purpose' to address climate change, and to reduce its own carbon footprint. The World Economic Forum has suggested that technology has the potential to reduce its emissions by 15%, representing a quarter of the target reduction in Europe, by 2030. Connectivity will be the main enabler in many climate solutions, especially in areas such as smart farming, urban mobility, wind farms and smart meters. Blockchain could be the technology to bring it all together. Satellites will be an important part of the 'green warning system' for climate change.

The role of regulators

There are also different goals for regulators in this debate. When allocating spectrum for the 5G rollout, the commission hopes that EU member states will look to the long term benefits of addressing climate change, and not just short term economic pressures created by Covid-19. There is a risk that technology can, on one hand, contribute to emission reductions but, on the other, see its own emissions rise. At 2% of global emissions, the digital sector is already close to that of aviation. The current roadmap from the ITU and GSMA envisages a carbon reduction of 45% by 2030 and net zero by 2050 for the telecoms sector. In Europe there is a role for public authorities to be more ambitious than this, ensuring the benchmarks are right, that measurements are accurate and transparent and there is no 'greenwashing'. Examples in the sector include base station cooling through water rather than air, and using excess heat in the buildings on which they stand. Finally, the reason for the focus on this isn't for the benefit of the commission, but for the 'youth on the street' that demonstrated in their millions in favour of addressing climate change. We can be in a position to say that we enabled technology to leave a better, cleaner world.

Dorothee D'Herde

Dorothee D'Herde welcomed the EU's leadership on the Green Deal and Digital Transformation strategy, and set out the ways in which Vodafone was contributing.

Operating in 24 countries gives Vodafone the speed and scale with which to reach the sustainable development goals (SDGs). Covid-19 has revealed the vital role that digital plays in the functioning of society and a sustainable future. The IPCC says that there are only 10 years left to avoid a climate catastrophe, but the good news is that the potential for digital technology to support the green transition is phenomenal. With better connectivity can come smart cities, a smart grid driven by IoT, cloud and hosting services reducing energy use and the power of data to allow better analysis and resource efficiency..

Energy efficiency

Vodafone's energy comes mostly from electricity, 95% from base stations and technology centres. By 2025 the target is to source 100% of Vodafone's energy from renewable sources, but the main focus has been on energy saving. In five years, Vodafone's energy consumption has been flat, in spite of a 1000% increase in network traffic – a 90 per cent reduction in energy per unit of data traffic. This has been achieved by actions such as shutting down old equipment, use of power saving modes and smart monitoring.

Vodafone uses some on-site generation, but mostly uses power purchase agreements with green tariffs and guarantees of origin. The company's geographical footprint makes switching to 100 per cent renewables difficult even in the EU, but the company will continue its efforts and will be publishing targets in the next few months using the GSMA pathway.

Digital transformation

The digital transformation will be critical to the Covid recovery, and the greener Europe that is envisaged. It's an opportunity that Vodafone recognises and wants to get right. The basis for this is the connectivity layer. One fifth of all world's internet traffic travels across Vodafone networks. In the early weeks of the coronavirus pandemics, mobile traffic increased by 15 per cent, broadband by up to 50 per cent. Despite this, there was only a limited increase in energy consumption. The future will continue to see exponential growth in data traffic, with polling showing the popularity of the home office and additional connectivity in more rural areas. New technologies such as fibre-to-the-home (FTTH) and 5G will improve connectivity, and use less energy. Investment costs are considerable, and allocations under the recovery package need to be forward-looking. This needs to be accompanied by demand-side incentives, such as vouchers, to encourage more businesses and citizens to become digitally equipped.

Internet of Things

IoT will provide the link between the data economy and the physical economy. One third of Vodafone's customers benefit from IoT to reduce energy emissions. It is an area in which Europe can lead, but is currently hindered by fragmentation of structures and regulation.

Sectors such as agriculture and energy have some of the highest emissions. Examples of where IoT is making a difference include 'MyFarmWeb' in Africa. It enables farmers to monitor data on soil, pest presence and weather and results in better water and energy consumption and more profitable and efficiently-produced crops. Vodafone is also involved in partnerships with companies in the property industry to enable remote metering in houses and commercial buildings. The company works with

EnergyWeb to ensure that new equipment is incorporated into the grid as effectively as possible. Vodafone is a partner of the Seville municipality, where IoT is used to monitor services such as city lamps, water supplies and air quality.

Mats Pellbäck Scharp

Mats Pellbäck Scharp set out some the facts surrounding life cycle assessment based on the company's research.

There are some myths surrounding the carbon footprint of the ICT sector. It forms 1.4 per cent of global greenhouse emissions, 3.6 per cent of global electricity consumption and is the world's largest purchaser of renewable energy. While previous generations of mobile technology resulted in significant increases in energy consumption, 5G will 'break the energy curve' by replacing, rather than adding to, the current network. The new network will be 'built with precision' and employ energy saving functionalities that can result in, using an example from South London, four times faster download speeds with a net reduction in energy consumption. It's important to focus at the network level – how much throughput can be achieved in the network – and not at individual level of comparing individual pieces of equipment, which may have different levels of energy consumption but also different levels of performance. In this way it's possible to break the connection between data throughput and energy consumption. The ICT industry has set a new standard on addressing the 1.5 degree rise target, which requires halving energy consumption every decade. The agreement includes all aspects of the sector, including datacentres and fixed networks.

On climate, the ITU/GSMA 'Exponential Roadmap' estimates that the ICT sector accounts for 1.4 per cent of emissions, but can enable a reduction in emissions of 15 per cent¹. For example, as the transport industry goes electric the ICT industry will be crucial both to vehicle charging rates and to control the power. Only 5G, with its lower latency and edge cloud possibilities, will be able to offer the speed necessary while keeping the network stable.

Focus on the network

It's important that any regulation doesn't go into too much detail and remains focused at the network level. The industry is in any case engaged in a major drive towards renewables, and is focused first on energy reduction through efficient networks. Ericsson's customers are very active in investing in this area. We should remember that digitalisation drives exponential change, and also drives 'democracy'. The music industry, for example, was controlled by five companies, and is now much more accessible and diverse especially for SMEs. 5G is a fantastic platform for innovation, and in Europe it is needed as soon as possible.

David Scuderi

David Scuderi introduced the Amazon climate pledge: 'Paris ten years early'. The goals are to measure emissions, implement decarbonisation strategies in line with the Paris agreement, then neutralise remaining emissions through meaningful offsets. The company targets are for 80 per cent renewable energy by 2024 and 100 per cent by 2040 – ambitious targets for a company that moves goods.

¹ Exponentialroadmap.org

Signalling to the market

As a large company, it's important that Amazon signals its commitment to the market in order to drive change through the supply chain and stimulate investment in green technologies. An example is the decision to purchase 100,000 fully electric vehicles, with 10,000 to be on the road by 2022. Nature-based solutions are a critical part of the mitigation part of the company's strategy, with \$100 million allocated to the 'Right Now' climate fund in partnership with the Nature Conservancy.

Environmental tools

The Amazon approach to climate change is to link science to technology, and technology to customer obsession. The company has built tools for teams across the company to enable them to both measure emissions, and to radically reduce carbon in the company and through the supply chain. Amazon is a complex company providing a multiplicity of services and products and as a result has created one of the most sophisticated carbon accounting tools in the world. It enables the measurement, to a high degree of resolution, of the environmental impact of the products and services they are creating. In the case of the Alexa device, the tool can inform decisions on energy consumption and material choice. This information can result in counter-intuitive discoveries. For example, same day delivery emerges as the lowest carbon option, because the products are shipped from warehouses close to the customers.

Benefits over traditional commerce

Amazon's view is that ecommerce is inherently more environmentally beneficial than traditional commerce. 'Romance' packaging, with plastic windows, isn't necessary – it just needs a few high resolution images. An Amazon delivery van carries, on average, 120 products and in a city environment will drive 72 kilometres. Assuming 5km per trip, 600 km of travel would be required to achieve the same with conventional shopping. Amazon is always looking at new opportunities for using technology to benefit customers, such as local pick-up points, or 'Amazon day' in which all of a customer's orders can be combined into a single delivery.

Nina Beebe

Nina Beebe described the green agenda commitments of several of her clients: Salesforce has a target of net zero by 2030, (and has created a dashboard designed to help other companies achieve carbon neutrality), SAP by 2025 while Microsoft aims to be carbon negative within ten years.

Lessons from the pandemic

She went on to discuss some of the lessons from the coronavirus pandemic. Internet use increased by as much as 50% with many people working from home. The shift required the rapid adoption of new platforms, VPN and connectivity. Many of these changes could be permanent. Cloud technology enabled resilience and continuity, as well as greater work flexibility. It was vital to the continued delivery of public services, especially healthcare and education, including the data-sharing about Covid-19 itself. The internet didn't 'break', but it's clear that in many parts of Europe broadband connectivity is behind where it should be. Another positive was the collaboration between governments and the private sector, pointing the way to the future delivery of critical public infrastructure. The pandemic has accelerated many trends, but decelerated others. The EU's post-pandemic recovery plan places great emphasis on the Green Deal and on connectivity, and is setting the benchmark. The UK's plans also aim to stimulate a zero carbon recovery. But there are different

approaches elsewhere. In China, post-Covid growth demands have crowded out environmental considerations of the top of the agenda. The US response is mixed, with the Environment Protection Agency suspending the legal enforcement of many obligations for an indefinite period for compliance issues deemed to be Covid-related. There are also some changes to carbon targets. But Congress may be including clean energy measures in the forthcoming stimulus package.

International responses

Internationally, thirty UN agencies are working on new sustainability goals. The ITU has launched a new standard for emissions reductions for the ICT sector, and created a 'Reg4Covid' platform² designed to pool experiences and measures resulting from the crisis, in order to inform future policy.

What regulatory frameworks will support the TMT industry whose largest members are implementing net zero policies? Other considerations include smart grids and smart cities, and spectrum allocation for 5G and in the future 6G. Standards will also be important to achieving better efficiency among devices and data centres.

Governments will need to consider how high speed connectivity can be extended beyond urbanised spaces that may, in the future world of work, be less populated than at present. AI can help sustainability but requires a more open cloud regime. Countries focused on data localisation may be left behind. As governments impose digital taxes, they need also to consider how to incentivise greener policies.

Looking around the world for leadership in green technology, the European Commission is at the top of the list, but some Asian economies are also impressive. Australia and Singapore have both introduced clean technology objectives into their economic plans.

Questions

How can rural connectivity be improved?

Mats Pellbäck Scharp and Dorothee D'Herde:

OpenRAN (open radio access network) provides an economic model that can expand networks. With 4G and now 5G fixed wireless can provide very good connectivity much more cheaply than fibre by utilising a standard mobile technologies. Ericsson has demonstrated this in some of the more remote communities in Canada, where fixed wireless was set up to support home schooling in just two weeks. Similar projects have taken place in rural parts of Spain. Broadband can now readily be delivered without fibre.

How can policymakers work with industry to set environmental targets? What is the balance between micro-regulation and voluntary agreements?

Daniel Mes:

It's very easy to put rules on paper, but it must happen on the ground. The EU is ready to hardwire environmental objectives across all of its policies. 5G will enable many companies to digitalise and agriculture is especially interesting. It may be possible to look at using the agricultural funds in the

² <https://reg4covid.itu.int/>

EU to support digital improvements that result in better land management, for example in the use of fertiliser.

Although it's right to focus efforts at the network level, it's important also to consider the impact of devices. In some cases, 50% of the emissions from a device derive from its manufacture, which may then just be thrown away with the latest upgrade. We still need to ensure that our environmental benchmarks are sufficient.

What would you change?

Nina Beebe:

The retreat from multilateralism is concerning, and I would ask countries to stick to a global order that could enable harmonisation in the field of technologies

David Scuderi:

Less divergence across the regulatory spectrum, especially in the light of Brexit. We need the greatest amount of regulatory alignment.

Mats Pellbäck Scharp:

Treat digital infrastructure as a national asset and stop imposing huge costs through license fees, as they are doing in Italy, for example.

Dorothee D'Herde:

Increase the pace of change in the digital economy. Everything needs to happen in the next ten years.

Daniel Mes:

Bonuses for teachers not just bankers. Everyone should make a climate pledge, and we need to work with partners also looking for their own version of the green deal.