Flash analysis Telecommunications

Compared to other sectors, the telecommunications industry is seen as having low environmental impact. By offering the ability to work from home or replace business trips with video conferencing, its digital services may even make a positive contribution. However, digitalisation, which is developing ever more dynamically in particular with regard to visualisation and streaming, is already being described as a potential "accelerant" of climate change.

Rating agencies: low exposure to environmental and climate risks

According to Moody's' latest Environmental Heat Map, the telecommunications industry is only exposed to a low level of climate-related risk, all things considered. This is inferred from its low impact on the environment and the climate compared to other sectors. Only physical risks are viewed as being moderately high: storms or natural disasters that happen more frequently and are more severe can damage telecommunications infrastructure. If the rules on greenhouse gas emissions are tightened, this may lead to higher energy input prices. However, Moody's assumes that these can be passed on to customers. S&P also views the telecommunications sector as incurring below-average environmental and climate-related risks. The sector does consume energy in order to operate networks and data centres, for example; however, its energy consumption is lower than in other sectors like the basic industry.

Green telecom bonds

Climate-related changes in the market may also generate opportunities. Well-known telecommunications companies like Verizon, Telefónica and Vodafone have already issued green bonds. Thanks to the growing interest in green investment opportunities, the market for green finance is also becoming more popular with telecom companies. Telefónica's green bond was five times oversubscribed and Verizon's was eight times oversubscribed, making it the most popular bond in the company's history. When issuing their green bonds, the telecommunications companies highlight that cloud services, home working opportunities and the ability to replace business trips with video and audio conferencing make it possible to save significant amounts of CO_2. Investments in modern technologies also allow companies to become more energy efficient and make a positive impact.

Growing amounts of data consume more and more electricity

But how green is the sector really? Between 2009 and 2018, telecommunications companies' emissions doubled. This was driven by the sharp increase in use of broadband data. With the new 5G wireless standard, significantly larger amounts of data will be transmitted at high speeds in future. While investment in 5G is progressing slowly in Germany, it is only a matter of time before the new standard becomes established. Parts of Asia and the USA are already seeing significant progress in 5G expansion. While data transmission via 5G is considerably more efficient than with its predecessor technologies, a study by Eon and RTWH Aachen suggests that in 2025, the additional energy required by data centres due to the introduction of 5G in Germany will be equivalent to the electricity consumed by 600,000–1.25 million households. In spring 2020, Federal Environment Minister Svenja Schulze raised concerns that by 2025, more greenhouse gases could be emitted due to digitalisation than due to traffic. This makes digitalisation a potential "accelerant" for climate change, says the minister. A single Google search triggers demand for around 0.3 watt hours of electricity. Just 20

Google searches are equivalent to the electricity used by an energy-saving bulb that is switched on for one hour. That might not sound like much at first, but with 40,000 searches being conducted every second worldwide, it adds up to a lot. In 2030, the telecommunications, information and communications sector could make up 2% of global greenhouse gas emissions.

Green data centres are possible

There are various measures that can counteract the tension between its growing demand for energy and the sector's self-image as a "green industry". In future, smart data centres will be able to systematically delay some computing processes until times of day when larger amounts of green energy are available. This could enable even better harmonisation of energy demand and generation between data centres and wind farms, for instance. Moreover, a stronger focus on use of exhaust heat could increase efficiency.

Demand for renewables is growing; little capacity secured to date

Along with many other data centre operators, telecommunications companies also want to use more green energy to meet their growing demand. T-Mobile US wants to achieve its self-imposed aim of saving 1.1 million tonnes of emissions by 2030 with, among other things, contracts that it has already concluded to purchase wind energy. Ten international telecommunications companies have undertaken to cover 100% of their energy requirements with renewables in the medium to long term. These include Vodafone, BT, Deutsche Telekom and Telefónica. According to data from Bloomberg New Energy Finance, meeting these self-imposed commitments in 2030 would require the telecom companies to purchase more than 21TWh of renewable energy – in addition to the quantities purchased to date (which Bloomberg NEF estimates at just 3TWh). There is therefore an expectation that in the years to come, telecom companies will considerably increase their activity in the renewable energy market.

Optical fibres: not only fast, but efficient too

Purchasing green energy is not the only way telecom companies can reduce their environmental impact. There are various potential ways of designing digital services more efficiently by investing in new technologies. Optical fibres are a highly promising technology which continues to see below-average expansion in Germany. S&P assesses that an optical fibre connection laid to the consumer's house (Fibre to the Home – FTTH) is up to 85% more energy efficient than transmission through the copper network. This is primarily because fibre networks require fewer cooling systems and control centres. A study commissioned by the German Federal Environment Agency showed that one hour of video streaming produces around two grams of CO_2 (1.5 grams from the data centre and 0.5 grams from data transmission). A person streaming through copper cables will generate the same amount of CO_2 at the data centre, but considerably more in transmission, meaning that 4 grams per hour are used in total. This means that CO_2 emissions depend on both the type of energy purchased and the modernity of the transmission technology.

Conclusion

On the one hand, telecommunications companies are highlighting their positive impact on the environment. On the other, widespread use of digital services is leading to a sharp rise in demand for energy. In order to ensure that the telecommunications sector continues to live up to its green reputation, green data centres are an important lever. However, technological investment and the expansion of optical fibres can also help to make the services more energy efficient.