



Rostelecom

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***CWG-Internet: Online Open Consultation (October-December 2021)
The Environmental Impacts and Benefits of the Internet***

1. What effects does the Internet have on the environment and vice-versa?

Damage to the environment by Internet is defined as all digital activities that generate greenhouse gas emissions. In fact, this is a negative impact of external use of new technologies that usually remains unknown to consumer, while the digital world significantly adversely affects the environment creating a sizeable carbon footprint: 4% of all greenhouse gases.

Owing to their intangible external appearance, digital technologies are usually considered as a tool that has no direct impact on the environment. However, digital technologies are indeed tangible and depend on a physical infrastructure such as data centers and kilometers of cables used for transmitting antennas.

Basically, there are two types of pollution caused by Internet:

1. Pollution caused by data centers and network infrastructure;
2. Contamination generated by household equipment and appliances.

Since the onset of the Covid-19 pandemic, followed by the numerous lockouts, we have been witnessing an exponential growth in the use of video transmission (streaming) around the world.

Despite many erroneous assumptions about CO² emissions generated while watching 30-minute video streaming on Netflix, the climatic impact of video streaming still remains relatively modest. Indeed, according to the International Energy Agency (IEA), viewing video streaming video on Netflix just for an hour results in emission of 36g of CO² (while airplane flight from Moscow to Irkutsk is equivalent to emission of 1.3 tons of CO²).

Low carbon footprint of video streaming content can be attributed to the rapid improvement of energy efficiency of data centers, networks and devices. However, the slowdown in energy efficiency growth rate, impact of epidemics and new demand for new technologies, including artificial intelligence (AI) and blockchain, result in growing concern about the overall environmental impact of this sector in the coming years.

Since these technologies are data factories housing thousands of IT servers, data centers are generally believed to be energy consumers.

2. How can we improve the impact the Internet has on the environment and take advantage of its potential to help address climate-related issues?

Reducing the negative impact of the Internet (more specifically, the equipment used) is most promising in the field of energy efficiency, in particular:

- reducing the rate of energy consumption by data centers,
- implementation of energy efficient technologies (free cooling method, heat recovery systems, etc.),
- using stand-alone renewable energy sources (solar panels, wind generators),
- dropping use of senseless computing operations when mining cryptocurrencies (this would require replacing the PoW emission mechanism by alternative ones).

DCs are basically digital information storage facilities. Network infrastructure and DCs account for a half of all digital pollution. Network infrastructure and data centers are required to run search engines.

Air conditioning is the most expensive part in a DC in terms of energy. Since 2018, PJSC Rostelecom has been implementing an energy saving and power efficiency program. Various technical solutions for supply and exhaust ventilation are being introduced under the program. The applied solution uses cold outside air to cool technological and server equipment in DCs during cold weather periods.

On the other hand, owing to technological evolution at the start of the XXth century, Rostelecom has been replacing poorly efficient network equipment with highly efficient one, thus enabling subscriber base enhancement, while electricity consumption, and, accordingly, hydrocarbon footprint on the map of the planet, is reduced.

3. What role should stakeholders play in shaping the environmental impacts and benefits of the Internet?

Business: suggesting and implementing initiatives (environmental, energy efficient, resource efficient, etc.) that reduce the negative impact on the environment. Posting for public access materials related to its impact on the environment (ESG strategies, sustainability reports, etc.).

Governments: preventing creation of obstacles for such initiative implementation, ideally - creating a legal framework to enable profitability of such initiatives implementation. Addressing the general public opinion, opinion of the business, not-for-profit organizations (using Internet capabilities among other).

Media: covering timely and unbiasedly existing and potential problems without prejudice to anyone's interests.

Public: taking a proactive stand on environmental protection and climate change, for instance, when discussing business plans, changes in legislation, etc.

Non-profit organizations: Creating and maintaining communications and reputation tools that drive environmentally responsible behavior of business.

Science: making research, predicting environment and climate changes; ensuring objectivity and as wide as possible availability of results.

Environmental organizations: using Internet capabilities to cover their activities and for their publicity.

4. What are the policy, regulatory and other relevant matters associated with the environmental impacts and benefits of the Internet?

Policymakers can enact regulations, requiring full transparency on the footprint of digital products and the proactive measures taken by service providers to curb or reduce their environmental impacts. This would ultimately allow for consumers to make decisions on what products and companies they choose, creating market competition to 'go green'. As Internet access increases globally, it is important to be cognizant of the energy generation sources that have lower environmental footprints.

Specifically, it is worth noting an international document - the International Telecommunication Regulations 2012, which establishes general principles of provision and delivery of international telecommunication services, where the following article is contained:

«Energy efficiency/e-waste:

Member States are encouraged to adopt energy efficiency and e-waste best practices taking into account the relevant ITU-T Recommendations”.