Environment Pollution and Climate Change

Mercado, Environ Pollut Climate Change
2020, 4:4

Short Commentary OMICS International

Sustainability: Socio-Technological Transformations to Overcome the Paradigm of Continuous Growth

Alexis Mercado*, and Karenia Córdova

Area of Science and Technology, Center for Development Studies, Central University of Venezuela, Venezuela

***Corresponding author:** Area of Science and Technology, Center for Development Studies, Central University of Venezuela, Av. Neverí, Edificio FUNDAVAC, Colinas de Bello Monte. Caracas, Venezuela; E-mail: alexisms60@gmail.com

Received date: Jul 29, 2020; **Accepted date:** Sep 15, 2020; **Published date:** Sep 22, 2020

Keywords: Continuous growth; Socio-technological; transformations; Technological systems.

Short Communication

In 2019 the Earth Overshoot Day was reached in just seven months. Greenhouse gas emissions (GGE) continued to rise, as well as other forms of pollution. Surely, this year we could observe a partial regression of this trend due to coronavirus crisis, which will probably have killed around a million people by the end of the year, and will cause an estimated global economic fall of 3%. However, in 2021, according to the estimates of the International Monetary Fund (IMF), the economy may experience a significant rebound of 5.2% [1]. This, in a scenario of world oil oversupply, at very competitive prices, can lead to increased pollution and environmental degradation.

The aforementioned is clear evidence that we are facing a serious civilizatory crisis. The health of the human beings faces new risks, sixth mass extinction is taking place and environmental deterioration is increasing. This last problem is at the base of the first two. Even more, the combination of mass extinction and environmental deterioration can increase the resurgence and dispersion of old diseases and the emergence of new ones.

Among the main causes of environmental degradation, the economic-productive order consolidated around continuous growth, highly resource predatory, stands out. Given the magnitude of the coronavirus pandemic, in the economic decision centers (i.e World Economic Forum, IMF) some concerns about these problems has begun to arise. A good example is that the call of 2021 Davos Forum has as its central emblem “The Great Reset”, highlighting the urgency of rebuilding the foundations of the economic and social system to make it fairer, sustainable and resilient.

However, in the mainstream of the economy, the objective of more growth is irremovable, arguing that these problems, generally seen as mere externalities, could be mitigated thanks to the progressive decoupling between growth and the use of resources that, concomitantly, would reduce the environmental impact. But even though the contribution of services and intangibles in the Gross World Product (PCM) is increasing, the world exploitation of natural resources, both traditional commodities (i.e. iron, bauxite, copper) and new ones associated at the disruptive technologies (rare earths, tantalum, niobium, etc.) continues to grow at a similar rate to and even higher than the global economy, raising doubts about whether effectively is moving towards a "knowledge economy". This is because its main foundations (Gross Domestic Product (GDP), factor endowments and free trade), developed at least almost a century ago, and which were the pillars of the techno-economic paradigm based on the intensive use of materials and energy, remain unchanged, like its legal and institutional structures [2]. This has a decisive influence on all spheres of human endeavour.

Specifically, in this aspect, Joseph Stiglitz recently said that business as usual is not an option once the world emerges from the coronavirus pandemic, and highlights the need for new indicators, different from GDP, to estimate the health of the economy. This because it does not take into account inequalities, lack of resilience, and unsustainability [3]. We add that it is much less useful to define the necessary guidelines for a sustainable future of society

Implications for Science and technology development

Science and technology development is not an exception. The disruptive technological transformations ongoing are pushing the emergence of one or, perhaps, several technological revolutions. The accelerated development of convergent technologies (nanotechnology, biotechnology, ICT and knowledge sciences) is creating new forms of production and services much more efficient in the use of resources and energy, which could open possibilities for a sustainable transformation of large technological systems [4]. This is because, although they are knowledge-intensive, they are not necessarily capital-intensive, and they have certain attributes of flexibility that could make less concentrated forms of production and services viable.

However, by developing within the precepts of continuous growth, frequently their outputs are integrated into forms of production and consumption very intensives in capital and technology (for example mega-constructions and plants production of commodities with scales of the order of more than one million tons), that contribute to consolidating the current unsustainable economic-productive structure. Thus, the reduction of the environmental impacts which can result from the design of much more efficient production processes, are counteracted by extraordinary increases in production scales that stimulate wasteful consumption and the increase of pollution.

The above is clear evidence that the implantation of the techno-economic paradigm based on informatics and microelectronics did not imply a rationalization of the exploitation of natural resources, production, and consumption. All those new innovations, developed into the logics of continuous growth, led to a new techno-economic paradigm, but they did not contribute to reducing environmental degradation.

Thus, convergent technologies, technological revolutions, and the diffusion of the fourth industrial revolution (4i) developing into this logic could not offer alternatives to the current pattern of development.

An unbeatable example is the extraordinary increment of energy consumption of cryptocurrency mining [3], activity associated with the financial economy, or, more precisely, with the speculative economy.

The necessary transformations

The disruptive nature of many of the converging technologies makes them potential drivers of change in the techno-productive structure, even in the society. May induce the emergence of technological revolutions because they can modify the means of production, the labor conditions, and contribute significantly to reducing the problem of environmental pollution. In turn, this cluster of technological transformations is encouraging the spread of the fourth industrial revolution that are modifying the notions of production, distribution, and consumption. And, even more, the kinaesthetic capacities of the human being. The question is: will such transformations change the current forms of appropriation of nature, the forms of accumulation, and the social structure? Probably not

This is because, as indicated above, if they are developed and implemented within the precepts of continuous growth, they will not modify the logic of production, accumulation, and consumption, having little impact on the mitigation of environmental degradation and, even, generating new forms of pollution and undesired socio-cultural impacts.

Indeed, moving towards a sustainable development requires more than a transformation of the current large technological systems. It is about the construction of sustainable socio-technological systems. To achieve it, technological innovation is insufficient per-se, unless it occurs in conjunction with radical societal changes, that including deep institutional renovation, the transformation of cultures of production and consumption, and the prevailing notions of the economy.

In other words, it is imperative to modify the paradigm of development based on continuous growth and its cultures, to make possible a civilizatory transition. But this only will be possible if it is driven by socio-institutional factors, especially political ones that respond to the imperative of sustainable development.

References

1. Gopinath, G (2020) The Great Lockdown: Worst Economic Downturn Since the Great Depression.
2. Robinson, N (2013) Keynote: Sustaining Society in the Antrophocene Epoch. 41. Journal Int Law and Policy 467:467.
3. De Vries A (2019) Renewable Energy Will Not Solve Bitcoin's Sustainability Problem. Joule 3(4):893:898.
4. Hughes T (1987) The evolution of large technological systems. En Bijker WE, Hughes TP and Pinch TJ (eds) (1987) The Social Construction of Technological Systems, Cambridge: MIT Press.