

**INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION  
ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)**

**Vienna, Austria  
15-17 January 2019**

Contribution of Peru

to the CSTD 2018-19 priority theme on 'The impact of rapid technological change on sustainable development'

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# United Nations Commission on Science and Technology for Development (CSTD)

## Request for inputs for CSTD 2018-19 Priority

### Theme 1: "The impact of rapid technological change on sustainable development"

Dear CSTD member,

As you are aware, the CSTD 21st annual session selected "The impact of rapid technological change on sustainable development" as one of the priority themes for its 22nd session (2018-19 period).

Rapid technological change in recent years is having a broad impact on the economy, society and the environment. Frontier technologies such as artificial intelligence, big data, Internet of Things, synthetic biology, satellite and drone technologies can create great opportunities to address the SDGs in numerous areas, including in helping to achieve goals related to poverty, health, agriculture, education, clear water, energy and financial inclusion. At the same time, rapid technological advances can outpace the capacity of governments and society to adapt to the changes that they bring about, as they can affect labour markets, perpetuate inequalities, and raise ethical questions.

The CSTD secretariat is in the process of drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel meeting. In this context, we would like to hereby solicit inputs from the CSTD members on this theme. We would be grateful if you could kindly answer the following questions based on your experience from your country or region.

- 1. From the perspective of your country/region what are the key emerging technologies and their current and potential applications that could give an opportunity to solve great societal challenges and achieve the SDGs in your country or region?**

*Peru is in a phase of massification of broadband Internet that occurs in a particular context of socioeconomic development, and by the increase of coverage in a large territory with significant geographic complexities that limit the deployment of networks and services. In this sense, the potential to develop this scenario is generated from the effects of connectivity: tele-education and tele-medicine services are increased. Likewise, digital security is promoted, it is reduced and, at the same time, there is a frontal struggle against gender inequality, among other conditions that fit in with the Sustainable Development Goals.*

- 2. Can you provide examples of policies/projects/initiatives that promote rapid technological change in your country/region and mitigate their potential negative effects? Are there any of these policies/projects/initiatives directed to women, youth or other groups of the society? How have the policies targeted inequalities? What are the challenges confronted in implementing these projects?**

*The connectivity policy promoted by the Peruvian Government seeks to reduce the Internet connection gap of a huge group of citizens throughout the country, in that sense, it is the most ambitious telecommunications policy in the history of the sector. This policy is integrated by the promotion and deployment, through public-private partnership schemes, of the National Fiber Optic Network and twenty-one regional broadband projects.*



*It should be noted that, generally, the work teams that propose, design and develop these projects are multisectorial and integrated by women and men in similar proportions.*

**3. What are the actions that the international community, including the CSTD, can take to contribute to maximize the benefits and mitigate the risk associated to rapid technological change? Can you give any success stories in this regard from your country or region?**

*Contribution of international community can focus on supporting the generation of Internet demand by the population, as well as the digital transformation by MSMEs. Except in very specific cases, cooperation should seek to materialize long-term productivity and sustainability schemes.*

**4. Could you suggest some contact persons of the nodal agency responsible for policies related to rapid technological change and its impact on sustainable development as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area? We might contact them directly for further inputs or invite some of them as speakers for the CSTD inter-sessional panel and annual session.**

*The specialist of networks and spectrum management, Mr. Wilmer Carol Azurza Neyra ([wazurza@mtc.gob.pe](mailto:wazurza@mtc.gob.pe)), official of the Vice Ministry of Communications of the Ministry of Transport and Communications of Peru, (MTC).*

**5. Do you have any documentation, references, or reports on the specific examples on the priority theme in your country or region?**

*In 2011, documents were published on the challenges to be overcome and goals to be achieved, these documents were:*

- *The Digital Agenda 2.0*
- *The National Plan for the Development of Broadband*

*In both cases, the shortcomings in connectivity were recognized and the deployment of high-speed connectivity networks was prioritized (for example: Optical fiber, in the jungle area, radio links).*

Please send your responses and any further inputs on the theme to the CSTD secretariat ([stdev@unctad.org](mailto:stdev@unctad.org)) by 6 September 2018. We look forward to receiving your valuable inputs.

Sincere Regards,

CSTD secretariat



**Theme 1: The impact of rapid technological change on sustainable development.**

**From the perspective of your country/ region what are the key emerging technologies and their current and potential applications that could give an opportunity to solve great societal challenges and achieve the SDGs in your country or region?**

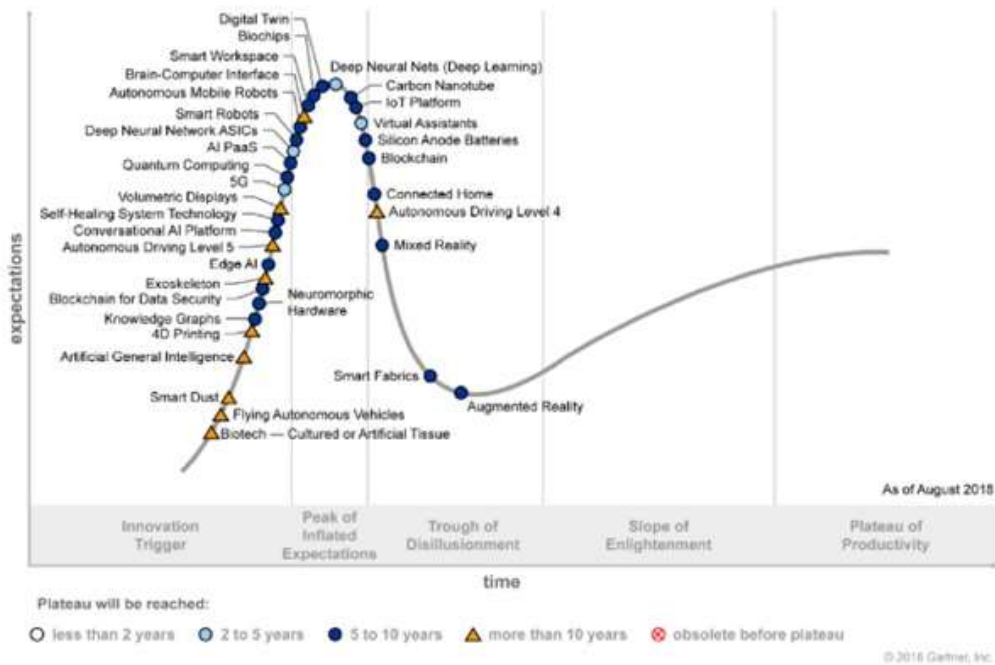
The SDG Index and Dashboards Report 2018 is a study prepared by Bertelsmann Stiftung and the Sustainable Development Solutions Network, which evaluates the performance of countries in the implementation of the SDGs. Peru is in position 64 of 156 in the index. According to this study, in Peru significant challenges persist in relation to Objectives 8 and 12, and the main challenges remain with respect to Objective 9.

Regarding Objective 8, the Monitoring and Follow-up System shows that one of the main problems continues to be informality in employment. By 2016, the percentage of non-agricultural informal employment was 63.8%. In relation to Objective 12, it stands out as a first step towards the fulfillment of one of its goals, the publication by some companies of Corporate Sustainability Reports. It should be noted that since December 2015, the Superintendence of Securities Market requests this type of reports to all companies with securities registered in the Public Securities Market Registry.

Regarding trends in information and communications technologies (ICTs) currently (2018), in the middle of the fourth industrial revolution (often called the Industry 4.0 era). This term was only used as of 2011 in the industrial fair of Hannover) where in business the digitization and computer interoperability of all the elements, people and processes of an organization are promoted, developing new business strategies around ICTs such as; social networks on the Internet, teleworking, drone logistics, portability and mobility of devices with access to all company information from anywhere in the world, intelligent management of business processes (iBPMS) and many more that are studied by Gartner.



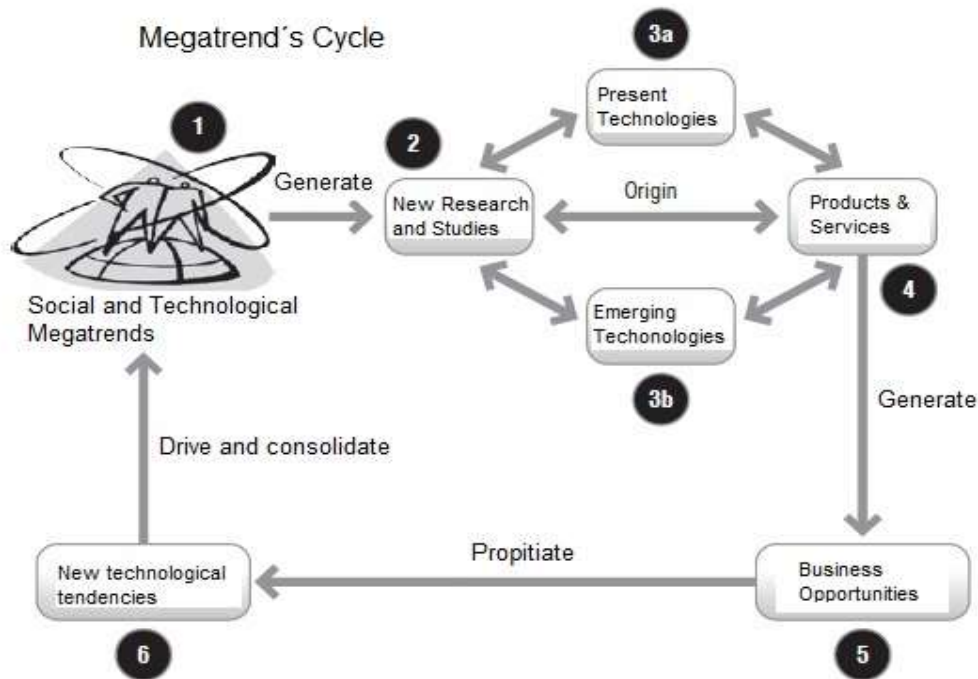
## Hype Cycle for Emerging Technologies, 2018



Source: Gartner megatrends, 2018, retrieved from:

<https://www.gartner.com/smarterwithgartner/gartner-top-10-strategic-technology-trends-for-2018/>

The technological and social megatrends generate a cycle for the creation of business opportunities, as well as to deepen knowledge or generate new technological knowledge starting from this cycle.



Source: Instituto Tecnológico de Monterrey, 2009, modified by DIE

Starting from this model of trends which Peru can venture into in the coming years would be:

### Optical Systems

Mechanisms that allow manipulating light and modifying its properties to achieve, through minimally invasive means, quality results in medical, instrumentation and metrology applications, of which the work on microsystems in environmental control devices, as well as applications, is incipient for Biomedical monitoring of the human body.

### Agricultural biotechnology

It is a multidisciplinary science that uses living organisms, components, metabolites to develop or modify chemical and pharmacological products, environmental bioremediation methods or to develop microorganisms for specific uses. Some areas of modern biotechnology include the use of proteins and enzymes, for remediation of contaminated environments and waste management, as well as soil improvement.

### Biofuels

Peru has a potential to generate this type of energy from sugar cane, palm and sorghum, for this will require efficient management of water and soil, as well as a treatment of wastewater and look for crops with high yield that demand little

application of water and agrochemicals. This would support marginal agricultural areas such as: deforested areas and uncultivated land. According to the National Institute of Statistics and Informatics (INEI), Peru has 14 million hectares of agricultural units of which approximately 47% is not used for cultivation, 2 million 800 thousand hectares, which have environmental criteria and financing clear lines could be used for this purpose.

### **Medical biotechnology**

Given the demographic growth and the increase in life expectancy, this multidisciplinary science is developing new methods such as the means of diagnosis, DNA management, creation of new vaccines, Nano devices for the detection of diseases for which they use ICTs, As well as seeing new forms of treatment regarding health care, specialized professional labor will be required as technicians in this field to be able to obtain services in this field.

### **Blockchain**

The Blockchain allows to transfer digital data with a sophisticated and secure coding. It is a transfer of information that does not require an intermediary to certify the information, but is distributed in multiple independent blocks that validate it. Initially it was created for transactions with cryptocurrencies, but its impact will change sectors such as transport, logistics, cybersecurity, food or the financial sector. It will even be used against any cyber-attack, since given its structure, in case of receiving an attack it will only affect one block, leaving the rest intact. Experts say that the blockchain will be the basis of digital business and one of the technological revolutions that will take more strength.

### **Cybersecurity**

As digital ecosystems are more complex and sophisticated, so are the risks for our cybersecurity. The trend is risk management in real time. Gartner proposes a solution: the CARTA model (Continuous Adaptive Risk and Trust Assessment) that involves being proactive in security, focusing on people and giving weight to the role of developers so that they assume responsibility for security measures, with a focus on continuous adaptive risk and confidence assessment. Thus, integrating security into the development and operation of software (DevOps) to provide a continuous process and explore deceptive technologies capable of hunting the intruder will be techniques that will give voice in 2018.

## **Theme 2: The role of science, technology and innovation in building resilient communities, including through the contribution of citizen science.**

1. Could you give examples of projects/policies in your country aimed at using science, technology and innovation (STI) to build resilient communities? ¿What are the main challenges confronted while trying to implement these projects/policies in your country or region?

Although there are no specific policies on the use of STI to build resilient communities, the following ones contribute to this issue:

- The Plan Nacional Estratégico de Ciencia, Tecnología e Innovación Tecnológica para la Competitividad y el Desarrollo Humano PNCTI 2006-2021 (National Strategic Plan of STI for Competitiveness and Human Development) that identifies strategic areas (Environmental Science and Technology, ICTs, Biotechnology, Biodiversity Valorization, Materials Science and Technology, Water Resources Science and Technology, Science and Technology for Energy and Basic Sciences).
- The National Policy for the Development of Science, Technology and Technological Innovation, which aims at improving and strengthening STI performance in the country.
- CONCYTEC is developing a new financial scheme that aims at responding to those needs with great social impact.

The main challenge is the weak articulation between academia, business sector and decision- and policy-makers.

2. Can you provide examples of policies/projects/initiatives aimed at using/promoting citizen science to build resilient communities? Do these projects incorporate a gender approach? What are the main challenges confronted in implementing these projects?

CONCYTEC, through its executive body FONDECYT, and Grand Challenges Canada funded the Project “Mamás del río: mejorando la salud materna e infantil en comunidades rurales de la Amazonía Peruana” (River Moms: improving maternal and child health in rural communities of the Peruvian Amazon). This project had a gender component and consisted of using smartphones to collect and send health information and others of pregnant women of native communities to two medical ships that attend these communities. This project was co-funded by the financial scheme Bold Ideas, which focuses on innovation projects.

The Instituto de Investigaciones de la Amazonía Peruana – IIAP (a public research institute adjunct to the Ministry of the Environment) has the Research Program for the Use and Conservation of Water and other resources (AQUAREC), Research Program in Integrative Management of the Forest and Environmental Services (PROBOSQUES), Research Program on Climate Change, Territorial Development and the Environment (PROTERRA), Research Program of Cultural Diversity and Amazon Economy (SOCIODIVERSIDAD), and Research Program on Information of the Amazon Biodiversity (BIOINFO). These six programs contribute to the sustainable management and conservation of biodiversity, socio-diversity and Amazon economy. Through these programs, the IIAP develops scientific knowledge, adaptation and use of technologies, products and methodologies appropriate for the efficient and organized use of natural resources and the Peruvian Amazon territory.

The main challenge is the great biological, geographical and cultural diversity in the country, that requires specific approaches to meet the needs of the regions.

3. What are the actions that the international community, including the CSTD, can take to leverage the potential of STI in building resilient societies, including the



contribution of citizen science? Can you give any success stories in this regard from your country or region?

The Project “Mamás del río” was the result of the cooperation between Grand Challenges Canada – GCC and CONCYTEC and its objective was to reduce maternal and child mortality in remote communities of the Peruvian Amazon through a combination of social and technological innovation methods.

4. Could you suggest some contact persons of the nodal agency responsible for projects/policies, related to resilient communities, STI and the citizen science as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area? We might contact them directly for further inputs or invite some of them as speakers for the CSTD inter-sessional panel and annual session.

From CONCYTEC, we suggest the specialist in environmental science and technology, Tania Peña (alternate Paul Soplín).

Among the experts, we suggest Dr. Dennis del Castillo from IIAP and Dr. Magaly Blas-Blas from the Universidad Peruana Cayetano Heredia.

5. Do you have any documentation, references, or reports on the specific examples on the priority theme in your country or region?

To the best of our knowledge, there are no specific documentation with examples on the priority role of STI in building resilient communities, including the contribution of citizen science.