

APEC PPSTI Initiative

Achieving greater coherence among APEC economies' policies in the field of forming new technology markets of the future

Proposed by the Russian Federation

1. Background

In an increasingly global technological challenges associated with the emergence of radically new technology, in particular platform (converged) technology of interbranch usage (in some combination of ICT, bio- and nano-, aerospace, chemical, nuclear and other technology), which is cross-cutting technology with a wide range of applications, STI policy becomes an adaptation to the emerging new markets, large-scale dissemination and use of modern technology that determines the ability to produce hi-tech products.

Emerging technology will lead to the formation and development of new markets, offering users advanced technological solutions and radically new products and services such as remote monitoring of health status, augmented reality technology in surgery, genome editing, genetic engineering of drugs, cell reprogramming, "smart" electric power networks, distributed capacity, modeling of new materials based on nanotechnology, crop production in artificial environment, functional products, unmanned vehicles, "smart" road infrastructure and others.

In particular, according to the estimates of the Russian National Research University "Higher School of Economics"¹, by 2019, the aggregate volume of mobile healthcare services market will amount to 42 billion dollars, equipment for minimally invasive surgery – more than 50 billion dollars; enzymes used in medicine for diagnostics – 7.1 billion dollars, with an average annual growth rate of 8.3% (the market of the Asia-Pacific region will grow even more dynamically – by 9.4% per year).

By 2020, the global market for biologics obtained as a result of genetic engineering will reach 497 billion dollars², cell therapy³ – 119.5 billion dollars, while maintaining an average annual growth rate of 24.2%; products and services of genome editing (biomedical research, agricultural technology, pharmaceuticals) – 4 billion dollars (the largest growth in the market is expected in Asian economies – China, Korea, Japan, etc.).

By 2023, more than 11.5 thousand power gas turbines (worth about 200 billion dollars) will be produced in the world, using primarily in combined-cycle plants (almost 60% of them will be supplied to developing economies that do not have unified energy systems). By 2024, the global market for smart grid technology could reach 83 billion dollars, technology of energy storage in power networks with distributed energy sources – 68 billion dollars.

By 2030, the total market for unmanned vehicles will be about 87 billion dollars, software for vehicles with unmanned control systems – 25 billion dollars. The largest share of revenues from the unmanned vehicle industry will be received by China and the United States. China plans to

¹ Hereinafter, the source of data is the Atlas of Technologies of the Future / A.V. Sokolova, N.S. Mikova, E.V. Gutaruk et al. ; Ed. L.M. Golberg; Nat. Study. University Higher School of Economics. - M.: Publishing group "Tochka", Publishing house "Alpina Publisher", 2017. - 192 p.

² This market will move towards the development of monoclonal antibodies, recombinant human insulin, etc. The volume of the market for molecular diagnostics products (oncology, hereditary diseases, infectious diseases, etc.) may amount to 8 billion dollars, with an average annual growth rate of at least 9.9%.

invest 85 billion dollars in an intelligent road infrastructure until 2020, while in the United States, the total amount of funding provided for "smart" highways until 2030 will reach 286 billion dollars.

The rapid development of complex technology, its penetration into all spheres of human activity leads not only to profound changes in world markets, but also to the transformation of modern R&D processes, industrial production and economy. It requires the concentration of joint efforts of scientists, experts, producers and policymakers from different economies, cooperation aimed at the development and effective functioning of new markets.

The emergence of radically new technology and its applications against the backdrop of significant differences of the APEC economies in the level of economic and technological development, in S&T specialization, in legislative regulation, in standardization and quality systems, and in the contradictory attitude to the results and consequences of the application of this technology call for greater compatibility of existing mechanisms and joint formation of new norms, rules, principles and standards.

In order to promote the technological and innovative development of APEC economies, it is necessary to seek greater convergence of its strategic directions, develop sound policy measures, study best practices, identify drivers and barriers, determine the effects and threats of use, develop joint action plans related to the formation of new technology markets, proliferation and advancement of emerging technology.

2. Objectives,

Russia proposes to launch an initiative aimed at achieving greater coherence among STI policies of APEC economies in the formation of new markets for emerging technology in Asia-Pacific. This initiative will allow to reveal best practices of new high tech creation and use in APEC economies; identify areas of emerging technology notable for intensive international STI linkages; develop joint actions to intensify STI activities in the APEC region and link economies and new technology markets; promote open policies that foster competition, facilitate access to technology, and support new technology markets and APEC economies' capacity to innovate.

The initiative will facilitate the implementation of the APEC Leaders' Declaration (Lima, 2016) which recognizes innovation as a key driver of quality growth and reiterates commitment to build a dynamic, harmonious and open economy in the Asia-Pacific region featuring innovative development, interconnected growth and shared interests.

The initiative fully conforms to the APEC Ministerial Meeting Joint Statement (Lima, 2016) which recognizes that Research and Innovation is a key driver of quality growth and human development; encourages endeavors to use Science, Technology and Innovation to face challenges and create opportunities in the region; and supports Research and Innovation Policy Dialogues to exchange best practices and information and to formulate science and technology policy recommendations.

The initiative will contribute to APEC Accord on Innovative Development, Economic Reform and Growth which underlines that for the Asia-Pacific region to steer the world economy, member economies should remain innovation driven and maintain strong momentum for economic growth by pressing forward with innovations and identifying new sources of growth. It also encourages economies to promote cooperation in science and innovation; facilitate

voluntary transfer, dissemination and commercialization of technology on mutually agreed terms; strengthen innovation capacity; improve the environment for innovation.

According to its Mission Statement (Chapter 3), PPSTI will support the development of science and technology cooperation and build science capacity and enhance regional S&T connectivity. The initiative corresponds to the following Agreed Priorities and Key Performance Indicators of PPSTI Subgroup B (Promoting Enabling Environment for Innovation) and Subgroup C (Enhancing Regional Science and Technology Connectivity), as set out in the PPSTI Strategic Plan 2016-2025:

B.2. Accelerate Commercialization of S&T.

C.2. Accelerate S&T knowledge sharing to strengthen regional connectivity as an enabler for innovation.

C.3. Create STI ecosystems & STI networks that strengthen regional STI linkages/

The initiative also contributes to PPSTI priorities in 2017 by helping to promote stronger STI ecosystems in APEC region.

3. Main Activities Proposed

Russia has a successful experience in implementing a similar national initiative (since 2014) aimed at uniting the efforts of the state, science, business and society to provide growth in the economic development by focusing all its participants on new global high-tech markets. Within the framework of this initiative, a scientific and technical reserve of Russia for the creation of new technologies is being formed, including training, support of development and attraction of talented scientists and specialists to STI; creating conditions for the formation of companies-leaders ("national champions"); development of mechanisms for managing activities with the joint participation of existing actors; support for Russian and international scientific and technological projects, etc. Similar programs exist in many APEC economies, therefore the most important task of this initiative is to unite national efforts to obtain a synergistic effect of the region's STI and economic development.

The objectives of the initiative are:

- to exchange ideas and experience in planning and laying the foundations for new technology markets;
- to study measures and mechanisms for the creation, development and promotion of advanced technologies, products and services to new markets;
- to organize an APEC dialogue on comprehensive development of new technology markets;
- to prepare proposals for new tools for the development of promising technology markets;
- to lay the groundwork for the formation of global technological and production chains for new technology markets, promote S&T cooperation in order to develop high-tech products and services for these global production chains;
- to promote priority positions and high competitiveness of APEC economies` companies in the forming global markets;

Within this initiative the following activities are proposed:

- Delivering workshops on new technology markets.

- Implementing a research study (project) on coherence among APEC economies' policies in the field of forming new technology markets in the Asia-Pacific region.
- Developing the APEC Program for agreed forming and development of new technology markets.
- Launching mechanisms for achieving greater coherence among APEC economies' policies in the field of forming new technology markets, including the APEC Technology Communication Network and Cloud Platform (APEC TCNCP).

4. Cooperation with Other Fora

Taking into account the multidisciplinary and multidimensional nature of the activities connected with the formation of new technological markets, the initiative may be relevant to many APEC fora:

- Agricultural Technical Cooperation Working Group, ATCWG
- APEC Business Advisory Council, ABAC
- Energy Working Group, EWG
- Health Working Group, HWG
- Human Resources Development Working Group, HRDWG
- Intellectual Property Rights Experts' Group, IPEG
- Investment Experts' Group, IEG
- Life sciences innovation Forum, LSIF
- Policy Partnership on Food Security, PPFS
- Small and Medium Enterprises Working Group, SMEWG
- Telecommunications and Information Working Group, TELWG and other fora

The initiative will be coordinated by PPSTI.

The initiative echoes the related activities of global fora, such as OECD, UNESCO, the European Commission (EC). These organizations may be involved in the implementation of the initiative.

5. Draft Implementation Schedule

Year	Main Activities
2017	<ul style="list-style-type: none"> – beginning of May: gathering comments on the initiative from APEC economies and interested working bodies – mid-May: presentation, discussion and approval of the initiative – October-November: workshop on forming new technology markets in APEC region – Aim 1: Sharing best practices of forming new technology markets and international cooperation – Aim 2: Discussing measures and mechanisms for the creation, development and promotion of advanced technologies, products and services to new markets
2018	<ul style="list-style-type: none"> – before PPSTI / SOM 1: preparation of the structure of the APEC Program for agreed forming and development of new technology markets (herein after –

	<p>the Program) and proposals for study on coherence among APEC economies' policies in the field of forming new technology markets in the Asia-Pacific region.</p> <ul style="list-style-type: none"> – PPSTI / SOM 1: discussion and adoption of the structure of the Program and the proposals. – after PPSTI / SOM 1: drafting the Program, delivering a workshop to discuss the APEC Program for agreed forming and development of new technology markets. – PPSTI / SOM 2: presentation of the Program.
2019	<ul style="list-style-type: none"> – before PPSTI / SOM 1: implementation of the study on the mechanisms and directions for greater coherence among APEC economies' policies in the field of forming new technology markets – PPSTI / SOM 1: discussion of the study results containing proposals for mechanisms and directions to ensure greater coherence among APEC economies' policies in the field of forming new technology markets. – after PPSTI / SOM 1: launching the mechanisms for greater coherence among APEC economies' policies in the field of forming new technology markets, including the APEC Technology Communication Network and Cloud Platform (APEC TCNCP). – PPSTI / SOM 2: presentation of the APEC TCNCP.