

## THE ROLE OF BUILDING AN INNOVATION ECOSYSTEM IN GEORGIA'S INTEGRATION WITH THE EU

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The Argonauts of Greek mythology who ventured with Jason centuries ago, Greeks who sailed with Jason in search of the Golden Fleece visited Georgia. Ancient Greek legends told of a fabulously wealthy land where Jason and the Argonauts stole the Golden Fleece from King Aetes with the help of his daughter Medea. This happened in Colchis, the Georgian land. As the Legend shows ancient Greeks took innovative technologies of mining gold from Georgia, it was like a way of the technology diffusion from Georgia to ancient Greece. Nowadays Georgia needs to get back Golden Fleece. The nowadays Golden Fleece for Georgia is economy and its trade relations, in particular DCFTA. This Golden Fleece is to be returned to Georgia through high technology diffusion and EU standards implementation.

Our primary mission will be to become a member of European community and to live in the safe world without violence. There are a lot of economic problems in the country. While country goes towards the middle-income trap we need strong innovation policy to avoid this. Georgia is among 31 economies on Stage 2, Efficiency-driven, by Classification each stage of development (The Global Competitiveness Report 2017–2018 p.320).

Building competitive national innovation ecosystem should help country to achieve strategical purpose, become the member and economic part of the EU. The Association Agreement between the European Union and Georgia is a step toward this goal. The trade related content of this agreement establishes a deep and comprehensive free trade area. Deep and Comprehensive Free Trade Agreement (DCFTA), was ratified by the Parliament of Georgia in July, 2014. It is an important part of the overall Agreement. DCFTA provides Georgia with an opportunity to achieve deeper integration with the EU market. Agreement should promote regional economic integration through acceptance of European standards and innovations. The agreement should lead ultimately to higher level of economic integration between Georgia and the 28 EU member states. Agreement has as a political as economic purpose, Georgia's economic development direction should be towards EU market. DCFTA should promote innovation because, along with goods and services, the flow of trade, fostering competition and innovation.

Adaptation to and implementation of DCFTA requirements is essential for Georgia in order to enable business-

es to gain maximum benefits from the DCFTA by maximizing the export potential. If Georgia wants to get benefits from the DCFTA we need to have appropriate innovation strategy, which determines direction of the country's economic development. We have to make choice what economic sectors should we develop and innovate in.

The organization for Economic Cooperation and Development (OECD) Oslo Manual identifies four types of innovation: product innovation, process innovation, marketing innovation, and organizational innovation. These innovations can be new to the firm, new to the market, or new to the world. The advantage of using such a broad concept of innovation is that it includes all activities involved in the process of technological change. These range from identifying problems and generating new ideas (Itzhak Goldberg-2011).

Innovation and entrepreneurship are key drivers of job creation and productivity growth. However, as shows Global Competitiveness Index report, Georgia lags its regional (ECA) peers and other low-and-middle income countries on various global indicators of these dimensions:

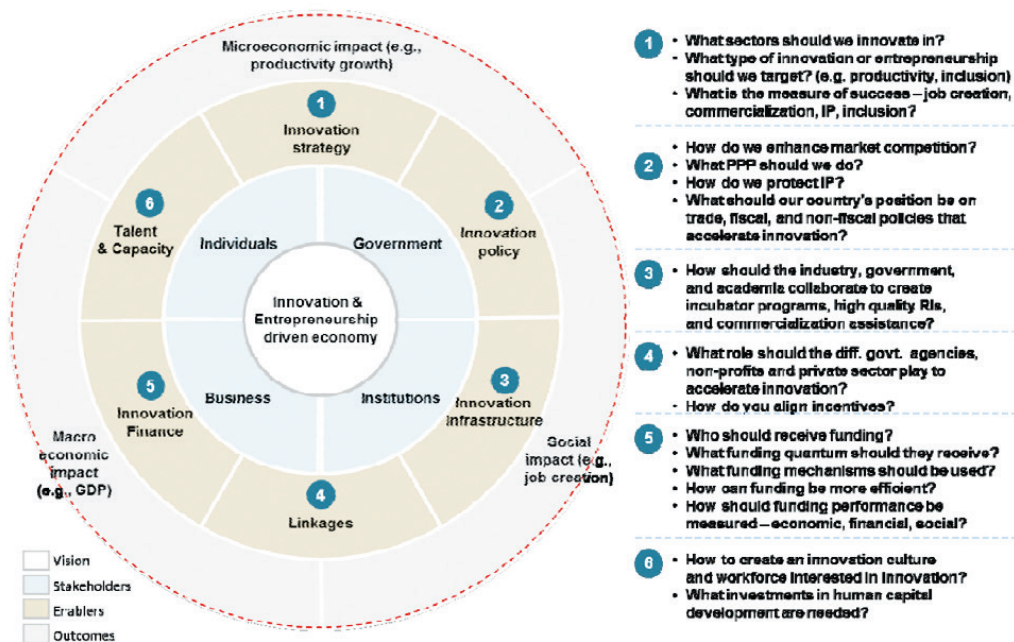
In the 2017–2018 Global Competitiveness Index, Georgia's lowest score of all 12 pillars of the index is on innovation (ranking 118); 12-th pillar: Innovation ranking 118 out of 137 - 2.8; 12.01 Capacity for innovation - 99 3.7; 12.02 Quality of scientific research institutions - 127 2.7; 12.03 Company spending on R&D - 122 - 2.7; 12.04 University-industry collaboration in R&D -116 - 2.8; 12.05 Government procurement of advanced technology products -78 - 3.2; 12.06 Availability of scientists and engineers -125 - 3.0; 12.07 PCT patents applications/million pop. - 70 - 1.0.

The first five most problematic factors for doing business are: inadequately educated workforce; access to financing Inflation Poor work ethic in national labor force and insufficient capacity to innovate. As this indicator shows Prospects for resurgence in productivity growth and exports are constrained by low levels of innovation and human capital development.

During building the National innovation system among the others the main subject is to make choice in which economic sector should we innovate. Here is a framework (a and b) for innovation ecosystem which helps us to rethink in what sectors should we innovate in and gives us opportunity to understand our countries' innovation potential better.

Framework a:

**Framework for the Innovation and Entrepreneurship Ecosystem**



Source: National Innovation Ecosystem (GENIE) Project, 2016)

Georgia definitely needs the innovation policy to use DCFTA and enter EU market, also the appropriate innovation strategy must be chosen carefully which answers the question which product or certain component of the product should we produce and export in EU market.

In low-income countries, where the institutional capabilities are limited, policies should focus on basic investment in technology infrastructure and demonstration operations of “basic” innovations which can contribute to improvements in welfare, education, and agriculture. This is important for establishing a dynamic technology sector and for promoting technology-led development which goes beyond meeting the need to survive. (Jean-Eric Aubert 2005).

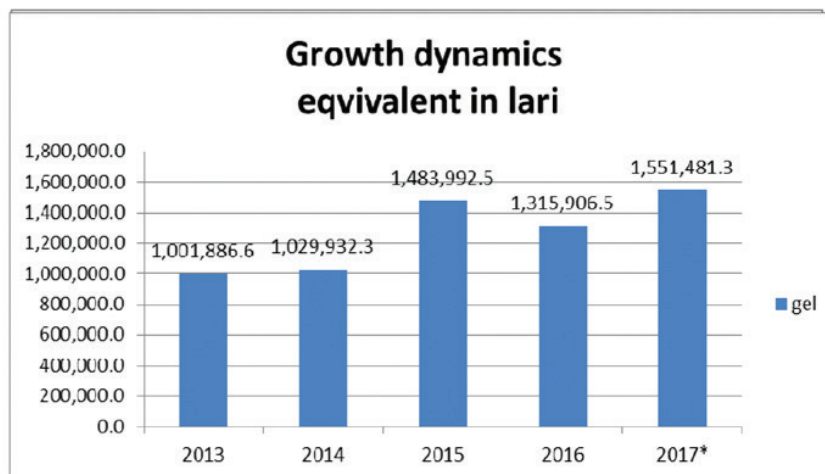
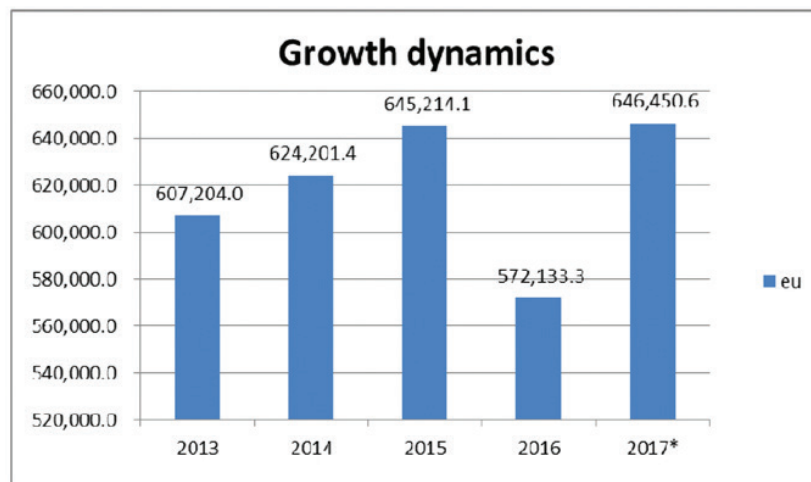
In Georgia EU relationship Export is more important than import because without strong export capacity country would not have enough resource or purchasing ability to import right product and service. Figure b. helps us measure export dynamic in EU after signing DCFTA.

Figure (b) shows that export growth dynamic in EU after signing DCFTA have not changed significantly. This proves hypothesis that the country needs the product improvement and innovation in the economy sectors which have an export potential. The statistics show that the agriculture sector has a big export potential. (In 2015 from 646.450 total exports in EU, 208.383 were agricultural products.) About 40% of Georgians are likely to live in the rural areas. Agriculture has 9.2% of total GDP. This sector has not significant growth dynamic toward EU market as well. Main indicators of exported prod-

ucts show that the export to the EU has not changed much after signing the agreement. As shown in global Competitiveness index we are at the “early stage” of innovations. Our country has to begin from almost zero and put on fundament of the national innovation system. As for a beginner country, for the first time, the absorption of technology as the subset of innovation is necessary. Agro sector needs a customized infrastructure, services, and the financing support. We need the absorption of up to date technology, high technology infrastructure for agriculture.

Absorption and a subset of innovation are the applications of existing technologies, processes, and products proved and tested in a new environment in which the processes have not yet been tested and the markets and commercial applications are not fully known. Developing country policies on technology transfer are necessarily complex and cross linked with a range of issues in the broader development agenda. Policy outcomes need to target increasing access to technology including improving the abilities of firms and other users of technology to identify, acquire, adapt and use knowledge and technology. Underlying these outcomes are national policies that support improving domestic absorptive capacities and stimulate the local innovation as well as international efforts to develop a supportive environment for technology transfer. However it is important to bear in mind that the end purpose of these policies is not to achieve successful transfer of technology themselves, but to support a process of innovation that creates value – most often economic value,

	2013	2014	2015	2016	2017*
<b>Growth dynamics</b>					
total	2,910,314.5	2,861,045.2	2,204,685.3	2,113,136.1	2,727,971.5
eu	607,204.0	624,201.4	645,214.1	572,133.3	646,450.6
gel	1,001,886.6	1,029,932.3	1,483,992.5	1,315,906.5	1,551,481.3
%	21%	22%	29%	27%	24%



(source: Geostat. ge).

but also social value – through the successful application of technology to productive activities or social attempts (Itzhak Goldberg 2011).

The agriculture sector needs to develop the technology diffusion which would help to increase the growth of export potential production. To increase and maintain productivity and economic growth and speed up convergence with Europe we need to find ways to create an environment conducive

to the application of knowledge in the economy through innovation and learning.

Problems in the agriculture, as the direction of the economic development, are as following: 1. Low productivity and low technology as well as standardization level; 2. Government policy is not clear; 3. Low productivity levels in agriculture have contributed to high poverty; 4. Many rural residents have limited access to markets and resources; 5. Agricultural

land consolidation demands encouragement from the state. The biggest problem to enter the EU agriculture market is to meet EU standards of the supplying products. Georgia needs significant innovations to resolve this problem and increase export to EU countries. Delivering products to EU market is complicated business process and that's why Georgia needs innovations in logistic infrastructure as well.

Standards are recognized driver for innovation. Producers in less developed economies face challenges when seeking to enter new market and increasingly require bundles of inputs and services – standards, certification. On the other hand, to succeed in today's competitive agri-food marketplace, two options are available: organize production more efficiently and focus more consumers oriented in order to meet consumer requirements (Viaene, et al., 2000).

Safety and quality is a core area for European standardization. It corresponds to around 60% of the Commission standardization requests, reflecting the impact of safety on the daily lives of EU citizens. For the EU standards and standardization are clear, strategic assets for securing EU competitiveness and are key tools for promoting innovation and progress in the Single Market. It is commonly accepted that standards and standardization play a vital part in supporting economic growth through their role in boosting productivity and competitiveness and encouraging innovation and prosperity. Standardization is a key component of EU Free Trade Agreement negotiations with the third countries.

GAP, one of the most important approaches, was developed to provide sustainability in agricultural production and trade and to serve confident for the quality and safety of the products that their origins well known (Burhan ozkan 2014).

The role of the state is very important in the national innovation policy making. Without the strong government support and help it can be quite impossible to create and maintain the economic growth through innovation and new technologies.

Systems of innovation theories were first developed in the 1980s by evolutionary economists (Carlsson et al. 2002, Edquist 1997, Freeman 1987, Lundvall 1992, Nelson 1993). The writers in this tradition build on Schumpeterian economics and on institutional economic theories. They argue not only that the innovation is the main source of long term economic growth but also that there is a major role for policy in R&D and science. Government has such a major role, they argue, for two reasons: first the innovation process itself is cooperative in nature; hence there is a significant role for public actors. (Breznitz 2007)

National policy must focus on the business sector since it is the backbone of a national innovation system and any kind of change and transformation requires change and reorientation of private firms (Teubal 2002).

Georgia 2020 sets three main priority actions and relevant policy measures: Priority Action 1: Increase private sec-

tor" competitiveness Policy measures: further improvement of the investment and business environment; promotion of innovations and new technologies; export promotion and development of infrastructure; and maximization of Georgia's transit potential. Priority Action 2: Develop competitive human capital Policy measures: development of market oriented human capital; streamlining social security system; and securing affordable and quality health care (SME development strategy of Georgia 2016-2020).

It's very important to understand cases in which countries achieved innovation based on economic growth.

The stories of Israel, Ireland and Taiwan offer cases of successful rapid innovation based on industrial growth in the time span of one generation in countries in countries with very different political and institutional systems. These cases provide us with insights into a highly contested issue of economic growth – the role of the state in the development of high technology industries in less-developed economics. These very different paths of science and technology industrial policy regimes and development bear upon the question of whether states and societies have choices in their economic development strategies. (Dan Breznitz 2007).

The main element of the innovation based on economic growth is human capital (especially the ability to produce products and service through innovation and creativity). Human capital is the main recourse in development of innovation ecosystem, because only a man has an ability to generate new ideas.

In accordance with knowledge economy assessment methodology world Bank uses indicators such as education and skills - The country's people need education and skills that enable them to create and share and to use it well and innovation system. The country's innovation system—firms, research centers, universities, think tanks, consultants, and other organizations—must be capable of tapping the growing stock of global knowledge, assimilating and adapting it to local needs, and creating new technology (world Bank Measuring Knowledge in the World's Economies-2008).

In Romer's new growth theory, for example, to create new innovations standard labor inputs are not sufficient, human capital must be devoted to the task, and human capital is more productive with a larger stock of knowledge (Romer 1986, 1990). The more knowledge there is, the more productive R&D efforts are—higher human capital produces more knowledge; the greater the stock of human knowledge, the more productive the human capital is.

There is an ineffective usage of human resources in Georgia because the people are not employed in accordance with their qualification and the existing qualifications do not meet the work markets demand. In this aspect, it is an objective necessity to create such conditions in which human capital capabilities will be employed effectively. For example: After the collapse of the Soviet Union and through the early 2000s the country abolished many government Institutions in



regions. Sanitary Epidemiological Stations, Veterinary agencies, in which lots of high qualified specialists were employed for many years. DCFTA takes into consideration and it is a necessary requirement to implement new standards in Georgian economic. EU Standards implementation is necessary for the country to take advantage of the agreement. Institutions which were mentioned above played the main role in monitoring products and services compliance with standards (gost) in Soviet Union. For now government tries to create new institutions which should maintain implementation of these functions: The National food agency; Agro consulting centers in regions. However, it should be noted during announced vacancy competitions the main requirement is considered not many years of qualified work experience in the field but the knowledge of legislative norms regulating specific spheres, which leads to the unexploited capabilities of the high-quality staff, On whose preparation was spent high amount of resources. Human capital is the main factor of innovation development, accordingly, qualified staff should be retrained in their specialty by up to date programs in order to increase their productivity and competitiveness for the innovation system building.

The recent literature suggests that skilled migrants can alter the development trajectory of a poor country through the diffusion knowledge or technology transfers. As for example in the shift from a brain drain of talent away from the home country to "brain circulation" between it and the core economies. (Saxenian et.al., 2006).

Many of the Georgians have emigrated from the country for the last 20 years. The most direct mechanism for transferring intellectual capital to the home country would be for the highly educated migrants to return to work in their native country.

Georgia has a Successful example of the innovation based development in the service sphere which shows that government Supported innovation could be very effectively promote countries' development.

A successful example of innovation based development Innovation Services Laboratory – Service Lab was created and operated since 2014 in the Public Service Development Agency of the Legal Entity of Public Law which is governed by the Ministry of Justice of Georgia.

The ServiceLab is set up in the PSDA as the agency is responsible for the issuance of civil registry and is responsible for facilitating the development of services in the state and introducing innovations in the public sector. It should be noted that its functioning extends throughout the country and provides innovative methods of creation and delivery of public services. The State Services Development Agency was the first in the region who founded the Laboratory of Innovation to justify the expectations of Citizens. In accordance with the Law of Georgia on State Services Development Agency, the one of the main goals of the agency is the introduction of new and innovative services. The ServiceLab methodology is distinguished by customer-oriented and provides for the development of services or product designs based on these needs. That approach is its main value - innovation. Design Thinking and Foresight Methods are especially popular in this regard. Design Thinking, as a method, focuses entirely on customer experience and creates a service delivery design. The method consists of several steps: Empathize; Define; Ideate; Prototype; Testing. ServiceLab has conducted several projects, whereby new public services for example: "IdeaBox", ServiceLab is actively involved in the ongoing Public Administration Reform.

## CONCLUSION

Georgia's national innovation system construction process is a promising story but a story with many complexities. Georgia can benefit from the DCFTA only through developing agricultural sector what could be achieved with technology absorption and global GAP standards implementation. Only in this case the country could get tangible benefit from the DCFTA. Country needs significant turn toward technology based development. Catch-up pressure should be put on the shoulders of the countries innovation ecosystem, which must be formed in the early future. The innovation policy should be directed to the concrete stakeholders in the sector, - farmers who have relatively large lands and use hired workforce. Innovation Services Laboratory – ServiceLab, Public Service Development Agency is a clear example that country has ability, not only to implement new technology, but also to create and innovate one.

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### SUMMARY

The article reviews the role of the innovation policy and national innovation ecosystem in Georgia in determining the direction of economic development of the country. The focus is on the state's role in supporting the sustainable components of the country's innovation ecosystem. A particular accent is made on the need for considering the importance of innovations and the introduction of new technologies in the aspect of getting benefits from the Association Agree-

ment with the European Union. The peculiarities of the use of human resources in the country and the problematic issues related to the introduction of innovations and new technologies in the development of economic relations with the EU. The article discusses a successful example of innovative development in Georgia by using the so-called "case study" method for the State Service Development Agency and the House of Justice.