Konrad Adenauer Stiftung

SME CLUSTERING:

FINDING THE RIGHT BUSINESS PARTNERS AND IMPROVING THE BUSINESS ENVIRONMENT FOR SMEs

Eds: Antal Szabó
Colin Dürkop

FINAL WORKSHOP REPORT
on
"SME CLUSTERING: FINDING THE RIGHT BUSINESS PARTNERS AND IMPROVING THE BUSINESS ENVIRONMENT FOR SMEs"

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ABBREVIATIONS

Ahrobum	Innovation and Technology Cluster in Melitopol (Ukraine)
AFRD	Association for Farmers Rights Defense
AIDA	Albanian Investment Development Agency
AITA	Albanian Information Technology Association
ASC	Albanian Software Cluster
ATU	Autonomous Territorial Unit in Moldavia
BDSS	business development support services
bn	billion
BRIC	Business Relay and Innovation Center of Albania
BSEC	Black Sea Economic Cooperation
BSTDB	Black Sea Trade and Development Bank
BSUN	Black Sea Universities Network
CAT	Competitive Advantage of Turkey
CEDA	Center for Entrepreneurial Education and Business Support in Moldova
CEE	Central and Eastern European Countries

CIP	Competitiveness and Innovation Framework Programme
CIS	Commonwealth of Independent States
CISA	International Centre for Entrepreneurial Studies in Bucharest
Cluster MEDGreen	Association for Promoting Businesses Specialized in Ecotechnology and Alternative Energy Sources
CNIPMMR	National Council of Small and Medium-sized Private Enterprises in Romania
COSME	EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises
COSMORAR	Constanta Space Technologies Competence Centre, dedicated to the sustainable development of Romania's marine and coastal regions
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EEN	Enterprise Europe Network
EFSE	European Fund for Southeast Europe
EHEA	European Higher Education Area
EIT	European Institute of Innovation and Technology
Elchim-Moldova	Science and Technology cluster in modern technology in Moldova
EPRS	European Parliamentary Research Service
ERENET	Entrepreneurship Research and Education Network of Central and Eastern European Universities
ETP	European Technology Platform
EU	European Union
EUR, €	euro, official currency of the eurozone
FDI	foreign direct investment
FGCR	Romanian Rural Credit Guarantee Fund
GCI	Global Competitiveness Index
GDP	gross domestic product
GEL	Georgian lari
GII	Global Innovation Index
GIZ	German International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)
GNI	gross national income
GNP	gross national product
GSI	General Secretariat for Industry in Greece
GSRT	General Secretariat for Research and Technology in Greece

GTZ	German Technical Cooperation Agency
GVA	gross value added
ha	hectare
HDI	Human Development Index
Horizon 2020	the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020)
HTCI	Hellenic Technology Clusters Initiative
ILO	International Labour Organization
INSAE	Institute for Nanotechnologies and Alternative Energy Sources
INSTAT	Institute of Statistics in Albania
JASMINE	Joint Action to Support Microfinance Institutions in Europe
JEREMIE	Joint European Resources for Micro to Medium Enterprises
KAS	Konrad-Adenauer-Stiftung
KICs	Knowledge and Innovation Communities
KOSGEB	Republic of Turkey Small and Medium Enterprises Development Organization
LEADER	Liaison Entre Actions de Développement de l'Économie Rurale, or "Links between the rural economy and development actions" in English. The LEADER approach uses local strategy development and resource allocation for local empowerment in area development and decision making.
LEDIB	Local Economic Development in the Balkans programme
LED	local economic development in Armenia
m	million
MAP	Multi-annual Programme in the EU
MDL	Moldovan leu
MECMA	Romanian Ministry of Economy, Commerce and Business Environment
MSME	micro, small and medium-sized enterprise
na	not available
NBS	National Bureau of Statistics of the Republic of Moldova

NRC	National Registration Center in Albania
PACA	Participatory Appraisal of Competitive Advantages, a methodology using a set of tools to build SME clusters in Armenia
PHARE	A pre-accession financial instrument of the EU through which the European Community cooperates with Central and Eastern European countries to support their transition to a market-oriented economy and their accession to EU
PPP	Public-Private-Partnership
RAEF	Romanian-American Enterprise Fund
ReNITT	National Network for Innovation and Technological Transfer in Romania
SBA	Small Business Act for Europe
SEE	Southeast Europe
SMAEs	Small and medium-sized agri-processing enterprises
SMEs	small and medium-sized enterprises
SME DNC	SME National Development Center in Armenia
SPM	Social Performance Management
TEKMER	Technology Development Center in Istanbul
TRY	Turkish lira
TTIP	Transatlantic Trade and Investment Partnership
UAH	Ukrainian hryvnia
UNAI	United Nations Academic Impact
UNCTAD	United Nations Conference on Trade and Development
UNECE	United Nations Economic Commission for Europe
URAK	International Competitiveness Research Institute in Istanbul
USD	United States dollar
WEF	World Economic Forum
WTO	World Trade Organization

PREFACE

Ambassador Traian Chebeleu
Deputy Secretary General,
Permanent International Secretariat of the Organization of the Black Sea Economic Cooperation (BSEC PERMIS)

Dear Dr. Dürkop,
Dear Dr. Szabó,
Distinguished Participants,

It is both an honour and a privilege to open this Workshop on SME Clustering and to welcome you, on behalf of the Permanent International Secretariat of the Organization of the Black Sea Economic Cooperation.

To begin, I would like to express our thanks and appreciation for the Konrad-Adenauer-Stiftung's long-standing support of our Organization. Through KAS's support, which dates back to 1997, we have endeavoured to encourage and support the development of SMEs in the BSEC region.

I would also like to express our thanks to Dr. Antal Szabó, Scientific Director of the prestigious ERENET, who has par-

ticipated in a great number of BSEC-KAS Workshops and Seminars, and shared his comprehensive and outstanding professional knowledge on the ways through which the SME sector in the BSEC Member States can be supported.

Today's Workshop focuses on SME clustering, specifically, the guidelines through which SMEs can find business partners that are right for them. Indeed, clusters are important economic policy tools capable of helping enterprises, particularly SMEs, to remain competitive in an increasing globalized market. As clusters have significant potential for technology transfer, dissemination of innovations, resource sharing and market expansion, they are useful instruments for entrepreneurship in the economies of the BSEC Member States.

The European Union has developed strategies and programmes enabling its Member States to develop world-class clusters in both traditional and emerging industries, by strengthening cluster management, promoting cluster cooperation and providing sound statistical analyses.

Thus, today's Workshop highlights the importance of this policy instrument within the BSEC framework, and aims to encourage and support the formation of clusters in the BSEC Member States. In fact, clusters can boost the development of a competitive private sector and contribute to poverty reduction by building sustainable linkages between small enterprises, their larger scale business partners and support institutions.

These linkages enhance enterprise competitiveness through the realization of economies of scale. They are a source of sustainability, as they increase the capacity of the economic actors to collectively react to crises and other difficult economic situations.

Support for the sustainable development of the SME sector in the BSEC Member States is one of the goals outlined in BSEC Economic Agenda 2012, the strategic document guiding the activities of our Organization. To achieve this goal, we prioritize, inter alia:

- increasing the competitiveness of SMEs by creating fair conditions at both national and regional levels;
- developing BSEC programmes aimed at promoting favourable conditions for local businesses and foreign investments;

- facilitating networking to enhance the exchange of experiences and know-how as well as organize training for young entrepreneurs.

This Workshop is, therefore, an important incentive and means of support for the activities of BSEC in this particular area.

To conclude, I wish to underline that BSEC will continue to promote SMEs in its Member States. For this reason, we will maintain our traditional cooperation with the Konrad-Adenauer- Stiftung, while simultaneously co-operating with other regional organizations and initiatives as well as with international organizations and institutions.

I look forward to hearing the evaluations and analyses of the experts and commentators attending this Workshop. I believe that the presentations made today will inspire the BSEC Member States to improve their business environments and support SMEs' economic growth.

I expect the discussions that follow will be fruitful, and result in conclusions and recommendations adopted by the participants. I also sincerely hope that the concluding recommendations would be submitted to the BSEC Member States' policymakers for further consideration and action.

INTRODUCTION

Dr. Colin Dürkop
Head of the Konrad-Adenauer-Stiftung (KAS) Office in Turkey

The twenty-first century is the age of the global marketplace, as goods, services and labour may be exchanged anywhere in the world and be utilized by all market participants. However, some countries are in a more advantageous position than others owing to better infrastructure, stable political and economic systems, and the ready availability of up-to-date technology. Developing countries, especially those coming out of the centrally planned economies, are unable to compete fairly with the products, services and workforce of these first world countries in the modern global economy. Similarly, economically advanced countries have to maintain their competitiveness and productivity in the global marketplace. Business clustering was thus conceptualized as a means of not only boosting the competitiveness and prosperity of the industries, products, services and labour of the developing countries, but a way through which all participants in the modern global economy can compete, cooperate and flourish with one another.

A business cluster is a network of connected businesses, suppliers, manufacturers, researchers and developers and other relevant enterprises in the same industry grouped together in the same geographical location so as to jointly increase efficiency, productivity, technological advancement, competitiveness and economies of scale on the national, regional and global levels. When small businesses and young enterprises participate in the business cluster, they are able to enjoy the research and development, expertise and skilled labour force, as well as technology and information usually reserved for larger companies. The larger companies, on the other hand, are able to gain access to the linkages and complementarities across industries and institutions that are essential to continued competitiveness and sustainable development. Furthermore, these linkages and complementarities within the cluster augment accountability and the capacity of all its economic participants to overcome economic, competitive and developmental hurdles in times of crisis.

All countries in the Organization of the Black Sea Economic Cooperation (BSEC) are presently dedicated to the improvement of local and environmental conditions for local businesses, increasing the competitiveness of local SMEs and entrepreneurs, enhancing favourable conditions for foreign investments, and fostering networking and the meaningful exchanges among local SMEs, young companies and start-ups. Clustering has, therefore, become an attractive methodology through which these aims may be achieved in the long-term in the BSEC Member States. This publication compiles the clustering experiences of the various BSEC Member States as contributed by the presenters of the BSEC and KAS workshop on SME Clustering: Finding the Right Business Partners and Improving the Business Environment for SMEs.

Dr. Antal Szabó, Scientific Director of the Entrepreneurship Research and Education Network of Central European Universities (ERENET), formally opens this volume with an examination of the European Union cluster policy, thereby emphasizing the ways through which clusters are able to promote increased productivity and competitiveness. The theme of clusters' ability to sustain competitiveness and growth is continued in Dr. Eden Mamut's exploration of cluster development through the university and research-based knowledge and innovation communities in Southeast Europe. Following these two summations of the importance of business clusters for productivity, growth, competition and economic development, the

subsequent national country studies delve into the unique clustering approaches and experiences of the respective BSEC Member States.

Arbër Demeti, Erjona Rebi (Suljoti) and Tefta Demeti consider Albania's competitiveness vis-à-vis the EU-27 average, cluster development in the country to date, impediments to Albanian SMEs' involvement in clusters, as well as the strategies in favour of clustering and national productivity in their case study. In Rshtun Martirosyan's chapter, the Participatory Appraisal of Competitive Advantage (PACA) methodology is expounded as a means of building SME clusters in Armenia through stimulation of the local or regional economy and SME development. While clustering is academically seen as a fast track to research commercialization, increased competitiveness and enhanced productivity, Todor Yalamov's case study on Bulgaria highlights the insufficient attention paid to finding the right business partners for successful and sustainable cluster formations and organizational networks between firms.

Georgia's agrofood-based clusters, development of their management, and their ability to meet social and economic challenges as well as local and national economic development through cluster policy and innovation support programmes are evaluated by Kakha Nadiradze, Nana Phirosmanashvili and Mariam Goginashvili. Antonios Gypakis, Konstantinos Apergis, Panagiotis Chatzinikolaou and Jorge-A. Sanchez-P recount the approach of the General Secretariat for Research and Technology (GSRT) in the creation of innovative high technology clusters in Greece, and recommend the establishment of realistic and measurable qualitative and quantitative objectives for cooperation and networking for future cluster funding. Moldova's state policy on cluster development for the improvement of SME innovative activities, competitiveness, cooperation and productivity is critically discussed by Alexandra Novac and Elena Aculai, who conclude with some suggestions of overcoming the risks and barriers of cluster creation in the country.

The case study on Romania's clustering efforts across regional barriers by Zsuzsanna Katalin Szabó and Katalin Dalma Szabó takes into account the impact of clustering on productive entrepreneurship, enterprises' innovative capacity, competitiveness and use of information and communication technologies (ICT), while reviewing the ways in which EU cluster policies could be adapted to local particularities and used to stimulate technology

transfer among universities, the SME sector, regional governments, high schools and different enterprises. Andrei Generalov probes into innovative regional clusters' capacity of achieving the strategic socio-economic objectives in Russia by studying the perspectives of cluster development in Russia and SME performance in innovative clusters. Aware that the development of innovative SMEs and clusters are dependent on more than specific government measures for the improvement of the existing business environment and the implementation of strategic documents, Sonja Đuričin and Isidora Beraha cover the importance of promoting cluster development policy, evaluating cluster activities as well as intensifying cooperation with the EU in the field of cluster policy implementation, supervision and evaluation for more dynamic cluster development in Serbia.

Meltem Ince Yenilmez's incisive analysis on the relationship between research and development, technology, firms' capability and national policies in textile clusters in Turkey provides a concrete instance of the strong positive impact of clustering on SMEs' technological innovations. Even though clusters exist in different fields in most regions of Ukraine, Oksana Dugert's investigation on the SME clustering situation in Ukraine reveals that more has to be done to advance the country's practical application of clusters.

As may be surmised in the various country studies, sustained competitiveness, increased economic development, improved innovation, better access to information, human resources and research and development are the main reasons of cluster formation in the BSEC Member States. However, these countries still have some way to go before cluster initiatives are fully a part of national economic development strategies and national cluster promotion programmes. Through a careful consideration of local particularities and needs, raising the awareness of clustering, enlarging innovation support, fostering better access to skills and competencies, promoting organizational and technological change, as well as facilitating real exchanges between research institutions and businesses, the countries in the Black Sea Region would be able to formulate policies for innovation infrastructure, dissemination of research results, and knowledge transfer for industrial and commercial applications within their cluster initiatives.

1. CLUSTERING FOR COMPETITIVENESS

Dr. Antal Szabó
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Budapest, Hungary

ABSTRACT
The definition of competitiveness varies, as it depends on a nation's ability to provide a favourable environment for its firms to prosper and develop. The author defines competitiveness as the ability of a company or institution to deliver better value to customers than its competitors. Using the World Economic Forum's Global Competitiveness Index (GCI), he analyses the data of the twelve BSEC countries.

Clusters are interconnecting systems between private and public sector entities such as firms and institutions. A cluster usually comprises a group of companies, suppliers, service providers, associated institutions like testing and quality control institutions, educational institutions, vocational training schools, and trade companies/distributors/associations in a particular field. These groups within a cluster are linked by externalities and complementarities. In our economy, productivity affects competitiveness. Productivity measures the firms' competitiveness in a particular field. Industrial companies can be highly productive if they use sophisticated technology, high-tech production methods, and offer unique products and services. Clusters affect competition by increasing the competitiveness of companies acting in their respective fields.

The European Union **Cluster Policy** is presented as a conclusion. In this conclusion, **the Cluster Policy Guide is elaborated. The author also discusses the design and plan of cluster policy support initiatives, the establishment of a European Cluster Observatory as well as pilot projects of model demonstrator regions,** and the elaboration of **a cluster stress test tool.**

Keywords: competitiveness, cluster, cluster policy, emerging industries, European Cluster Observatory, SMEs

JEL Classification: C38, L26, L52, L53, M13, O25

PREFACE

SMEs are deeply affected by the globalization of markets. Due to internationalization, all firms are forced to act and think globally. Changes in the world economy through liberalization of trade, increasing globalization, the EU internal market, the preponderance of e-commerce, and other institutional changes have gradually shifted the behavioural pattern of SMEs.

The SME sector's motto for the next millennium is **"Think global – Act local"**. At present, most SMEs are working within the framework of a local environment. Their consumers are their neighbours and they operate within the vicinity of their village, city, county or region. This is their strength and weakness. This is not sustainable in the long-term, and SMEs have to take into consideration the influence and external factors of globalization. They must also pay attention to the extent of their country's internationalization and be attuned to the challenges of competitive market players, environmental concerns, sustainable economic growth, international standards and information technology.

With the global marketplace changing so quickly, there is always a need to be one step ahead of the competition and be at a competitive advantage. This has created new paradigms of competition and competitiveness all over the world. Organizations now use strategies and resources to strengthen their competitiveness. Competitiveness Review, an international business journal, has established itself as the leading resource on competitiveness for all those associated with business.

Due to internationalization, SMEs can no longer focus on export and import activities. They must now engage in business activities that include cooperation as well as subcontracting. SMEs may also be engaged in cross-border partnerships and foreign investments to capitalize on new opportunities.

Undertaking changes and being enterprising is necessary in our globalized world today. Professor János Vecsenyi of the Small Business Development Centre in the Corvinus University of Budapest conducted a round table on becoming successful and socially responsible entrepreneurs in Budapest in 2006. He summarized the following as essential to successful entrepreneurship: "Asking whether a professor can teach entrepreneurship is like asking whether an ornithologist can fly? If an ornithologist

can teach a bird how to fly, perhaps a professor can teach someone how to be an entrepreneur." [1]

Entrepreneurship has a dual character: Art is necessary to the act of being enterprising, while Science is the organized knowledge used in the practice. Thus, **science** and **art** are **complementary** to entrepreneurship.

The essential feature of any science is the application of scientific methods to the development of knowledge. Thus, science has clear concepts, theories and other accumulated knowledge developed from hypotheses, experimentation and analyses. The Entrepreneurship Curricula is a rather new phenomenon in the majority of Central and Eastern European (CEE) universities. Globalization has resulted in former teachers of Marxist and Leninist macroeconomic sciences seeking new training in market-oriented economies. This is because centrally planned economies are no longer relevant in the globalized market. Moreover, the centrally planned economy is incompatible with private ownership and the market economy. Only a vendor or shopkeeper knows the intricacies of maintaining customer satisfaction when selling a simple T-shirt. Thus, entrepreneurship should be taught by people in business instead of university professors.
Indeed, the participants of Professor János Vecsenyi's round table discussion emphasized the importance of sharing experiences as well as the transferring of knowledge and skills from entrepreneurs to students. The round table established the following as excellent ways of facilitating the exchange of experiences, skills and knowledge from entrepreneurs to students:

- Organizing mentoring programmes for students;
- Organizing livelihood discussions such as the Budapest round table between entrepreneurs and students;
- Fostering cooperation amongst SMEs to exchange experiences;
- Put into practice the experiences of US entrepreneurs in realizing their dreams, boosting changes and learning from their failures;
- Set up business incubators for start-ups.

1.1 CHARACTERISTICS OF SMEs

Although governments recognize the importance of entrepreneurship and the SME sector in their national SME policies and support programmes, SMEs still face many problems. Some of these problems are inherent and

deeply rooted in the nature of the small businesses; others are the direct outcome of the ever-changing business, economic and political environment.

The United Nations Economic Commission for Europe (UNECE) has elaborated upon an **integrated approach to SME development that** is employed in many transition economies and the new CEE EU countries. During the last decade, sufficient experience has been gained to allow analysis from both best practices and failures. Today, SME support organizations are playing very important roles, and they constantly adapt their services with the changing conditions of the national and international economies.

The main problems faced by SMEs, as identified by the UNECE in the early 2000s, are still valid. [2] The author has ranked the specific potential constraints and barriers to internationalization in descending order in Figure 1. This schema was based on governments' SME reports and discussions with entrepreneurs.

SMEs face a lack of entrepreneurial, management and marketing skills. While most owner-managers and start-up entrepreneurs are experts in the products and services they provide, their lack of wider managerial skills often hinder their long-term success. Strategic planning, medium-term vision, marketing, finding customers, patience instead of "get rich overnight" schemes, innovative management, commitment to quality and knowledge of quality systems, knowledge of foreign languages, cash flow management, and information technology are the critical elements of management needed to meet challenges of the market economy in the international market environment.

SMEs in many transition economies suffer from bureaucratic red tape. They need freedom from unnecessary regulatory burdens if they are to survive and flourish. They also face constraints in the regulations on the establishment of a company, licensing, taxation, control of central and local government authorities. These issues are of primary importance to countries of the European Commission.

Lack of accessibility to information and knowledge is another factor hindering the development of SMEs. The majority of business information and advisory services offered by knowledge and innovation communities

(KICs) are based on the example of the European Commission. These centres provide information to SMEs with a well-developed market economic infrastructure. Small enterprises need a wide range of information on small business establishment, laws and regulations, taxation, custom regulations, business advisory services, training opportunities, financing sources, local and central tenders, and so on. In many cases, entrepreneurs can only obtain such information through an orderly form, and access to such information is difficult and expensive.

Financial intermediaries still feel that SMEs represent high credit risks. As a result, SMEs have to provide collateral with a value that is sometimes higher than the amount of credit requested. As a consequence, SMEs generally pay a higher rate of interest than larger enterprises. Although ten years have passed since the transition economies in the BSEC countries moved towards market economy, many of these countries still do not have any start-up capital and credit guarantee institutions.

Non-conformity of standardization, underdeveloped testing facilities, poor national certification, lack of quality counselling infrastructure and poor quality commitment of SMEs hinder the entrance of these companies to the international market. Standards should be lowered so that SMEs can overcome the barrier to entering the international market. This could be the only way for SMEs to enter the global market. Governments should play an active role in creating an appropriate business and socio-political environment; governments should also create national quality award schemes to raise awareness of the importance of providing quality goods and services. By doing this, governments can enhance the competitiveness of SMEs.

Figure 1: Ranking the barriers to SMEs' internationalization

BARRIERS TO INTERNATIONALIZATION	MOST IMPORTANT
Lack of entrepreneurial, managerial and marketing skills	▼
Bureaucratic red tape	▼
Lack of accessibility to information and knowledge	▼
Difficulties in accessing financial resources and Lack of capital	▼
Lack of accessibility to investment (technology equipment and know-how)	▼
Non-conformity of standardization, lack of quality awareness and lack of mutual recognition schemes	▼
Product and service range, and usage differences	▼
Language barriers and cultural differences	▼
Risks in selling abroad	▼
Competition of indigenous SMEs in foreign markets	▼
Unfavourable multinational companies' policies against domestic SMEs and Lack of government support programmes for SMEs	▼
Complexity of trade documentation including packaging and labelling	▼
Lack of government incentives for SMEs; internationalization	▼
Inadequate intellectual property protection	LEAST IMPORTANT

Source: UNECE Coordinating Unit for Operational Activities, Geneva, 2001

1.2 GLOBAL COMPETITIVENESS OF THE WORLD ECONOMY

The concept of competitiveness has numerous interpretations. The definition of competitiveness varies, depending on a nation's ability to:

- Provide a favourable environment for firms to prosper and develop;
- Enable its economy to achieve high GDP;
- Provide high standards of living to its population;
- Maintain sustainable economic growth;
- Ensure that its regions, companies and institutions are able to provide goods and services with low ecological footprints.

The box below contains various definitions of competitiveness.

DEFINITION OF COMPETITIVENESS

Competitiveness is the ability of a nation or a firm to offer products and services that meet the quality standards of the local and world markets at competitive prices. These products and services must also provide adequate returns on the resources employed or consumed.

Global competitiveness is the existence of competing organizations serving international customers. Access to global customers has increased due to enhanced communications, improved shipping channels, reduction of barriers, and centralized finance authorities.

BusinessDictionary.com
http://www.businessdictionary.com/definition/competitiveness.html

Competitiveness analyzes the way that nations and enterprises manage the totality of their competencies to achieve prosperity or profit.
World Competitiveness Yearbook
http://www.imd.org/uupload/www01/documents/wcc/content/fundamentals.pdf

Competitiveness "…analyzes the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people."

Academic definition highlighted by the IMD World Competitiveness Yearbook
https://www.imd.org/uupload/imd.website/wcc/FAQs.pdf

Competitiveness is the ability of a country to facilitate an environment in which enterprises can generate sustainable value.

IMD World Competitiveness Center
http://www.imd.org/research/challenges/TC028-15-competitiveness-sustainability-bris-caballero.cfm

Competitiveness is the ability of a company or institution to deliver better value to customers than its competitors.

Dr. Antal Szabó

In recent years, the concept of competitiveness has emerged as a new paradigm in economic development. Competitiveness captures the awareness of both the limitations and challenges posed by global competition at a time when effective government action is fettered by budgetary constraints, and the private sector faces significant barriers to competing in domestic and international markets. The Global Competitiveness Report published by the World Economic Forum defines competitiveness as "the set of institutions, policies, and factors that determine the level of productivity of a country."

For more than three decades, the World Economic Forum's annual Global Competitiveness Report has studied and benchmarked the many factors underpinning national competitiveness. From the outset, the goal has been to provide insight and stimulate discussion among all stakeholders on the best strategies and policies to overcome the obstacles to improving competitiveness. In the current economic context, this report is a critical reminder of the importance of sound structural economic fundamentals for sustained growth. Since 2005, the World Economic Forum (WEF) has based its competitiveness analysis on the Global Competitiveness Index (GCI), a comprehensive tool measuring the microeconomic and macroeconomic foundations of national competitiveness.

The concept of competitiveness includes static and dynamic components. Many factors influence and drive productivity and competitiveness. Today, investment in physical capital and infrastructure alone is insufficient. This is because good governance, macroeconomic stability, education and training, research and development (R&D) have become as important as capital and infrastructural investment.

The World Economic Forum takes into consideration twelve components when calculating GCI. These twelve components are called pillars in the report. Each pillar measures a different aspect of competitiveness.

These twelve pillars are organized into three sub-indexes, each critical to a particular stage of development. These sub-indexes are as follows:

The basic requirements sub-index groups those pillars most critical for countries in the factor-driven stage. Pillars in this sub-index are:

- Institutions

- Infrastructure
- Macroeconomic Stability
- Health and Primary Education

The efficiency enhancers' sub-index includes those pillars critical for countries in the efficiency-driven stage. Pillars in this sub-index are:

- Higher Education and Training
- Goods Market Efficiency
- Labour Market Efficiency
- Financial Market Sophistication
- Technological Readiness
- Market Size

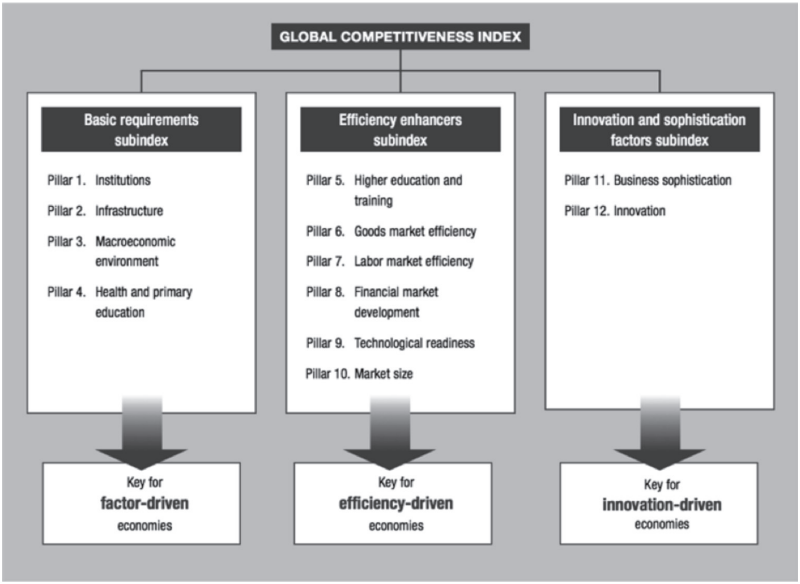
The innovation and sophistication factors sub-index includes the pillars critical to countries in the innovation-driven stage. Pillars in this sub-index are:

- Business Sophistication
- Innovation

The pillars are presented on a scale of 1-7, where 7 is the highest degree of competitiveness and 1 is the lowest.

The three sub-indexes are shown in Figure 2 below.

Figure 2: Three sub-indexes showcasing the 12 Pillars of Competitiveness



Source: World Economic Forum: Methodology – The 12 Pillars of competitiveness

http://reports.weforum.org/global-competitiveness-report-2014-2015/methodology/

The World Economic Forum analyzed 144 economies and determined their GCI. As a caveat, it states that some countries demonstrate insufficient progress in adopting and implementing structural reforms necessary for long-term economic growth. Innovation, talent development and institutional strength continue to play defining roles in determining the world's most competitive economies. The GCI uses statistical data such as enrolment rates, government debt, budget deficit, and life expectancy. These data are obtained from internationally recognized agencies, like the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Monetary Fund (IMF) and the World Health Organization (WHO).

Switzerland tops the report's Global Competitiveness Index rankings, while the US and Japan moved up in the rankings for a second year in a

row. The Table below summarizes the GCI of BSEC countries in 2014-2015 and compares their performance with the previous years.

GLOBAL COMPETITIVENESS INDEX OF BSEC COUNTRIES: COMPARISON BETWEEN 2014-2015, 2013-2014 and 2012-2013

Country	Rank (out of 148)	Score (between 1-7)	Rank among 2013-2014 & 2012-2013 economies*	GCI 2013-2014 & 2012-2013
Azerbaijan	**38**	**4.53**	**38**	**39**
	39	4.51	39	46
Turkey	**45**	**4.46**	**45**	**44**
	44	**4.45**	**44**	**43**
Russian Federation	**53**	**4.37**	**53**	**64**
	64	**4.25**	**64**	**67**
Bulgaria	**54**	**4.37**	**54**	**57**
	57	**4.31**	**57**	**62**
Romania	**59**	**4.30**	**59**	**76**
	76	**4.13**	**76**	**78**
Georgia	**69**	**4.22**	**69**	**72**
	72	**4.15**	**72**	**77**
Ukraine	**76**	**4.14**	**76**	**84**
	84	**4.05**	**82**	**73**
Greece	**81**	**4.04**	**81**	**91**
	91	**3.93**	**89**	**96**
Moldova	**82**	**4.03**	**82**	**89**
	89	**3.94**	**87**	**87**
Armenia	**85**	**4.01**	**85**	**79**
	79	**4.10**	**79**	**82**
Serbia	**94**	**3.90**	**93**	**101**
	101	**3.77**	**99**	**95**
Albania	**97**	**3.84**	**96**	**95**
	95	**3.85**	**93**	**89**

Source: Global Competitiveness Report 2013–2014, World Economic Forum 2013 and
http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf

Remark: *This column shows the rank of each economy based on last year's sample of 144 economies. The first figure relates to the year of 2013, while the second one encompasses the year 2014.

1.3 CLUSTERS FOR COMPETITIVENESS

1.3.1 DEFINITION OF CLUSTERS

The cluster-based approach is a new way of organizing and dividing the economy. **There is no real adequate definition of a cluster.** The two famous examples of clusters are US Silicon Valley with its high-tech electronics and the Emilia-Romagna region of Italy specializing in light industries such as textiles, shoes, machine tools, etc. Both clusters differ in nature, orientation, markets and members.

A cluster is an interconnected system of private and public sector entities such as firms and institutions. It usually comprises a group of companies, suppliers, service providers, associated institutions like testing and quality control institutions, educational institutions, vocational training schools, and trade companies/distributors/associations in a particular field, linked by externalities and complementarities. A cluster often includes financial institutions and various government entities.

An industrial cluster is an agglomeration of companies, suppliers, service providers and associated institutions in a particular field.

Cluster literature and discussions with practitioners of clusters indicate that the following are clusters have the following characteristics:

- **Geographical concentration of the interconnected firms.** These entities are linked by externalities and complementarities of different types, and are usually located near each other. Although location remains fundamental for clusters, its role today is different from a generation ago. An example would be a country's automotive industry, with its manufacturers and supporting services, such as parts and equipment suppliers, transportation companies, retail distributors, educational institutions, R&D firms, public relations and advertising agencies, etc.
- **Critical mass of members both in terms of resources as well as competencies.** Members of the cluster need to have considerable capabilities to achieve the overall goal and resounding success.
- **There has to be existing interaction and cooperation among the firms.**

In our economy, competitiveness depends on productivity. Productivity refers to the ways in which firms compete in their particular fields. Companies can be highly productive in their own industry if they use sophisticated technology, production methods, and offer unique products and services.

According to **Michael Porter**, clusters affect competition in three ways: [3]

1. First, by increasing the competitiveness of companies based in the area;
2. Second, by driving the direction and pace of innovation, which underpins future productivity growth; and
3. Third, by stimulating the formation of new businesses, which expands and strengthens the cluster itself.

When companies are part of a cluster, they are more efficient in obtaining information, better able to acquire learning and technology, and more productive in sourcing inputs. Therefore, companies in a cluster have the following options:

- Better access to employees and suppliers;
- Access to specialized information;
- Creation of complementarities;
- Access to institutions and public goods;
- Better motivation and measurement.

CLUSTERS ARE NOT BORN OVERNIGHT. THEY NEED TO DEVELOP SLOWLY OVER TIME!

1.3.2 THE WORLD BANK'S EXPORT COMPETITIVENESS INITIATIVE

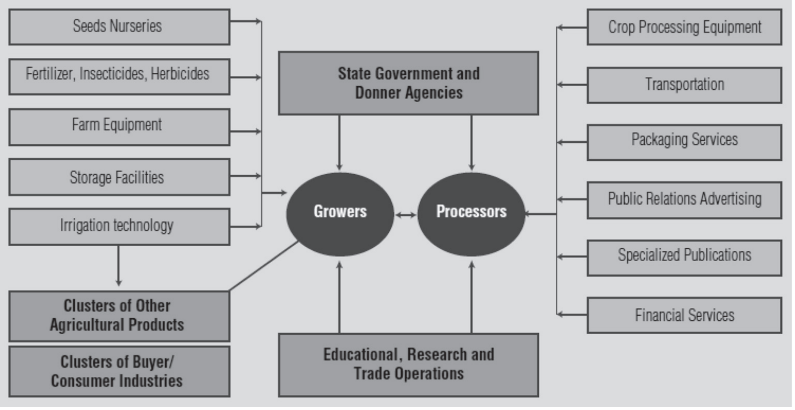
The World Bank's Export Competitiveness Initiative underscores several of the issues above, and aims to develop synergies among practitioners working on economic growth, trade and private sector development. It draws upon a myriad of policy tools and approaches, economic policy, customs and logistics, and direct enterprise support. The policy agenda that typically emerges from a competitiveness analysis touches on three core areas, and they collectively offer a platform through which necessary policy dialogues can be developed:

- Macro fundamentals (e.g. economic biases due to tariff and nontar-

iff trade barriers, real exchange rate misalignment, tax distortions, overall fiscal health of the economy)
- Hard and soft infrastructure (e.g. infrastructure, customs and trade logistics, the costs of doing business)
- Supply-side measures (e.g. technology creation and adaptation, product standards and certification, export promotion, human resource development) [4]

The figure below depicts the model of an agribusiness cluster. The entities of that cluster are geographically near to each other and their activities are interlinked, thereby ensuring that cluster members enjoy economic benefits and synergies. Some of the benefits enjoyed by cluster members include access to specified human resources, marketing tools, suppliers and subcontractors, R&D resources and quality testing services. This shows that a cluster can create both national and international economic power with strong competitiveness in all markets. Clusters can also foster commercialization of new products, start-ups and spin-off companies.

Model of an agribusiness cluster



Source: World Bank Export Competitiveness Initiative, 2009

1.3.3 PANNON AUTOMOTIVE CLUSTER (PANAC)

The **Pannon Automotive Cluster (PANAC)** is an innovative network cooperation of enterprises and organizations in the automotive industry. It is based on mutual advantages and is organized on a voluntary basis. PANAC

was established in December 2000 on the initiative of the West Transdanubian Regional Development Council, with the support of the largest multinational and local automotive companies in Hungary. PANAC aims to improve the international competitiveness of the domestic automotive industry through the provision of industry-specific services.

PANAC's professional founders are:

- Audi Hungaria Motor Ltd.,
- Hungarian Suzuki Co. (currently: Hungarian Suzuki Private Co.),
- Opel Hungary Vehicle Manufacturing Ltd. (currently: General Motors Powertrain – Hungary Ltd.),
- LuK Savaria Ltd. and Rába Holding Co. (currently: Rába Holding Plc.)

PANAC's service-provider founders are:

- Citibank Co. (currently: Citibank Private Co.),
- Industrial Research and Consulting Ltd.,
- West Transdanubian Regional Development Council
  The Ministry of Economy also joined the initiative as an active supporter. [5]

The overall strategic aims of the Pannon Automotive Cluster are the reinforcement of the Pannon region's international competitiveness, improvement of the region's ability to renew, and contribution to the region's development through automotive start-up and spin-off firms as well as the creation of jobs.

Other goals of PANAC are:

- Increase the efficiency of long-term network cooperation among the enterprises operating in the field of automotive industry
- Facilitate the elaboration of new automotive supply relations
- Promote the creation and settlement of new automotive enterprises
- Commonly exploit the infrastructures, technologies, capacities already existing in the automotive industry, and to commonly purchase and operate new ones
- Enhance the creation of an expert-base educated in conformity with the requirements of the automotive industry
- Transmit the educational needs of skilled workers in the automotive sector in engineering education, as well as to hone workers' other skills such as teamwork, knowledge of languages and practical orientation

- Dissolve mistrust among the automotive enterprises so as to ensure opportunities of informal communications and efficient flow of information
- Reinforce out-of-network relations with similar networks so as to improve cooperation and technology transfer
- Increase value added in corporate activities

1.3.4 EUROPEAN CLUSTER PANORAMA

With scarce natural and energy resources as well as ambitious social and environmental goals, EU companies cannot compete through low price and low quality products. They must turn to innovation, productivity, resource efficient and high value added goods and services to compete in global markets. Europe's comparative advantage in the world economy continues to lie in high value added goods and services, the effective management of value chains, and access to markets throughout the world. Thus, innovation and technological advancement will remain the main source of competitiveness for EU industries. For this reason, further efforts are needed to achieve the Europe 2020 target of spending 3% of GDP on research and development (R&D). [6]

The European Commission has launched a range of initiatives to foster innovation and growth, and strengthen the underlying competitiveness of the European economy. A key area of interest is the development of emerging industries and their role in driving economic dynamism. Cluster policy is one of the new driving forces in entrepreneurship development. SMEs can be more innovative when they work together, and they would collectively be able to create more jobs and register more international trademarks and patents. The EU Cluster Portal provides tools and information on key European initiatives as well as actions and events for clusters and their SMEs, as it aims to create more world-class clusters across the EU.

Clusters today operate in regional markets. 38% of European jobs are based in regional strongholds, and SME participation in clusters leads to better innovation and growth. **There are about 2000 statistical clusters in Europe, of which 150 are world-class** in terms of employment, size, focus and specialization.

Why did the EU elaborate a cluster policy? The 2014 Communication for a European Industrial Renaissance [7] highlighted clusters' ability to help SMEs grow and internationalize through facilitation of cross-sectoral and cross-border collaboration. The European Commission has launched several initiatives under COSME and Horizon 2020 to support SME innovation and growth through clusters.

COSME is the EU programme for the Competitiveness of Enterprises and SMEs, and it runs from 2014 to 2020. With its budget of €2.3 billion, COSME will support SMEs in the following areas:

- Facilitating access to finance;
- Supporting internationalization and access to markets;
- Creating an environment favourable to competitiveness;
- Encouraging an entrepreneurial culture [8]

COSME promotes the development of world-class clusters in the EU, and fosters cluster excellence and internationalization by emphasizing cross-sectoral cooperation, notably in support of emerging industries. The programme also aims to accelerate the digitalization of the business community, and promote e-skills and e-leadership.

Horizon 2020 is the biggest EU Research and Innovation Programme with funding of nearly €80 billion available over the course 2014 to 2020. [9]

One of the key areas of interest is the **development of emerging industries** and their role in driving economic dynamism. Emerging industries can be understood as "the establishment of an entirely new industrial value chain, or the radical reconfiguration of an existing one, driven by a disruptive idea (or convergence of ideas), leading to turning these ideas/opportunities into new products/services with higher added value". Therefore, emerging industries can be, but are not necessarily "new" industrial sectors.

CLUSTER IN EMERGING INDUSTRIES

The EU Cluster Policy includes elaboration of the Cluster Policy Guide, design and plan of cluster policy support initiatives, establishment of a European Cluster Observatory, implementation of pilot projects of model demonstrator regions, and the elaboration of a cluster stress test tool.

The European Commission has launched a range of initiatives to foster innovation and growth, and strengthen the underlying competitiveness of the European economy. A **key area of interest is the development of emerging industries** and their role in driving economic transformations and growth.

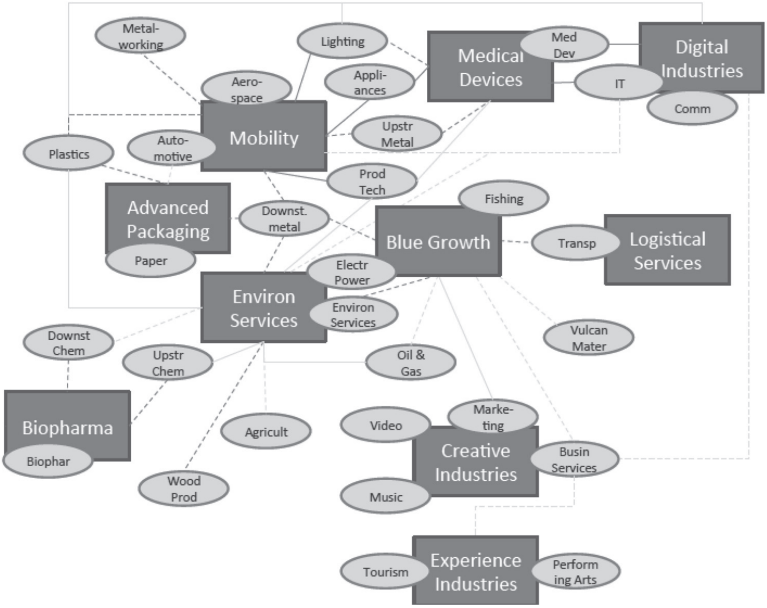
> **Emerging** industries are the establishment of an entirely new industrial value chain, or the radical reconfiguration of an existing one, driven by a disruptive idea (or convergence of ideas), leading to turning these ideas/opportunities into new products/services with higher added value.

Therefore, emerging industries can be, but are not always "completely new industrial sectors". They are new combinations of narrowly defined activities that can also comprise existing industrial sectors evolving into emerging industries in response to new technologies, market demands, and value chain configurations. [10]

The following fields are **emerging industries**:

- **Advanced Packaging** is an increasingly important input to many other activities, from food processing to automotive supply chains.
- **Biopharmaceuticals** form the scientific basis of the life science industries, and employ some of the most educated and productive employees.
- Blue Growth Industries are the focus of European policy in the last several years, and this is an area where interesting new islands of activity might emerge.
- **Creative Industries** are crucial to the future of European economy, and this sector has been growing faster than any emerging industry in the past two decades.
- **Digital Industries** cover the key parts of the Information and Communication Technologies (ICT) economy: computer hardware, software, e-commerce and wireless services.
- E**nvironmental Industries** cut through all sectors of the economy as the need for more sustainable operations is increasingly realized. This sector has high growth potential.
- **Experience Industries** cover the creation and consumption of "experiences", and are composed of millions of SMEs at the intersection of arts and businesses.
- **Logistical Services** are central to the modern economy, and are among the leaders in job creation.

- **Medical Devices** are another core part of the life science industry, and are also connected to large and growing employment in local healthcare services.
- **Mobility Technologies** form a core part of the European manufacturing industry. Despite suffering during the recent economic crisis, they are a clear focus for Europe's strategy to re-industrialize.



Linkages between clusters and emerging industries

Source: European Cluster Panorama, 2014

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2. THE PROCESS OF CLUSTERING SMALL AND MEDIUM ENTREPRISES IN KNOWLEDGE AND INNOVATION COMMUNITIES IN SOUTHEAST EUROPE: A UNIVERSITY PERSPECTIVE

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ABSTRACT
SME clustering has had a long history with important achievements over the years. This paper includes an analysis of the clustering process in the EU and Southeast Europe in particular.
The main components of the Innovation Union strategy of the European Union namely, European Technology Platforms, the associated Joint Undertaking Public-Private-Partnerships (PPPs) and the European Institute of Innovation and Technology (EIT) are evaluated.
The fundamental factors identified in the analysis of the EU's Innovation Union strategy are then applied to the process of structuring an innovative cluster.
Cluster MEDGreen, specializing in ecotechnologies and alternative energy sources, is presented as a case study. The results of this case study analysis are used to define a reference set of recommendations for universities. It is hoped that these recommendations will help to shape appropriate innovative clusters.

Keywords: eco-innovation, SME clustering, university-industry partnership

JEL Classification: L14

2.1 BACKGROUND

According to the literature [1] [2], a business cluster (also known as an industry cluster or a competitive cluster) is a geographic concentration of interconnected businesses, suppliers and associated institutions acting in a particular field. It aims to enhance the competitive advantages of the participating companies by increasing the productivity of the companies in the cluster, driving innovation in the field, and stimulating new businesses in the field.

The Cluster Portal of the European Union [3] uses the following definition: "Clusters are groups of specialized enterprises – often SMEs – and other related supporting actors that cooperate closely together in a particular location. In working together, SMEs can be more innovative, create more jobs and register more international trademarks and patents than they would alone."

From a university perspective [4], cooperation models with the business sector have centuries of history, with the most relevant model originating in the Humboldtian University model of the early nineteenth century in Europe and the American Land Grant University model of the late nineteenth century.

Contact between the universities and industries accelerated during World War II, and is still ongoing. In the USA, the Massachusetts Institute of Technology (MIT) and Stanford University are research universities that have contributed much to the institutional models of university-industry collaboration. The establishment of Stanford Industrial Park (also known as Stanford Research Park) in 1951 was a notable milestone in university-industry partnership, as it furthered entrepreneurial initiatives and developments, and prepared the legal framework for the future Silicon Valley phenomenon. Located in northern California, Silicon Valley is presently considered the leading platform and start-up ecosystem for high-tech innovation and development. It is estimated that Silicon Valley accounts for one-third of all venture capital investment in the USA.

Cooperation models between universities and industries parallel the American model seen in Silicon Valley, as they are happening now in Japan, Israel, Canada, Sweden, Australia and South Africa.

2.2 THE UNIVERSITY PERSPECTIVE

This study will not provide a detailed evaluation of the governance and corporate models of universities in Southeast Europe and the Black Sea region. Such a broad study is beyond the scope of this paper. I will instead consider universities in the region that have the same values of freedom of expression as well as university autonomy and accountability. The situation may differ slightly different between the countries; and different universities from the same country with the same regulatory, political and

socio-economic conditions may have different models of governance. But the overall core values of the universities in Southeast Europe are the same because they are integrated into the European Higher Education Area (EHEA) and have developed with the European Union and its neighbouring policies.

The main thesis in the present study is that university involvement in cluster-related activities is crucial to the strengthening and consolidation of the main values of the European model in the following ways:

- **Secures freedom of expression** – This is a fundamental value of universities. Over the centuries, there have been huge debates and confrontations for the freedom of expression. It has shaped the general values of the humanity. Freedom of expression is not restricted to the universities. It has to be promoted in society in order to generate valuable exchanges of ideas, new ideas, new proposals and new solutions in real life.
- **Secures university autonomy** – The generation of new knowledge or new ideas is a very sophisticated process that requires consistency, persuasion, courage and dedication for very long periods of time. Strong and autonomous governance within the university is needed so that new ideas are not distorted by external stimuli. Previous centuries have demonstrated that the autonomy of the universities could not be defended without significant income from different sources. By engaging in cluster-related activities, universities are able to generate additional income through knowledge transfers and exchanging expertise on competitive products or services.
- **Secures accountability** – The university management is accountable to the students, their parents, the taxpayers and other stakeholders. Accordingly, the university must manage its resources appropriately. Through cluster-related activities, universities would be able to enhance the transparency and traceability of their expenditures. The various partners and stakeholders of the university would then have a much broader view on the return of their contributions.

I will analyze the Black Sea Universities Network (BSUN) activities of the past decade. [5] BSUN is an ad hoc international organization founded in 1998 for the purpose of developing scientific, cultural and educational cooperation and exchanges among the Universities of the Black Sea Eco-

nomic Cooperation (BSEC) Member States and other institutions similarly interested in the sustainable development of the Black Sea region. At present, BSUN has 120 member universities from the BSEC Member States, as seen in Figure 1. More information about BSUN's activities may be found on www.bsun.org.

According to the studies carried out by BSUN, cooperation between universities and industries depends on several macroeconomic characteristics such as:

- Existence of a business climate based on principles, transparency and trust – Cooperation between universities and the business sector may lead to very dangerous developments if the business environment is corrupt or has many layers of underground economy.
- A functional market economy – This is fundamental to economic activity involving knowledge commodities, financial assets, human resources or operational costs for sustainable scientific research activity. There are many markets involved in cluster-related activities. For this reason, cluster-related activities have to be regulated if they are to function appropriately.
- A society struggling for competition, performance and involvement in value added activities – Universities' interest in the knowledge and creativity resources of cluster-related activities can only be sustained if the market community has competitive products and services.
- Existence of a pro-market mentality and existence of collaborative services (i.e. innovation services) – A mature business community needs to perform business ethically. Different experts must evaluate a business community to determine if it is ethical.
- A culture for long-lasting business collaboration partnerships – Innovation projects usually have longer business cycles, and may offer mutual satisfaction to both universities and businesses in long-lasting partnerships.

Figure 1: Geographic distribution of the Black Sea Universities Network (BSUN) member universities

Before any business is established and before a university-industry partnership can be set up, the following aspects of the regulatory framework must be in place:

- Contract Law in setting up a new company – The legal framework for establishing and closing a company has to be as simple as possible so as to consume minimal time and resources.
- Intellectual Property Rights (IPR) protection and patenting – This has to be in line with other international legal frameworks in the field.
- Legal environment ensuring the enforcement of contracts, access to credits, licenses and public procurement – While such a legal environment is the backbone of all business and economic activity, it is crucial to the functionality of the sophisticated transactions associated with cluster-related activities.
- Clear state aid rules – Innovation activities as well as expansion activities and knowledge transfer transactions are deemed high risk

factors and will need aid from the state if they are to take place. Therefore, the means of securing of state aid must be well-defined and transparent.

- Stable employment law – Human resources are crucial to innovative projects and other cluster-related activities. In most of the cases, the bulk of the investments are dedicated to the development of new knowledge, skills and attitudes of the employees. As a consequence, employment has to be appropriately regulated and stable for reasonable periods of time.
- Predictable taxation framework with fixed procedural aspects – A reliable taxation system is also extremely important for any kind of business or economic activity, especially high risk enterprises where revenues are yielded only after long periods for time.

Although studies on the cooperation models between universities and industries have been conducted since 2000, the study dedicated to the clustering process (which began under the auspices of the Turkish universities' chairmanship of BSUN) has gained the most traction in recent years. This study on the clustering process has been conducted in conjunction with the UNAI Global Sustainability Hub. On 18 November 2010, United Nations Secretary-General Ban Ki-moon formally launched the UN Academic Impact Initiative (UNAI) at UN Headquarters in New York, which states – "The Academic Impact aims to generate a global movement of minds to promote a new culture of intellectual social responsibility. It is animated by a commitment to certain bedrock principles. Among them: freedom of inquiry, opinion and speech; educational opportunity for all; global citizenship; sustainability; and dialogue."

The Black Sea Universities Network (BSUN) is a founding member of UNAI, and was nominated as a UNAI Global Hub for sustainable development in 2011. In this nomination, BSUN was judged sufficiently capable of establishing and administering the portal www.unai-sustainability.org. The portal was launched by His Excellency Mr. Kiyotaka Akasaka, the UN Under-Secretary-General at the international conference on "Education and Governance for Sustainable Development" held in Constanta, Romania on 17 March 2011. This conference also defined the priorities in the field of education for sustainable development in the Black Sea Region.

As part of UNAI activities dedicated to the promotion of sustainable development projects, a seminar on "Technologies for Biomass and Biogas Pro-

cessing for Sustainable Energy Solutions" was held on 24 October 2011. During that seminar, a pilot project establishing a collaborative model between universities, research organizations, local authorities and innovative companies actively promoting green economy was proposed.

This proposal was followed up by evaluation activities, debates and exchange of best practices. These activities sought to define the concept and structure of such a collaborative framework in line with the models of Knowledge Innovation Communities, Innovation Clusters and Competitiveness Poles.

In 2013, the partners of this initiative decided to register the Cluster MEDGreen as an Association under the Romanian Law for the organization of Foundations and Associations. BSUN coordinated the clustering process, but is not a member. BSUN's main interest in the cluster is access to information that it can use to support member universities in similar circumstances.

2.3 THE INNOVATION UNION STRATEGY OF THE EU

The European Union (EU) is the model for the economies in Southeast Europe and the Black Sea region. The EU is one of the world's largest economic platforms as it groups a population of over 500 million people with some of the most globally advanced economies. But this could change as the global economic situation is changing rapidly. By 2050, it is estimated that Europe's share of world GDP is likely to be half of the present-day's 29%. So far, Europe has been able to keep its share of world exports (20%); and in that respect, its performance is better than that of other advanced economies. But China, India and Brazil have started to catch up with the EU by rapidly improving their economic performance in the last five years.

Faced with strong competition from other countries, the EU has to innovate to keep up. Figure 2 shows the process that innovative products and services undergo from conception to commercialization.

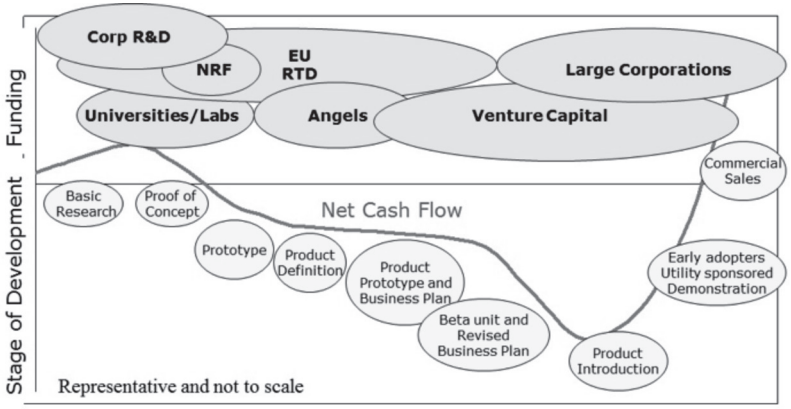

Figure 2: Correlation between new product/service development, funding requirements and possible funding sources

As seen in Figure 2, innovation requires significant support from different donors. By aggregating the contributions of the 28 EU Member States and associated partners, the EU is able to deploy the support of the Research and Technology Development (RTD) programmes in the early phases of the innovation process and the introduction of the product or service to the market. The positions of the National Research Funds (NRFs), corporate research and development activities, universities, national laboratories, business angels, venture capitalists and large corporations are also presented in Figure 2.

The EU currently aims to promote innovation in the sectors of society listed below: [6]

- In the private sector – Companies with design at the heart of their practices.
- In the public sector – Online public services that save people time and money.
- In the third sector – Quality care for the elderly by social innovators.

The "Innovation Union" strategy of the EU was conceived from these basic aims. The Innovative Union has the following strategic objectives:

- Make Europe a world-class performer in science;
- Revolutionize the way in which the public and private sectors work together, notably through Innovation Partnerships;
- Remove bottlenecks by creating an internal market for skills, patents,

venture capital, innovation procurement and standard setting so as to foster the quick implementation of ideas in the market.

Innovation Partnerships were also developed as part of the EU's Innovation Union. Innovation partnerships aim to tackle the major challenges facing our society. These partnerships will help Europe reach its innovation potential more quickly.
The main 3 areas covered by the Innovation Union are:

- European technology platforms, including Public–Private-Partnerships (PPPs) and Joint Undertakings.
- European Institute of Innovation and Technology (EIT).
- Horizon 2020, a research technology development and innovation (RTDI) programme.

The Organization of the Black Sea Economic Cooperation includes three EU Member States (Romania, Bulgaria and Greece), three EU candidate countries (Albania, Turkey and Serbia) and six countries that are neighbours of the EU (Moldova, Ukraine, Georgia, Russia, Armenia and Azerbaijan). Five of the non-EU countries (Albania, Moldova, Turkey, Serbia and Ukraine) are fully associated with Horizon 2020.

These states have similar problems achieving the objectives of the Innovation Union. As a result, they were mediocre in promoting innovation as the driving force for economic development.

On 30 November 2015, BSUN held a seminar at the European Parliament in Brussels. This seminar was titled: EU Innovation Strategy and the Black Sea Region – Effective results and expectations of the members of the innovation ecosystem from EU MS and neighbouring countries from the Black Sea Region concerning the EU strategy "Innovation Union".

The event gathered participants from Albania, Armenia, Bulgaria, Georgia, Greece, Moldova, Romania, Russia, Ukraine, Turkey, Austria, Germany, the Czech Republic, Belgium and the representatives of different organizations in Brussels.

The following issues were addressed in the presence of Mr. Marian-Jean Marinescu (MEP and EPP Vice-President), Mr. Vassilis Maragos (Acting Di-

rector of C Neighbourhood East and DG NEAR) and Mr. Carlos Moedas (Commissioner for Science and Innovation):

- Joint Undertakings: Assessing the possibility of calls for projects addressing topics of interest for the Black Sea region, thus supporting the participation of institutions and enterprises from this region.
- European Institute of Innovation and Technology (EIT): Expanding the Knowledge Innovation Communities (KICs) towards the Black Sea region.
- Horizon 2020: Increase the budget for innovation issues in the Black Sea region.
- Developing a top-down approach in support of Innovative Clusters in the Black Sea region with advice and assistance from the European Commission.
- Developing a top-down approach in support of innovation-based competitiveness poles in the Black Sea region.

Mr. Carlos Moedas, Commissioner for Science and Innovation, highlighted the important role of the Black Sea region within the EU Neighbourhood Policy. He also expressed the European Commission's interest in developing dedicated programmes and components of large EU initiatives. If the Black Sea region is to benefit from this, its sea and coastal areas must be environmentally sound. This is because the natural resources and sustainable development of the region depend on the good environmental status of its waters. Moedas also emphasized the roles of the main actors of innovation. Some of the main actors of innovation are scientific research organizations, universities, inventors and innovative companies. When Moedas spoke on the actors of innovation, he mentioned that there were new initiatives called "seal of excellence". These seals of excellence aimed to certify the value of different project proposals. The Commissioner for Science and Innovation and the Commissioner for Regional Development will decide if a proposal or initiative deserves a seal of excellence. When a project has a seal of excellence, it will be considered for funding resources. Before an initiative can achieve a seal of excellence, it must be committed to the promotion of innovation. A European Council for Innovation will judge if an initiative is sufficiently innovative to warrant a seal of excellence.

At that same seminar, Mr. Vassilis Maragos outlined the ways in which activities carried out in cooperation with regional Black Sea organizations

have synthesized with one another. He mentioned the Black Sea Basin Cross-Border Cooperation Programme as a key player in getting countries in the region to cooperate. The Black Sea Basin Cross-Border Cooperation Programme is in place for the period 2016-2020. This programme will focus on the problems related to environmental protection and the digital agenda. It will also promote renewable energy technologies, blue growth and innovation. Mr. Maragos emphasized the importance of combining bottom-up approaches with top-down initiatives. He also presented activities related to the interconnectivity of data transfer networks and the promotion of the digital agenda in the Black Sea region as examples.

2.4 THE EUROPEAN TECHNOLOGY PLATFORMS

European Technology Platforms (ETPs) are industry-led stakeholder fora recognized by the European Commission as key actors in driving innovation, knowledge transfer and European competitiveness.

ETPs develop research and innovation agendas and roadmaps for action at the EU and national levels, and these agendas are supported by both private and public funding. They mobilize stakeholders to deliver on agreed priorities and share information across the EU. By working effectively together, they are able to overcome major issues such as the aging society, environmental problems as well as food and energy security.

ETPs are independent and self-financing entities. They conduct their activities in a transparent manner and are open to new members. ETPs must have a strategy as well as a mobilization and dissemination function before

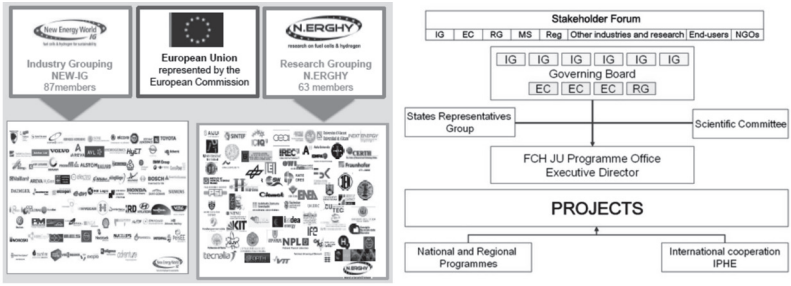

Figure 3: Structure of the Fuel Cells and Hydrogen Joint Undertaking (FCH2JU)

The main activities of ETPs encompass:

- Developing industry-focused strategic research and innovation agendas, including technology roadmaps and implementation plans;
- Encouraging industry participation in Horizon 2020 and cooperating with networks in Member States;
- Fostering networking opportunities with other ETPs and partners along the value chain to address cross-sectoral challenges and promote more open models of innovation;
- Identifying opportunities for international cooperation;
- Providing external advice vis-à-vis the programming and implementation of Horizon 2020.

ETPs have been a key driving force behind the launch of high profile public-private-partnerships known as Joint Undertakings. The structure of such a PPP is presented in Figure 3. Figure 3 presents the Fuel Cells and Hydrogen Joint Undertaking (FCH2JU), a very successful partnership promoting fuel cell and hydrogen technologies as part of market implementation and securing a leadership role for the European players in the field.

2.5 THE MODEL OF KNOWLEDGE INNOVATION COMMUNITIES

The European Institute of Innovation and Technology (EIT) is an independent body within the EU. Its mission is the full integration of all three sides of the "knowledge triangle" – higher education, research and business – in Knowledge and Innovation Communities (KICs). By bringing together leading players from higher education, research and business, EIT is able to promote cooperation within KICs and highlight the importance of innovation in Europe. EIT was established in 2008, and its headquarters is in Budapest.

EIT seeks to be a world-class innovation institute, inspiring and driving change in existing European universities, research institutions and businesses, both new and established, from SMEs to large multinationals. Conceived with a clear market-driven focus, EIT acts as a catalyst for sustainable economic growth and job creation throughout the EU by generating new skills, products, services and business, responding to public demand and the needs of the knowledge economy.

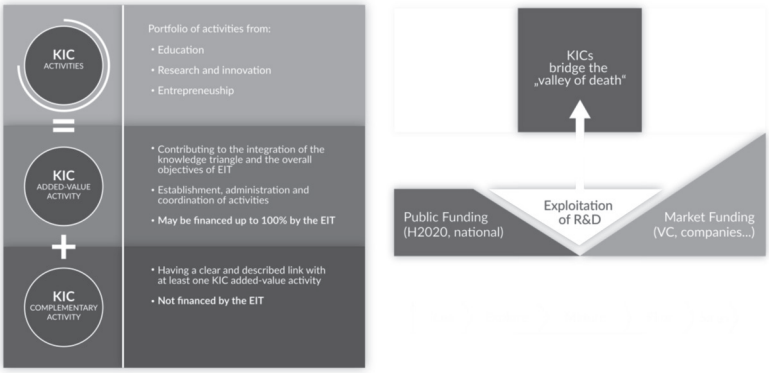

Figure 4: Activities and the basic role of EIT raw materials

The EIT initiative was launched by the former President of the European Commission, Mr. José Manuel Barroso, at the Conference of European Universities in Glasgow in 2005. Since then, EIT has developed an extensive consultation process and defined the different KIC models. Each KIC has a number of Co-Location Centres (CLCs) that are geographically distributed across Europe. These CLCs group the regional players of the knowledge triangle in a specific field.

Figure 4 illustrates this by presenting the generic activities and basic role of EIT raw materials that will boost the competitiveness, growth and attractiveness of the European raw materials sector via radical innovation and entrepreneurship. As seen in the Figure 4, EIT activities cover education, research, innovation and entrepreneurship. EIT also bridges research and development activities with the market implementation of innovative products and services.

Some of the generic opportunities may be summarized as following:

- There are scaling projects supporting the market uptake process in the EIT system. When a project developed under Horizon 2020 reaches demonstration level, it might be further developed as an EIT scaling up project.
- EIT also supports PhD research activities through several thematic networks.
- EIT is involved with many Master of Science (MSc) programmes. These are offered as short certificate courses. All EIT's MSc programmes emphasize the promotion of entrepreneurship.

BSUN has been involved with EIT since 2005. BSUN has participated in pilot projects promoting cooperation and governance models between universities and industries. BSUN is also in close collaboration with some of the existing KICs.

2.6 THE MEDGREEN CLUSTER

Before Cluster MEDGreen was established, SME clustering in the EU, USA, Israel and Black Sea countries like Russia, Turkey and Azerbaijan were studied. Extensive research was carried out on the business environment of Romania in 2011-2013.

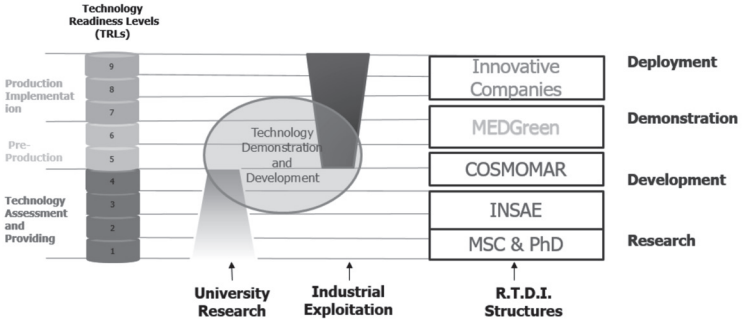

Figure 5: Concept development of Cluster MEDGreen

As a starting point, the initiators of MEDGreen studied the experiences of the Institute for Nanotechnologies and Alternative Sources of Energy (INSAE) in the Ovidius University of Constanta. It was observed that INSAE conducted significant activities in field technology assessment as part of its master's and doctoral programmes.

There are many different challenges in technology demonstration and development. COSMOMAR Center for Space Research and Cluster MEDGreen were established to overcome them.

COSMOMAR Center for Space Research addresses highly ambitious demonstration projects in collaboration with the Romanian Space Agency and European Space Agency.

Cluster MEDGreen is a cluster structure carrying out a wide range of activities, covering the entire innovation chain. MEDGreen's activities include

training and education programmes, reinforcing the journey from research to the market, innovative projects and business incubators. This ensures that Cluster MEDGreen is able to react in an effective and flexible way to new challenges and changing environments.
Cluster MEDGreen was established according to the following main principles:

- A combined bottom-up and top-down approach – This is an iterative process where the needs of the companies and stakeholders are evaluated to determine if they are in line with policies and strategies at the national and regional levels.
- Participatory approach to vision building – Main players from the business sector and academia participated directly in the process by defining the future vision of the cluster.
- Capability-building actions based on shared targets – After defining the best ways of reaching the commonly agreed targets, the required capabilities were identified and plans were created to ensure that these targets are met.
- Sustainability of the cluster development process – A roadmap was drawn up to ensure that the cluster's activities are sustainable.

Cluster MEDGreen was created on the principles of green economy and it seeks to offer eco-innovative solutions to environmental issues. Environmental innovation, which is also known as eco-innovation, seeks to decrease the negative influence of innovations on the natural environment.

Eco-innovation is "the creation of novel and competitively priced goods, processes, systems, services, and procedures designed to satisfy human needs and provide a better quality of life for everyone with a life-cycle minimal use of natural resources (materials including energy and surface area) per unit output, and a minimal release of toxic substances." [7]

According to the United Nations Environment Programme (UNEP), the green economy is defined as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive. [8]

Practically speaking, income and employment in a green economy are driven by public and private investments that reduce carbon emissions and

pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services.

Figure 6: Services offered by Cluster MEDGreen

In 2014, Cluster MEDGreen was granted financial support. It received this grant because it was deemed capable of developing "… solutions for innovative products and services that will enhance the competitive advantages of companies associated in Cluster MEDGreen".

Due to this grant, MEDGreen was able to develop the services presented in Figure 6. The services outlined in Figure 6 were prototyped innovation activities capable of creating products and services that will enhance the competitive advantages of companies in Cluster MEDGreen. Additionally, the selection of personnel, infrastructure development and institutional consolidation were also carried out.

The sustainability of Cluster MEDGreen has been assured from the following sources:

- Contracting of the services provided by the Cluster;
- Projects funded by national programmes and EU funded programmes;
- Membership fees and donations.

MEDGreen's present portfolio of new projects is expected to exceed EUR 5 million in the next five years.

BSUN has gained invaluable experience in the development of Cluster MEDGreen. With the assistance of the Romanian team involved in the formation of MEDGreen, BSUN documented the actions carried out, and criti-

cally evaluated all procedures undertaken. As a result, BSUN now has a list of recommended procedures for BSEC Member States interested in SME clustering.

CONCLUSIONS

The Black Sea region is very complex. Due to the economic crisis in 2013, the current economic and business environments of countries in the Black Sea region are very unfavourable to the development of the SMEs and the higher education sector. This will negatively impact the welfare of the region, as it will weaken the socio-economic processes and democracy.

The scarcity of funding resources in the higher education sector could lead to the degradation of the quality of education. It could also result in the state corrupting the basic values of freedom of expression, university autonomy and accountability.

Development of the Black Sea region is dependent on the understanding, learning and implementation of the basic principles of SMEs clustering in cooperation with universities and other stakeholders. Such cooperation will result in competitive advantages for both universities and industries.

The process of establishing an eco-innovation cluster from inception to implementation was explored in this study. We have learnt that such a cluster will be able to cope with issues pertaining to sustainable development and the green economy.

This study also demonstrated the ways in which universities are reliable partners for industries, as they have the potential to contribute to the development and consolidation of the innovative capacity of highly competitive suppliers of products and services within the region.

A business framework based on principles, transparency, trust, market economy and rule are law are necessary to the successful promotion of clustering.

The Black Sea Universities Network will use the results of this study and the accumulated experience gained from MEDGreen to promote agglomeration economies and the clustering process in the region.

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3. NATIONAL COUNTRY STUDIES IN THE BSEC REGION

3.1 ALBANIA'S COMPETITIVENESS AND SME CLUSTER POLICY

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ABSTRACT
Competitiveness is significantly important for sustainable economic growth. Albania needs to increase the competitiveness of its economy in order to integrate in the region and in the EU. This paper will describe the competitive performance of the Albanian economy and explore the relationship between cluster development and increased competitiveness. We will also analyze Albanian cluster policy by focusing on SMEs.

This study uses Global Competitiveness indicators and the Global Innovation Index in its analysis. These indicators evaluate Albania's competitiveness and compare Albania's competitive position to the EU-27 average. We will also outline the obstacles that prevent SMEs from joining clusters in Albania; chief among them is the fact that Albanian businesses view each other as competitors rather than collaborators.

Our analysis shows that the Albanian economy is not very competitive. Only a few clusters have been established in Albania in the last eleven years with the support of different donors. However, they were not sustainable and only continued to exist as long as they were supported by donors.

Keywords: competitiveness, cluster, innovation

JEL Classification: C38, L26, L52, O31

3.1.1 INTRODUCTION

The Albanian economy has had steady economic growth since 1992. In 2000-2008, growth levels reached 6-8%, the highest among countries in Central and Eastern Europe. In 2009-2010, Albania's economic growth shrank to 3.5% due to the global economic crisis. Economic growth continued to slow in 2011-2014, and was less than 2% due to sluggish domestic demand and the continuous deterioration of external environment stemming from the Greek government-debt crisis. Competitiveness is important for sustainable economic growth. The Albanian economy has to be more competitive if it is to grow as well as integrate in the region and in the EU. This paper will describe the ways in which cluster development and increased Albanian competitiveness are linked. We will do this by focusing on SMEs in our analysis of Albanian cluster policy.

According to the World Economic Forum's Global Competitiveness Report 2014-2015, Albania is ranked 97 of 144 countries, dropping 19 places from its rank in 2011 when it was 78 of 142 participating countries. Albania is ranked among the last countries in the Southeast Europe (SEE) region, and is only ahead of Bosnia and Herzegovina. Among the countries in the region, Macedonia is ranked 63, Montenegro is 67, Croatia is 77 and Serbia is 94. Business sophistication, one of the pillars used in assessing competitiveness in the Global Competitiveness Report, is linked with cluster development and business networks. Albania fared poorly in business sophistication, ranking 104 of 114 countries in the Global Competitiveness Report 2014-2015.

Achieving and maintaining high rates of economic growth in the coming years is a challenge for all world economies and Albania. It will be difficult for Albania to obtain sufficiently high economic growth to implement free trade agreements that will allow it to integrate regionally and with the EU. Albania can expect to go against other countries' competitiveness in the integration process. Therefore, it is very important that Albania increase competitiveness through innovation and cluster cooperation. A few clusters have been established in Albania several years ago with the support of donors, but they were not sustainable and only existed as long as they were supported by donors. The information and communications technology (ICT) and tourism clusters are the only functional clusters in Albania at the moment. We will describe them later in this paper when we analyze the

reasons behind the unwillingness of Albanian businesses to join clusters. Most Albanian businesses are reluctant to join clusters because they view other enterprises as competitors rather than collaborators.

3.1.2 OVERVIEW

The SME sector contributes substantially to economic growth and employment with more than 66% of the total value added of the economy, 41% in total export and more than 81% in employment in the non-agricultural private sector (INSTAT 2015a). There were 112,537 active enterprises in the country at the end of 2014, and this number grew by 15.4% from the previous year. More than 99% of businesses are SMEs. Most SMEs are microenterprises (with 1-9 employees). Microenterprises constitute 95% of all active enterprises in the country. SMEs in the service sector such as trading and accommodation make up almost 78% of all active enterprises (INSTAT 2015b).

Albania had experienced high economic growth at the turn of the century. Before the economic crises, real GDP grew on average by 6.0% in 2000-2007. During this period, economic growth was driven by a boost in domestic consumption and productivity gains, both of which were supported by the rapid and robust expansion of the financial sector. The crises inhibited economic growth, which has slowed down to 2.4%. Headwinds from the EU, high uncertainty and decreased confidence, weak credit and falling remittances further dampened domestic demand in the post-crisis years.

Albania is a small open economy that has operated consistently under a trade deficit and consequently has a relatively high current account. In the past few years, the trade deficit has narrowed slightly, reflecting the increase of export and the decline in imports of goods and service. The current account deficit in 2015 comprised almost 9% of GDP. Albania has a constant budget deficit, which averages at 4.4% of GDP in the last ten years. The increase in debt stock has accelerated growth in the last four years, and it stood at 70.2% of GDP at the end of 2014. Albania is economically vulnerable due to its current account deficit and weak fiscal position.

The financial system in Albania has experienced substantial changes in the last ten years. Financial intermediation has expanded and more in-

novative financial instruments have been introduced. The banking system represents the most important segment of the financial system. There are sixteen commercial banks operating in Albania; fourteen of which are foreign-owned. The international banks have enhanced competiveness and efficiency in the market. The ratio of banks' assets to GDP has increased to 93% as of June 2015. The banking system is characterized by high ratio of liquidity and capitalization, which has enabled the system to withstand shocks (Bank of Albania 2015a). While the ratio of credit to GDP rose to 40% in 2012, it has been declining ever since and has stabilized at close to 37% in mid-2015. The credit growth rate to the private sector has been subdued in the past two years, remaining close to 2%. The decline in demand has resulted in the high risk of doing business; as a result, the economy is performing under its potential.

During its transition to the market economy, Albania had low inflation of its consumer price index (CPI). Inflation remained low after the global financial crises, as the economy operated below its potential. Average annual CPI inflation rate in 2015 was close to 2%, lower than the 3% target of the central bank. In this environment, the monetary policy has been loosened. The key interest rate has been lowered progressively from mid-2011 to the actual level of 1.75% (Bank of Albania 2015b). The cost of lending to the private and public sectors fell to new historic lows. However, the sluggish lending activity reflects a weak credit demand and conservative lending, especially for SMEs. Access to finance remains one of the main obstacles of SMEs in Albania.

3.1.3 ALBANIA'S PERFORMATIVE COMPETITIVENESS

A number of Albanian enterprises have recorded rapid growth, thus indicating increased entrepreneurial desire in the country. However, Albanian enterprises continue to lag behind other countries in innovation. This endangers their competitiveness as well as the sustainability of economic and employment growth.

3.1.3.1 Definition of competitiveness

Competitiveness is defined as the set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the sustainable level of prosperity that can be earned by an economy (WEF 2014, 4).

3.1.3.2 Albanian economic performance according to the 12 pillars of global competitiveness

Albania's competitiveness has been most thoroughly assessed in the Global Competitiveness Reports. Since 2008 (WEF 2008), Albania has been included in the group of countries that are in the second stage of competitiveness development (also called the "efficiency-driven" stage). This can be seen in Figure 1. At the efficiency-driven stage, the most important factors for competitiveness enhancement are higher education and training, efficiency of markets (of goods and services, labour, and finance), technological readiness and the size of the market.

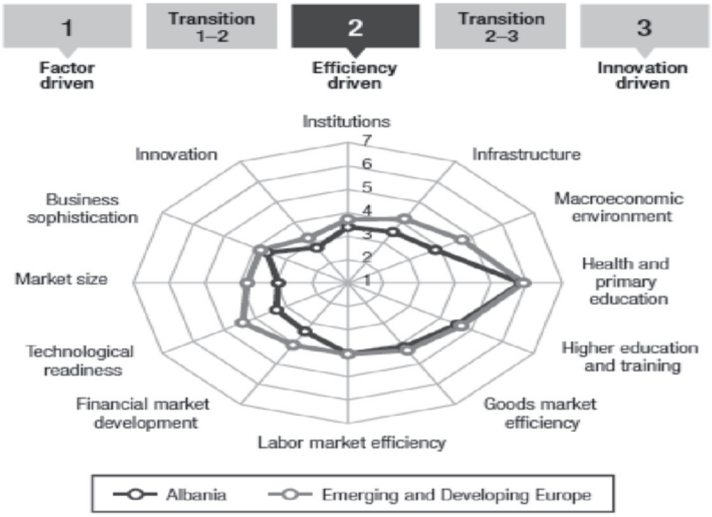


Figure 1: Albania's stage of economic development

According to the Global Competitiveness Report 2014-2015, Albania is ranked 97 of 144 countries, dropping two positions from the previous year and nineteen positions from 2011-2012, when Albania had its best competitiveness ranking position. The main factor contributing to this decline is the deteriorated performance of the macroeconomic stability pillar, which decreased from 4.4 points in the previous year to 3.8 points. Figure 2 shows some of the other deteriorating sub-indicators. These are:

- Government budget balance, % GDP from -3.1 to -6.2;
- Gross national savings, % GDP from 13.9 to 15.2;
- General government debt, % GDP from 60.6 to 70.5.

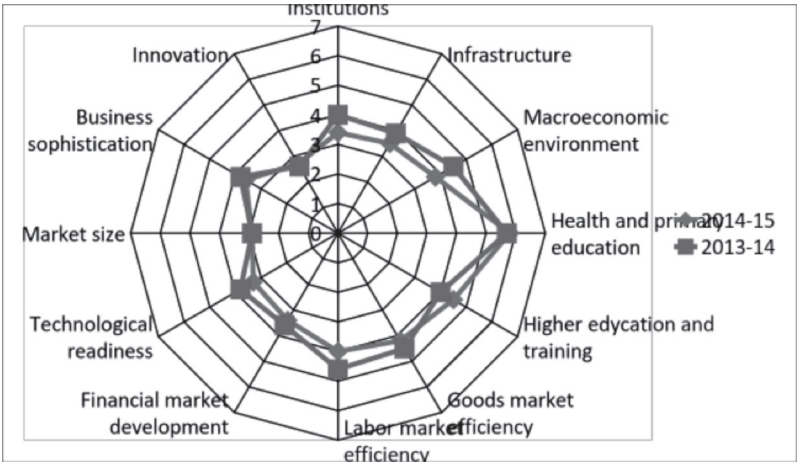


Figure 2: Pillars in the GCI where Albania deteriorated

A thorough analysis of the performance of the Albanian economy under the twelve pillars is presented in Table 1.

Albania recorded improvement in the following pillars:
First Pillar – Institutions. Institutional components in the Albanian economy received a score of 3.4, improving by 0.1 points from the previous year. However, this is a noticeable decrease from its score of 4 in 2011.

Second Pillar – Infrastructure. Albanian economic infrastructure components had a score of 3.5, improving by 0.2 points from the previous year. However, this was a drop of 0.4 points from its score in 2011.

Fifth pillar – Higher education and training. Albania had a score of4.5, recording an improvement by 0.3 points from the previous year and 0.5 points from its score in 2011.

Sixth pillar – Goods market efficiency. Albania had a score of 4.2, improving by 0.1 points from the previous year. However, this was a decrease of 0.3 points from its score in 2011.

Eighth pillar – Financial market development. Albania had a score of 3.4, improving by 0.1 points from the previous year. However, this was a drop from its score in 2011 when it had 3.6 points.

Eleventh pillar – Business sophistication. Albania had a score of 3.6, improving by 0.2 points from the previous year. But it fell by 0.2 points from its score in 2011.

Albania remained at the same level as the previous year in the following pillars:

Ninth pillar – Technological readiness. Albania had a score of 3.3, the same as the previous year. However, it fell from its 2011 score of 3.8 points.
Tenth pillar – Market size. Albania had a score of 2.9, the same level as the previous year, as well as in 2011.

Table 1: Albanian competitiveness indicators (yearly)

WEF Global Competitiveness Index (GCI)	ALBANIA											
	2014-2015		2013-2014		2012-2013		2011-2012		2010-2011		2009-2010	
	rank	score	rank	score	rank	score	rank	score	rank	score	rank	score
GCI – Total	**97**	**3.8**	**95**	**3.8**	**89**	**3.9**	**78**	**4.1**	**88**	**3.9**	**96**	**3.7**
Basic requirements (40%)	**97**	**4.1**	**94**	**4.2**	**87**	**4.2**	**71**	**4.5**	**75**	**4.4**	**90**	**4**
Institutions	103	3.4	118	3.3	84	3.6	57	4	63	4	87	3.6
Infrastructure	90	3.5	99	3.3	91	3.5	72	3.9	89	3.5	104	2.8
Macro-economic environment	122	3.8	94	4.4	98	4.3	86	4.5	101	4.2	95	4.2
Health and primary education	62	5.8	56	5.9	79	5.6	65	5.7	56	5.9	66	5.5
Efficiency enhancers (50.0%)	**95**	**3.7**	**100**	**3.7**	**92**	**3.8**	**82**	**3.9**	**89**	**3.8**	**93**	**3.6**
Higher education and training	60	4.5	78	4.2	76	4.1	82	4	84	3.9	0	3.6
Goods market efficiency	93	4.2	97	4.1	58	4.3	43	4.5	63	4.2	97	3.9
Labour market efficiency	93	4	67	4.3	68	4.4	49	4.6	63	4.5	65	4.4
Financial market development	114	3.4	128	3.3	120	3.4	107	3.6	100	3.7	90	3.9
Technological readiness	91	3.3	92	3.3	77	3.7	62	3.8	72	3.5	89	3.2
Market size	106	2.9	107	2.9	98	2.9	101	2.9	103	2.8	106	2.8
Innovation and sophistication factors 10.0%	**114**	**3.2**	**119**	**3.1**	**113**	**3.1**	**02**	**3.2**	**104**	**3.1**	**121**	**2.9**
Business sophistication	104	3.6	122	3.4	98	3.6	78	3.8	87	3.6	109	3.4
Innovation	120	2.7	119	2.8	123	2.6	123	2.6	121	2.6	126	2.4

Albania deteriorated in the following indicators:

Third pillar – Macroeconomic stability. Albania had a score of 3.8, dropping by 0.6 points from the previous year and 0.7 from 2011.

Fourth pillar – Health and primary education. Albania had a score of 5.8, dropping by 0.1 points from the previous year, but improving by 0.1 points from 2011.

Seventh pillar – Labour market efficiency. Albania had a score of 4, dropping by 0.3 points from the previous year and 0.6 points from 2011.

Twelfth pillar – Innovation. Albania had a score of 2.7, dropping by 0.1 points from the previous year, but improving by 0.1 points from 2011.

3.1.4 ALBANIA'S INNOVATION PERFORMANCE

Innovation drives economic progress and competitiveness, both in developed and developing economies. Thus, innovation is at the centre of many countries' growth strategies. Innovation is more general and horizontal in nature, and includes social innovations and business model innovations as well as technical ones. Recognizing and celebrating innovation in emerging markets is critical to inspiring people, especially the next generation of entrepreneurs and innovators (Dutta et al. 2015).

3.1.4.1 Definition of innovation

An innovation is the implementation of a new or significantly improved product (good or service), a new process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations (OECD 2005).

3.1.4.2 Albania's Innovation Assessment

According to the Global Innovation Index (GII) 2015, Albania had a score of 30.74 out of a maximum of 100 in 2015, and ranked 87 out of 141 countries (Dutta et al. 2015). Although Albania's position in 2015 increased by 7 positions from its rank in 2014, it was still underperforming in GDP. Albania is ranked last among the 39 European countries and the other Southeast Europe (SEE) countries.

Compared to its GII performance in 2012, Albania moved up 3 places in 2015 when it improved its score to 30.74 from 30.4 in 2012. However, Albania's innovation efficiency score was 0.5 in 2015, dropping from its score of 0.62 in 2012. By breaking down this indicator, we can further analyze Albania's performance according to innovation input and innovation output. Albania had an innovation input score of 41.22, improving by almost 4 points from 2012. On the flipside, Albania's innovation output fell by 3 points from its score in 2012 (see Table 2).

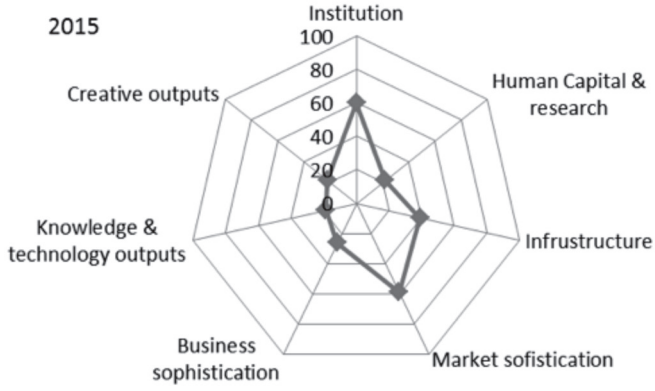
Table 2: Albania's Global Innovation Index (yearly and by sub-index)

	2012		2013		2014		2015	
	score	rank (out of 141)	score	rank (out of 142)	Score	rank (out of 143)	score	rank (out of 141)
GII total	30.4	90	30.83	93	30.47	94	30.74	87
Innovation efficiency	0.62	112	0.58	129	0.5	131	0.5	129
Innovation input	37.4	82	39.05	77	40.51	71	41.22	73
Innovation output	23.3	98	22.66	118	20.43	117	20.26	112

According GII 2015, Albania fared poorly in the following pillars (see Figure 2):

- Knowledge and technology outputs = 18.5 points
- Human capital and research = by 21.8 points
- Creative outputs and business sophistication = 22 points
- Institution = 60.1 points
- Market sophistication = 59.1 points

Figure 2: Albania's innovation performance according to 7 pillars (2015)



source: GII 2015

3.1.4.3 Problematic factors of doing business in Albania

The Albanian economy is still fragile and its competitiveness is still based on cheap labour. Its lower productivity is reflected in lower wages, and its

public institutions are still weak. The most problematic factors of doing business in Albania are: corruption, inadequate access to finance, inefficient government bureaucracy, tax rate, tax regulation, poor ethics in labour, inadequate educated workforce, crime and theft, policy instability, etc. (Figure 4).

Corruption is still the most problematic factor in 2014, even though it fell by 4.3 points from the previous year. However, it further deteriorated by 10.3 points from its score in 2011.

Access to finance is the second most problematic factor of doing business in Albania in 2014 when it fell by 0.1 points from the previous year and 1 point from its score in 2011. At present, bank loans for start-ups are almost non-existent. Before the global financial crises, the business lending portfolio had been balanced with the size of the business. This meant that 60% of business lending at the time went to financing SMEs. Due to credit supply restriction after the crises and the increase in economic uncertainty, most bank loans went to corporate businesses. Thus, 63% of business credit went to corporate enterprises in mid-2015 (Suljoti and Manjani 2015). Financial assistance schemes for SMEs have only been introduced recently, and these are supported by international institutions such as USAID, the Italian government and the European Bank for Reconstruction and Development. However, the amount provided is low and it is too early to evaluate the impact they have in the economy (Demeti, Rebi and Demeti 2016).

Inefficient government bureaucracy is the third most problematic factor. Albania's score in this area fell by 1.1 points from the previous year and 5.1 points from its score in 2011.

For the first time, tax rates and tax regulation appeared among the five most problematic factors of doing business in Albania in 2014.

According to GCI Report 2014-2015 (WEF 2014), Albania's industries still possess significant competitive disadvantages in the areas of availability and affordability of financial services, soundness of banks, state of cluster development, local supplier quality and quantity, value chain breadth, quality of scientific research institutions, capacity for innovation, univer-

sity-industry collaboration in research and development (R&D), and availability of scientists and engineers. This can be seen in Figure 3.

Figure 3: Problematic factors of doing business in Albania (2011-2015)

3.1.4.4 Albania's competitiveness compared against the benchmark of EU-27

Since Albania is an EU candidate country, reaching EU competitive benchmarks is extremely important for the country if it is to be a full member state in the future. An attempt has been made to draw up a list of indicators to explain Albania's existing levels of development and competitiveness. The following sets of explanatory variables were used: WEF Global Competitiveness Index, WEF's basic requirements, efficiency enhancers, and innovation and sophistication factors. These indicators measure Albania's competitiveness in accordance to the individual sets of competitiveness determinants.

When the Albania's indicators of competitiveness are compared to those of EU-27, it will be easy to determine Albania's strengths and weaknesses. So doing also shows the indicators in which Albania fits in with EU-27's competitive benchmark and where it lags behind. This analysis may ultimately serve as marker for the creation of policies.

Albania's competitiveness in GCI is 82% of the EU-27 average in 2013-

2014. Albania fared the best in "basic requirements" where its performance is 81% of the EU-27 average. However, the country only reached 79% of EU-27 average in "efficiency enhancers" and 71% of EU-27 average in "innovation & sophistication factors".

As the competitiveness performance indicators move from basic requirements to more sophisticated factors, Albania gradually lags behind the EU-27 averages. The lag is the most considerable in technological readiness (62.6%), infrastructure (64.3%), market size (67.1%), innovation (67.5%), institutions (72.7%), business sophistication (73.8%) and financial market (75.2%). We shall put aside the factor of market size, as one cannot do much about it. All the other factors in which Albania is underperforming against the EU-27 average requires a lot of investment in terms of human resource development, and well-defined and implemented policies (see Table 3).

3.1.4.5 Albania's Competitiveness Performance Index over EU-27

Albania's Competitiveness Performance Index over EU-27 is first calculated by assessing the average score in each pillar of the Global Competitiveness Index (GCI) for all EU-27 countries; then, their aggregate value is calculated. After that, the ratios between Albania's performance scores over EU-27 averages are calculated for each of the twelve pillars of GCI as well as the aggregated value. All results are reflected in Table 3.

Comparing Albania's competitiveness performance indicators to EU-27 averages in Table 3 helps us to identify the strengths and weaknesses of the Albanian economy. By identifying the extent to which Albania lags behind EU-27 averages in each of the twelve pillars of GCI, new policies can be developed to increase Albania's competitiveness.

GDP per capita is an important indicator because it assesses the stage of development and competitiveness of a country. In 2013, Albania's GDP per capita was 30% of the EU-27 average, making the country's ratio one of the lowest in SEE alongside Kosovo and Bosnia and Herzegovina.

Table 3: Albania's Competitiveness Performance Index over EU-27

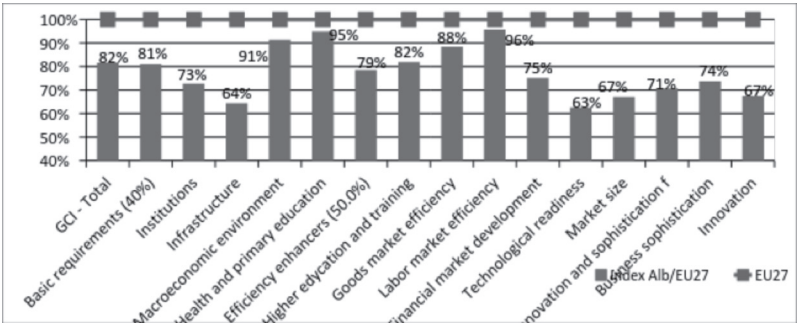
	Albania	Result current year 2013	Result previous year 2012	Index, ** Ratio of 2 years		Index Alb/EU27 in %
	GDP per capita, USD*	**10,596**	**10,291**	**103%**		**30%*** **
	GCI Index – Global Competitiveness (WEF - GCI)	GCI, 2013-14	GCI, 2012-13	Index, (2013-14)/ (2012-13)	BE27** v2013-14	Index ** Alb/EU27 in %
	A. GCI – Total	**3.85**	***3.91***	***98.5%***	**4.72**	**81.6%**
	Basic Requirements	**4.2**	4.24	*99.1%*	5.18	81.1%
1	Pillar 1: Institutions	3.3	3.6	*91.7%*	4.54	72.7%
2	Pillar 2: Infrastructure	3.3	3.5	*94.3%*	5.13	64.3%
3	Pillar 3: Macroeconomic Stability	4.4	4.3	*102.3%*	4.82	91.3%
4	Pillar 4: Healthcare and Primary Education	5.9	5.6	*105.4%*	6.22	94.9%
	Efficiency Enhancers	**3.7**	3.8	*97.4%*	4.71	78.6%
5	Pillar 5: Higher Education and Training	4.2	4.1	*102.4%*	5.13	81.9%
6	Pillar 6: Goods Market Efficiency	4.1	4.3	*95.3%*	4.64	88.4%
7	Pillar 7: Labour Market Efficiency	4.3	4.4	*97.7%*	4.49	95.8%
8	Pillar 8: Sophistication of the financial market	3.3	3.4	*97.1%*	4.39	75.2%
9	Pillar 9: Technological readiness	3.3	3.7	*89.2%*	5.27	62.6%
10	Pillar 10: Size of Market	2.9	2.9	*100.0%*	4.32	67.1%
	Innovation and sophistication factors	**3.1**	3.11	*99.7%*	4.38	70.8%
11	Pillar: 11 Business sophistication	3.4	3.6	*94.4%*	4.61	73.8%
12	Pillar: 12: Innovation	2.8	2.6	*107.7%*	4.15	67.5%

Source: WEF (2013), and **authors' calculations. Simple averages of each pillar were calculated for EU-27.

*IMF and World Economic Outlook Database, October 2014.
***Eurostat: http://epp.eurostat.ec.europa.eu/

An analysis of Albania's competitive position with the EU-27 average shows that Albania (3.85 points) made up 81.6% of EU-27 average (4.72 points). When these figures are compared to those in 2011, it will be noted that Albania's position has deteriorated. In 2011, Albania's competitiveness was 83% of the EU-27 average. Albania has a long way to go before it can catch up with EU-27, as Albanian competitiveness is in 95th place and EU-27 is in 38th place. Figure 4 shows that Albania is best at the basic requirements of competitiveness where it comes up to 81.1% of the EU-27 average. Albanian efficiency enhancers are 78.6% of the EU-27 average. However, Albania's innovation and sophistication factors only make up 70.8% of the EU-27 average. Albania lags behind the EU-27 in all competitiveness factors, except basic requirements. Albanian technological readiness is only 62.6% of the EU-27 average, its infrastructure is 64.3%, the size of its market is 67.1%, its innovation is 67.5%, its institutions make up 72.7%, its business sophistication is 73.8%, and its financial market is 75.2% (see Figure 4). Since Albania cannot do much about the size of its market, we will leave that factor aside. In all other factors, Albania lags behind the EU-27 averages. To remedy this, Albania needs a lot of investment and greater development of human resources. It will also have to implement well-determined policies.

Figure 4: Comparison of Albania and EU-27's competitiveness factors in accordance with the Competitive Performance Index Albania/EU27 (%)



Source: WEF 2014 (GCI) and authors' calculation

All is not bleak for Albania's competitiveness, as the country did make some progress in the following factors: macroeconomic stability (102.3%), health and primary education (105.4%), higher education (102.4%), and innovation (107.7%). Albania had the same rank two years in a row for the factor, "size of market", even though its overall performance in the seven other pillars had dropped from the previous year (see Figure 5).

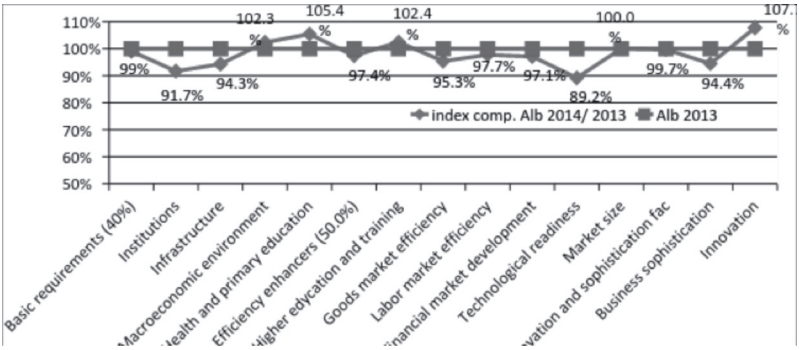


Figure 5: Albania's Progress in the pillars of the Competitiveness Performance Index compared to the previous year (%)

Source: WEF 2014 (GCI) and authors' calculation

3.1.5 ALBANIAN CLUSTER DEVELOPMENT

Definitions:

According to Michael E. Porter, "Clusters are geographic concentrations of interconnected companies and institutions in a given field. Clusters comprise a group of related industries and other entities important in terms of competition."

Innovative clusters are considered the "engine" of economic development and innovation in the EU. They represent a framework for business development, collaboration between companies, universities, research institutions, suppliers, customers and competitors located in the same geographical area (local, regional, national, transnational).

Cluster development in Albania to date

Clusters in Albania are developed with the support of donor organizations. Since 2004, four clusters have been created through Enterprise Develop-

ment and Export Market Services (EDEM) and the financial assistance of USAID. These four clusters are in the tourism, meat processing, medical herbs, and leather goods production industries. EDEM aims to promote the competitiveness of small and medium enterprises (SMEs) in domestic and foreign markets, and accelerate the export of Albanian agricultural and manufactured goods into global markets through interfirm clusters and networks. By enhancing cooperation between small enterprises, EDEM hopes to encourage the dissemination of best practices. EDEM also organizes different seminars and training sessions to transmit the benefits of interfirm cooperation to enterprises.

The Albanian Software Cluster (ASC) was established in 2010 with the support of German International Cooperation (GIZ). GIZ also supported the tourism cluster in Albania. While ASC operated with international counterparts and relevant stakeholders of the sector within the country, none of them remain active.

It is difficult to form clusters in Albania because there is next to no government support for the establishment and operation of clusters. The few clusters established in Albania in previous years only survived for as long as they had the support of different donors; they ceased to exist the moment their donors' support was withdrawn. Businesses in Albania are also reluctant to join clusters, as they view each other as competitors rather than collaborators.

However, the two clusters created with the financial support of member companies are still active and stable. They will be discussed below:

The Albanian Textile Cluster is a professional association established in 2013. Together with its 30 founding companies and institutions, manufacturing, academic institutions, consulting, logistics, local and international transport companies, it has a long tradition of operating in the garments, footwear and leather industry in Albania. The textile cluster is unique because the enterprises came together to formalize their traditional collaborative relationships.

The Albanian Information Technology Association (AITA) was established in 2007 to bring together the Albanian information technology (IT) enterprises. Its website is http://aita-al.org/. AITA has over 70

members from the hardware, software, and Information and communications technologies (ICT) service companies. It is the voice of the Albanian information and communications technologies (ICT) sector as well as a prominent advocate for the expansion of Albania's innovative capacity and stronger productivity across all sectors through the strategic use of technology.

Clusters – Tool for recovery at the regional level

The global economic crisis was a catalyst for change; it provided an opportunity to leap forward in a more entrepreneurial and innovative way. The benefits of cluster development are:

- Source of employment creation at the regional and national levels
- Boost regional competitiveness and regional development
- Stimulate innovation, and support companies as they acquire resources, knowledge and technology
- Facilitate ideas that can be turned into business opportunities.

3.1.6 STRATEGIC DOCUMENT TO SUPPORT INNOVATION AND COMPETITIVENESS

The Business Innovation and Technology Strategy 2011-2016 (BITS) is the most important document for increasing competitiveness in Albania. BITS is in line with EU policy as its vision is "… to increase the competitiveness of Albanian enterprises within the national, regional and global contexts, by encouraging and effectively supporting firm-based innovation and technological development through financial, technical, informational, infrastructural and other types of support, improving framework conditions, creating a favourable environment to business innovation and strengthening the National Innovation System."

One important pillar of this document is infrastructure development, which encompasses:

i. The creation of incubators (both in physical space terms as well as in the development of specific support services) so as to provide a favourable environment that will foster the potential success of emerging innovative business initiatives, and allow for the creation of new jobs, business opportunities and value adding through the healthy growth of new innovative enterprises.

ii. Business cluster support in key sectors providing support to collaborative platforms, which may enable and support strategic cooperation between enterprises and other organizations. So doing will aid in the development of value chains, foster internationalization, open access to new markets and allow businesses/products/services to respond to more sophisticated demand.

Programmes assisting companies in the midst of innovation and improving their technological capacity are geared towards an innovative system that will increase the interaction of institutions supporting enterprises. Some of the programmes specifically targeting the interaction of enterprise supporting institutions with businesses include:

- Innovation Financing
- Business Innovation Services
- Business Incubators
- Business Clusters

According to the Business and Investment Development Strategy (BIDS) 2014-2020, the creation of industrial clusters is crucial to increasing the value added of domestic products. The establishment of industrial clusters will improve cooperation and specialization, which will in turn promote regional development, improve the competitiveness of products, and ensure close cooperation between industrial companies and supporting institutions. Thus, business clusters will enable domestic industrial companies to achieve both national and international success. BIDS aims to establish three industrial clusters by 2020.

As part of the Albanian Business Innovation and Technology Action Plan 2011-2016, the clusters will undergo the process illustrated in Figure 6:

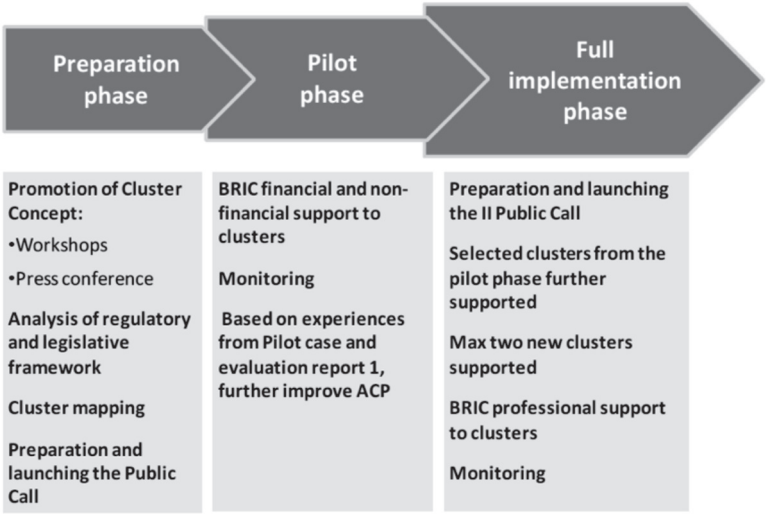


Figure 6: Phases of cluster establishment

The Business Relay and Innovation Center (BRIC) was established by the Albanian Investment Development Agency (AIDA) in 2011 to implement the Business Innovation and Technology Strategy (BITS). BRIC will also assist in the programmes to stimulate firms to innovate and upgrade technologically. It will do so through:

(i) Training assessment for cluster managers so that they are acquainted with the life cycle of a cluster;
(ii) Market needs or political initiative;
(iii) First ideas;
(iv) Networking or cluster management;
(v) Internationalizing;
(vi) Participation in European Commission (EC) initiatives and programmes;
(vii) Support and train companies so that they will innovate and establish partnerships;
(viii) Increased productivity and profitability through better resource allocation;
(ix) Bringing new products to the market;
(x) Increasing exports;
(xi) Improving the chain value by enhancing access to financing for new product development activities;
(xii) Providing innovation financing;
(xiii) Providing assistance and market pointers as well as identification for quality certification.

3.1.7 CONCLUSIONS AND RECOMMENDATION

The Albanian economy is not very competitive. A few clusters have been established in Albania in the last eleven years, but they were established with the support of donors and ceased to exist when assistance was withdrawn. Albania is also not very innovative. Although there are several strategic documents supporting innovation and technology development in Albania, they are still in the initial stages of implementation.

In order to increase national production value, clusters in areas of high potential should be promoted and developed. The Albanian Cluster Programme was drafted for this purpose. This programme aims to stimulate the creative processes and enhance collaborative chain value, through innovation and internationalization. Close cooperation between companies and supporting institutions is central to the success of this programme at the national and international levels. The following topics are defined in the programme:

- Support regional development;
- Create interest for and engage in developing clusters with growth potential;
- Better functioning of cooperation and infrastructure;
- Increase innovation capacity;
- Increase internationalization;
- Increase in-cluster competitiveness and joint value production

Albania can increase its competitiveness by:

- Strengthening the capacity of BRIC.
- Financial support. Grants awarded should help to initiate, establish and develop clusters.
- Need for better coordination and networking between stakeholders through events and business-to-business (B2B) meetings.
- Organizing round tables and conferences to identify clusters and challenges, and conceptualize common solutions.
- Raise awareness on the benefits of clustering.
- Invite and cooperate with donors in the development of clusters.

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3.2 PACA AS A MEANS OF BUILDING SME CLUSTERS AND IMPROVING LOCAL ECONOMY IN ARMENIA

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ABSTRACT
Regional and local development of economies is often based on the top-down approach. The effectiveness of this approach is low vis-à-vis the consumption of resources and investments. Local SMEs are forced to adapt to the resultant effects of the top-down approach. Local businesses have to expend a lot of time and effort in adapting to the new rules, which are often incomprehensible and unacceptable to them.

Rules and the decisions can only be implemented quickly and effectively, when they are discussed and approved by the executors and beneficiaries.

The PACA methodology is based on the bottom-up approach. Under PACA, the local stakeholders and SMEs decide the trajectory of local economic development, and take it upon themselves to increase the efficiency and competitiveness of local SMEs. The methodology is important because it is based on ten years of practical experience and has been adapted to the new market economy of Armenia.

Experience shows that it is possible to achieve tangible results, make new contacts, create partnerships, foster cooperation and build clusters by spending very little resources. The only way of achieving this quickly is through the participatory or bottom-up approach.
The key findings of research and ten years of practical application of the methodology are:

- Local SMEs have great potential that remain unused;
- Strengthening existing competitive advantages and creating new competitive advantages through cooperation, partnership and clustering;
- SMEs cannot develop stably and efficiently if the economy and competitive advantages of the region or community are not sufficiently developed;

- As the locals are conscious of their problems, they, and not external experts, know the best solutions to their problems;
- External experts must submit a schema and tools for solving local problems;
- The PACA methodology was developed as a Local Economic Development approach, but it has resulted in strengthened cooperation, improved partnership and the clustering of local businesses, especially SMEs.

For these reasons, this chapter will present PACA as a methodology of building SME clusters and improving local economy. It will be shown that SME clustering under PACA will lead to better economic development and create opportunities for local SMEs to increase cooperation.

Keywords: clusters, local economic development, regional development, SMEs

JEL Classification: C38, L26, O18

3.2.1 WHAT IS PACA?

Narrowly defined, the Participatory Appraisal of Competitive Advantage (PACA) is a set of diagnostic tools used to determine the competitive advantages of a locality, and conceptualize concrete, practical proposals for the stimulation of the local or regional economy and SME development. This process is known as the PACA Exercise. In a wider sense, PACA is a participatory, bottom-up, pragmatic approach to local economic development through SME clustering and cooperation.

PACA is different from other approaches because it emphasizes local economic development (LED) and SME clustering in three ways:

- It identifies strengths and opportunities, with a mind to strengthening them further. It does not fret over weaknesses and bottlenecks.
- It aims to achieve quick, visible results without the implementation of a grand strategy.
- As it targets the early phases of LED, it assumes that there is a very strong learning element. This is not something that happens as a side-effect; rather, it is a key element.

PACA is supposed to lead to practical activities that will enhance a locale in order to make it a better place for doing business, especially for SMEs. Once a locale has been established as a good place for doing business, clusters for SMEs will likewise follow. When SMEs participate in a mini-workshop or interview, they can voice their preoccupations and suggestions. In this way, SMEs are able to make proposals and resolve their own problems.

With SMEs participating in presentation events, they are able to obtain immediate feedback, a quick scan of the local economy, proposals as well as opportunities for business and cooperation.

3.2.2 WHY PARTICIPATORY APPRAISAL OF COMPETITIVE ADVANTAGE (PACA)?

Local economic development initiatives seek to achieve results quickly. Conventional approaches, however, often involve huge up-front investment in time and money, resulting in tediously drawn out discussions before proposals are made. Furthermore, proposals made in the conventional methods are not always practical and may be incompatible with the local mindset. PACA does the opposite because it is an action and results-oriented methodology based on rapid and participatory appraisal. It has the following features:

- The initial diagnostics will take no more than 2-3 weeks, and the results are presented and discussed immediately after that.
- External specialists and local SMEs are involved in the diagnostic process. The active participation of SMEs facilitates the transfer of methodological and conceptual know-how, and it motivates and empowers all parties to continue with the initiative once the external consultants have left.
- While external consultants play a role in the initial diagnosis and provide backup later on, the implementation of concrete activities is done by the local actors, SMEs and institutions.

A successful local economic development initiative depends, first and foremost, on the local actors' motivation and dedication. Inspiring and motivating local actors to act for themselves is a crucial task of the PACA diagnostic. Thus, any practical proposal must closely relate to the capabilities and motivation of an Armenian region's various local stakeholders and SMEs.

3.2.3 PACA APPLIED TO LOCAL ECONOMIC DEVELOPMENT AND SME CLUSTERING

SMEs and clever interaction among individuals are the focal points of PACA. PACA can be divided into the following basic theoretical points:

Our actions must be substantiated in the logical sequence of cause – action – effect. However, this is not always the case with people and SMEs. The actions of people and SMEs often have a circulatory effect. For example, my action will impact the responses of another person or SME; the response undertaken by this other party will in turn affect my next course of action, and so on. The behaviour, action and response of any given person or SME is conditioned by cooperation and the attitudes of the other persons or SMEs. An SME would be more competitive and successful if the environment and our communities were the same.

A single flap of a small butterfly's wings is essential in this world.

For real change to take place in a person, SME or community, this change must take root internally. Any external change is short-term only, as the person, SME or community will revert to its initial state in time. For example, if you are sitting and I push you, you will certainly bend down; but as soon as I let go, you will return to your initial pose. You can only change your movements in the long-term by consciously changing your own position.

The person undergoing change must be willing to change.

Another PACA specific approach is citizens' and SMEs' awareness of active participation, and the positive impact of such active participation on the economic structure. Thus, it is essential to know the ways in which people and businesses evaluate themselves, their activities and the things they intend to change.

Through raising awareness and transferring the necessary skills and knowledge among those people and SMEs, the changes planned and implemented can lead to higher productivity. Under PACA, external assistance is limited to consultation and backup only to reassure the local stakeholders and businesses who are interested in hearing external expertise. In all

other issues, the local business community should rely on the efficient use of its own resources in accordance to PACA's practical suggestions.

Help comes to those who help themselves.

PACA maximizes communication, interaction, and the study of opinions

PACA Programme – 6 months		
Assessment of the locality and the local participants	**PACA examples**	**Visible results**
Preparation	Implementation	Implementation of proposals
Duration (6-8 weeks)	Duration (3-4 weeks)	Duration of 3 months

and behaviours. It realizes that effective communication can raise the interests of the people in the community as well as SMEs in joint, mutually beneficial actions. This communication can be transmitted bilateral as well as multilateral via interviews or workshops.

Ask your neighbour how he is doing in the right manner and he will realize that he is doing pretty well.

The most essential part of PACA is the sequence of problem solving. Think of it as building a snowman. We need to start with a small snowball that we will roll in snow. Each time that the snowball is packed with additional snow, it becomes bigger. Repeat this process a hundred times and the snowball will be a hundred times bigger. Do this repeatedly and you will have the body of a snowman. Problems grow in the same way. Although they start out as small and insignificant, they become larger and more significant as more issues cloud them. Unfortunately, human nature tends to dismiss small problems to the point where we only consider problems when they become too large and serious to ignore. We often do not notice the small issue which gave birth to this big problem. PACA provides the opportunity to discover and effectively solve problems in their initial stages. On the other hand, PACA enables us to analyze existing problems from realistic perspectives, divide them into parts and solve them through small but effective steps while depending on our own resources. PACA also provides us with the opportunity to make the right choice in development outlook.

Therefore, let us solve problems while they are still small. Sometimes, a small, seemingly unimportant issue can cause more harm than a large one.

PACA is not an independent magical tool for local economic development. It is the conglomeration of means and tools through which committed people and dedicated businesses can develop and improve competitiveness and economic development.

3.2.4 CONSECUTIVE STEPS OF THE PACA PROJECT

Results are first recorded 6 months after the project has begun. Implementation of the initial stages of PACA takes 3-4 weeks. This period is one of intensive work so as to ensure that the general dynamic is laid down. The basic stages of PACA are illustrated in the table below.
Some of the various institutions and people able to initiate PACA are:

- Local self-government bodies;
- Customer-Centric Initiatives (CCIs);
- Business associations;
- SMEs;
- Business centres;
- Decision-making institutions or people.

The implementation of the project and the involvement of the interested parties should follow a special procedure. As soon as the project site is selected and the PACA team members are chosen, these parties should study PACA methods and tools in an 8-day training session.

The parties initiating PACA have to be motivated and dedicated. Regardless as to their reasons for initiating PACA, their motivation must remain strong. They must also have the clarity of vision to see that local economic development is only possible when all local entities and SMEs work together. The initiators of PACA should strive to unify the separate local units and institutions so that a common solution can be found. Thus, the initiators of PACA must find competent people from the local community and interview them. By doing so, interested individuals, SMEs and organizations can become involved in the PACA process and contribute to the general course of actions.

PACA is a local economic tool that has to be nurtured. It is not enough to implement a project, local people and businesses should follow this up with events and development initiatives. Hence, PACA is a dynamic process with the potential to become the basis for future ongoing feedback.

Preparation

- Local strengths are needed to foster local economic development. Local SMEs and key local persons must be committed to the improvement of their environment. Thus, it is important to select persons and businesses that are conscious of the impact of their joint efforts and are dedicated to increasing local competitiveness. For best results, 5-7 people should conduct the organizational and methodological work.
- Local actors will only be provided with methodological assistance and counselling, as financial support does not come into play in the preparation stage. Thus, at this stage, the local actors should invest their time and expend as little of their personal finances as possible.
- To study the related methods and tools for the project, 1 or 2 external experts should be provided. This will appease members of the community who are interested in the neutral, pragmatic expertise of outsiders in their local affairs.

3.2.5 PACA EXAMPLE

There are seven steps in executing PACA. These seven steps supplement each other and are strongly interrelated. This part of the process should take no more than 2-3 weeks, if the process is to yield results in a short amount of time.

1. Working group meetings for pre-hypothesis formulation

The working group will hold meetings to formulate a pre-hypothesis. This pre-hypothesis aims to introduce local members to the PACA team and share information on the local economic situation before PACA is formally launched. In this stage, the team members will form the pre-hypothesis after considering both existing and missing connections within the community.

2. Workshop – Launch

The project presentation should be made in front of the most active enterprises and people who have the most influence on the community's decision-making process. Their first impressions of the project and local economy should be collected, as this will be the means through which the PACA team obtains new information and ideas on the local economy. At this stage, it is also essential that participants who have expressed an interest in the future implementation of the project be allowed to be a part of it.

3. Information accumulation – Interviews and small workshops

The case study begins in earnest with a series of interviews. By conducting short interviews, the team would be able to assemble the opinions of the decision-makers and businesspeople in the community, gather information on their business competitiveness as well as conceptualize possible plans and future perspectives. Meeting participants from the same field of activity provides the team with the opportunity to discuss the competitiveness of that particular field and their joint efforts. These meetings are solely for getting new information; they are also to galvanize the businesspeople and decision-makers into bringing up issues. After information has been gathered from the workshops and interviews, an assessment should be made.

4. Assessment and proposal development

A thorough assessment of the local economy should be made, and the final proposal should benefit the local economy in its entirety. The problems and weaknesses disclosed during this time consequently become the base on which the project proposal develops. This will help to bring about sustainable development.

RESULTS AND PROPOSALS PRESENTATION

A general picture of the local economy and the proposals received should be submitted to the local decision-makers and SMEs for implementation.

Action plans

It should be noted that local decision-makers and SMEs may express interest in different proposals and different cooperation projects. When that happens, the PACA team should meet these different parties the day after the proposal presentation in order to draft a finalized action plan with guidelines on implementation.

Implementation

The local decision-makers, SMEs and organizations involved in the process should implement the action plan as soon as they receive it. Experts should regularly monitor the implementation process so that they can respond to complications in a timely fashion.

Manner of implementation

When a project is implemented, it should be given 2-3 weeks to take effect. The PACA team should only choose action plans that will yield tan-

gible results within three months of its implementation. Some tangible positive results that the team and parties involved should look out for are: new employment vacancies, new collaborations, establishment of new enterprises, etc.

ROLE OF THE PARTICIPANTS

1. External experts

The external experts are not all-knowing, but they are best equipped to answer any question because they are specialists who are cognizant of PACA projects. Their role is to raise the participants' and interested parties' awareness of the tools that will be used to solve their particular local problems. They are also fully knowledgeable on PACA information guidelines and can help the participants to decide on the best course of action for the community. However, external experts should avoid influencing decisions. All decisions must be proposed by the local participants only. The local participants may ask the external expert to propose other optional solutions, but experts should refrain from doing this because it will hinder the natural process of development. Any decision undertaken should only be put into practice if they stem from the personal experience and localized knowledge of the participants.

External experts should incorporate the experiences and knowledge of the locals into the plans for local economy development through the appropriate corresponding tools and methods.

External experts should not only involve the locals in the action plan and decision-making process; they should also ensure that the actions undertaken by the locals are more purposeful and productive. This is because the best decisions and laws can be disastrous if they are not tweaked to suit the local context.

PACA helps decision-making at the local level by coming up with plans that are wanted and practical.

2. Domestic participants

The PACA team of local participants should be trained, as they are the foundations of the project. The people and SMEs in the PACA team are able to enact changes at the ground level, and are therefore crucial to effective

project implementation. Due to their local knowledge, they are able to carry out the action plan while maintaining links between SMEs, residents and government bodies. By working together with these different local bodies, they will increase local participation in the decision-making process. Members of the PACA team should undergo an 8-day training course in order to have a general idea of the methodology and tools deployed. This training session will also ensure that the PACA team has the necessary skills to conduct interviews with local parties in a productive manner. So doing enables the PACA team to work together with the external experts.

3. Hosting organization
When the PACA team has decided upon an action plan, the project will need an organization to act as host to take care of the organizational issues as well as eliminate possible obstacles in the implementation process. The host project will have to invest time, personnel and money in this endeavour.

Personal success is achieved through personal effort and the use of personal funds.

The host organization should be recognized and trusted by the local community and local businesses.

4. Methods and tools of PACA
PACA uses tools to raise local SMEs' awareness on their present situation and provides them with the means to improve it. Through use of these tools, the PACA team and local SMEs will be able to translate new ideas, new collaborative endeavours and actions into positive economic change.
Two basic premises of PACA are:

- Local economic changes can only be initiated from within the community.
- All approved solutions and proposals should combine different perspectives.

5. External experts are only equipped with the vision to change, whereas local bodies have the means to change.

PACA enables change by putting the action plan into motion through tested methods and tools.

Each step is the logical consequence of the previous one; each step is only possible due to the unique traits of the local economy and the willingness of all parties to work together. This creates many opportunities for development.

Identifying the gaps and problems in the relationships between the major players of the local economy is essential because it will result in the development of project proposals.

The completed proposal would be submitted as various separate projects. Each project will come with a list of specific actions that must be undertaken in the course of implementation.

Tangible results will be seen only when project implementation takes into account local resources and local cooperation.

This will lead to sustainable development because local SMEs will see that their strengths are enough to enact change as long as they remain committee. It will also lead to dynamic development of the community, as improved local economic development will improve the welfare of all local residents. Some ways in which this will result in sustained development in the community are: creation of employment, and development of new products or services that will automatically impact the residents' living standards and SME productivity.

PACA's tools seek to discover the problems in the relationships between all interested parties, SMEs and local decision-makers. PACA makes everyone involved understand that getting along and cooperating are central to local economic growth. PACA helps people realize that their connections to one another and the community are enough to improve their local economic development, and that this is a better way of improving their lot than depending on the government. When people bear this in mind, they will focus on the positive changes that will occur, and come up with new ideas and new projects. They will start to consciously think: "I can change my situation by changing my behaviour. If I change my behaviour to focus on connections and good relations, I can make good things happen."

Thus, PACA is all about using local economic connections that already exist. The local businesses and decision-makers determine their communi-

ty's level of competitiveness. Local businesses and decision-makers must want to enhance their community's competitiveness, only then can they see the benefits of using PACA.

Although tax laws, loan policies and the presence of democratic institutions are essential to economic development and growth, they cannot solve the specific problems of specific businesses in specific communities. Thus, locals living and working in that community should come up with their own solutions to their problems.

When local businesses and decision-makers assess their communities' competitiveness, they should analyze all the factors influencing local economic growth. These factors must be analyzed on their own as well as in connection to one another. The four factors that they should consider are:

1. The strategies and competitiveness of enterprises;
2. The nature and quality of local demands;
3. The industrial environmental condition;
4. The condition of auxiliary and assisting branches.

All these factors indicate that any person or institution has the potential to be competitive. Everything in a community is connected. When business connections are good, there will be better infrastructure of schools and public works. Customers who are satisfied with a business's goods and services will be regular patrons. These interconnected relationships will increase local competitiveness.

Competitiveness is like running a marathon, you have to be dedicated to change for an extended period of time, and you must be willing to make small incremental changes at every step of the way until you achieve success. It is impossible to be competitive if you expect quick results within a short period of time.

PACA's mission is the long-term, sustainable development of local economy. To achieve this mission, PACA uses local finance to implement its action plan when it is deemed to be able to produce tangible results within three months. Doing this will give the local stakeholders a sense of accomplishment that they have done something by themselves, for themselves. When the local stakeholders see that their own efforts have resulted in positive change, they will be further spurred on to make sure the change effected is sustained in the long-term. Many PACA initiatives can be implemented within a community at the same time, as they each have the potential to develop the local economy.

3.2.6 PACA IN ARMENIA

PACA has been deployed in Armenia twice. It was first used in 2006-2010 when German International Cooperation (GIZ) launched its project to increase the competitiveness of MSMEs by promoting innovation and entrepreneurship (ProSME). In 2010-2015, PACA was used by the Local Economic Development Academy to promote local economic development in various regions of Armenia.

There have been more than 40 PACA projects implemented all over Armenia, including rural communities, since 2005.

- In each community where PACA was implemented, 10 business partnerships sprang up. This is because there were on average 4-6 new enterprises in need of business partners.
- Almost all large companies involved in PACA Project found new SME partners from their own local communities.

3.3 FINDING BUSINESS PARTNERS IN BULGARIA: STRATEGIES USED BY SMEs AND THINGS THE GOVERNMENT SHOULD DO TO SUPPORT SME CLUSTERING

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ABSTRACT
The various stakeholders in national innovation systems are interested in clustering for different reasons. The relationship between Bulgarian firms has been evolving through complex organizational partnerships. These partnerships seek either to increase competitiveness or avail themselves to funds for the formation and development of clusters. Policymakers mimic trendy EU or global policies, and utilize funds to support favourable regions, sectors or party allies. Some business associations or business leaders promote themselves by rebranding their activities through clustering discourse. Academic entrepreneurs see clustering as a fast track to research commercialization and so on. However, little attention has been paid to the actual practice of finding business partners and the evolution

of productive partnerships that later institutionalize into sustainable organizational networks. This paper presents the author's practical experience in nurturing and assisting Bulgarian firms' search for business or research partnerships domestically or internationally (Bankova and Yalamov 2011). It will draw on institutional knowledge (such as the ARC Fund and Enterprise Europe Network – Bulgaria) and quantitative data from national representative innovation surveys. It will be posited that cluster policies in Bulgaria are ineffective and naturally induce firms' opportunistic behaviour. Real clustering only emerges as a market response to demands of foreign companies. By examining innovation partnering, which is central to the form of business partnership leading to the establishment of clusters, it will be demonstrated that innovation in Bulgaria is rather a closed or close proximity phenomenon. In other words, innovation is driven by embedded social networks rather than institutions or clusters. This paper concludes with recommendations to the government and other national and international stakeholders as to the ways they should modify their support for SME clustering in Bulgaria.

Keywords: innovation partnerships, clusters, finding business partners, organizational networks, pre-commercial procurement

JEL Classification: C38, 038

3.3.1 INTRODUCTION

The Bulgarian enterprise sector has a dual character (Peev 1995, 1999, 2002) that engenders profound differences in the way firms do business, find business partners, receive government support and manage their business relationships. The first set of enterprises would have ultimate owners or controlling shareholders and/or managers belonging to inherited pre-1989 networks of security officers, party and business nomenklatura; or have been nurtured during the transition in political parties and crony-captured networks of high ranking public administration officials, politicians and firms dependent on their discretion and public funds. These crony capitalists and oligarchs are now endogenous to regulation and even the Constitutional Court's decisions. Although small in number (less than a thousand families), they control between 10 and 30 percent of GDP according to different estimates, but more than half of public resources.

The second set of enterprises consists of normal de novo start-ups and

some privatized firms that behave comparatively similar to western de novo enterprises by being more or less exogenous to regulation and law enforcement. This group would be quite heterogeneous, possessing owners with various backgrounds and proximity to the first set of companies/owners or law enforcement/government officials, and might engage in non-compliant behaviour from time to time.

That these two sets of companies/owners behave differently is a theoretical fact backed up by anthropological observations from Bulgarian economists. The prevalence of incomplete contracts, the absence of predictable and fair conflict resolution, and a dysfunctional judiciary significantly increase the volatility of interfirm relations and represent a crucial risk to the competitiveness of firms and the economy as a whole. Companies endogenous to regulation and law enforcement would behave differently from those that are exogenous, as the former would manage these risks easier and cheaper than the latter. Likewise, the former could selectively enforce regulation on their competitors from the second group.

This paper addresses companies from the second group, as all methodologies herein apply to that group. This is indeed a limitation of the study, but companies from the first group are very rarely real SMEs. However, the distinctive difference in strategies lies not merely with the size of the enterprises, but with the power emerging from their endogeneity to the rules of the game.

Business partnerships vary from long-term, strong and dense (i.e. leading to complex clusters), through mid-term and focused (i.e. leading to innovation or outsourcing), to short-term contracts (i.e. technology transfer). Low trust in institutions would translate into little partnerships (atomized firms). In fact, most ad hoc and short-term partnerships in Bulgaria are rooted in personal, rather than institutional relationships. The horizon of overall planning and partnerships, as well as innovativeness would extend with the geographical distance of partners (outside Bulgaria, but also outside the Balkans) and their localization in more innovative countries.

3.3.2 INNOVATION PARTNERSHIPS IN BULGARIA

Let us begin by exploring the ways in which Bulgarian SMEs engage in partnerships for innovation. We will use the National Innovation Surveys

that are mirrored on Community Innovation Surveys to compare the enterprises' perception of different partners for innovation with their development of innovative products or processes, as well as the importance of sources and channels of information for innovation projects. Innovative SMEs and their innovation intensity (type and novelty) vary throughout the years (between 35% in 2005 and 70% in 2014), but their partnership pattern remains unchanged both in survey data (green bars – 2008, grey – 2005) and in-depth interviews (2009-2014). The percentages do not add up to 100%, as "don't know" responses are not shown.

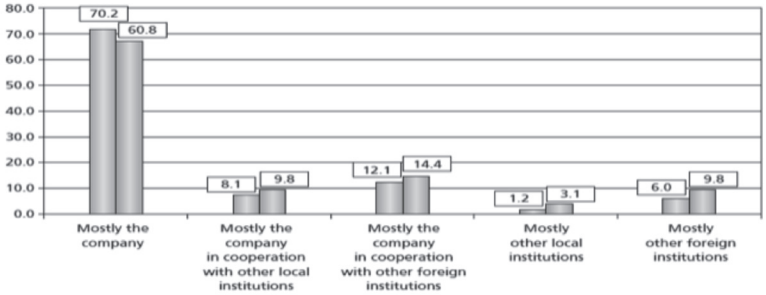

Figure 1: Partnerships for innovative products (% of innovative companies)

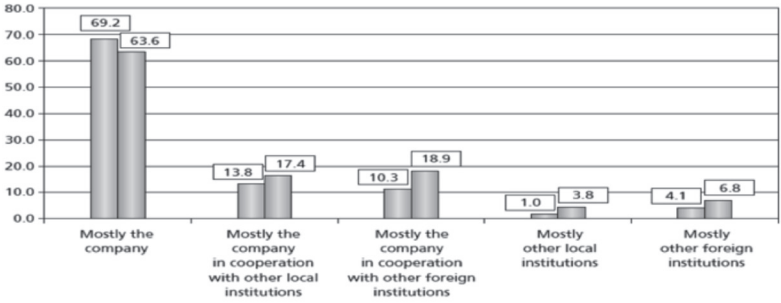

Figure 2: Partnerships for innovative processes (% of innovative companies

The vast majority of innovative SMEs (60-70%) developed their innovative products (Figure 1) and processes (Figure 2) entirely by themselves. This leads to a lot of repetitive effort and low efficiency. Compared with the EU-27 average, Bulgarian firms cooperate significantly less with universities and other public or private research institutes, and the government

as procurers of innovation (Figure 3). This is partially because academia has limited potential to respond to market demands. Academic and business excellence has shifted apart in the last 25 years, so much so that even in cases where business and academia are in partnership, it is rarely institutionalized through official contracts and is more often the personal appointments of professors and PhD students in firms. This practice leads to de-capitalization of academic assets, and limits the knowledge flows to close social networks. However, all stakeholders prefer this stable Pareto inefficiency for different reasons – from pure rent-seeking to better trust management and conflict resolution (in case of unexpected leadership change at the institution or too many internal risks factors such as long power-chain and unpredictable self-governing bodies, accounting, audit and financial inspections, etc.). Additional motivation for the industry-academia relationship is the battle for talents. Companies, especially in engineering and Information and Communications Technology (ICT), tend to develop partnerships with academia through directly headhunting the best and brightest or through professors, who use their technology in classes, thus preparing the students to work later with it.

Figure 3: Partnerships for innovation in Bulgaria versus EU-27

One particular form of innovation is changes in the way the firm works with business partners. This, in particular, includes how firms search and find business partners, assess their credibility and reputation, sign contracts with arbitrage clauses (a growing trend in Bulgaria is to sign up for out of court arbitration due to judicial inefficiency), employ third parties to help with enforcement of contracts (debt collectors, for instance) and so on. Roughly a third of all companies (32% in 2009 and 32.8% in 2014) engage in such activities on an annual basis. Despite the slightly conservative situation and close innovation models applied by companies in the previous years (2005-2008), these changes in the innovation periphery (in 2009-2014) have generated new product and process innovation for 2015-2020. This means that public support for firms' clustering is needed. Enterprise Europe Network (EEN) – Bulgaria is currently the major service provider in that it helps companies find new business partners, and offers subsequent support on contracting and managing the partnership. EEN-Bulgaria is generously funded by the Community Innovation Programme of the Seventh Framework Programme and Horizon 2020. EEN is the successor of the Innovation Relay Centres and Business Information Centres of the European Commission that operated both in Bulgaria and Europe through industrial commerce associations, chambers of commerce, commercialization departments at research institutes, private business consultancies and non-governmental organizations. EEN-Bulgaria (and previously, IRC) is managed by the Applied Research and Communications Fund (ARC Fund), where the author has worked for more than 15 years in addition to his university affiliation. EEN provides a full-fledged portfolio of services targeting internationalization of firms, technology transfers (inward and outward), R&D and innovation support. It also facilitates participation in framework programmes and Horizon 2020, brokerage, matchmaking and representation of firms at major innovation fairs. So far, more than 6,000 firms have benefited from ARC Fund's services, but less than 1% have gone through the whole process and achieved a long-lasting partnership following an outward technology transfer with long-term support from a service provider.

The majority of successful cases of partnership facilitation (estimated at around 20%) resulted from joint participation of the firm and service provider at industry fairs, large international brokerage business-to-business (B2B) matchmaking events such as CeBIT (in Hannover and Istanbul), Mobile World Congress (in Barcelona) and smaller focused start-up events,

hackathons and business conferences combined with sector missions. Helping Bulgarian companies join international consortia for framework programme 5 (FP5), framework programme 6 (FP6), framework programme 7 (FP7) or Horizon 2020 projects is another way of finding business partners for these companies. Although not all of them secure funding, these partnerships later manage to sustain cooperation without external support. Sometimes, matchmaking and deal-making lead to a sample order or investment interest, but later negotiations fail for different reasons, including the fact that the entrepreneur is too secretive, does not want to involve the consultant deeper in the negotiations, does not want to share control of the company, and prefers debt over opening the ownership. The latter scenario is unfortunately typical for Bulgarian entrepreneurs.

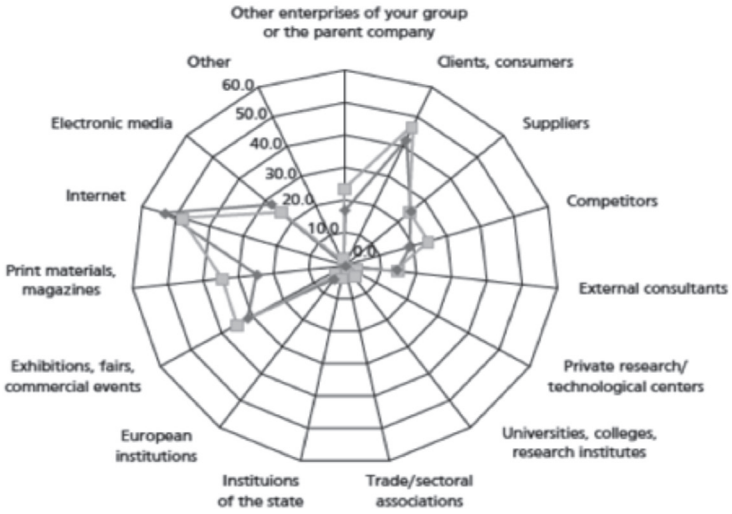

Figure 4: Importance of sources and channels of information for innovation projects

Very rarely do firms rely on the electronic service, even though it is backed up by two EEN partners. In cases where the lead contact was obtained through the internet, a meeting between the partners is organized at an upcoming EEN brokerage event. These findings correlate with data from the national innovation surveys (Figure 4), where exhibitions, fairs and commercial events are the third most important source and channel for information for innovation. As can be seen in Figure 4, exhibitions, fairs

and commercial events are next in popularity to use of existing clients and consumers and internet. There are various cases – facilitated and otherwise – where new business partnerships and innovation were sparked during large business exhibitions and shows.

For instance, Datecs is an exemplary case of Bulgarian academic entrepreneurship that made a break-through deal at one such show. This occurred after 1989, with the commercialization of academic research (when Western printers could print using Cyrillic fonts). A device capable of transforming a Blackberry phone into a mobile point of sale was presented at that show. Apple was interested it and commissioned Datecs' R&D to develop a similar device compatible with iPhones and iPads. It resulted in Linea Pro, which abolished the old Motorola technology (running on Microsoft) at Apple stores and led to a wide diffusion of mobile point of sales in US retail shops. Datecs was the sole manufacturer of the device for Apple, only losing the battle recently to Verifone.

Clients are very important to innovation at firms. This is evident in many examples, including Datecs when it ventured into geographic information systems (GIS) while working for a small German company that was later acquired by the Bertelsmann Group. This acquisition provided room for unlimited growth based on unique vector algorithms, and Datecs was responsible for digitalizing most of the maps and cadastre in Germany, Egypt, Thailand and other countries. The business unit was later acquired by Nokia and recently returned to German owners in the automotive manufacturing cluster. Another example of world-class innovations conceptualized hand-in-hand with its clients is Ontotext (semantic web technologies) working for the British Broadcasting Corporation (BBC).

Similarly, firms learn and innovate whilst working with their suppliers (Figure 3). Innovation hubs in Bulgaria (like TechnoLogica and its CAD/CAM centre, AMK – Gabrovo, Point-L, etc.) shorten the product development process through fast prototyping, unique production line development or digitalization of management and production equipment through various sensors and automation. Such innovation hubs are responsible for 14-17% of innovation processes. This indicates that the Bulgarian economy has the potential to grow organically. Hubs can either create new production lines for particular new products or optimize existing processes. Sectors of application vary from ICT to food processing, sport equipment to environ-

ment protection and many others. In this particular niche, there are no brokers and the predominant means of finding a proper partner is through word of mouth, as well as through the National Innovation Forum and its competition for the most innovative enterprise of the year, which popularizes such partnerships and hubs.

3.3.3 CLUSTERS IN BULGARIA

Although there are various discussions and viewpoints as to when clusters emerged in Bulgaria, there are several different types of organizational networks that can be called clusters. The first type is a complex network of firms (that eventually included other entities such as NGOs or research institutes) linked in vertical and horizontal partnerships in the value chain, without any formal registration as a cluster. Such networks emerged quickly after 1989 around real estate, which was available for rent due to the bankruptcy, restructuring and optimization of former state enterprises. Former colleagues, who became unemployed, learned entrepreneurship because they had nothing else to do. They were competitors who had to cooperate in case they had a client but could not deliver all their services on time. Due to their common working experience, they trusted each other enough to cooperate. Similarly, when independent SMEs have grown sufficiently to compete on a larger scale, their owners may realize that everybody will be better off if they cooperated and produced goods/services together for larger clients than aggressively competing. Various clusters in the garment, furniture, tourism, construction and transportation industries were formed in this way, even though they are not officially called clusters and do not refer to their partnership as a cluster. Some of these partnerships are stable, while others dissolved quickly after the first big deal. A few scholars claim clusters were formed well before 1989 and were known as "stopanski obedinenia" (business units). However, these were not true clusters as they resembled holding structures with diversified control rights.

At the beginning of the twenty-first century, cluster policies were developed through external consultancy under the PHARE programme. The Cluster for Furniture Manufacture in Troyan (a town in central Stara Planina, Balkan Mountains) and the Rhodope Cluster for Tourist Services (formed in 2003) were the pilot clusters, and they had a total budget of EUR 800,000. Despite the fact that the cluster in Troyan was based on existing com-

mercial cooperation by SMEs in furniture production; despite the fact that the Smolyan District's cluster participants were also carefully selected and trained; and despite the fact that funding was available, these clusters did not exist for years. Two years later, PHARE support continued in 2005 through another project that granted over €1 m to 10 newly established clusters. Out of these 10 clusters, only three are currently active:

– The ICT cluster, which benefited from the USAID Competitiveness Programme prior to PHARE and is not deemed to be a real cluster by Porter and other external observers (Porter 1998).

– The Mechatronics and automation cluster, which fits closest to the definition of a cluster.

– The Marine cluster in Varna.

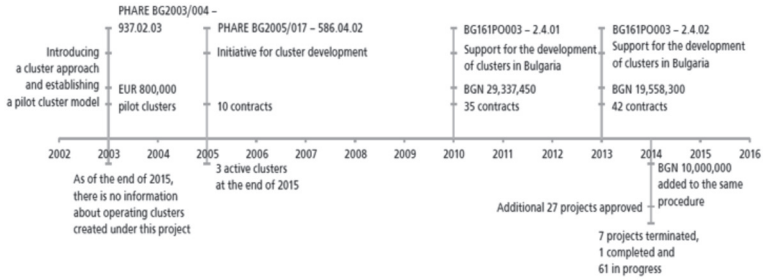

Figure 5: Timeline of support for the development of cluster practices in Bulgaria

Even though a new programme with a budget of €15 m was launched in 2010 to combat the lacklustre public support for clusters in 2003-2007, the situation for clusters did not improve. There were various media reports that organizations, which had nothing to do with clusters applied for and obtained funding in the first round (2010) and second round (2013). The programming of the measure within the Structural Funds created an opportunistic environment where consultants drafted projects to receive funding, even though neither the government nor the respective authorities were interested in publicly accepting that the programming was wrong. The only possible way out of the situation was to fund some other organizational networks with internationally competitive companies of good reputation; this was done in 2014 through an additional €5 m and actively engaging the Association of Business Clusters to help. The Association of Business Clusters tried to introduce good governance and

enforce self-regulation on clusters, as clusters in Bulgaria generally have a poor reputation. It also brought together some of the strongest clusters and companies with good reputations so as to map and evaluate existing clusters.

There are about 220 legally registered organizations with "cluster" in their name and many more using "association" instead of clusters, which competed and won funding for cluster activities. Yet, only 9 Bulgarian clusters have achieved the bronze level of efficiency. The bronze level of efficiency is a good approximation of the real number of clusters in this country. Some of them are dominated by "truly" Bulgarian companies, while others have strong joint ventures as leaders, and a third would have majority foreign direct investments (FDIs) on top.

New clusters emerged recently around two venture funds (co-funded by the EU) – Eleven and LAUNCHub. These funds serve as incubators and accelerators, and they operate large networks of start-ups, both inside the accelerators (already invested in them) and outside (potential companies) through events or trainings. Although they do not comply with Porter's definition of a cluster, they entertain similar benefits of effective knowledge sharing and management, higher levels of trust and cooperation in product design, and open innovation.

Too often policies for cluster formation and support for SME clustering focused on the supply side whereby funds are provided for activities so long as they are deemed "attractive". This emphasis resulted in "unattractive" activities receiving no private funding, and had the unfortunate side effect of preventing effective cooperation and cluster formation. The experience shows that these activities easily became a goal per se, and funds were thus misused. Similarly, the support for innovation comes from the same avenue (supply side, pre-determined activities, sectors, etc.) and governments rarely push the demand side. In terms of innovation support practice, the EU countries have already demonstrated the ways in which pre-commercial procurement could be a very cost-effective, transparent and competitive instrument for procuring innovation. Even though this could be easily done, it is still not used for innovative cluster formation.

3.3.4 CONCLUSIONS

Bulgaria should adopt EU regulations and best practices in pre-commercial procurement. Pre-commercial procurement could be an effective, transparent and competitive method of stimulating the "demand side" for cluster formation, as opposed to funding the "supply side". Pre-commercial procurement should be regulated through the overall procurement regulation in consultation with research, development and innovation (R&D&I) specialists.

The Bulgaria Investment Agency should also promote outward foreign direct investments (FDIs) as a sustainable growth channel for innovative companies, including clusters. As existing outward FDIs could be used as a framework/infrastructure for subsequent roll-outs and in the search for partners, the government could design internationalization programmes for SMEs based on domestic companies' existing network of investments abroad.

Many successful new partners find each other and form joint ventures at international fairs. Therefore, an instrument to support SMEs attending such major industry fairs could have significant impact.

Academic entrepreneurship has a proven track record in the last 25 years, while the practice of university-industry research schemes has attracted significantly more criticism. Better regulation protecting the interests of both academia and the individual researcher is needed before international property rights (IPR) and academic entrepreneurship (both individual and institutional) can take place. This should also regulate business-academia relationships in general, as they are fully liberal (contrary to many EU universities). Venturing risk funds for academic entrepreneurship, similar to those existing in other universities (i.e. Cambridge), would be a good idea.

The European Commission (EC) should "push" national governments to partner with the European-wide networks and instruments for SME support such as EEN. Although some governments are nominally members of EEN, they are not effectively participating in activities. This is certainly the case for Bulgaria.

The European Commission should engage in ex ante governance risk assessments, as functioning mechanisms in the EU (such as the LEADER approach) often fail in countries with bad overall governance and poorly functioning law enforcement.

The government and EC should be more demanding and circumspect in assessing clusters seeking financial support. It would be prudent to have regulations stating that clusters should have a minimum bronze level if they wish to apply for funding and that clusters should attain certain benchmarks towards silver status prior to obtaining funding (by the end of the project or by a certain date after that linked with a fixed percentage refund if not met).

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3.4 PERSPECTIVES OF AGROFOOD-BASED CLUSTERS IN GEORGIA

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ABSTRACT
Many countries all over the world have developed cluster policies as well as strategies and programmes for development to enhance the impact of their research and innovation policies in cluster management. Clusters provide governments and the private sector with an excellent opportunity to address social and economic challenges through business development and innovation support programmes on a regional scale. However, clusters have to be considered a tool instead of an objective. The enhancement of productivity and growth of agro-value chains in developing countries like Georgia should be a fundamental goal of national governments and international development agencies. Although a large part of the population in developing countries relies on agricultural production, increasing demographic pressures have led to low productivity and food scarcity. These challenges are difficult for poverty alleviation schemes to overcome. Cluster management excellence is the main prerequisite for a cluster organization, its participants, the industrial sector and the region to achieve the highest impact within a given technological, industrial, regional, and legislative framework. This country report will provide an overview of the global experience in modelling the structure of clusters, governance, key objectives, prevailing services, cluster management issues, and the ways that these issues can be adopted in Georgia. The development of a cluster policy in Georgia will provide the national government with an excellent strategic opportunity to address social and economic challenges through agribusiness development and innovation support programmes. Excellent management of clusters in the country will not only result in the economic development of Georgia and the region; it will also be a boost to the development and competitiveness of the Georgian agro-industrial sector.

Common standards for excellent cluster management improve mutual understanding and foster better national cooperation between cluster organizations. International and regional cluster cooperation should be promoted because of the benefits to the participating SMEs. Cluster management excellence will contribute to regional and local prosperity, improved competitiveness of companies, and more returns on investment for investors.

Keywords: clusters, agribusiness, agricultural cooperatives, policy

JEL Classification: C38

There is no doubt that clusters offer a favourable and dynamic business environment through which the competitiveness and innovation capacities of the cluster participants are significantly improved. According to Michael E. Porter, "clusters are geographic concentrations of interconnected companies and institutions in a particular field." When economic players are located close to one another, they are more likely to interact and build mutual trust. A business cluster serves this purpose when it brings many enterprises in the same location together. Clusters improve their participatory companies' productivity as well as increase their national and global competitiveness. This phenomenon is called agglomeration in urban studies. Clusters are also very important aspects of strategic management. For instance, individual food companies may conduct an analysis of their internal strengths and weaknesses, only to conclude that they are too small to enter the global market on their own. However, they realize that banding together enables them to break into the international market because they are collectively able to cover a broader product and technology spectrum. Many countries all over the world have utilized cluster policies and development programmes to enhance the impact of their research and innovation policies.

Clusters have the potential to affect competition in three ways:

- By increasing the productivity of the companies in the cluster,
- By driving innovation in the field,
- By stimulating new businesses in the field.

Clusters and their cluster management organizations are individuals. Even though they share some common characteristics, they also have significant differences. A simple definition of a cluster is "the geographical con-

centration of industries which gain advantages through co-location" (Bosworth and Broun 1996). A broader definition of clusters sees them as the "geographic concentrations of interconnected companies and institutions in a particular field" (Porter 1998).

3.4.1 CLUSTER DEFINITION

Clusters can be an array of linked industries and other entities important to competition. They include, for example, suppliers of specialized inputs such as components, machinery and services, and providers of specialized infrastructure. Clusters also often extend downstream to channels and customers; they likewise extend laterally to manufacturers of complementary products and companies in industries related by skills, technologies or common inputs. Many clusters include governmental and other institutions such as universities, standard-setting agencies, think tanks, vocational training providers, and trade associations that provide specialized training, education, information, research and technical support (Porter 1998). The idea is that clusters will reinforce their competitiveness as they evolve through the combination of interfirm rivalry and collaboration, innovation, the rapid transmission and adoption of ideas, and the generation of important local externalities such as a skilled labour pool, the availability of specialized inputs (physical, technical, legal and related to certification), and enhanced access to information on technologies and markets.

Clusters may actually differ from their academic definitions, as some clusters are individuals. Clusters can be differentiated in the following ways:

- Research-driven clusters vs. Industry-driven clusters;
- Sources of funding;
- Relevance of specific determinants;
- Effects of the cluster's technology field;
- Links between services of the cluster management organization and SME activities.

Characteristic of this type of cluster programme is the objec¬tive of developing business-driven clusters representing national industries that are internationally competitive. Such a programme supports pre-existing developed regio¬nal systems of innovation in their efforts to utilize their potential for further national and international growth. These programmes target the national cluster champions. They should overcome their region-

ally-centric focus by promoting national and international collaboration with other clusters.

3.4.2 GLOBAL HUMAN POPULATION GROWTH

The problem of the overpopulation of the world is compounded by the dependence on outdated and inefficient technologies leading to poor productivity and slow economic growth. Agriculture-based industrial products account for half of all exports from developing countries, yet only 30% of those exports involve processed goods, compared to 98% in the developed world. The world population is now estimated to be at 7 billion, and is set to grow to 9 billion in the next few decades. Innovations in the agricultural systems are needed if the rapidly expanding world population is to be fed. Agro-based Food Clusters are intelligent agro-logistic networks with consolidation centres, agro-parks and satellite farms organized in rural transformation centres. They are simultaneously oriented to serve the nearby metropolis and the world market, to which they deliver their products and from which they receive inputs that cannot be produced locally. Agro-based Food Clusters fit into the context of the network and information society as the third development stage of humankind after agricultural and industrial societies.

The agro-value chain development and cluster development approaches share similar premises. As individual firms often face sector-level constraints that they cannot address alone, they have to enhance their corporate and industrial competitiveness through competition and cooperation mechanisms. So doing builds trust among the different actors, establishes the reliability of good business governance and emphasizes the importance of coordination mechanisms amongst different stakeholders. These factors are particularly important for the generation, transfer and diffusion of knowledge, as they will lead to innovation that will in turn improve the firms' performances.

In contrast, the differences between their approaches are subtle. The value chain approach considers a broad market system and the development of products/services from input suppliers to end-market buyers. Essentially, the value chain focuses on the flow of a developmental process by emphasizing value creation in each segment of the chain. Vertical linkages are the main focus, and less emphasis is given to horizontal linkages be-

tween agents operating in the same node of the value chain. While the cluster approach also considers an industry value chain, it focuses on geographic concentrations of interconnected companies and their interactions. In particular, it concentrates on the synergies between these enterprises (wrought by horizontal linkages), including those between firms in different segments of the value chain and between firms and other stakeholders such as governments, universities, business associations and other intermediate bodies. As a result of this geographic focus, the cluster approach does not always focus on the entire value chain. Merging these two policy approaches will modernize the agribusiness sector in many developing countries and lead to its structural transformation by creating value along the entire supply chain.

Agro-based Food Clusters can be seen as a system innovation in present agricultural practice, as it moves away from the separation of sector-oriented agriculture and food production towards vertical and horizontal integration of a number of spatially clustered or semi-clustered value chains. The clusters are linked with sourcing areas that provide commodities meeting high standards of sustainable development in agriculture and precision farming. At one end of the chain, Agro-based Food Clusters are production regions and satellite farms, centred on rural transformation centres. At the other end of the chain, distribution and consolidation centres directly service the metropolitan or export markets to which they deliver their products and from which they receive inputs that cannot be sourced locally.

3.4.3 FOOD CLUSTERS' PRACTICE

Clusters have become a key element and instrument of modern innovation policy activities in the EU. Clusters provide governments with an excellent opportunity to address social and economic challenges through business development and innovation support programmes. However, clusters have to be considered a tool rather than an objective in itself. In light of the fact that Georgia lacks sufficient regulations and definitions of clusters, the country has made some progress in interfirm cooperation through the existence of some food clusters, agricultural-based vertically integrated cooperatives, vineyards and wine factories. For instance, there is a wine cluster in the Kakheti region of Georgia that has several value chains in an industrial set-up. This cluster contains a variety of different agro-pro-

duction, processing, agro-logistics, and agro and food linked services and functions. Within the cluster, the principles of industrial ecology are applied in the large-scale central processing unit. The spatial cluster thus combines units that represent the different parts of the value chain from primary production to ready-to-eat food products, with added compartments of essential agribusiness services like R&D, education and training facilities, trade and logistics facilities, and park management services.

Clustering with non-agro-industries like energy production and waste management can further decrease economic costs and environmental emissions. The development approach is co-designed in cooperation with knowledge institutes, entrepreneurs, and non-governmental and governmental organizations to realize the system innovations of Agro-based Food Clusters.

In this context, a value network of Agro-based Food Clusters involves:
• Vertical relationships among suppliers of raw materials and production inputs, agricultural producers, processors and exporters, branded buyers and retailers;
• Horizontal relationships among producers, which take the form of growers' cooperatives or various types of smallholder business consortia;
• Support relationships between producers and facilitating organizations (e.g. local governments, business service providers, research institutes, universities and non-government service organizations) that reinforce the quality, efficiency and sustainability aspects of the chain.
There are huge diffe¬rences among industry sectors, when it comes to the cluster managements' effects on the international activities of SMEs. The promotion of cluster management activities for the internationalization of the cluster should there¬fore take the specific framework conditions of industry sectors into account. Corresponding instruments should be developed by programme owners to provide need-based support for cluster managements. The clusters for the development of a new model for the agrofood industry were recognized at an early stage. Both the United States and Europe have developed a strong base of agrofood clusters. Similarly, predominantly agricultural developing countries are turning to clusters as a means of improving their economies. Latin America has many good examples of agro-based clusters. The Asian region has also begun to include agrofood clusters into the mainstream changes in the agricultural, farming and food industries. Clusters are particularly relevant to China, as

they have huge potential for agrofood development. The two most prominent clusters in China are the ones specializing in vegetables and flowers. In order to meet the specific development conditions of clusters, support should be provided on a long-term basis of five to ten years. Furthermore, pro¬gramme requirements and processes should not only be less bureaucratic, but also flexible enough to respond quickly to the changing economic and technology environments in which clusters operate. In the course of implementing the programmes, many programme officials have observed that there is always room for im¬provement in the monitoring and evaluation of programmes and cluster initiatives. Although most of them were satisfied with their approach and instruments, they emphasized that they are continually searching for a system capable of balancing the interest in obtaining programme governance-related information with the interest in keeping the bur¬dens from the participation in monitoring and evaluation as low as possible for beneficiaries. However, none of them had a textbook solution for the best system available. Programme officials have indicated that benchmarking cluster programmes and cluster initiatives was a very good method of supporting the further development of funding schemes and activities of beneficiaries.

Benchmarking provides standards for performance assessment, and thus helps identify potential for improvements and best practice through the comparison with peers. Benchmarking is an ideal supplement to a formative evaluation because it is less resource intensive than a fully fledged evaluation exercise. The Danish Mega Clusters (DMC) approach to studying specific industrial areas of business has strengthened the framework for the development of Danish industries. This approach is based on several studies covering specific parts of the Danish economy. These studies were in turn the foundation for dialogues with the firms and organizations involved in the specific clusters. Dividing the clusters into different areas captures important differences in the different clusters. The history of the Danish construction cluster has been highly influenced by regulative legislation. The Danish government has influenced the growth of the sector in the last century. In the 1950s, there was an extensive demand for housing in Denmark. To solve the problem, the construction sector underwent industrialization. This led the government to set up new regulations promoting this industrialization. By subsidizing both private and public funded housing projects, they succeeded in moving production from the building sites to production plants or factories. This movement of the physical ac-

tivities was necessary if the sector was to receive the subsidy. By doing this, the government succeeded in promoting the production of housing and the industrialization of the sector. The food industry is also a very important industry for the Danish economy. One third of Danish exports come from the food industry and more than 350,000 people are employed in the industry. This makes Denmark the fifth largest exporter of food products. The agrofood cluster is very internationally competitive due to the structural and business synergies between the branches in the sectors of the cluster. The cluster has been continually evolving to the successful rationalizations of its structure of the cluster and the high international quality demands. According to the 1993 Danish Mega Cluster analysis of the Danish Agency for Trade and Industry (EFS), the low level of investment was the cluster's main weakness. It would be interesting to know if this still is the case, and if its low level of investment stemmed from the general recession of the Danish economy in the early 1990s.

3.4.4 KEY ROLE OF AGRO-BASED CLUSTERS

Agrofood clusters are historically influenced by their primary sector, especially agriculture. The cluster's cooperative movement and vertical integration are its most important features. The owners of slaughterhouses and dairies in the primary sector dominate the owner and managerial structure of this cooperative movement. The purchasing function of firms in the cluster has also been coordinated with one single company in charge of purchasing for the entire industry. This has also been the case for consultant businesses, research and education, where such coordination has had noticeable success. The Danish agrofood cluster is a coherent system with strong vertical and horizontal linkages. Mutual dependency between the different actors in the system has led to important synergy effects. The high integration of the agrofood cluster and the competition between the firms has created competitive advantages. Favourable cooperation on quality control in response to high demands from the market has been possible due to the mutual dependency and vertical ownership. High international quality demands have influenced the competitive position of the cluster, and Danish firms have been able to gain access to important international markets such as Japan. The cooperative structure is also a major problem or challenge for the cluster in the near future. The ecology movement, which began in Denmark in the mid-1990s, has raised the demand for ecologically friendly products. Demand for these products is

increasing, but the supply is relatively low because a majority of farmers are too conservative to meet the ecological demands. This has spread to the entire cluster through the cooperative structure. The refusal to adjust to the new and increasing consumer demand on this point is a growing threat, as more people and countries move towards ecologically friendly food products.

Georgia has many significant laws and state policies supporting small and medium-sized enterprises. It has Agricultural Cooperatives that increase productivity and innovation through close cooperation with regional partners along the value chain. Economists see clustering as a means for small companies to enjoy some of the economies of scale usually reserved for large ones.

The concept of industrial clusters has been around for some time. For many national and regional authorities, particularly in the United States and Europe, cluster development policies are central to the new development paradigm based on the agglomeration economy. The potential of many developing countries and economies in transition like Georgia, particularly those with large rural communities, suffer from inadequate access to food and lack of employment. Food agro-industrial development is closely linked to the performance of the agricultural sector, since it is its main source of basic raw materials. Close vertical links between agriculture and the agro-industry are essential to ensure that continued availability of good quality raw materials for the production line. At the same time, agro-industrial development is critically important for the expansion and diversification of the agriculture sector. Development of the agro-industrial sector can significantly contribute to the transformation of agriculture and the development of the economy as a whole.

3.4.5 AGRICULTURE OF GEORGIA AND DIVERSE OPPORTUNITY FOR CLUSTERS

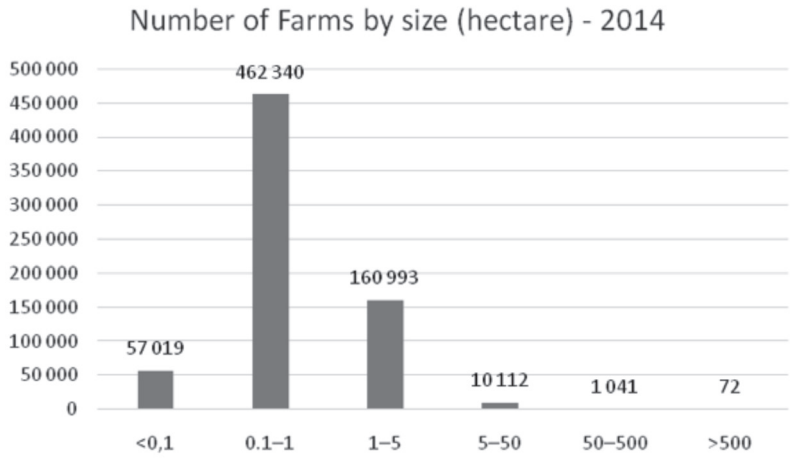
Subsistence farming is the main mode of agriculture in Georgia. The Georgian agricultural sector employs 54% of the total labour force. With 95% of small farmers (+/-1.2 hectares per family), output and productivity are extremely low. The majority of farmers cannot benefit from economies of scale, and the country is highly dependent on foreign imports of agricultural products because most farmers cannot compete with importing suppliers.

The land privatization process of the early 1990s resulted in the creation of small household farms. A large portion of the population (42.6%) lives in rural areas where low input subsistence and semi-subsistence farming is the main source of livelihood. According to the agricultural census, there are nearly 800,000 farm households in the country. The average farm size per household is 0.9 ha and the average plot size is 0.5 ha (see Graph 1 below). Thus, the farm structures in Georgia are dominated by a large number of very small privately owned subsistence family farms. Although there are a considerable number of both medium-sized family farms and larger corporate farms, these operate on leased state agricultural land. Pastures are mostly state owned, but controlled and managed by communities or municipalities. However, environmental degradation has resulted in deficient management of pastures.

These, then, are the structural obstacles for agricultural development in Georgia:

- Small and fragmented parcels of land (average 0.9 ha per household, average plot size 0.5 ha);
- Underdevelopment of agricultural technologies;
- Underdevelopment of infrastructure; and
- Lack of know-how of modern technology and low skills of farmers.

The resultant low agricultural productivity is a structural feature of Georgia's agriculture sector. Development of the sector is slow and it is difficult to attract investments. Moreover, many farmers find it difficult to have long-term visions for development. However, some improvements have been identified in the last years. These are increased foreign investment, as well as increased overall growth of agricultural production and agricultural processing production.



Graph 1: Number of farms in Georgia by hectare in 2015

Georgia has significant agricultural potential, with estimates indicating that farm and agro-industrial production could increase fivefold from current levels. A well-developed agricultural sector will reduce inflation as well as drive economic growth and other social benefits. Further development and modernization of the sector is also critical to the improvement of the country's food security and nutritional status of vulnerable people, including better food safety and sanitary and phytosanitary (SPS) standards.

Agriculture is an important safety net for most of the rural population. Of those classified as employed in the agriculture sector, 95% are small farmers (subsistence or semi-subsistence). Eurostat data for 2013 shows that 57.1% of agricultural workers in Georgia are either self-employed or work for their families. This indicates that most agricultural activities in Georgia are dominated by many small-scale, family-run farms and cooperatives. So far, smallholders and farmers are defined through their position relative to the Food/Feed safety, Veterinary and Plant Protection Code of Georgia, and the Tax Code of Georgia. There is no definition of rural areas; however, the law on the Development of High Mountain Regions defines which settlements belong to mountainous areas and the benefits accrued to these areas. For the implementation of rural development strategy, a definition of rural areas is needed.

Migration from villages to the capital city is high. Of the 49% of villagers that migrate to Tbilisi for work, 27.6% of them migrate frequently and 23.1% rarely. Despite the aforementioned unfavourable agriculture structure, rural incomes have increased mainly due to increased remittances from emigrants, which have mitigated the impact of the poor agricultural performance on the rural population, where nearly half the Georgian population lives. An increasing share of agricultural land is not used and people are leaving the rural areas in search of better incomes in cities or abroad. The rural non-farm sector is small and dominated by small and medium trading enterprises that are mostly private and individually owned.

3.4.6 GEORGIAN GOVERNMENT'S CRUCIAL ROLE IN AGRICULTURAL DEVELOPMENT

The importance of agriculture was officially recognized in 2014 when the Ministry of Agriculture (MoA) updated the Strategy for Agriculture Development in Georgia (SADG) 2014-2020, and secured improved technical support from the EU after extensive consultations with parliament, civil society, donors and other relevant stakeholders. Since 2013, MoA has made significant effort to improve its internal organization, capacities and procedures, including the establishment of a new Policy Unit responsible for monitoring the implementation of SADG, and the re-establishment of its territorial presence in all districts. Additionally, MoA has established the Agriculture Cooperatives Development Agency (ACDA) and the Agricultural Scientific Research Centre (ASRC).

	2010	2011	2012	2013	2014
GDP per capita growth (annual %)	5.25	6.47	6.01	3.40	4.37
GDP per capita, PPP (current USD)	5641	5958	6322	6702	6930

Table.1: GDP growth in Georgia
Source: World Bank indicators

According the latest data on registered agricultural cooperatives in Georgia, there are 1,250 cooperatives with approximately 5,000 members. This indicates that less than 1% of farmers in Georgia are members of cooperatives.

Clusters are promising and powerful instruments for the promotion of research and development through innovation. Thus, clusters are essential for economic growth and job creation in Georgia. Many studies around the

world have proven that cluster activities positively impact R&D investments as well as R&D collaboration and innovation. The fact that the returns and profits on R&D investments are increasing with this economic policy instrument confirms clusters' ability to offer a favourable and dynamic business environment capable of significantly enhancing competitiveness. Innovative companies can develop in such favourable ecosystems by interacting with different innovation actors within and across sectoral boundaries.

In this respect, cluster policies and cluster programmes are important for the development of clusters and SMEs. The potential of clusters can be tapped through use of the right strategies and instruments. Clusters are now a key instrument of modern innovation policy activities, as they bridge tradition, innovation, know-how and development. The levels of cluster policies and cluster organizations vary across regions and countries in Europe. Some countries have only introduced cluster policies recently, while others implemented cluster policies in the 1990s. There are more opportunities for exchange of practices across countries in recent years, leading to cross-border collaboration as well as policy convergence across regions and countries. The establishment of inter-national cluster policy collaboration bodies, comparison exercises of cluster policies as well as benchmarking of cluster organizations and programmes are great leaps forward in the development of cluster policies and cluster programmes. Clusters have become part of modern innovation policy activities.

Cluster organizations are always the result of an organic economic development. Therefore, this report will not propose resolutions to the challenges faced by cluster policymakers and programme owners. Instead, it sets up a framework for more effective and coherent cluster policy by referring to a number of new studies and analyses as well as the experiences of excellent cluster organizations and owners of good practice programmes. However, it should be noted that each country has specific policy traditions, different regulations, cultures and economic circum¬stances. As such, the framework has to be adjusted to suit the unique circumstances of each country.

In 2008, the European Commission called for the development of world-class clusters to maintain and further develop Europe's global competitiveness. It sought to do this through better cluster policies, increased transnational cooperation, promotion of cluster management excellence

and improved integration of innovative SMEs into clusters. The relevance of clusters for economic development in the European Union was further emphasized in 2010 by the European Commission's communication on future regional policy, which highlighted clusters as a key element in smart specialization strategies. In order to contribute to know¬ledge and innovation based economic growth, EU Member States are encouraged to put more emphasis on the smart specialization of their regions by concentrating resour¬ces on a few key priorities and addressing their particular strengths rather than spreading investment thinly across areas and business sectors. Although cluster deve¬lopment is discussed from a regional policy perspective in the EU, all Member States are still pursuing the development of world-class clusters.

Clusters can be used at both the design and implemen¬tation phases of smart specialization strategies. In the design phase, they can be used to identify the industrial strength and assets in a region, which can contribute to the setting of strategic priori¬ties and the right political decisions. For this purpo¬se, cluster mapping and benchmarking are valuable tools that can be used to identify regional specialization patterns and compare economic activities, including agriculture. Cluster mapping and benchmarking can compare one country's cluster strengths with another. In the implementa¬tion phase, clusters can be used as efficient platforms focusing on and contributing to the objectives of smart specialization. By fostering cross-sectoral cooperation, clusters can contribute to the implementation of thema¬tic-based strategies by addressing new societal challenges and creating new competitive advantages in a region. Horizon 2020 is a key tool in implemen¬ting the Innovation Union flagship initiative, which focuses on tackling major societal challenges, maximizing the competitiveness impact of research and innovation, and raising and spreading levels of excellence in the research base.

Georgia – trade 2007-2014

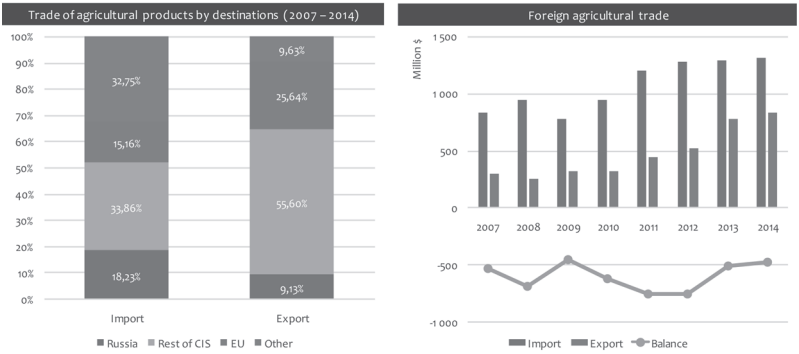


Table 2: Trade in Georgia 2007-2014

It will ensure broader access in the following ways:

- SMEs with dedicated projects would be able to address societal challenges and utilize enabling technologies, and
- All regions would have specially tailored support in the areas of policy learning, twinning, networking and complementing structural funds.

Horizon 2020 could contribute to Smart Specialization Strategies by:

- Promoting research priorities with strong innovation potential;
- Supporting all forms of innovation including social innovation;
- Promoting and improving SMEs' market access, commercialization of research results and intellectual property rights (IPR) management by opening up new paths to risk finance;
- Supporting open access to research results, scientific publications and data.

Regions can play a crucial role by implementing Horizon 2020. Horizon 2020 can be instrumental in organizing local operations, and it can be used to prepare and implement strategies and projects through smart specialization. Horizon 2020 will enable all players in a region to liaise with knowledge institutions, industries and clusters to build research and innovation ca¬pacity, while providing intelligent assistance to prospective participants.

As a result, clusters are the most popular policy instrument in improving competitiveness all over the world. According to the Harvard Business

School, the US economy has more than 25 employees in 32% of all clusters (except budgetary ones) and Sweden has more than 25 employees in 39% of its clusters. Labour productivity in these clusters is 44% higher than the national averages. Moreover, clusters drive the local market development in the service sector wherever they are located. The more a cluster develops, the more competitive are its participatory companies; the more competitive its participatory companies, the higher the country's standard of living. Thus, clusters are geographic concentrations of industries related by knowledge, skills, inputs, demand, and/or other linkages. A growing body of empirical literature has shown the positive impact of clusters on regional and industry performance such as job creation, patenting, and new business formation. There is an increasing need for cluster-based data to support research, facilitate comparisons of clusters across regions, and support policymakers and practitioners in defining regional strategies.

As a developing country, Georgian clusters have the following characteristics:

- Dominated by SMEs
- Lack a critical mass of firms
- Comparatively weak internal linkages
- Poor infrastructure
- Infrequent interactions between cluster agents
- No sustainable connections with the global market

The development of inter-organizational networks in Georgia and the practical development of clusters have shown that a cluster can be identified in four ways:

- Geographical cluster
- Sectoral cluster (a cluster of businesses operating together from within the same commercial sector
- Horizontal cluster (based on interconnections between agribusinesses sharing resources such as knowledge management)
- Vertical cluster (i.e. a supply chain cluster)

The performance of clusters in Georgia is affected by cluster strategies, policies and programmes. According to the Association for Farmers Rights Defense (AFRD), five key aspects should be conside¬red when setting up a cluster programme:

1. Programme officials must ensure that a programme is smart and sim-

ple. This will avoid administrative burdens for cluster organizations that may negatively impact the performance of their daily operations.

2. Programme requirements and processes should be less bureaucratic and flexible enough to re¬spond quickly to changing economic and technological environments in which clusters are operating.
3. Programme implementation should be supported by a knowledge-based support infrastructure, including the pro¬gramme agency and specialized partners such as non-governmental organizations (NGOs) and consultants, in order to assist clusters with their specific needs in an adequate manner.
4. From the very beginning, the programme should be based on clear targets that can be measured through a pur¬poseful indicator system providing information relevant to the implementation processes.
5. Programme implementation should be accompanied by a formative evaluation that continually provides recommen¬dations for programme adaptation. Ex-post evaluation can be useful in improving the performance of a programme, if results are used both for the further devel¬opment of the existing programme and the development of new programmes.

The development of a value chain with a clear geographical component is very important in Georgia. In fact, similar economic activities are often geographically concentrated or "clustered" in specific areas and localities. Agribusiness operations are no exception to this pattern of concentration. The geographical proximity of firms allows for a rapid diffusion of information on market opportunities as well as process and product innovations. Innovation policies targeting the cluster are likely to boost the collective learning capacity as well as the overall competitiveness of the cluster and the local economy. Competition and imitation play an important role; as emphasized in the case study above, the cost of learning is lower in clusters.

Clusters can bring about the following benefits:

- Labour market efficiency and finer division of labour within the local economy in Georgia. Skilled labour, specialized and customized products and services, lower costs and a greater variety of inputs are the results of a finer division of labour in a "dense" cluster.
- Access to capital and credit market efficiency. Clustering of economic activities within one or few related sectors might significantly improve

the efficiency of the credit market, as this will reduce the information asymmetries between borrowers and lenders. An effective allocation of capital is fundamental to the development of clusters. Given the better quality and quantity of soft and hard information within a cluster, the financial intermediaries are able to reduce screening costs and allocate capital to the best entrepreneurial talents. This advantage might not be particularly strong in developing countries with an ill-functioning credit market.

- Development of a "cluster as brand". This is particularly important for agro-products because the concentration of producers makes it easier to generate a "local brand". Thus, all firms in a successful and competitive cluster are able to benefit from this cluster brand. For instance, many Italian agrofood clusters currently in their maturity stage are united behind a "brand" with significant value in that the firms therein are able to better position themselves in high value added niches. Given these advantages, cluster development policy should reinforce and promote cooperative efforts and networking of firms in order to mobilize and spread knowledge and ideas, information and technology within the cluster and/or to create soft infrastructures. So doing will enable actors in the clusters to import knowledge and best practices from other locations.

Cluster development can be used to address value chain constraints, especially those requiring the transformation of stakeholder relationships. In fact, one of the main limitations of the value chain methodology is that value chains are often simple linear flows with almost exclusively vertical linkages between actors operating in different nodes of the value chain (e.g. farmers, agro-processors, traders). This disregards the possible weaknesses in the horizontal linkages between firms operating in the same node of the value chain. Another limitation is the stylized dichotomous concept of either buyer-driven or producer-driven value chains. This concept tends to ascribe all power to one "governor" of the chain, which is a far cry from reality where different degrees of power or powerlessness are usually found along any given chain due to the continuous change of power constellations over time.

There is no single indicator system that can be applied to measure the success of a cluster programme or cluster po¬licies. This is because indicators always depend on the objectives of a specific programme or policies. Thus,

individual programmes, policies and their targets will determine which indicators are used. Once the key performance indi¬cators of a programme have been chosen by policymakers and programme owners, several different methods of impact analysis can be deployed to measure the effects of the policy. Both economic and non-eco¬nomic impact of cluster policies can be analyzed. In an ideal world, the impact of a cluster policy can be derived from a comparison between the performance of a participatory enterprise's performance in a cluster and an identical enterprise that is not in a cluster. Such an analysis is not possible because an enterprise is either part of a cluster or it is not. Since the ideal situation for impact analysis does not exist, alternative methods are used.

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3.5 CREATION OF INNOVATIVE CLUSTERS IN GREECE: THE GENERAL SECRETARIAT FOR RESEARCH AND TECHNOLOGY (GSRT) APPROACH

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ABSTRACT
Many countries all over the world have developed cluster policies and related programmes to enhance the impact of their research and innovation policies. Clusters provide governments with an excellent opportunity to address social and economic challenges through business development and innovation support programmes. However, clusters have to be considered as a tool and not as an objective in itself.

The Community Framework for State Aid for Research and Development and Innovation defines innovation clusters as "groupings of independent undertakings, operating in a particular sector and region and designed to stimulate innovative activity by promoting intensive interactions, sharing of facilities and exchange of knowledge and expertise and by contributing effectively to technology transfer, networking and information dissemination among the undertakings in the cluster."

The mi-Cluster is the first innovation cluster in Greece and was established in 2006. It is geographically concentrated and shares common premises at the Microelectronic Innovation Centre in Athens. It implements the Corallia business model. The Corallia Clusters Initiative is a well-organized, systematic, strategic national cluster initiative with long-term scope.

The General Secretariat for Research and Technology (GSRT) implemented a three-phase cluster development programme within the National Strategic Reference Framework 2007-2014, and was so successful that there were more than 150 members involved by 2009. Through a two-phase call for proposals, four cluster proposals were awarded funding:

- Civil enterprise for B/T, Biosciences and Culture, BIONIAN
- Corallia Cluster Initiative/R.C. Athena, si-cluster
- Corallia Cluster Initiative/R.C. Athena, gi-cluster
- CERTH/CPERI/APTL, Chorus cluster

The following clusters are currently active in Greece:

- BIONIAN Life Science Cluster – 13 firms
- si-Cluster (Hellenic Space Technology and Applications Clusters) – 16 firms
- Innovative Gaming Technologies and Creative Content Cluster – 13 firms
- CERTH/CPERI/APTL Chorus Cluster for Green Energy – 10 firms
- Nano/Microelectronics-based Systems and Applications Cluster (mi-Cluster) – 50 industrial members

There is an ongoing evaluation process by GSRT, inclusive of consultation with stakeholders, to define the **future for clusters and the role of the state, within the strategies of smart specialization.**

Keywords: cluster, technology transfer, innovation policies, smart specialization

JEL Classification: L1, O1, O2, O4

3.5.1 CLUSTERS AND CLUSTER POLICIES

3.5.1.1 Assessment of Cluster Policies in Greece

Greek cluster policies developed from the second half of the 1990s, predominantly through research and academic initiatives, as part of the

state's attempt to replicate industrial policies of other more advanced countries instead of simply responding to the needs of businesses, sectors or regions.

The General Secretariat for Industry (GSI) [1] launched the first policy initiative based on a large-scale study, The Future of Greek Industry, conducted in 1994-97. The study concluded that there was great potential in establishing 19 clusters in various Greek industrial sectors – an estimate too over-optimistic to put into practice. Neither the first call launched in 1997 under the Community Initiative for SMEs nor a second call via the Operational Programme for Industry resulted in a cluster worth mentioning.

Despite this first failed attempt, GSI pursued the effort under Operational Programme (OP) Competitiveness and Entrepreneurship in 2003 [2], through the call to "Promote Industrial SMEs networking (clustering)". Even though the call was well-intentioned, it adopted cumbersome and bureaucratic pre-conditions and restrictions on the definition of a cluster and the eligibility of costs. These factors made the call appear unattractive. As a consequence, the response was very poor – only three proposals were approved and only one took off. GSI also announced a call to "Strengthen Environmental Networks" in 2013 in order to promote entrepreneurship in environment-related sectors, but its procedures were similarly bureaucratic. Two proposals were co-funded, but only one project was completed without managing to create even a rudimentary cluster or network.

An attempt at clustering was also made in the tourism and hospitality industry so as to build on the already successful businesses of that sector. The call to "Promote Networking in Tourism SMEs (clustering)" was opened in 2005 and received proposals from only four small clusters. By the end of the co-funding period, none of them developed into a good practice and the intervention was neither able to build on the success nor exploit the strengths of the sector.

In short, up to 2005, the results of Greek cluster policy were far from satisfactory. None of the funded clusters were able to develop high visibility or serve as a national model. Some of the factors that resulted in the policies' failure were:

- The design followed an authoritarian top-down approach.

- The calls did not differ significantly from traditional business state aid measures, and the stringent requirements and restrictions constrained the operation and development of a cluster.
- Most Greek companies were not ready for strategic collaboration with coopetitors and the calls were not preceded by sufficient groundwork (seminars, workshops, special meetings to present good practices to candidates, etc.).
- Limited emphasis was placed on innovation, and the connection between academic and research institutes and policymakers generally failed to grasp the necessity of the triple helix.
- The role of the cluster facilitator was underestimated and the calls requested the facilitator to become a legal entity for purely administrative reasons.
- The calls did not require evidence of prior cooperation between at least some of the cluster members or the pre-existence of at least an embryonic network.
- The calls prohibited the participation of large enterprises that in many cases are crucial to the formation of clusters.
- The calls did not consider that clusters have various integration levels corresponding to different stages of maturity, and therefore required a step-by-step approach with intermediate control gates and labelling levels.
- The monitoring framework adopted was similar to traditional state aid calls, with no metrics related to clustering effects and results.

Overall, the policy was based on an assumption that a single call could develop flourishing networks and clusters, and it overlooked the establishment of a holistic long-term strategy for the deployment of cluster policies. In the meantime, policies for innovation have been changing since late 2003 and in the 2004 revision of Operational Programme (OP) Competitiveness and Entrepreneurship. It became evident that:

- The knowledge economy requires the constant interaction of innovation actors.
- Policies need to support specializations and concentrations.
- Calls for clustering need fermentation, the exchange of views, technical sessions, workshops, presentations and other preparations for the initiation and maturation of collaboration of candidate participants on joint initiatives.

The Regional Innovation Poles [3], initiated by the General Secretariat of Research and Technology (GSRT) [4], was the first action implemented to assist the formation and emergence of clusters in Greece. The call preparation started in mid-2003 through a series of meetings and discussions with technology parks, research institutes and business representatives. The discussions were complemented by the 2004 study titled "Regional Innovation Poles", which recorded the research, technological and productive tissue of the Greek regions, and proposed an implementation plan and calls for coopetition bearing in mind the structural funds framework. After a competitive tender emphasizing the partnership between research institutions and businesses of the same region as well the importance of focusing on one or two themes per region, five regional innovation pole projects were selected in 2007. These five regional innovation pole projects agreed to launch technological platforms where diverse stakeholders would agree on a common vision for the development of technologies pertinent to them in order to create a critical mass that would later evolve into clusters.

At the same time, GSRT instigated the Thessaloniki Innovation Zone [5], a second initiative with a similar scope. The aim was to develop innovation and high-tech activities in an area of Thessaloniki that had a high concentration of universities, research laboratories, technology parks, incubators and businesses. The Thessaloniki Innovation Zone soon focused on selected themes that eventually led to the creation of a critical mass of companies and clusters.

Both these actions started with high expectations, but delivered mediocre results and failed to develop into a recognized cluster. The development of the poles and the zone:

- Stagnated due to the failure of the stakeholders, including public administration, to embrace the projects, mobilize the necessary resources and create the necessary regulatory environment for the concepts to become functional;
- Had a predominantly top-down approach and constraints that hindered entrepreneurship;
- Had few planning and maturing activities, and did not set out clear long-term measurable objectives and roadmaps;
- Were hit hard by lack of long-term commitments, cash flow issues, central and regional public services bureaucracy and poor management.

As policymakers grew anxious as to the potential for Greek cluster policies, a new approach was backed by the Research and Innovation Centre Athena [6] and the most promising Greek-based high-tech industries in 2004. The founders wanted to establish research and development (R&D) centres of excellence that would attract investments in industrial sectors with a competitive advantage. The aim was to reverse the accelerating brain drain, reinforce entrepreneurship as a well as underpin the design and fabrication of products based on "Innovation Made in Greece" for the world market, much like Taiwan, Korea and Israel.

After broad consultation with a significant number of stakeholders, the public and private sectors gave their support to this approach in 2005. The failures and lessons learnt from previous attempts were recognized after a study of worldwide best practices, SWOT analysis and the elucidation of the specificities of the Greek research and industrial fabric in early 2006 (phase-0). The strategizing and implementation processes took form in the Hellenic Technology Clusters Initiative (HTCI) in 2006, and was later renamed Corallia.[7] Corallia was thus established as an independent unit of the Research and Innovation Centre Athena.

In 2006, the Ministry of Development mandated Corallia [8] to design and manage a programme that would create a favourable environment highlighting entrepreneurship and innovation, and fostering emerging technologies in export-oriented and high technology market segments where Greece had the capacity to build a sustainable innovation ecosystem, attain a worldwide competitive advantage and yield world-class results.

Due to the previous failures, the policymakers initially implemented a small-scale pilot programme in one of the most promising sectors. In 2006-2008, the pilot cluster programme (phase-1) implemented within OP Competitiveness and Entrepreneurship, yielded very positive results through the establishment and expansion of the nano/microelectronics-based systems and applications cluster (mi-Cluster). The milestones achieved by its cluster members included double-digit growth rates in turnover (+59%), exports (+109%), employment (+92%) and patent applications (+137%). In the course of the pilot programme, Corallia inaugurated the Athens InnoCenter (in Maroussi, Attica) in 2007, The Athens InnoCenter is a thematic building that gathers the mi-Cluster members, creates a reference point for the microelectronics industry, and optimizes the geographic focus of the cluster.

In 2008, Corallia implemented one of the most important interventions for the development of clusters in Greece, the "Phase-2 Microelectronics" programme. The Phase-2 Microelectronics programme, which operated within OP Competitiveness and Entrepreneurship [9], included a dedicated measure covering activities from the call for proposals to the monitoring of granted projects. The results were noteworthy, for cluster companies produced results within 2009-2011 by exhibiting an estimated turnover growth rate of +145%, employment +70%, exports +108% and investments by private investors +369%; patent applications grew by 76% (a total of more than 60 applications); and joint industry-academia diploma and doctoral theses grew by 160% (80 in total). Within this intervention, Corallia established an additional innovation centre, the Patras InnoHub (in Kastritsi, Western Greece) to gather the mi-Cluster members in Western Greece in 2011.

The main features of the new approach can be summarized as follows:

- Based on international good practices;
- Deployed a clear bottom-up, customized, phased and holistic approach;
- Put strong emphasis on innovation and export orientation;
- Focused on talent, people and niche market orientation;
- Insisted on a strong and sustainable cluster facilitator;
- Set a long-term strategy that outperformed short-term gains;
- Determined long-term goals and integrated control gates with metrics;
- Deployed a plan-do-check-act management method for controlled and continuous improvement;
- Had zero-tolerance for nepotism, corruption, discrimination;
- Programme design was based on needs of sectors instead of limitations of funding frameworks;
- Invested in good publicity that reached out to the world.

By 2008, Corallia's impact was widely recognized in Greece and its efforts at globalization had received European and international recognition. Its rapid and significant success rejuvenated the interest of policymakers and created a favourable climate for cluster policies.

The heads of the Ministry of Development, Managing Authority of OP Competitiveness and Entrepreneurship, GSRT and GSI turned their attention to

the implementation of cluster policies following this new paradigm. They organized fermentation events, meetings with stakeholders, and participated in international events for clusters and special missions abroad to visit successful clusters. This led to:

- A two-step call by GSI in May 2011. Although the call, simply known as "Clusters", improved on previous GSI calls, it still had some stringent requirements and restrictions. Despite the considerable interest garnered in the first step call and the swift evaluation that followed, GSI never announced the second step of the call. Indeed, GSI never disclosed the reason for the process's discontinuation to the proposers. This damaged the budding trust in the government strategy on cluster policies.
- A June 2011 update of the Incentives Investment Law (3908/2011) incorporated a special chapter for clusters.[10] Unfortunately, this is another rather imperfect example of cluster policies. Mature clusters did not apply and the call received only one proposal, as no official announcement had been made. The chapter on clusters is currently open to feedback from stakeholders for improvement.
- A two-step call by GSRT in September 2011.[11] The call, titled "Establishing Innovative Clusters – A Greek Product, One Market: The Planet", had a good design. It received 21 proposals in the first round when it was announced in September 2011. Of these proposals, the nine highest ranked proposals were asked to submit a final proposal by September 2012. While some improvements could be made to the design of this call, the most important deficiency has been the extremely long length of time it took to evaluate proposals. By taking more than 18 months to evaluate proposals, doubts grew as to the GSRT's capacity to implement the programme. Nonetheless, this initiative signified the adoption of cluster development policies nationwide. GSRT is expected to launch the follow-up cluster development phase in early 2016, within the new programming period 2014-2020.

3.5.1.2 Support for Innovation Clusters

Cluster initiatives are flourishing all over Europe in the fields of research and innovation, regional policy, enterprise and industry. Clusters typically have a geographical and thematic focus for the development of synergies and networking in the triple helix model.

Based on the structure of the Greek productive sector, of which more than 90% are SMES, clustering initiatives could be a suitable tool to achieving economies of scale and scope, in line with European Innovation Strategy. The Microelectronics Cluster (Corallia), initiated in 2005, served as good practice for GSRT in planning an initiative (2011) to support the creation of innovation clusters in further sectors (co-funded by the European Regional Development Fund).

The Corallia Clusters Initiative (or Corallia) is a unit of the Research and Innovation Centre Athena, established in Greece for the management and development of Innovation Clusters. Corallia acts as cluster facilitator within those clusters by implementing targeted support actions that involved all innovation ecosystem actors.

In 2014, Corallia became a full member of the European Business and Innovation Centre Network (EBN), a leading international innovation network.[12] Corallia was also awarded with the EU|BIC certificate and internationally recognized as a quality-certified business support organization. As a member of EBN with business and innovation centre (BIC) qualifications, Corallia has access to and can collaborate with a pan-European ecosystem of nearly 150 quality-certified BICs and 100 other organizations dedicated to supporting the development and growth of innovative entrepreneurs, start-ups and SMEs.

Corallia is also one of the founding members of three European Strategic Cluster Partnerships in the fields of semiconductors, space and creative industries established under an initiative supported by the European Commission. These partnerships implement a number of coordinated support actions in order to unleash the innovative capacity of SMEs, improve their performance, increase their competitiveness and nurture cross-sectoral innovation through the development of new industrial competitive value chains based on the combined competencies of SMEs.

Corallia was awarded with an ISO 9001:2008 certificate by TÜV NORD CERT for its management programmes, measures and actions as the final beneficiary of the Operational Programmes; its design and maturing of programmes and projects; its scheduling, implementation, monitoring, control and validation of project deliverables; and its management of state aid programmes. Corallia was also awarded with the Bronze Label of Cluster Management Excellence for the mi-Cluster (2011), si-Cluster (2013) and gi-Cluster (2013).

3.5.2 GSRT'S CALL IN "ESTABLISHING INNOVATIVE CLUSTERS – A GREEK PRODUCT, ONE MARKET: THE PLANET"

In 2011, GSRT launched a new action plan to support the creation of innovation clusters (co-funded by European Regional Development Fund).

3.5.2.1 New Cluster Initiatives

Call for expressions of interest: (Step 1), launched in September 2011.
The action plan aims to develop Greek innovation clusters that focus on thematic areas or economic activity sectors with a competitive advantage for the country. The innovation clusters sought to develop and take advantage of high value added, internationally recognized and competitive innovative products and services. The members of the network, coordinated and represented by the proposed facilitator, acted as principal catalyst for the innovation clusters.

The call was open to all sectors and thematic fields in all Greek regions. It was addressed to existing networks of undertakings, research and academic organizations as well as other public and private sector support organizations with the potential to evolve into innovation clusters. Prior to the submission, each network was not required to assume any specific legal form. Each submission should include at least 10 undertakings (of which at least 8 should be SMEs) and at least one research and academic organization based in Greece. The proposals were examined according to the following criteria:

- Composition and maturity of the network.
- Documentation of clustering needs.
- Completeness and reliability of the thematic and geographical focus.
- Degree of innovation of the emerging cluster.
- Suitability of the facilitator.
- Strategy of the emerging cluster in relation to market dynamics in the addressed market, ensuring that it benefits the national economy, and has the potential competitive advantage to penetrate international markets.

Networks with worthy proposals were next invited to submit a fully-fledged business plan according to a specific template. This business plan would then be evaluated.

Evaluation Results – Step 1 (January 2012)

After the business plan proposal was submitted, an evaluation committee would review it. This evaluation committee was composed of five members who were scientists from Greece or abroad, sufficiently experienced in innovation clusters, know-how transfer and knowledge-based entrepreneurship. Between October 2011 and January 2012, twenty-three proposals were submitted. Of these, nine were selected to proceed to Step 2. These nine selected proposals were in the thematic areas of health and biomedicine, information technology (IT), communications and knowledge-intensive services, energy and environment, and materials and chemicals.

Submission of Business Plans – Step 2 (July 2012)

The nine selected applicants had to submit a 5-year business plan for the cluster as a whole, as well as individual proposals for the facilitator and each participating enterprise. These nine networks were also allowed to expand their list of members. Their proposals comprised details of the following:

- A full-scale 5-year business plan for the implementation of the cluster's pilot operation phase as well as subsequent development and evolution.
- Funding plans of the enterprises participating in the cluster at the time of submission of the proposal.
- Aid and infrastructure project of the facilitator.

Additionally, the cluster should have a minimum of ten autonomous enterprises as members. Of these, at least eight should be SMEs. As long as cluster had the requisite number of SMEs and members, the following activities were eligible for funding:

- Consultancy services for enterprise reorganization and modernization
- Innovation advisory services and innovation support services
- Registration of industrial property rights
- Participation in fairs
- Training (general and specific)
- Remodelling of spaces and purchase of equipment and software
- Relocation and collocation in share infrastructure
- Experimental development and demonstration
- Aid to the young and existing small innovative enterprises to encourage the development of prototypes

Table 1: The nine proposals selected to submit business plans in Step 2

Identification	Project Title	Sector	Region	Facilitator
118	Hellenic Biocluster	Health and Biomedicine	Attica	FORTH/PRAXI
74	Hellenic Space Technologies and Applications Cluster	Space Technologies	Attica	Corallia / R.C. Athena
76	Innovative Gaming Technologies and Creative Content Cluster	ICT	Attica	Corallia / R.C. Athena
104	Chorus Cluster for Green Energy	Energy	Central Macedonia	Centre for Research and Technology Hellas
105	Hellenic Photonic Cluster	Photonics	Attica	FORTH/PRAXI
136	Life Sciences Cluster in Greece and South East Europe – BIONIAN Cluster	Health and Bio-medicine	Attica	Not For Profit (Civil Enterprise for B/T, Bioscience and Culture
77	Innovation Cluster for Development of Organic Electronics Industry in Greece	ICT and Electronics	Central Macedonia	University of Thessaloniki
125	Hydrogen-Fuel Cells Energy	Energy	Western Greece	Patras Science Park
132	Production Systems and Technologies PV Smart Installing	Energy	Western Greece	University of Patras

Evaluation Results – Step 3 (January 2013)

Of the nine networks selected, eight submitted proposals. The evaluation committee of five scientists from Greece and abroad reviewed the eight proposals. In January 2013, it was announced that four proposals would receive funding.

All eight proposals received were evaluated in 3 successive stages.

Stage 1: Preliminary check to ensure proposals complied with the requirements.

Stage 2: Evaluation of the business plan by analyzing the composition and maturity of the cluster, its administrative and organizational structure, degree of innovation and extroversion, financing plan, cluster development strategy, impact and performance indicators.

Stage 3: Evaluation of the technical-economic information at the following

sub-stages:

1. The facilitator would be judged on the feasibility of the proposed activities, clarity of the technical scope and deliverables, suitability of the budget, justification of the costs required.
2. The enterprises would be judged on their reliability and innovative character, the feasibility of the proposed activities, linkage to the cluster's objectives, clarity of the technical scope and deliverables, qualifications and experience of the staff, suitability of the budget, justification of the costs required.

On 27 February 2013, the following final proposals were awarded funding:
a. Civil enterprise for B/T, Biosciences and Culture, BIONIAN,
b. Corallia cluster initiative/R.C. Athena, si-cluster,
c. Corallia cluster initiative/R.C. Athena, gi-cluster,
d. CERTH/CPERI/APTL, Chorus cluster.

The level of public funding for the implementation of a 2-year pilot programme of joint activities varied from 15% to 100%, depending on the nature of the facilitator (public or private) and the type of expenditure required. Three types of financial support were given: state aid, public funding of non-economic activities, and de minimis aid. The total budget for public funding was €15,300,000 and the expected project completion date is 31 December 2015.

3.5.3 SUPPORT OF THE ACTIVE CLUSTERS

3.5.3.1 mi-Cluster

Mission and Vision

The Nano/Microelectronics-based Systems and Applications Cluster (mi-Cluster) brings together highly specialized companies and public research institutions with the vision "to create a world class cluster on nano/microelectronics-based systems and applications". Its mission is "establishing and promoting Greece as a significant and competitive global provider of nano/microelectronics technologies and applications" so as to open new markets, foster new international collaborations for its members, and attract foreign direct investment (FDI) from major global industry leaders.
As a high-tech innovation cluster, mi-Cluster has the following characteristics that are proven to accelerate growth and success:

- Knowledge-intensive, focused on innovative, state-of-the-art, highly competitive products.

- Strong export orientation, capable of boosting the competitiveness of Greece in world markets.
- Possess success stories of international calibre, capable of convincing potential investors that Greece has world-class potential boosted by a "can-do" mentality.
- Comprises mostly of SMEs, including start-ups and spin-offs, benefiting the most from supportive activities under the cluster umbrella.
- Exhibits pre-existing or pre-cluster formation ("bottom-up" rather than "top-down" approach), in order for participating members to recognize the importance of clustering in their value chain operations and reach critical mass to pursue larger projects.
- Leverages the top-tier Hellenic human capital, constituting the pillars that support competitiveness, entrepreneurship and innovation in the clustering ecosystem.

Main activity areas of the cluster organization

The main activities of mi-Cluster are:

1. Creation and management of facilities and innovation centres in Greece (Athens, Patras) in order to boost geographic concentration and increase synergies, economies of scale and scope.
2. Initiate domestic and international collaboration, in addition to collaborative projects with companies and research institutions
3. Organizing and holding business training, business coaching and business mentoring acceleration programmes, workshops and seminars for intellectual property (IP) management, patent filing and new technical skills. Holding similar seminars to coach executives, and hosting workshops focusing on start-ups, etc.
4. Assisting its members in attracting foreign direct investment, venture capital (VC), business angels (BAs), etc.
5. Organizing international business delegations to international fairs, study trips, roadshows, business-to-business (B2B) matchmaking and international business development endeavours. Supporting participation in EU research and development projects
6. Marketing and public relations (PR) promotion of the Youth Entrepreneurship Acceleration Programme (YEAP) to attract young people for the industry, cluster-related PR, newsletters, website, networking days, career days, social responsibility events and branding.

Legal Form

The mi-Cluster is the first innovation cluster in Greece and has demonstrated continuous development since its establishment. At the end of 2012, mi-Cluster had 130 members (small, medium and large companies, academic laboratories and research institutes, science parks, etc.) from all over Greece. Specifically, it consisted of 75 large and small companies, 40 members from academia (universities, research centres, laboratories, etc.), and 17 other institutions necessary for the support of the whole ecosystem (services providers, financial institutions, associations, infrastructure providers, media). Currently, mi-Cluster has no explicit legal form.

3.5.3.2 si-Cluster

Mission and Vision

In order to create a world-class cluster on space technologies and applications, the Hellenic Space Technologies and Applications Cluster has the following strategic directions and targets:

- Creating an international image of industrial and scientific excellence in specific technological and application fields, while respecting the different missions, roles and responsibilities of industry, academia as well as end users.
- Developing the necessary prerequisites for a highly competitive, innovative and transparent economy that is supported by space-related technologies and investments from the private sector as well as governmental organizations.
- Developing a compensative and flexible mechanism that will absorb, retain and further enhance the intellectual capital developed by the local space industry.
- Full exploitation of the services presently provided by modern space technology for the security and safety of citizens. The services provided include disaster monitoring, border surveillance and control, weather forecasts, environmental disaster monitoring, smart citizens' transportation, electric power transfer, services for the reduction of the digital divide as well as high bandwidth internet services.
- The integration of its scientific and industrial communities, taking care that it is consistent with the proper role of each community in the different phases of the value chain. Communities that should be integrated include navigation under the European Geostationary Navigation Overlay Service (EGNOS) and Galileo global navigation satellite system, telecommunications, earth observation, and those

with a high added value for the industry and national economy.
- The integration of all space-related programmes of different ministries and governmental organizations (e.g. Ministry of Defence, Ministry of Transportation, Ministry of Education, GSRT, etc.) in order to maximize economies of scale in specific technological areas of national interest.
- Developing appropriate research culture in the local space industry in order to closely monitor related developments in global technologies and applications.

The si-Cluster brings together renowned and highly specialized companies and public research organisations with the following common mission: "Aiming to develop Greece as a leading region for Space Technologies and Applications with a high international visibility, capable of developing and attracting high impact research, development and innovation and business activities." It does this by providing an efficient framework around themes of common interest to reinforce the competitive advantage of its members.

Legal Form

The si-Cluster was established in 2008 as part of a joint endeavour on behalf of the segment of the Hellenic industry that was activated with the formation of the Hellenic Association of Space Industry (HASI). It has been cooperating with the Corallia Clusters Initiative since 2009.

3.5.3.3 gi-Cluster

Mission and Vision

Established in early 2012, gi-Cluster aims to become a fully functional innovation and business ecosystem with substantial international market share capable of supporting viable industry growth and competitiveness. It also seeks to gradually evolve into a world-class cluster and contribute to increasing Greece's global competitiveness.

Main activity areas of the cluster organization

The cluster facilitator of gi-Cluster is pursuing 6 key areas of activities:
- **Research and Networking.** This involves use of information gathering, publishing cluster reports, creating websites as well as bridg-

ing the Hellenic and global industries to promote networking. In that respect, Corallia underlines information sharing among cluster members, raising awareness about the cluster in several different audiences and gathering information about the cluster's progress over time.

- **Policy Action.** This involves improving the microeconomic conditions for business by upgrading the physical infrastructure, and enhancing the legal and institutional setting. Corallia addressed this issue through the development of a common building infrastructure for the co-location of cluster members.
- **Commercial cooperation.** This includes collective purchasing or sharing of services (such as business assistance, market intelligence, and export promotion) to reduce costs. Corallia has successfully networked with other innovation actors and firms from external and internal markets, as it is committed to the establishment of synergies and cooperation.
- **Education and Training.** Corallia organizes both management training programmes and sector-specific training for cluster members in a systematic manner.
- **Innovation and Technology.** Corallia supports common R&D projects among cluster members in order to enhance innovation, research excellence and cooperation between businesses and academic/research organizations.
- **Cluster expansion.** This includes the development of a strong branding identity for the gi-Cluster, as a vital element for cluster expansion (extroversion). The strong branding identity is combined with the provision of business and management-related assistance through the operation of one-stop shop for entrepreneurs.

3.5.3.4 CERTH/CPERI/APTL – Chorus Cluster
CLUSTER FOR GREEN ENERGY

Mission Statement

The Chorus Cluster is dedicated to the activation of a critical number of companies in the broader area of central Macedonia so as to create synergies among them. It aims to establish an arsenal of renewable and/or zero or low carbon footprint technologies that could be transformed into specific commercial products capable of defining the identity of central Macedonia in the future.

These technologies are either in a relatively mature (i.e. ready for commercialization) stage or in a pre-market state of development. In all cases, Chorus focuses on products that will yield results in the mid-term (i.e. 5 years) because it has an eye to creating markets currently in their embryonic or non-existent stage. As part of its strategy, the Chorus Cluster aims to fully exploit the substantial experience, expertise and production capacities of its members regarding clean energy-related markets and products. The core members' activities have resulted in obvious synergies that clearly promote the cluster's strength in unity approach.

The Cluster Members

The Chorus Cluster comprises 21 members, most of which participating organizations are product or market developers. The facilitator is an experienced knowledge transfer organization with long-term experience in the implementation of applied research projects. The consortium also includes a venture capital company that will be actively involved in raising the capital for investment in selected developed products, especially after the initial 2-year period of Chorus operation.

The Technology, Innovation and Business Model

The specific products of the Chorus Cluster, as defined in its establishment stage, are:

1. Autonomous waste-to-energy station
2. Smart retrofit automotive exhaust aftertreatment systems
3. Recharging station for electric vehicles
4. Autonomous solar refuelling station
5. Low carbon footprint cement processor

Chorus Cluster is also constantly considering the inclusion of new emerging products and technologies in its operations. Chorus selects its products following the "low hanging fruits" strategy where candidate products should fulfil the following criteria:

- They should encompass a highly innovative character.
- The research partners and/or involved companies should have a significant, developed, scientific background and technological know-how.
- They demonstrate strong clean energy potential.
- They possess certain advantages vis-à-vis market penetration within the local and/or the international energy-related business environment.

3.5.4 FUTURE PERSPECTIVES AND CONCLUSIONS

3.5.4.1 New Programming Period 2014-2020

The smart specialization strategy (RIS3) is the focused productive reconstruction of the country with research, technological development and innovation as the main features mitigating regional disparities, creating sustainable employment for people and society, and enhancing the environment and culture. Smart specialization is also expected to contribute to the creation of stable employment relationships and the formation of appropriate conditions for the effective exploitation of the country's workforce.

3.5.4.2 Priority fields in National Smart Specialization Strategy and Complementarities with regional RIS3

The main conclusions of the analysis of regional strategies for smart specialization are:

- National strategy has to play multiple roles in combining regional impulses with greater cooperation actions at the national level.
- For the first time, regions are given the opportunity to design and fund research, technology, development and innovation (RTDI) actions, and develop their own short and long-term strategies to enhance innovation.
- All regions must continue to actively pursue policy priorities related to the development of each of its own structures and procedures for data collection and ongoing consultation.
- In addition to the above, entrepreneurial discovery should be combined with suggested policy scenarios at the regional or national level.
- Finally, the research infrastructures should encourage entrepreneurial potential by increasing collaboration with the business sector and offering new ideas.

A correlation between the regional and national priorities highlights the following:

- Out of the eight national priority fields, agrofood, tourism and culture, materials, and life sciences and health/medicine are vertical priorities at the regional level with direct needs for the relevant private sector. Information and communications technology (ICT), energy, transport

and environment are more secondary areas for entrepreneurship and innovation for most regions.

- Only three regions have prioritized the support of entrepreneurship (and especially young entrepreneurship) through the collaboration between academia and the private sector: Attica, Epirus and Crete. Relevant policy measures should be promoted by other regions hosting RTDI infrastructure as well. For example, the model of Crete may well help the model of Epirus and vice versa. To enhance the promotion of entrepreneurship and industry-academic cooperation, central planning should play its role as a facilitator.

The RIS3 actions were designed to cover the pre-competitive stages of creating new products, services or processes so as to overcome the "death valley" syndrome, i.e. to survive and expand to the critical stages after their establishment. Public funding decreases as the chain goes from research to exploitation of research results, to the establishment of new businesses and clusters, and to the enhancement of extroversion and integration in international value chains.

There are extensive thoughts and concerns about the future of clusters and the role of the state within the strategies of smart specialization. New criteria for international cooperation and networking are setting realistic and measurable objectives (both qualitative and quantitative) for the extension of state aid/public funding of existing and new clusters, as well as the establishment of critical mass of their activities.

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3.6 STATE POLICY ON CLUSTER DEVELOPMENT IN THE REPUBLIC OF MOLDOVA: OPPORTUNITIES AND OBSTACLES

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ABSTRACT
Entrepreneurs, researchers, and the government of Moldova have only recently turned their attention to the problems of creating clusters. Clusters are a relatively new phenomenon in the Moldovan economy. By cooperating, sharing existing resources and conducting joint activities, clusters have contributed a great deal to enterprise development in the country. The cumulative positive effects of clusters enable small and medium enterprises (SMEs) to overcome some of their problems as well as increase their innovative activity and competitiveness.

This paper analyzes the development of the SME sector in the Republic of Moldova, and provides a quantitative assessment of SMEs' contribution and potential. State policy on cluster development in Moldova will be explored, and the factors contributing to the risks and barriers of cluster creation in Moldovan cluster development policy will also be examined. This study compiles analyses of statistical data and international rankings, and the authors' previous survey results with entrepreneurs.

Keywords: cluster, enterprise, small and medium enterprises, association, Republic of Moldova

JEL Classification: O25, O38, L50

3.6.1 SMES' POTENTIAL AND THEIR CONTRIBUTION TO THE COUNTRY'S DEVELOPMENT

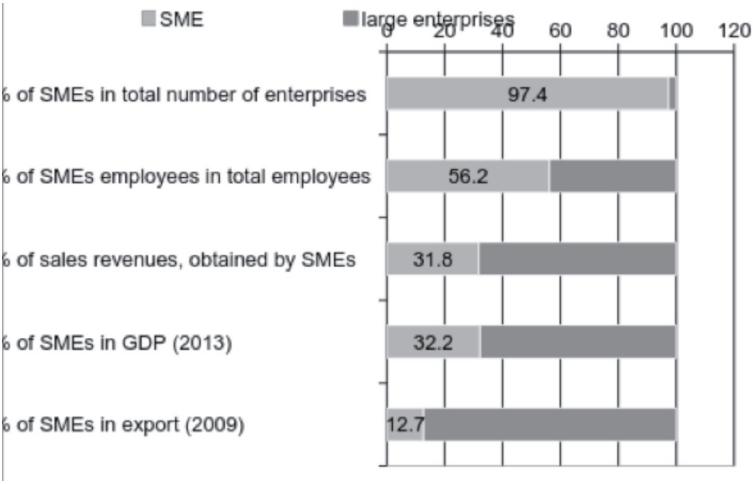
3.6.1.1 Main indicators of the SME sector in 2014

The role of small and medium enterprises (SMEs) in resolving the socio-economic problems of many countries throughout the world has visibly grown in recent years. This is true, regardless as to the different countries' level of economic development. It is now established that SMEs enhance employment of the labour force, contribute to jobs creation, saturation of the consumption market, middle-class formation, as well as the creation and implementation of innovation.

According to the National Bureau of Statistics of Moldova (NBS), there were 53.7 thousand economic agents in the country in 2014; of which 97.4% were SMEs. This represents approximately 31.7% of all enterprises registered within the State Registration Chamber (SRC).

Moldovan SMEs have contributed significantly to jobs creation. In 2014, 56.2% of all employees of the national economy worked for SMEs. SMEs made up 31.8% of all sales revenue and created 82.3% of total profits before taxation. SMEs' share in GDP (market prices) was 32.2% in 2013. However, SMEs' share in export is still very low at 13% in 2009 (see Figure 1).

Figure 1: SMEs' Share in the National Economy of the Republic of Moldova in 2014



Source: Authors' calculation, based on statistical data

Of the total number of SMEs in the country, 77.6% are microenterprises, 19.3% are small enterprises and 3.1% are medium enterprises. The main indicators of the Moldovan SME sector are presented in Table 1.

Table 1: Main indicators of the Moldovan SME sector in 2014

INDICATORS	TOTAL NO. OF SMES	Medium enterprises	Small Enterprises	Micro-enterprises
Number of enterprises, units	**52,335**	1,621	10,099	40,615
% of Total	**97.4**	*3.1*	*19.3*	*77.6*
Average number of employees, persons	**291,737**	85,893	119,289	86,555
% of Total	**56.2**	*29.4*	*40.8*	*29.6*
Sales income, MDL m	**83,650.3**	28,085.0	44,553.9	11,011.4
% of Total	**31.8**	*33.6*	*53.3*	*13.2*
Profit (+) and/or Loss (-) before taxation, MDL m	**3,012.8**	1,045.0	1,765.7	202.1
% of Total	**82.3**	*34.7*	*58.6*	*6.7*

Source: Authors' calculation based on statistical data

3.6.1.2 DATA ON THE NUMBER OF REGISTERED AND LIQUIDATED ENTERPRISES

The State Registration Chamber (SRC) of the Moldovan Ministry of Justice provides data on the number of registered and liquidated enterprises in the country. This data could be used to monitor trends in entrepreneurship development in Moldova. This information is accumulated in the State Registration Chamber's database, where all the registered and officially liquidated enterprises are recorded. According to SRC data, there were 168,273 legal business entities and individual entrepreneurs in Moldova as of 1 February 2015.

The number of registered and deregistered enterprises in the SRC in 2013-2014 is indicative of the poor performance of the business entities in the country. In 2014, there were two times as many registered enterprises as liquidated/deregistered ones that were officially excluded from the SRC,

and there was a net increase of 3,493 enterprises. However, as seen in Table 2, the number of enterprises in Moldova in 2014 was only 102% the number of existing enterprises in 2013. During that same period, the average number of registered enterprises increased by 521.9 per month and the number of deregistered companies decreased from 234 in 2013 to 230.8 in 2014. These figures are significant when it is borne in mind that the enterprise registration procedure is relatively easy, while the procedure to officially close a business is extraordinary complex and drawn out. This could indicate that some entrepreneurs who have ceased activities and intend to close down the business have yet to successfully do so.

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Table 2: Number of enterprises registered and liquidated/deregistered in SRC in 2012-2014,

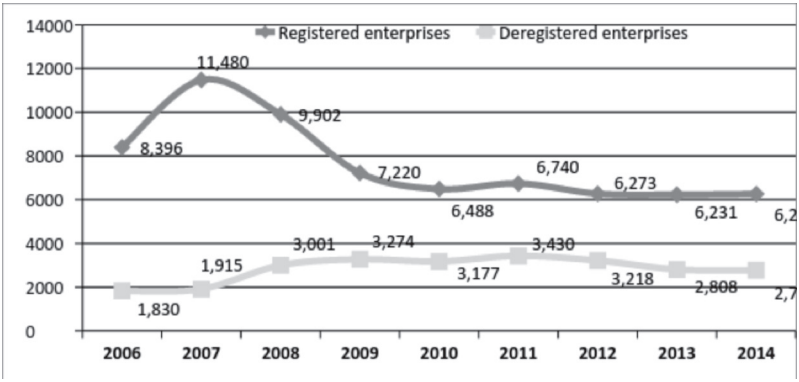
Period	2014			2013			2012		
	Registered Enterprises	Deregistered Enterprises	Net	Registered Enterprises	Deregistered Enterprises	Net	Registered Enterprises	Deregistered Enterprises	Net
Jan.	501	221	80	574	233	341	496	270	226
Feb.	552	220	332	627	212	415	562	284	278
March	607	245	362	596	255	341	699	298	401
April	539	249	290	609	282	327	451	219	232
May	527	190	337	415	182	233	559	271	288
June	504	231	273	485	204	281	489	270	219
July	589	248	341	505	260	245	438	362	76
Aug.	474	219	255	435	229	206	445	288	157
Sept.	518	216	302	439	168	271	495	195	300
Oct.	520	190	330	515	293	222	564	211	353
Nov.	466	204	262	524	203	321	584	207	377
Dec.	466	337	129	507	287	220	491	343	148
Total	6,263	2,770	3,493	6,231	2,808	3,423	6,273	3,218	3,055
Average in 12 months	521.9	230.8	291.1	519.25	234.0	285.2	522.8	268.2	254.6

Source: Author's calculations based on SRC data

There was a slight decrease in the number of registered enterprises in 2006-2014. In contrast to the 8,396 new enterprises registered in 2006, the number of registrations decreased by 25.4% to 6,263 in 2014. The overall number of enterprises registered in 2014 increased insignificantly by 0.5% compared to the previous year.

While 1,830 enterprises were deregistered in the SRC in 2006, the number of deregistrations in 2014 rose by 51.3% to 2,770. There was, however, a 1.4% decrease in the number of deregistered enterprises in 2014 when compared to 2013.

Figure 2: Registrations and Deregistrations in the State Register in 2006-2014, units



Source: SRC data

3.6.2 MOLDOVA'S INNOVATION SCOREBOARD

SMEs' enhancement of their capacity to absorb and generate innovations is critical to their involvement in the national innovation system.

The government has empowered the Academy of Sciences of Moldova to develop, elaborate and promote innovation and technology transfer policy. The Agency for Innovation and Technology Transfer (AITT) is tasked with implementing state policy in innovation and technology transfer, and facilitating the partnership between research organizations, higher education institutions and the business sector.

The state policy for innovation and technology transfer was adopted by the government of Moldova in 2013, and led to the creation of a legislative framework on innovation and incubation. Some of the most important documents on innovation and technology transfer within this policy framework are: [4]

- The Code on Science and Innovation of the Republic of Moldova nr.259-XV of 5 July 2004;
- The Partnership Agreement between the government and the Academy of Sciences of Moldova;
- The Law on Scientific-Technological Parks and Innovation Incubators nr.138-XVI of 21 June 2007;

- The innovation strategy of the Republic of Moldova "Innovations for Competitiveness" 2013-2020.

However, state efforts remain ineffective, and they do not meet the expectations of entrepreneurs. Potential entrepreneurs still have minimal impact on the development of the SME sector, due to weak ties of cooperation between public authorities responsible for policy innovation, industry and academia as well as other factors. [4]

There are currently 8 innovation incubators in Moldova – one in the Science and Technology Park "Academica", one in the Science and Technology Park "INAGRO", and six in the universities. Five of them are in Chişinău, and two are in Balti and Comrat. All the innovation incubators in Moldova are non-profit, and the state is their main partner and sponsor.

These incubators were created under the Law on Scientific-Technological Parks and Innovation Incubators. The law outlines measures to support and encourage innovation and technology transfer activities of incubator residents. Although the law initially provided residents important tax and customs facilities, these were later cancelled in 2012. [4]

Moldova continues to face a number of intellectual property problems. Residents in the innovation incubators are anxious over the protection of their intellectual property, more so because intellectual property is not yet central to the economic, social and cultural development of the country. Furthermore, Moldova does not recognize the importance of the value of intangible goods (assets) such as intellectual property. For example, residents who wish to obtain loans from commercial banks may leave some intellectual property rights as pledges, but they fail to obtain any funding because banks are reluctant to recognize these rights and assess their value. [6]

Figure 3 shows the share of patent applications filed by national applicants in 2006-2013. As can be seen in Figure 3, individuals filed 39% of patents, institutions of the Academy of Sciences filed 27.8% of patents, and companies filed only 3% of patents. The low share of SME patenting is due to two major reasons:

- Companies are unwilling to innovate.
- Companies believe that patenting procedures and maintenance are very costly.

Although SMEs are offered a number of discounts in intellectual property registration fees, they do not have sufficient financial resources. Moreover, a significant part of inventions owned by individuals are generated in academia and industry. Given the fact that most inventions are perceived to have low applicability, academia and industry usually have no interest in them. Thus, they give up their patents to these inventions and individual inventors.

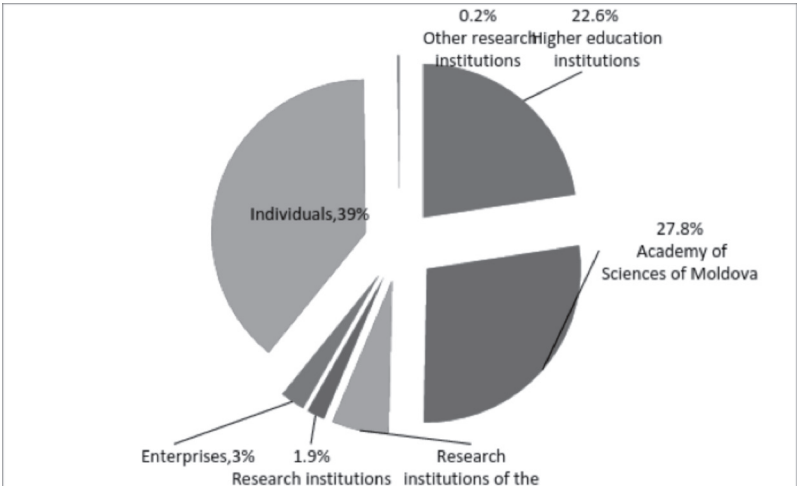


Figure 3: Share of patent applications filed by national applicants in 2006-2013

Source: Authors' calculation based of the data from the State Agency on Intellectual Property

According to the study "Recommendations for strengthening the role of small and medium-sized innovation enterprises in countries of the Commonwealth of Independent States" [11], there are no essential changes in the innovation development of SMEs in CIS. However, most countries, including Moldova, are taking steps to enhance innovation in economic development so as to support the SME sector.

The real action of the developed and adopted legislation in this area is greatly neutralized by the underdevelopment of market relations, the low level of maturity of the competitive environment, bureaucracy, limited financial resources necessary to create favourable conditions for innovative

SMEs, high risk, lack of proper infrastructure, low innovation culture, lack of information, the existence of more profitable fields for capital investment, etc. [8]

The experiences of Western countries have shown that innovation development will enhance the competitiveness of the SME sector. However, the colossal reserves of the SME sector in Moldova remain insufficiently exploited. There are many factors hindering the development of SMEs. To highlight the Moldovan SME sector's problems in accessing innovations, the authors conducted interviews and surveys, and consulted various publications and materials published in the last 3-4 years.

According to research gathered from the authors' interviews and surveys [1] [2] [4], entrepreneurs encounter several obstacles in developing their innovation projects. The main barriers limiting SMEs' access of innovation are:

- High acquisition cost of technology or development of new products/services. Respondents stated that, in their opinion, the cost of equipment is quite high, and its acquisition requires additional financial resources that they lack.
- Lack of qualified staff such as highly skilled engineers, technologists, programmers, etc. In order to be truly competitive, enterprises need different categories of personnel. Not only do the entrepreneurs demonstrate low innovative and research potential, their enterprises lack insufficiently skilled specialists in research and innovation activities. There is also a dearth of skilled workers and specialists knowledgeable as to the workings of modern equipment, and new technologies in production and management. The continued use of outdated equipment and technologies in many SMEs aggravate their lack of innovation.
- Lack of information on technologies and the market. Because the business sector and scientists lack the necessary information to search for partners, they do not know where to go for advice on certain business needs or scientific achievements.
- Insufficient financial resources. The lack of financial resources is the biggest obstacle for SMEs wishing to innovate. SMEs' insufficient financial resources are further exacerbated by the highly complicated process of borrowing financial resources. It is very difficult for SMEs to access grants for development of innovation, and bank loans are issued at very high interest rates.

- Poor or lack of collaboration between businesses and other institutions stem from the following factors:
- A distrust of entrepreneurs regarding researchers. This increases entrepreneurs' reluctance to conduct dialogues with scientists and collaborate with them.
- Entrepreneurs' poor exposure to scientific language and results. The complex concepts, style and scientific language of researchers alienate entrepreneurs and place additional constraints on their cooperation with businesses.

It seems that the scientific community and universities are not ready to engage in entrepreneurial activities. Universities and research institutions appear more comfortable as "owners" of scientific research, because the researchers prefer to own the patents and use them to supplement their list of academic publications rather than to provide a right monopoly for commercial gains. [4]

3.6.3 THE POTENTIAL OF THE SME SECTOR

Employees and business assets are the main types of SME resources. One way of statistically determining human resources is the number of employees in any one enterprise. In 2014, an SME employed an average of 5.6 persons; a medium-sized company had an average of 53 employees; a small business had an average of 11.8 employees; and a microenterprise employed an average of 2.1 persons. Throughout 2006-2014, the average number of employees fell from 9.4 persons to 5.6 persons.

Table 3: Number of employees in one company, 2006-2014

Average number of employees in one SME	2006	2007	2008	2009	2010	2011	2012	2013	2014
SME	9.4	8.7	8.0	7.2	6.8	6.2	6.1	5.9	5.6
Medium	83.1	79.4	74.5	72.4	68.5	60.7	56.9	56.2	53.0
Small	16.4	15.5	14.4	14.2	13.2	12.6	12.8	12.4	11.8
Micro	3.0	3.0	2.6	2.5	2.3	2.4	2.4	2.2	2.1

Source: Authors' calculation based on NBS data

Moldovan enterprises have limited potential. As Figure 4 shows, an average Moldovan SME has 5.6 employees, USD 93 thousand in financial assets, and sales revenues amounting to USD 79 thousand.

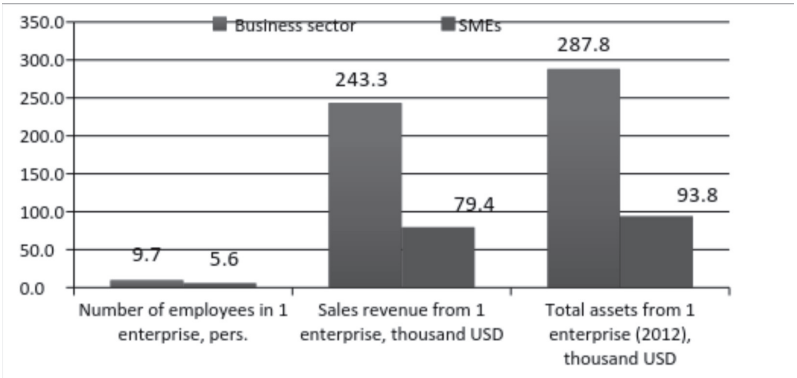


Figure 4: The potential of the SME sector in 2014 (On 30 September 2015, 1 USD=20.14 MDL)
Source: Authors' calculation based on NBS data

The state policy of SME development has to be improved in Moldova if the sector is to be more competitive, and increase its contribution to the country's economic and social development.

Given Moldova's budget deficit, the financial constraints of external donors and the ongoing model of SME management, public policy should not be exclusively focused on the methods of direct support. The provision of tax, credit, and other incentives requires significant financial expenditure from the state budget. To that end, the state should support SME development through institutional methods encompassing "soft" techniques such as: improving the dialogue between SMEs and public administration bodies, developing cooperation between enterprises, building confidence (trust) between businesses and the government, and so on.

The formation of clusters can help improve the socio-economic development of the SME sector. The participatory enterprises in a cluster can grow more competitive and innovative through joint activities such as the sharing of existing capacities, exchange of knowledge and transference of technology. [2]

3.6.4 MOLDOVAN STATE POLICY ON CLUSTER DEVELOPMENT

3.6.4.1 Prerequisites for creating clusters in Moldova

As in other CIS countries, clusters are a relatively new phenomenon in the Moldovan economy. Thus, issues related to the creation and problems of clusters have only recently attracted the attention of researchers. The obstacles and barriers to the development of enterprises in the clothing industry cluster in Moldova were explored by researchers from the Academy of Economic Studies of Moldova. This research project, coordinated by Dr. C. Gutu, was titled "Elaboration of regional development models through cluster creation" and took place in 2009. Opportunities for cluster creation were also investigated in the research of Professor G. Belostecinic.

Dr. E. Aculai's project on the "Identification of the main problems of SMEs in Moldova and elaboration of methodological materials for the creation and development of clusters" touched on issues germane to cluster creation, and was conducted by researchers from the National Institute for Economic Research (NIER) in 2010. This project developed methodical materials supporting the creation and development of clusters, including the drawing up of a "cluster map". These support measures were formulated as recommendations for the state policy on SME participation in the creation and development of clusters.

SMEs in Moldova need to improve their competitiveness, but their development is hindered by their limited capacities. As an upshot, they are unable to innovate, develop export activities or protect the interests of small businesses vis-à-vis the authorities. Therefore, **a policy spotlighting the participation of SMEs in cluster creation is particularly relevant and meaningful.**

The most important prerequisites for the development of clusters in Moldova are:

- SMEs' limited access to all types of resources (financial, personnel, etc.). By cooperating, SMEs can pool their resources and increase their potential.
- High geographic concentration of SMEs, due to the small size of the country.
- Enterprises and SMEs already have some experience of cooperation through business associations.

- Public institutions (state agencies, research centres, etc.) have the ability and incentive to support the establishment and development of clusters.
- The practical experience of EU countries can be used to encourage SMEs to participate in the creation and development of successful clusters.

Due to the small size of the country (stretching 350 km from north to south and 150 km from west to east), enterprises in Moldova are characterized by a relatively high degree of geographical concentration.

According to the National Bureau of Statistics of Moldova (NBS), there were 53.7 thousand enterprises in the country in 2014. This means there were 15.1 businesses for every 1,000 residents in Moldova in 2014 (see Table 4).

The high density of enterprises vis-à-vis the population necessitates an analysis of the size of the regional markets. In fact, there are major disparities between the developing regions of Moldova and its capital, Chişinău. Enterprises in Chişinău have three times the number of employees than businesses in the developing regions.

Table 4: Share of enterprises by region, 2014

Region	Share of population by region, %	Density of enterprises per 1000 inhabitants, un	Share of enterprises %
Total by Republic	**100**	15.1	**100**
Chişinău	22.6	44.0	65.9
Northern region	28.0	6.4	11.9
Central region	29.8	7.4	14.6
Southern region	15.1	5.2	5.1
Autonomous Territorial Unit of Gagauzia	4.6	8.4	2.5

Source: Authors' elaboration based on NBS data

Moldovan businesses have had some experience in cooperation. This fact was established in the 2011 research project "Analysis of existing forms of organizing the dialogue between SMEs and public administration bodies". [3] Page 110 of this research project identifies the mechanisms that can

be used to strengthen SME and public administration dialogue at different levels of administration. This study showed that about 17.9% (of 107 respondents) of enterprises were members of business associations. Certainly, compared to other countries with more advanced economies, this figure is modest. For example, 20-25% of SMEs in Southeast European (SEE) countries are members of business associations.

Research and educational institutions are able to offer innovation to clusters activities and the development of company staff. According to the National Bureau of Statistics in 2013, research and development activities was conducted in 64 units, including 40 institutes and research centres, 15 higher education institutions and 9 other units. Out of the total units with research and development activities, 53 units or 82.8% are owned by the state, including 20 institutional members of the Academy of Sciences, other research institutions and institutions of higher education. At the end of 2013, there were 4981 persons in the research and development sector. Of these, 35.9% were in the natural sciences, 13.8% in the technical sciences, 14.1% in the medical sciences, 12.3% in the agricultural sciences, and 12.6% in the social sciences. [9]

Moldova can also call on the vast practical experience of EU states in the initiation, creation and development of successful clusters. [9]

3.6.5 CLUSTER DEVELOPMENT IN MOLDOVA'S INDUSTRIAL SECTOR

The promotion of SME cooperation through clusters was encouraged in the state programme supporting the development of SMEs in 2009-2011.

The national strategy for industrial development also outlined the need for cluster policy. Currently, the government is implementing the Small and Medium Enterprise Sector Development Strategy for 2012-2020. One of the six priorities supporting SMEs in this Strategy is the development of business partnerships.

In August 2013, the government adopted the "Concept of Industrial Cluster Development of the Republic Of Moldova". This concept was developed in accordance with the National Development Strategy "Moldova 2020" and the Industrial Development Strategy until 2015. The document ap-

proving the government's adoption of the "Concept of Industrial Cluster Development" examined the premises for cluster development in the country's industrial sector and concluded that the Moldovan economy had sufficient economic prerequisites for the creation and development of local and international clusters. Manufacturing industries in Moldova where clusters would most likely result in innovation and increased competitiveness were the food and beverage industries; the manufacture of textiles, enterprises engaged in the dressing and dyeing of furs; the manufacturers of leather products such as footwear, etc.

The Concept of Industrial Cluster Development determines the purposes, objectives, general principles and steps through which state policy can support the development of clusters in industrial sector.

The Moldovan economy has many characteristics favourable to the stimulation of various forms of cooperation between enterprises such as the predominance of SMEs in the country, the relatively high geographic concentration of businesses and the existence of business associations. Despite these favourable conditions for interfirm cooperation, the development of clusters has yet to take root in Moldova.

Clusters can be a promising form of association for enterprises in Moldova, as they have a positive impact on businesses within the clusters as well as on the country as a whole. The creation of clusters of Moldovan companies may confer the following benefits:

- Access to new markets
- Implementation of more innovations through the access to new technologies
- Additional production capacity
- Reduction of costs and expenses due to their distribution among all members of the cluster
- Increased access to the labour force
- Opportunity to improve the image of the participants
- Positive trend of the results of the enterprise activity
- Improvement of the business climate in the region

Moldova may benefit from clusters in these ways:

- Successful clusters can provide an incentive for the development of existing enterprises and creation of new businesses

- Increasing the number of innovations
- Export growth
- Support for research and commercialization
- Increase budget revenues as a result of the increasing volume of collected taxes
- Increase the attractiveness of the country and its regions for investment
- Increase the competitiveness of the country and its regions

In addition to securing the participation of SMEs and increasing their competitiveness, cluster formation policy has many other goals.

The goal is the development and implementation of a cluster policy that will encourage the effective and efficient cooperation of enterprises in any given industry so as to raise its competitiveness within the economy.

The main objective of the state policy supporting the development of clusters is to enhance the development of industrial sectors and increase their share in the national economy by strengthening the managerial and organizational efforts, supporting the innovation process, and increasing the competitiveness of the large industrial enterprises and the SME sector

The specific objectives of the cluster policy are:

- Modernization of traditional branches of industry
- Create conditions for innovation activities, strengthening cooperation between enterprises and research institutions
- Increasing the efficient use of human, material and financial resources through use of advanced technologies in the industrial production process
- Professional development of employees
- Support for regional economic development
- Growth of key financial and economic indicators of enterprises, and the subsequent increase of budget revenues

Clusters and the resultant intensive development of the industrial sectors are essential to the development of other sectors of the economy. This demonstrates that clusters can contribute to the promotion of domestic goods and trademarks to foreign markets and solve the country’s social problems at both micro and macro levels.

The cluster creation policy in Moldova is at its initial stage.
The government has outlined its support of cluster formation in industrial development in several strategic documents. These are:

- Programme of the Government of the Republic of Moldova "European Integration: Freedom, Democracy, Welfare"
- Industry Development Strategy until 2015, approved by Government Decision no.1149 on 5 October 2006 (p.6.2; Annex no.13 Action Plan, Chapters V, VI, VII)
- Small and Medium Enterprise Sector Development for 2012-2020 (Government Decision no.685, dated 13 September 2012)
- National Innovation Strategy of the Republic of Moldova "Innovation for Competitiveness" 2013-2020 (Government Decision no.952, dated 27 November 2013)
- National Regional Development Strategy for 2013-2015 (Government Decision no.685, dated 04 September 2013)

Before state policy supporting the development of clusters in the industrial sector can be realized, an effective mechanism providing multidimensional support of cluster formation and development should be conceptualized. Such a mechanism should be enshrined in the Strategy for the Development of Industrial Clusters.
The following elements should be included in this mechanism: [7]

- Legislative framework
- Scientific and methodological support for the preparation and realization of cluster policy
- Promoting the idea of clustering, and preparing the key persons involved in the creation and development of clusters
- Financing the cluster policy
- Identification of key organizations involved in the cluster formation policy

3.6.6 THE INITIATION OF CLUSTERS IN MOLDOVA

The presence of business associations in Moldova bodes well for the formation of clusters, and analysts are able to make some preliminary prognostications on clusters in the country.

At the moment, there are two Moldovan cluster initiatives operating on a bottom-up approach: the Elchim-Moldova cluster and the innovative-educational InnoCluster.

There are 10 members in Elchim-Moldova, of which 2 are companies. Figure 5 shows all ten participatory bodies in the Elchim-Moldova cluster. The main activities of the Elchim-Moldova cluster are:

- Technology transfer, the development and implementation of its own innovations, including advanced technology and equipment
- Development and coordination of training programmes for the development and promotion of innovations
- Further training of human resources and education
- Development of the innovative small and medium-sized enterprises within the cluster

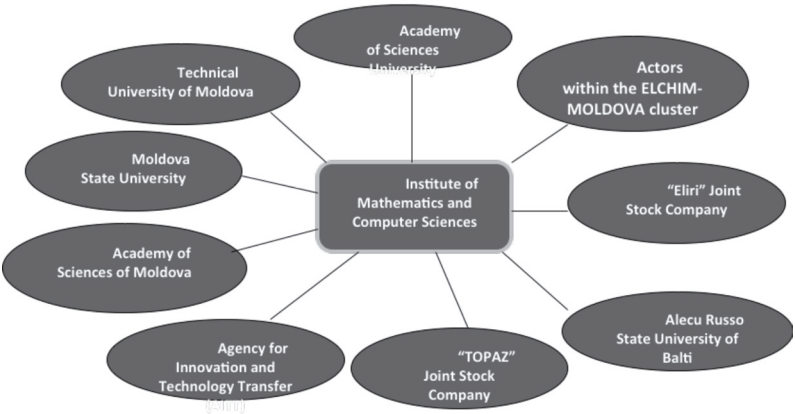


Figure 5: Actors within the Elchim-Moldova cluster

InnoCluster is another cluster in Moldova with a bottom-up approach. It is located in Comrat State University in the autonomous territorial unit of Gagauzia. It aims to develop the economy of Gagauzia through scientific and technical cooperation.

The main participants of InnoCluster are:

- The Executive Committee of Gagauzia
- Comrat State University
- Agrotehnica College
- The Diversified Vocational School in Comrat
- The Chamber of Commerce and Industry of Moldova in Gagauzia
- The Gagauzia Business Club.

The members of InnoCluster engage collectively in the following activities:

- Establish joint scientific research programmes

- Exchange scientific and technical literature, scientific and technical documents, etc.
- Forming an effective innovation system in Gagauzia
- Conducting joint seminars, conferences, forums, etc., in the field of innovation
- Attracting investments necessary for joint projects, etc.

3.6.7 RISKS OF CLUSTER DEVELOPMENT POLICY

As clusters are relatively new to the Moldovan economy, they may give rise to a number of risks and possible barriers in the course of their development. Some of the main risks are:

- Entrepreneurs are insufficiently experienced in associating and cooperating with one another. Most entrepreneurs do not recognize the potential of associating and cooperating with their peers because they traditionally resolve their problems independently. When enterprises come together in a cluster, they should establish common goals meeting the interests of each enterprise.
- Lack of open access to the business information environment. Entrepreneurs must communicate freely with one another when they are cooperating in a partnership. The cluster will only be effective if its business managers and cluster members are able to exchange information.
- The results of a cluster only manifest after a significant period of time. Since the impact of clusters is not immediate and they do not yield quick positive results immediately, managers of enterprises (and SMEs in particular) are unwilling to take the risk to develop clusters.
- Lack of legislative framework. Although some legislative policy documents support the notion of clusters, the main issues related to the creation and development of clusters are not regulated.
- Low interest of companies and research institutions in cooperation. The low level of innovative connections between the scientific community and businesses in Moldova is confirmed by international rankings. According to the Global Innovation Index 2014, Moldova had a score of 28.0 and ranked 123 out of 143 countries in cooperation between the business, scientific and educational communities. When these figures are compared to Moldova's ranking in 2011-2013, it is evident that cooperation between businesses and scientific and educational communities fell by 1.4 percentage points (see Table 5).

Table 5: Evolution of Moldovan cooperation between academia, the scientific community and industry in the Global Innovation Index

Year	Ranking	Score	Number of countries analyzed
2011	114	29.4	From 125
2012	118	28.3	From 141
2013	119	29.2	From 142
2014	123	28.0	From 143

Source: Global Innovation Index Report, 2011-2014. Online at https://www.globalinnovationindex.org/content.aspx?page=gii-full-report-2014 (accessed 12 August 2014).

3.6.8 CONCLUSIONS AND PROPOSALS

Despite the importance of the SME sector in the economy of the Republic of Moldova, many Moldovan enterprises have limited capacity hindering their competitive growth. By combining resources and jointly developing innovations through clusters, SMEs would be able to grow.

Cluster creation is still in the initial stage in Moldova, as the Moldovan Ministry of Economy only adopted the Concept of Cluster Development of the Republic of Moldova's Industrial Sector in 2013. This concept compiles the prerequisites for the development of clusters in the industrial sector, sets out the goals and objectives of the government's cluster policy, outlines the stages of policy implementation, details the mechanisms of state support for cluster development, and lists actions that should be taken.

Since clusters are still new in the Moldovan economy, a number of risks and possible barriers may arise in the cluster policy development process.

The barriers and risks to cluster formation and efficiency should be taken into account when the next stages of cluster-related policies are developed.

The implementation of clusters and the development of cluster policies will help strengthen the cooperative capacity of SMEs.

Further steps in the development of cluster policies include:

- Developing policy documents on clusters creation and development to include the concept of clusters and mechanisms for cluster support in policy documents and laws. The lack of necessary legislation also limits the possibilities of cluster creation. Even though clusters are included and referenced in some policy documents, their creation and development are not regulated at the legislative level. Thus, introduction of the concept of clusters in legislation, defining the regulatory mechanisms and outlining state support are necessary for clusters development.
- Educate businesses on the new opportunities related to cluster development. In order to popularize clusters and promote their benefits, enterprises and business associations should be educated on the positive impact of clusters for cluster members, industries, the region and the national economy. Meetings, seminars, workshops, media publications and informative brochures should be utilized in stressing the importance of clusters and the benefits they yield. In addition to information dissemination, local government bodies should create close contacts with business associations by supporting and promoting cluster cooperation to interested enterprises so that they will become the core of the prospective cluster.
- Develop a map of clusters. Research institutes and business associations have to cooperate in the development of a cluster map in Moldova at the national and regional levels. This map should also pinpoint the relevant branches of the cluster. A pilot project for such a map should analyze the development prospects of each region, and indicate the sectors and regions that will benefit the most from clusters. The cluster map should also be updated periodically.
- Organize training for facilitators and managers of clusters. Persons from enterprises interested in clusters should be trained in the interaction process at all stages of cooperation in order for cluster development to take off. People who should be trained are managers of large companies, entrepreneurs in the SME sector, specialists in various scientific and technological fields, local authorities and politicians, and representatives of branch associations and non-governmental organizations. Training will help raise awareness of the benefits of cluster creation, promote the advantages of partnership cooperation

and competitiveness, and highlight the positive impact of interacting with competitors.

- Further expand upon industrial cluster development, and institute a guide for cluster development. Now that the government has approved the Concept of cluster development in the industrial sector of Moldova, the cluster development strategy should be expanded. This strategy should specify the provisions for cluster development and lay down the necessary directions before clusters are implemented. By doing this, clusters in Moldova will meet their objectives and achieve positive results. An action plan for the implementation of this strategy should determine the activities, responsibilities, timelines and resources needed for the successful achievement of cluster policy.
- Identify those enterprises that will form the cluster core and innovative component.
- To encourage the development of international clusters through the participation of SMEs from neighbouring countries. Moldova would be able to participate in joint projects with other EU countries in such an endeavour.
- Extending the mode of cooperation in clusters to other non-industrial enterprises so that they will form clusters and facilitate the development of SMEs. Sectors of the economy that will benefit from interfirm cooperation and clusters are tourism and agriculture.

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3.7 THE INNOVATIVE CAPACITY OF SMEs AND CLUSTERING EFFORTS ACROSS REGIONAL BARRIERS AS WELL AS THEIR FUTURE CHALLENGES IN ROMANIA

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ABSTRACT
This study presents the role and significance of clusters in EU, with special emphasis on the situation in Romania. We will discuss the role of SMEs in the national economy, their entrepreneurial performance (quantity vs. quality) and the business environment in Romania. The present situation for clusters, the potential clusters in Romania and their characteristics will be presented.

All regions of Romania will be analyzed in this study.
Research studies have confirmed the strong positive relationship between productive entrepreneurship and an innovative economy. Productive entrepreneurship generates economic wealth through innovation, and clusters enhance innovation and competitiveness. In this respect, the innovation capacity of enterprises in Romania will be examined. As EU general policy recognizes the importance of clusters as drivers of innovation, we will explore EU cluster policies, their role in general EU policies and cluster policies in Romania.
The findings of this study may prove useful to policymakers in the formulation of policies promoting innovation and competitiveness in Romanian enterprises.

Keywords: innovation, cluster, development, entrepreneurship, EU, Romania

JEL Classification: C38, O1, O3, O52

3.7.1 RESEARCH BACKGROUND

Globalization has increased international competitiveness in trade. An enterprise has to keep abreast of technological changes to stay competitive, and an enterprise needs qualified personnel knowledgeable in the functions of these technological changes to stay up-to-date. BSEC Member States face the challenges of globalization in disparate ways, due to their differing national socio-economic and cultural backgrounds.

Innovation is the main driver of growth, and clusters are the cornerstone to innovation. Thus, cluster policies have a special place in EU general policy.

A study on Romania's clustering efforts can be approached either from a theoretical point of view or through a practical one. Both theoretical and practical approaches will be used in this paper to provide a full picture of cluster development in Romania.

To intensify clustering efforts in Romania, carefully formulated mid and long-term strategies should be implemented. These policies must be grounded in scientific research because the results will only be visible in 15-20 years and they must fulfil Europe 2020 strategy requirements. Romanian policymakers must, therefore, identify the most suitable policies, and prioritize policies that have the greatest impact on economic development. Romania lags behind the BSEC Member States in many different fields (WEF 2015; Hollanders et al. 2015). Romania's poor showing in international rankings indicates that it has many barriers to economic development.

Although the concept of cluster development seems relatively new, industrial districts had existed in Romania before 1989.

After 1989, Romania experienced many more difficulties in adapting to market economy than the other Central and Eastern European countries (Vasile 2002). As the government sought to reduce the social costs of the transition to market economy, the financial system was not sufficiently tightened and large non-profitable enterprises were privatized. The upshot was negative economic growth and an increase in national poverty level from 20% in 1996 to 41% in 1999.

To foster economic growth, the government began implementing macroeconomic policies in 2000. A tightly controlled financial policy was introduced, followed by a monetary policy designed to instil financial discipline in the enterprise sector and provide a solid base for public finance and fiscal policy (Szabó 2011).

The effects of industrialization in Romania were only visible after 2001. Legal definitions of clusters and cluster policies were implemented after 2000. The government sustained clustering efforts, promoted initiatives and encouraged projects in order to identify existing and potential clusters. The Ministry of Economy, Commerce and Business Environment of Romania (MECMA) has been deeply involved in identifying existing and emerging clusters since 2008 (see Clustero 2011-2015).

3.7.2 ROLE AND SIGNIFICANCE OF CLUSTERS IN THE EU

Clusters are now widely accepted to be drivers of change, and it is established that they are the drivers of economic development (Figure 1).

The main events accelerating the general recognition of the clusters in the European Union (EU) are:

- The European Commission analysis on the transnational dimension of clusters in Europe (EC 2006).
- Article 13 of Decision No.1639/2006/EC which emphasized the "important role of clusters for competitiveness and innovation as instruments for closing the gap between business, research and resources."
- The creation of the European cluster observatory in 2006 and the launch of its homepage in 2007 which gives data and reports on clusters (see Cluster Observatory EU).
- The European Commission Communication 652/2008 reaffirmed that the clusters are the engine of economic development (EC 2008).

These EU initiatives triggered a great number of national cluster development measures from European countries, and created calls for strategic policy orientation and cooperation within the EU.

Clusters are recognized as central to the national strategies for innovation, and EU Member States are consequently encouraged to implement national cluster policies as well as to formulate and implement measures promoting and developing clusters.

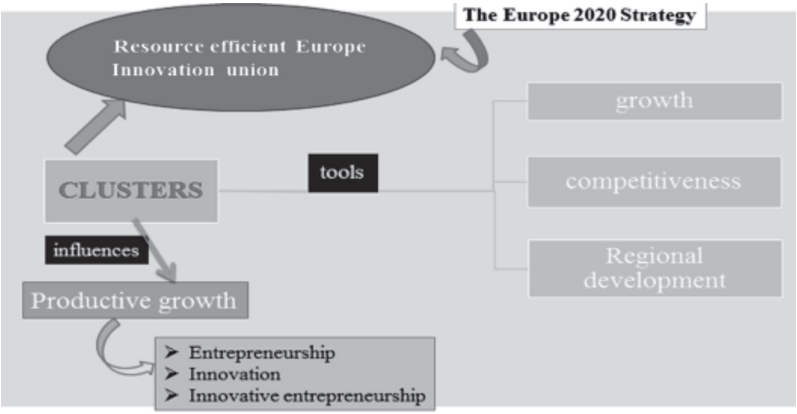

Figure 1: Role and significance of clusters, authors' own construction

EU Policy for Clusters

"Cluster specific policies aim at mobilising the inherent capabilities of clusters and spurring their upgrading over time" (EC 2006). However, cluster policies are not the only initiatives capable of sustaining cluster development. Innovation policies, regional policies, research policies, industrial policies and SME policies can all have significant impact on clusters.

The EU is currently committed to the sustainable development strategy (Szabó 2011), even though competitiveness is enshrined in the EU political agenda (European Parliament Directorate General for International Policies 2010). The Europe 2020 Strategy was formulated to ensure Europe continues to fare well in international rankings and to safeguard social wellbeing through the creation of workplaces, high living standards and measures of fighting economic crises (see Figure 2).

3.7.3 CLUSTERS IN ROMANIA

A research study on cluster development in Romania has outlined that clusters are "an agglomeration in the space of companies" and can be both "natural and public" (Pislaru and Aristide 2005). As part of the Romanian government's public policies promoting cluster development, "public clusters" have been created to encourage firm agglomeration. Public clusters are legally defined in Romania as industrial parks, and research and technology parks. Statistical and quantitative analyses have also identified the

presence of natural clusters in the country. Thus, there are two types of clusters in Romania: public clusters and natural clusters.

3.7.3.1 Research studies and projects on Romanian clusters

The government presently encourages initiatives and research projects focusing on the identification of potential clusters in Romania.

The first study was elaborated in 1998 for the World Banks' Institute for Economic Development and was coordinated by the International Centre of Entrepreneurial Studies (CISA) in Bucharest. Three nascent clusters were identified: software manufacturing, nautical industry, and wood industry.

The second study, elaborated by Marco Riccardo Ferrari from Bocconi University in Milan, was published in 1999, and identifies three proto-districts in the wood, pottery and textile industries (Ferrari 1999).

In 1999, Valentin Ionescu analyzed previous publications and noticed their methodological differences; he concluded that clusters are not clearly defined (Ionescu 1999). His study also confirmed the existence of two proto-clusters in the pottery and software manufacturing industries.

As seen in Figure 3, the first European cluster projects began in 1999. These are:

- The Virtual Cluster Identification (VICLI) project implemented in 1999-2001 and funded by grants from European Union through INTERREG II C Community Initiative Operational Programme CADSES. VICLI sought to identify and disseminate strategic territorial planning best practices in certain countries of Danubian and Southern Europe. This was followed by INTERREG III B CADSES, which included industrial cluster development.
- The West-East Industrial Districts (WIED) formed in 2001-2004 under the Fifth Framework Programme (FP5).
- The Clustering and Upgrading Romanian Automotive Suppliers (CURAS) programme launched in 2003-2004, which was evaluated in a research paper by Adriana Reveiu in 2012 (see Reveiu 2012).

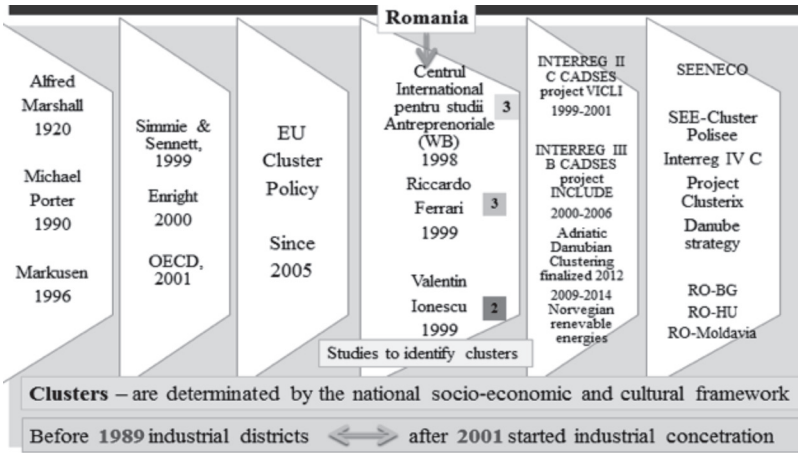

Figure 3: Short review of the literature on the potential clusters identified in Romania, authors' own construction

3.7.3.2 Map of identified clusters

Romanian law GO 918/2006 – Programme "Impact" defines a cluster as a group of producers, beneficiaries and/or customers. This definition is used to put European best practices into action so as to increase competitiveness.

The Romanian Cluster Association was founded in 2011 by 15 founding member clusters; 6 clusters later joined. The Romanian Cluster Association is a member of the Enterprise Europe Network (EEN). Its aim is "advertising Romania and the country's economic recovery and development, by supporting the creation, development and cooperation between clusters at regional, national and international level" (Clustero 2011-2015). A cluster that has followed the "Triple Helix" model to completion with its catalyst organization is eligible to join the Romanian Cluster Association. The Romanian Cluster Association is a cross-sectoral organization. It is made up of members from the following industries: textile, automotive, wood and furniture, electrotechnical and energy.

A detailed report of the Romanian cluster experience, general considerations and a map on existing clusters was made by the German Technical Cooperation Agency (GTZ) and the Romanian Ministry of Economy in 2010 (Guth and Cosnita 2010).

The modified Triple Helix approach was used to identify clusters. The factors driving the success of clusters were determined to be concentration, R&D units, labour force, cooperation and service suppliers. Although 55 clusters were identified, the lack of cooperation, and shortage of availability and utilization of innovation services have resulted in a slowdown of the development. Finally, the report recomends a three layer policy approach:

- Elite clusters on national level
- Supporting regional clusters so that they are nationally recognized
- Facilitating cooperation among partners to create a conducive environment for cluster creation

A study published in 2011 details the existing and potential competitiveness poles and clusters in Romania (Proiectul Incubatoarelor de Afaceri şi Tehnologice 2011).

In Romania, "cluster" and "competitiveness pole" have different meanings. Clusters, according to Marshall's agglomeration theory, are used for industrial agglomerations, and do not necessarily follow the Triple Helix model (Scott 2000). Competitiveness pole is used when an association of enterprises, research centres and institutions cooperate to implement a common development strategy. A comparative analysis between clusters and competitiveness poles appear in Analiza situaţiei existente privind polii de competitivitate existenţi şi potenţiali din România as well (Proiectul Incubatoarelor de Afaceri şi Tehnologice 2011, 25-6).

The analysis followed Innovation Scoreboard methodology and examined the qualitative indicators of importance, size, concentration, field of activities, export and innovation.

The quantitative indicators studied were geographical concentration, R&D, labour force, cooperation, internationalization and catalyst institutions. The qualitative analyses identified 35 clusters and potential competitiveness poles (Proiectul Incubatoarelor de Afaceri şi Tehnologice 2011, 73-5). Twelve clusters were identified as having the potential to become competitive poles at the national level. The study concluded by observing that clusters in Romania spontaneously formed from the "bottom-up". Clusters and competitive pole creation have accelerated since 2009 due to the efforts of the Ministry of Economy, the improved commercial and business environment, and policies of the Directorate for Industrial Policy. The cata-

lyst organizations and institutions have also played significant roles in the cluster development process.

A 2013 study on the competitiveness of Romanian clusters (Cosnita and Iorgulescu 2013) noticed that the Directorate for Industrial Policy at the Ministry of Economy listed 47 clusters. Only the clusters which have signed documents and can prove cooperation activities under the four clover model were registered. Of these, only 21 are members of the Romanian Cluster Association (Clustero 2011-2015).

Cluster growth is determined by creation, development, management and internationalization. There is currently a huge gap in cluster development between Western and Eastern Europe. In Western Europe, the majority of the clusters have achieved gold medals under the European Cluster Excellence Initiative (ECEI), but Romanian clusters have only been recently formed. The 2013 study used the same methodology as the previous 2011 report regarding quantitative and qualitative analyses (Cosnita and Iorgulescu 2013).

As established in the 2011 and 2013 studies, 55 clusters and potential clusters were identified in Romania. The clusters that have been identified are active in 28 different fields (see Figure 4). This heterogeneity shows that the clusters are really local initiatives.

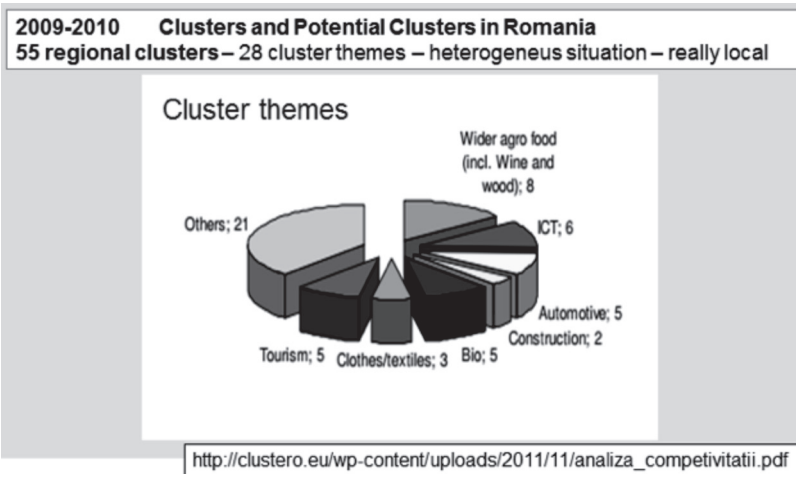

Figure 4: Clusters' fields of activity, authors' own construction

We will next present the distribution of Romanian clusters by region. Figure 5 shows the total number of clusters in each region and their field of expertise. As seen in the figure, two numbers are allocated to each region. The numbers on the left represent the total number of identified clusters, whereas the numbers on the right indicates innovative clusters. While 8 clusters were identified in the northeast region of Romania, only one passed the criteria of actual cooperation as well as availability and usage of innovation services; thus, only that one cluster can be considered an innovative cluster.

8 clusters were identified in the northeast (NE) region, 5 in the southeast (SE) region, 8 in the southern (S) region, 8 in the region of Bucharest-Ilfov, 6 in the southwest (SW) region, 8 in the western (W) region, 7 in the northwest (NW) region, and 5 in the central (C) region.

It is important to keep in mind that out of 55 identified clusters, only 19 passed the criteria of actual cooperation as well as availability and usage of innovation services. The distribution of these successfully cooperative and innovative clusters by region can be seen in Figure 5, where there were only 1 in the northeast (NE), 2 in the southeast (SE), 3 in the south (S), 4 in Bucharest-Ilfov, 3 in the southwest (SW), 2 in the west (W), 1 in the northwest (NW), and 2 in the central (C) region.

The lack of cooperation is endemic among Romanian clusters. Out of 55 identified clusters, only 38 clusters have signed documents of collaboration with universities, R&D units and research centres.

75 clusters participated at the National Conference of Clusters in Cluj-Napoca in 2015. Not only does this show that the number of existing and potential clusters increased to 75 in 2015, it also indicates that cluster creation is an ongoing evolutionary process. The gradual increase in the number of clusters demonstrates that clustering efforts have a central place in general policies, and yield results over time.

Additionally, 12 Romanian clusters were certified by the EU and 5 new clusters were officially recognized in 2015.

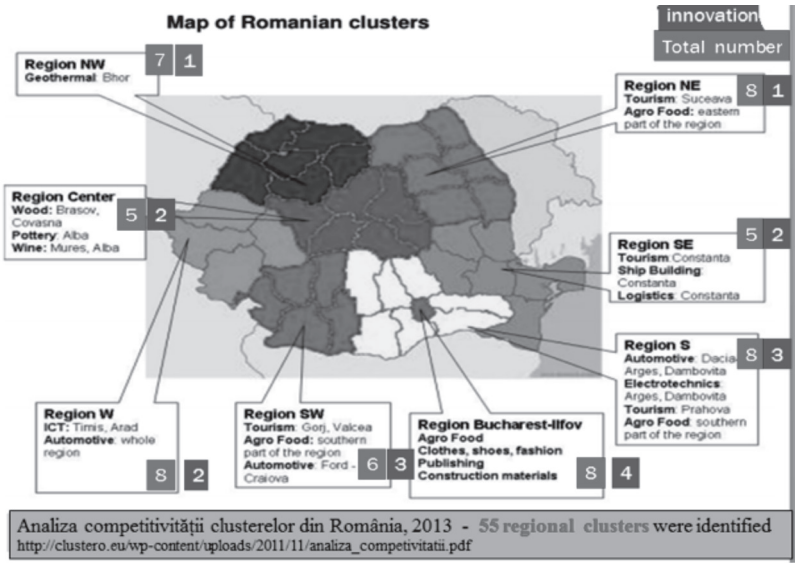

Figure 5: Map of Romanian clusters by region

Source: http://clustero.eu/wp-content/uploads/2011/11/analiza_competivitatii.pdf

3.7.4 INDUSTRIAL AND TECHNOLOGICAL PARKS

To better understand the impact of Romanian industrial and technological parks on clusters, we will examine the extent to which these parks impact cluster development and initiatives. We will pose the following questions: Are cluster development and cluster initiatives dependent on the efforts of existing industrial and technological parks? Are there many innovative clusters in regions where there are numerous industrial and technological parks?

In 2004-2007, the National Authority for Scientific Research (ANCS) facilitated the creation of a national network for innovation and technology transfer through the INFRATECH programme. This follows the creation of incubators, information centres, and technology and research parks after 1990 (Proiectul Incubatoarelor de Afaceri şi Tehnologice 2011, 20-1).
Figure 6 shows the total number of industrial and technological parks, their national distribution, and the innovative clusters identified in the different counties. 54 technology transfer and innovation entities were accredited by ANCS according to GO 406/2003, members of the National Network

for Innovation and Technologic Transfer (ReNITT), and Enterprise Europe Network (EEN). The data demonstrates there is no connection between clustering efforts and active industrial parks. Although 10 industrial parks can be identified in Brasov County (BV), only 3 clusters were detected. There were no identified industrial parks in Covasna County (CV), even though 6 clusters were recognized.

3.7.4 INDUSTRIAL AND TECHNOLOGICAL PARKS

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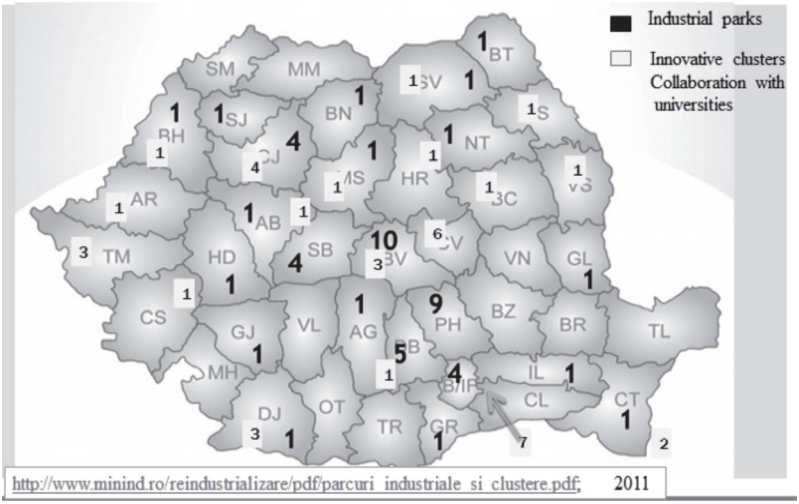


Figure 6: Industrial parks and innovative clusters in Romania

3.7.5 GENERAL CHARACTERISTICS OF ROMANIAN CLUSTERS AND FUTURE CHALLENGES

There are three most successful models for clusters in Europe:

1. The French centralized model
2. The flexible German model combining central and regional assistance
3. The Swedish model successfully implementing the theoretical "Triple Helix" model combining industry, research and the authorities

An adaptation of the "Triple Helix" cluster model combining industry, research and the authorities has been applied to the realities of the Romanian economy where there is a lack of cooperation. A catalyst organization would be needed to spark cooperation.

Clusters in Romania are the results of local initiatives without mid and long-term strategy. There are also few clusters nationally. The business environment is not currently suitable for cluster development and the "Triple Helix" model is unsuited to Romania. The four clover model can be better adapted to Romanian clusters.

Clusters can develop in an environment where there are functioning networks, existing partnerships in a prosperous business environment, existence of qualified resources and an efficient workforce, and infrastructure

conducive to innovation. In such a favourable economic environment, enterprises interested in clusters should have unlimited access to knowledge and information.

In other words, opportunity-driven entrepreneurship must be facilitated if qualitative entrepreneurship is to develop. Qualitative opportunity-driven entrepreneurship can be created if the existing barriers are identified and policies are implemented to eliminate them.

The methods used to overcome these challenges will affect the future evolution of entrepreneurship in Romania. It will impact the manner in which technology transfer is accelerated, the way in which the government will sustain innovation, the means through which EU funds for development will be attracted, and the trajectory of cluster initiatives.

Lack of trust amongst enterprises is one of the biggest challenges to increasing competitiveness, innovation and cooperation. Methods to increase the confidence among people and enterprises should be explored. By increasing the confidence among businesspeople and enterprises, cooperation between them can be accelerated. National strategies, policies and action plans sustaining exports and promoting cluster initiatives need to be formulated and implemented. Access to training and education is also essential to cluster development efforts. Romanian clusters and their economic benefits are presented briefly in the 2012 research paper published by Adriana Reveiu in the Romanian Economic Journal (Reveiu 2012).

In Romania, the cluster policies are still in the embryonic phase, and they present political engagement. Cluster policies are a mix of research policies, innovation policies, industry policies and policies for SMEs. In 2009, the industry policies for 2011-2013 had a whole chapter for clusters, specifically on competitiveness and innovative clusters.

Regional potential exists and there are initiatives, but clusters are presently unable to impact the educational system and transform students into a knowledgeable and technically savvy labour force.

Eliminating technical barriers to innovation and competition is not enough, as "the most difficult challenge of the transition in the post-communist countries is to change the mentality of individuals" (Kenny and Trick 1994; Suutari and Riusala 2001).

This fact is underlined by statistical data. The World Economic Forum (WEF) annually publishes their analyses of the state of cluster development around the world. The WEF's annual Global Competitiveness Report calculates the level of cluster development by analyzing the geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field.

The data is then compared across all economies within the region. For example, one starts by looking at the data for Romania before comparing it to the other Eastern European countries that are also developing economies. It is interesting to observe that Eastern European countries nearer to developed ones ranked higher than those further away. Tables 1 and 2 present the ranking of economies according to their state of cluster development. While Romania is among the leaders in countries in the Black Sea region, it lags behind the West European countries.

1	Taiwan, China	5.6
2	Italy	5.5
4	Germany	5.4
12	Finland	5.1
30	Turkey	4.4
75	Azerbaijan	3.8
84	Armenia	3.6
96	**Romania**	**3.5**
108	Bulgaria	3.3
111	Hungary	3.3
116	Georgia	3.2
124	Russian Federation	3.1
128	Greece	3.0
129	Serbia	3.0
136	Ukraine	2.9
147	Moldova	2.3

1	Italy	5.6
3	Germany	5.5
36	Turkey	4.3
70	**Romania**	**3.8**
91	Hungary	3.5
99	Azerbaijan	3.4
112	Georgia	3.2
113	Armenia	3.2
115	Serbia	3.2
118	Russian Federation	3.1
125	Greece	3.0
126	Albania	3.0
128	Ukraine	3.0
129	Bulgaria	3.0
144	Moldova	2.4

Table 1 **Table 2**

Ranking of economies according to the state of cluster development

Source: WEF 2013 and 2015

3.7.6 INNOVATIVE CLUSTERS IN ROMANIA

Innovative clusters are defined as "groupings of independent undertakings – innovative start-ups, small, medium and large undertakings as well as research organisations – operating in a particular sector and region and designed to stimulate innovative activity by promoting intensive interactions, sharing of facilities and exchange of knowledge and expertise and

by contributing effectively to technology transfer, networking and information dissemination among the undertakings in the cluster. Preferably, the Member State should intend to create a proper balance of SMEs and large undertakings in the cluster, to achieve a certain critical mass, notably through specialisation in a certain area of R&D&I and taking into account existing clusters in the Member State and at Community-level" (Official Journal of the EU 2006, 10).

A 2011 research study on innovative clusters by Monica Dudian underlines the fact that innovative clusters do not have a commonly accepted definition in the professional literature (Dudian 2011). Dudian compared the innovative cluster definitions of Bessant and Tsekouras (2001) with the OECD's (1999 and 2001), and Isabel Bortagaray and Scott Tiffin's (2000). Bortagaray and Tiffin (2000) divided industrial clusters into three sub-categories according to the intensity of their innovation: innovative industrial clusters, proto-innovative clusters and mature innovative clusters.
Dudian concluded her findings on Romanian innovative clusters thus:

- There is only one mature innovative cluster in Romania – the Dacia-Renault cluster in the automotive industry.
- Most institutional clusters in Romania are very young and they have yet to prove their growth potential and innovative character (Dudian 2011).

3.7.6.1 Innovation capacity of enterprises

Innovation and clustering go hand-in-hand. The innovative capacity of companies must be nationally improved if clustering efforts are to be encouraged and sustained. This section will discuss the innovative capacity of Romanian enterprises and the evolution of innovative SMEs.

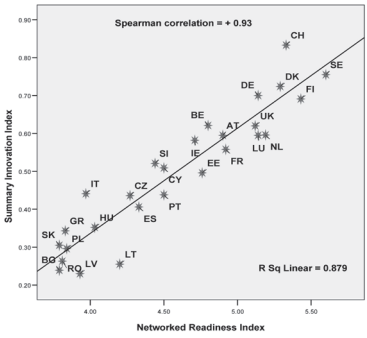
Technology and innovation increase economic competitiveness, and they significantly contribute to social and economic development. There are European and international measurement frameworks for innovation performance. The Innovation Union Scoreboard (IUS) is a European framework calculating the Summary Innovation Index (SII) through analysis of 25 different indicators that are grouped in 8 innovation dimensions and incorporated into 3 pillars; 2 of these pillars are built on the innovative efforts at the level of the enterprise (firm activities) and output effects of the firm's innovative activities. The Innovation Union Scoreboard categorizes

the EU Member States into four groups, according to their average innovation performance (Hollanders et al. 2012a, 2012b and 2015). In the IUS, Romania belongs to the "modest innovators" group.

The Global Innovation Index (GII) is an international framework based on 2 sub-indices and built on 84 indicators (Dutta 2011; Dutta 2012; Dutta et al. 2015).

The Networked Readiness Index (NRI) measures a nation's or community's willingness to participate in and benefit from information and communication technology developments. NRI is published in the Global Information Technology Report by the World Economic Forum, and the reports have been annually published since 2000-2001. The Global Information Technology Report 2012 (Dutta and Bilbao-Osorio 2012) analyzed the world's economies through 10 pillars.

Readiness, infrastructure, competencies, skills, the availability of technology and its usage will impact economic development. The impact of NRI on innovation and competitiveness is presented in Figures 7 and 8.



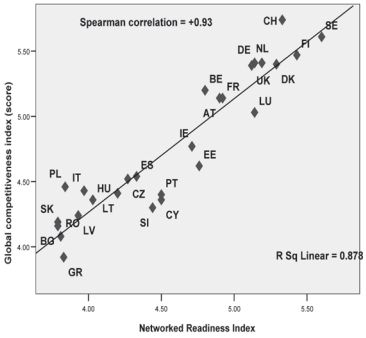


Figure 7: NRI on Innovation **Figure 8: NRI on Competitiveness**

Source: Zsuzsanna Katalin Szabó and Emilia Herman, "Productive Entrepreneurship in the EU and Its Barriers in Transition Economies: A Cluster Analysis," Acta Polytechnica Hungarica 11, no.6 (2014): 73-94.

According to the publicly available databases (SII, NRI, GII and Eurostat), Romania lags behind developed economies and was ranked lowest

amongst the EU in many indicators. For a detailed comparative analysis of Romanian enterprises' innovation capacity and performance across the EU, see Zsuzsanna Katalin Szabó and Emilia Herman's "Productive Entrepreneurship in the EU and Its Barriers in Transition Economies: A Cluster Analysis" (Szabó and Herman 2013).

3.7.6.2 Innovative SMEs in Romania

Romanian SMES have not changed significantly in the last few years. While the number of active SMEs has been fluctuating in the country, they average 400 thousand in 2005-2015. Romania's standing in the 2015 Doing Business ranking has improved significantly by 25 places from its performance in 2013 (see Table 6). This improvement was largely due to the implementation of e-payment procedures. However, Romania's number of SMEs per 1000 inhabitants is still under the EU average.

YEAR / Number	2000	2001	2002	2003	2004	2005	2006	2007
Enterpr.	308 064	311 260	315 105	349 061	394 519	433 030	461 812	**499 857**
SMEs	**306 073**	**309 303**	**313 159**	**347 064**	**392 544**	**431 135**	**459 972**	**498 014**

Year	SMEs	Large	Total
2010	436.508	1.527	438.035
2011	437.042	1.588	438.630
2012	**441.362**	**1.651**	**443.013**

Romania	DB 2009	DB 2010	DB 2011	DB 2013	DB 2014	DB 2015
	45	55	56	73	50	48

Source: INS, MEBE, ONRC

Table 6: Romania's Doing Business ranking

The Oslo Manual outlines methods through which an SME's innovativeness can be measured; European countries use the Oslo Manual to determine the extent of their SMEs' innovativeness (OECD and Eurostat 2005). When a Romanian SME's innovativeness is measured according to the Oslo Manual, the results are mirrored in CIS Survey data.

The number of innovative SMEs in Romania is decreasing. There are many economic and cultural reasons for this. Table 3 shows the data on Romanian SME's innovativeness. It shows that the barriers to innovation are lack of personal funds to invest in innovation, high innovation costs, and lack of experience in dealing with innovative technologies. Romanian innovative SMEs also do not tend to cooperate with one another. Only 17.3% of innovative firms in 2004-2006 and 13.8% of innovative enterprises in 2006-2008 signed documents on cooperation.

	2002 - 2004	2004 - 2006	2006 – 2008	2008 - 2010	2010-2012
Innovative enterprises (%)	19.9 %	21.1 %	33.3 %	30.8 %	20.7%
The number of innovative enterprises	5136	5970	9986	8116	5968

Innovative SMEs		2002 - 2004	2004 - 2006	2006 – 2008	2008 - 2010	2010-2012
Technologic innovator	Product innovator	472	525	710	631	351
	Process innovator	1203	1169	1965	948	706
	Process and product innovator	3461	4276	3073	2054	634

Table 3: Analysis of innovative SMEs in Romania

Source: Romanian National Institute of Statistics (NIS) Press communication no. 124 dated 30 June 2008; no. 269, 2010; no. 153 dated 28 July 2010; no. 29, 8 February 2012; no. 178, dated 28 July 2014, and authors' own calculations

The distribution of innovative SMEs at nomenclature of units for territorial statistics level 1 (NUTS 1) level is presented in Table 4. Huge differences in the numbers of innovative SMEs can be observed among the different regions.

NUTS 1	The weight and number of innovative firms 2004-2006		The weight of innovative firms 2006-2008	The weight of innovative firms 2010-2012
N-V and Centre region	20.7 %	1236	29 %	33.2%
N-E and S-E region	34.7 %	2071	45.9 %	68.7%
South-Muntenia and Bucureşti-Ilfov	16.8 %	1003	34.2 %	35.8%
S-Vest- Oltenia and V	12. 1 %	722	22.6 %	34.2%

Table 4: Romanian innovative SMEs at NUTS 1, by region

Figure 6 shows the different distribution of Romanian innovative SMEs across counties. By comparing each county's economic development level in GDP against the number of innovative clusters, it can be observed that the county is more economically developed when the level of innovation is higher. Table 5 presents an overview of GDP's impact in the development regions by breaking down each region's share of total GDP.

2012	2013	2014	2015	2016	2017	Years
587,5	625,6	658,6	692,2	730,3	771,6	Total economy
63,9	67,6	71,1	74,6	78,7	83,1	NE
62,8	66,1	69,5	73,2	77,3	81,6	SE
73,4	79,1	83,3	87,4	92,3	97,5	S
47,8	52,3	55,1	58,0	61,2	64,7	SW
59,9	63,9	67,2	70,5	74,3	78,5	W
62,6	66,7	70,1	73,7	77,7	82,1	NW
67,5	72,6	76,5	80,4	84,7	89,6	C
148,8	156,4	165,0	173,6	183,2	193,6	B-I

Table 5: GDP by development regions, 2012-2017

Source: Romanian National Institute of Statistics (NIS), available at http://cursdeguvernare.ro/evolutia-pib-pana-in-2017-si-lipsa-coeziunii-interne.html

As seen in Table 6, government support for the attainment of equipment has noticeably decreased. Consequently, knowledge transfer is not sustained and insufficiently encouraged.

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Total	2006-2008	2008-2010
Inov. enterpr	5.907	3.768
Equipm (thou RON)	8.684.944	2.607.518
Knowledge transfer	129.006	52.291

NIS 2013, Statistica teritoriala

Table 6: Government support for innovative enterprises

In 2004-2006, 4.1% of innovative SMES obtained information from universities and 3.5% used research centres. The percentage of innovative SMEs obtaining information from universities increased to 5.1% in 2006-2008, but only 3% consulted research centres during that same period. This data underlines the lack of cooperation between SMEs, research centres and universities.

All the data has shown that developed economies with high SII scores have high GDP, high levels of competitiveness and high levels of innovativeness. In fact, these developed economies have a calculated Spearman's rank correlation coefficient of 0.89.

Research studies and European reports have demonstrated that innovative clusters are insufficiently developed in Romania. Comparative analysis with the EU level shows that Romania lags behind EU countries in innovation. These data also show that Romania has a very low number of innovative SMEs.

The Global Entrepreneurship Monitor Report established that necessity-driven entrepreneurial activities are rampant in post-communist countries. In contrast, developed economies have fewer necessity-driven entrepreneurial activities (see Figure 9), but high numbers of opportunity-driven

entrepreneurial activities (see Figure 10). Opportunity-driven entrepreneurial activities are typical of innovation-driven economies.

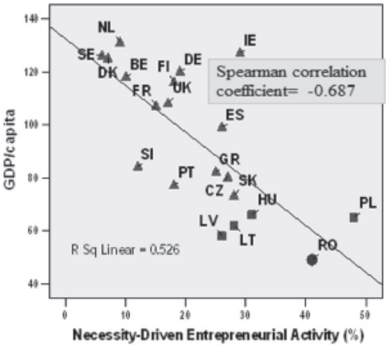


Figure 9

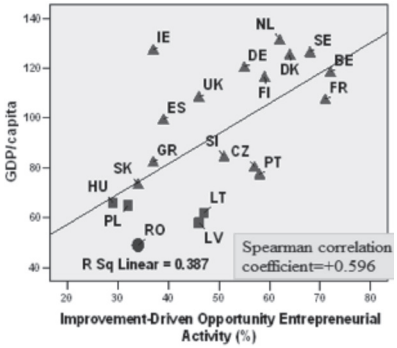
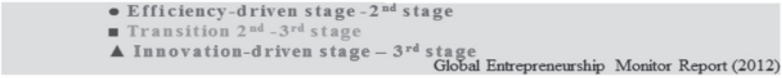


Figure 10



The Global Entrepreneurship Development Index (GEDI) measures the quality of entrepreneurial activities in a country. A brief analysis of European countries' standing in GEDI was published in Productive Entrepreneurship in the EU and Its Barriers in Transition Economies (Szabó and Herman 2014).

3.7.7 CONCLUSIONS

Clusters are prioritized in EU general policy because they are recognized as drivers of change, development and the economy.

In order to promote clusters, national policies must create a favourable business environment for growth and innovation, ensure the diffusion of knowledge, guarantee the enlargement of innovation support, set mission-oriented strategies, upgrade human resources, improve access to skills and competencies training, endorse new learning, promote organizational change, institute technological change, and emphasize productivity and competitiveness.

Romanian cluster development should evolve along a three-layer policy approach. National policies creating and sustaining elite clusters should

be formulated and implemented. However, regional clusters should not be neglected and policies should support them so that they will be nationally recognized. Policies also have to be developed to facilitate cooperation among partners and enterprises so that a favourable environment for cluster creation is generated.

Romania lags behind developed economies in many respects such as innovation, competitiveness, readiness to use information and communication technologies (ICT), and productive entrepreneurship. The Europe 2020 Strategy flagship initiatives of innovation, education, information society, climate, competitiveness and labour market present challenges for Romania. Short and long-term strategies are needed to increase the innovative capacity of enterprises and their SII. National policies must be committed to enhancing innovation. These are the steps that have to be taken if innovative clusters are to be created in Romania.

Local particularities must be identified so that clusters in regional areas can leverage them. In this respect, suitable local, regional and national strategies should emphasize the importance of local particularities.

To sustain and encourage cooperation, policies have to stimulate technology transfer and the commercialization of academic research. This can be done by improving the partnership between universities, the SME sector, regional governments, high schools and different enterprises. One method of improving the partnership between schools and businesses is to encourage student internships in enterprises. This will give students the practical experience of working in small enterprises.

To increase economic competitiveness, development of the innovation infrastructure and the improved methods of dissemination for industrial and commercial applications should be encouraged. The national R&D and Innovation Plan should encourage companies to take part in corporations and initiate innovation projects. To increase the competitiveness of human resources in SMEs and improve the overall business environment for clusters, financial measures should be developed to support researchers, and enterprises should be encouraged to invest in researchers.

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3.8 SME CLUSTERING: FINDING THE RIGHT BUSINESS PARTNERS AND IMPROVING THE BUSINESS ENVIRONMENT FOR SMEs IN RUSSIA

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ABSTRACT
This article is devoted to the implementation of cluster policy and the creation of innovative regional clusters in the Russian Federation. Within the framework of the Concept of long-term socio-economic development of the Russian Federation until 2020, the Russian government has defined the goals and priorities for economic sustainability and socio-economic indicators, as well as improvement of the quality of life of the population. In addition to these strategic objectives, a programme of state support has been developed to modernize and stimulate innovation in Russia. Improvement of innovation development and management has become an integral part of the economic activities of enterprises, regions and countries. Therefore, the operation of innovative regional clusters in the regions of Russia is not only an issue of creating highly efficient and highly competitive economic activities, but also an issue of improving the quality of life in the country and the development of society in general.

The article also considers the impact of regional clusters infrastructure on the country's economy, and covers the issue of SME performance evaluation in innovative clusters and perspectives of cluster development in Russia.

Keywords: clusters, Russian Federation, regional economy, innovations, policy, state programme, small business
JEL Classification: C38, O25, O31

3.8.1 ENTREPRENEURIAL ACTIVITY, SME AND CLUSTER DEVELOPMENT

The Russian economy is currently going through hard times; the economy is experiencing deflation, which is caused by a number of external and internal factors. It was affected by a slowdown of the world economy, the fall in oil prices, as well as political circumstances such as sanctions against Russia and food sanctions taken by Russia itself.

The current economic problems have hit small and medium enterprises (SMEs) the hardest because they do not receive adequate state support, owing to the economy prioritizing large-scale industry.

Despite the current economic situation, the Russian government acknowledges that strengthening the economy will provide even more opportunities for development.

The structural reforms that were initiated in the mid-1990s have not been brought to fruition and market mechanisms have not worked in full force. One of the main obstacles to growth and development is the monopoly of big businesses.

Russia's economy has gone through a process of deep transformation in the last twenty years. At first, emphasis was placed on the development of market institutions and the progressive dissemination of market rules. Despite its huge natural resources and large domestic market, the Russian economy is now in decline with low oil prices and the introduction of the food embargo.

In that sense, there is no one mode of boosting the competitiveness of a national economy. Recent theoretical research and empirical studies highlight innovation and the role of small and medium firms (SMEs) for the improvement of economic development. Convincing contributions to the analysis of the role of SMEs can be found in a whole range of studies published by international financial institutions such as the United Nations Conference on Trade and Development (UNCTAD) and the World Bank. It is also a particular topic of attention in the European Union (EU) and in most national economies. [1]

Although precise data is unavailable, World Bank research across the world's economies has estimated that SMEs consistently form around 95% of existing businesses and employ approximately 60% of private sector workers. They are also believed to contribute about 50% to the world's gross value added (GVA). [2]

Moreover, because of their dynamism and flexibility, SMEs are crucial for the creation of jobs. In fact, they are practically the only source of new jobs in many countries. It is the case in developed countries, where big

firms tend to downsize and delocalize their labour force, as well as in emerging countries. [3]

In addition to the Russian government's emphasis on innovative economic development, there are three important factors of Russian economy diversification and regional development:
- Entrepreneurial activity of innovators
- SMEs
- Cluster development

3.8.2 SME PERFORMANCE IN THE RUSSIAN ECONOMY

3.8.2.1 Statistical overview

The number of SMEs in Russia has not really grown since the mid-1990s, and the existing two million SMEs generate only about 20% of GDP. [4]

Here, we are faced with the peculiarities of Russian statistics, which in spite of the developed criteria for classifying enterprises in the category of small or medium-sized businesses, also count individual entrepreneurs in this category. According to official statistics, there are more than five million SMEs, of which more than three million are individual entrepreneurs. [5]

While the number of SMEs grew throughout the 2000s, the economic crisis of 2008 reduced this figure. Another strong reduction in the number of SMEs occurred in 2014, due to the increased tax burden on entrepreneurs.

The vast majority of Russian SMEs are very small firms and individual entrepreneurs who are engaged mostly in trade, construction or services. Even a quick observation leads to an obvious conclusion: Russia severely lacks small and medium firms specializing in intensive technology transfer activities and innovation.

Since 2012, the government has developed a programme to support the development of SMEs and regional innovation clusters. There is some doubt as to whether clusters created by the state (instead of private businesses) can become the flagship of innovative development of industries in Russia. There are similar concerns as to whether they would be able provide a decent level of competitiveness, as well as economic and social well-being to the regions in which these clusters are located.

3.8.2.2 Innovation management

The innovation process, including the activities of small and medium-sized enterprises, depends largely on the management of these enterprises. Implementation of the innovation process is long and tedious, as it requires the ability of managers to evaluate the prospects of a new technical solution. Experience cannot guarantee the achievement of the planned effect after its introduction. Innovation should be implemented in the fixed period time. Therefore, the organizers need to have a timely sense of innovation, the ability to recognize innovation, and predict its positive effect for the future. Innovation management covers all strategic and operational objectives of management, planning, organization and control of innovation processes in the enterprise.

While innovation is still the prerogative of large enterprises, small businesses may choose to cooperate with large enterprises in implementing or testing innovative ideas. Alternatively, SMEs can be ground-breaking on their own from start to finish in solving innovative tasks, and passing the whole cycle from development of the innovative product to its production and bringing it to the market. The second option is more difficult for SMEs, as it requires more serious management decisions. If successfully done, it would allow them rapid entry into the market and enable them to increase their capitalization. Finding partners for innovation can be difficult, but these may be found from related industries so as to avoid competition and better arrive at mutually beneficial cooperation. Thus, innovation management for SMEs provides an opportunity not only to recognize innovation, but also the ability to find partners in this process.

Technology parks, business incubators, technological development centres and other facilities collectively called "industrial parks" are the main infrastructural elements supporting entrepreneurship. The first Russian business incubators were established in 1990s and funded by foreign grants. Business incubators are mainly situated in Central Russia, with less developed incubator structures located in the Russian Far East.

Comparative analysis of innovative business support entities is complicated because of the different purposes of these structures. Thus, in accordance with Russian legislation, a business incubator should have a total area of non-residential premises of more than 900 square metres, and at

least 85% of the usable area of incubator should be allocated to business structures (but not more than 15% for each tenant). [6]

According to Russian legislation, a business incubator needs to provide the following core services:

- Lease (or sublease) premises of the business incubator to small businesses;
- Implementation of the technical operation, and maintenance of a business incubator building;
- Provision of postal and secretarial services;
- Advice on tax, accounting, credit, legal protection and enterprise development, business planning, training and education;
- Provision of access to information databases.

A business incubator (save business incubators related to agricultural production) must meet the following basic requirements for technical equipment:

- Have at least 70 workstations equipped with office equipment and furniture;
- Each workstation computer should have individual or collective access to the printer, as well as a telephone with an outside line and long-distance call capabilities;
- Presence of at least one equipped meeting room with furniture, whiteboard and telephone;
- Presence of at least one equipped room with furniture, whiteboard, projector and phone for lectures, seminars and other training activities;
- Presence of the Internet channel for at least 80% of workplaces in the business incubator;
- Availability of the following office equipment for public access: fax, copier, scanner, colour printer, telephone.

However, in practice, business incubators in Russia often occupy a much smaller area. This is especially true for university incubators aimed at supporting student entrepreneurs. Business incubators are created for different purposes (promotion of regional economic development, job creation, technology commercialization, support of various social groups, etc.) and are designed for different audiences (young scientists, students of technical and liberal arts colleges, women, etc.). Therefore, each business incu-

bator conducts its activities differently to meet its goals. Due to the disparate natures of the different types of business incubators, establishing and applying strict criteria and standards in this regard appears to be incorrect.

3.8.2.3 The success of innovative SMEs

The creation of innovative regional clusters has become a tool planned to increase the effectiveness and competitiveness of the Russian regions. The urgency of cluster policy implementation increased considerably in 2014, due to the tense political and economic relations between Russia, other European countries and the United States. The government has set a new goal – development of industrial sites and related sectors that would reduce Russia's dependence on imports of products from Europe and the United States. This goal was reflected in the Concept of long-term socio-economic development of the Russian Federation until 2020. To achieve this goal, the introduction of large-scale regional clustering in Russia has become a very important issue. [7]

In these circumstances, however, the activities of innovative SMEs are mainly linked to factors like scientific knowledge, intellectual property, and economic application of innovative ideas. As it is almost impossible to place a value on these factors, it makes it more difficult to assess the quality of a project. Their success relies on the human skills factor, as innovative SMEs do not have valuable assets to offer as collateral to investors. Also, innovation means inventing new, untested products, and going through a high percentage of failures.

There are two types of innovation and knowledge-based SMEs in the world: the first creates innovation, whereas the second uses it. The first type of innovation SMEs are in the minority, while most innovative SMEs belong to the second type.

However, any firm – even small ones engaged in the most simple of activities – can profit from technological progress and innovation. In addition to access to financing, access to new technologies is essential to the competitiveness of SMEs. New technologies are just as important to SMEs in adapting to the requirements of global markets, lowering their costs of production and generating strong growth.

3.8.3 IMPACT OF SMEs IN CLUSTERS ON THE REGIONAL ECONOMY

The Russian regional socio-economic impact of SMEs in the innovation clusters can be seen in the analysis of the gross regional product (GRP) and its dynamics. It influences unemployment rate, real disposable income of the population, volume of attracted investments, amount spent on research and experimental development (R&D), development of infrastructure and social facilities in the region.

There are five kinds of clusters in Russia:

1) Informal – the result of a spontaneous agglomeration of firms in a limited territory without support from the state or other economic agents (such as big firms), or by historically established economic ties.
2) Organized – have gone through a process of collective structuring, sometimes supported by the state and sometimes resulting from the initiative of businesses only.
3) Innovative – tend to be centred on knowledge-intensive activities.
4) Technology parks and incubators – usually designed and supported by state or universities programmes.
5) Special economic zones – government created and government supported clustering usually aimed at attracting foreign investors, delocalizing their production and selling the product abroad afterwards.

3.8.4 PERSPECTIVES OF SME INNOVATION CLUSTERS' DEVELOPMENT IN RUSSIA

3.8.4.1 Concept of long-term socio-economic development

The creation of innovative regional clusters is necessary for the realization of the Concept of long-term socio-economic development of the Russian Federation until 2020. According to this Concept, Russia must enter the list of the top five leading countries in terms of gross domestic product (GDP) by 2015-2020.

To achieve this goal, the Concept identified six priority areas:

1) Development of human potential in Russia
2) Creation of a highly competitive institutional environment to encourage entrepreneurship
3) Structural diversification and development of the economy based on innovative technological development

4) Consolidation and expansion of Russia's global competitive advantages in traditional areas (energy, transport, agriculture, processing of natural resources)
5) Expanding and strengthening the external position of Russia, increasing its participation in the international division of labour
6) Transition to a new model of territorial economic development

3.8.5 GOVERNMENT SUPPORT PROGRAMMES AND CLUSTER SPECIFIC BARRIERS FOR SME DEVELOPMENT

The Ministry of Economic Development of the Russian Federation has prioritized the development of science and technology as the new drivers of innovation growth in the Russian economy. Russian regions applying for federal support to finance pilot clusters were obliged to approve a special local comprehensive programme to support innovation in 2015.
The main directions of state support are as follows:

- State subsidies to the budgets of subjects of the Russian Federation for the implementation of activities under the programmes of development of innovative regional clusters.
- Support for the implementation of the initiatives for the development of innovative regional clusters in the framework of the federal target programmes and state programmes of the Russian Federation.
- Involvement of state development institutions in programmes of innovative regional clusters development.
- Encouraging the participation of large state-owned companies, and implementing programmes of innovative development in regional clusters.

Currently, state support for the development of clusters and territories is carried out within the framework of several initiatives at the federal level, including programmes of the Russian Ministry of Economic Development, Ministry of Communications and Ministry of Education.

3.8.6 CLUSTERS IN THE RUSSIAN REGIONS

Research on the distribution of Russian regional clusters by industry specialization was conducted by experts from the Ministry of Economic Development of the Russian Federation, who evaluated the submitted regional applications for participation in the federal cluster programme. [8]
The key activities for innovative development are: medicine, pharmaceuti-

cals, shipbuilding, spacecraft manufacturing, nuclear industry, oil refining and gas processing, information and communication technologies, electronics, manufacturing of equipment, and chemical industry. Experts selected cluster industries according to the largest capital funds and investment for further development (oil and gas processing, nuclear industry), as well as according to industries that had a strong industrial base in the Soviet period (space industry, chemical and pharmaceutical industry).

Region	Specialization	Number of participating businesses
Altai region	Biomedicine	30
Archangelsk region	Shipbuilding	18
Moscow city	New materials, laser technologies	20
Kaluga region	Pharmaceuticals	18
Kemerovo region	Complex processing of coal	15
Krasnoyarsk region	Space technology and telecommunications	6
Moscow region	Biotechnology and pharmaceuticals	36
Moscow region	Cluster Fiztech XXI: Information, communications and space technology; energy efficiency, new materials and equipment	25
Moscow region	Nuclear physics	8
Nizhny Novgorod region	Industrial automotive cluster	3
Nizhny Novgorod region	IT technology, energetic	22
Novosibirsk region	IT technology, Medicines and Biotechnology Pharmaceutics	31
Perm region	Mechanical engineering	6
Republic of Bashkortostan	Petrochemical	17
Republic of Mordovia	Energy-efficient lighting technologies	10
Republic of Tatarstan	Automotive industry Extraction of natural resources, oil and gas	30
Samara region	Rocket and space production	14
St. Petersburg	Information technologies	18
St. Petersburg / Leningrad region	Radiation technologies. Medicine and Pharmaceutics	13
Sverdlovsk region	Titanium processing	10
Tomsk region	Pharmaceuticals, medicine	20
Ulyanovsk region	Consortium: Research, Education and Aviation production	7
Ulyanovsk region	Nuclear physics	13
Khabarovsk region	Aircraft manufacturing and shipbuilding	6

Table1: Cluster Specialization in Russia

3.8.7 LESSONS FOR CLUSTER POLICY

3.8.7.1 Concept of cluster

The concept of a cluster in Russia is defined in scientific papers and official government documents. In 2012, the government officials defined innovative territorial cluster thus: [9]

"Innovative regional clusters" are a set of enterprises and organizations (cluster members) placed in a limited area. They are characterized by:

a) Uniting members of the cluster in the scientific and production chain through one or more fields (the key economic activities);
b) Existing mechanism for coordination and cooperation of cluster members;
c) Synergies expressed in improving economic efficiency and effectiveness of each company or organization due to their high degree of concentration and cooperation.

3.8.7.2 Examples of Russian clusters

The term "agrocluster" is still quite freely interpreted by the authorities. For example, an agrocluster was unveiled near Moscow in 2014 and the Mayor of Moscow attended its opening ceremony.

In reality, this so-called agrocluster is a two-storey building with an area of 246,000 square metres, combining office and hotel buildings, warehouses, production of ice, parking, banks, restaurants and more. Also on-site are trade pavilions covering a total area of 50 thousand square metres, designed for the buying and selling of wholesale food products directly from trucks. Since it is really just a huge wholesale food market, it can hardly be called an agrocluster. [10]

In contrast, the Krasnodar agrocluster was founded in 2003 and its Governor adopted a sub-programme for its development of an agro-industrial cluster. This has strengthened the existing system of the cluster, as the Krasnodar region had traditionally been developed as a regional informal cluster with all the elements of a classical cluster, including academic institutions (Kuban State Agrarian University), agribusinesses (large, small and medium-sized enterprises, food processing companies), transportation companies, and financial institutions. The high agricultural potential of the Krasnodar region, at which 2% of the world reserves of black earth

are concentrated, also contributes to the development of the agrocluster. [11] The region produces the entire crop of Russian tea, 25% of grain (including more than 80% of rice), and 30% of sugar and vegetable oil. [12]

During the transition to market economy, the social and economic relations within the regional economic system of the Krasnodar region were also transformed. As part of the transforming social and economic relations in the region, the prerequisites for the development of sectoral and cross-industrial markets were defined. The regional structure of the ecosystem was formed as a system of territorial distribution of goods and services for which consumers have intraregional demand. This allows the cluster to take local specificities and the interests of economic actors into account when it balances supply and demand.

3.8.7.3 Krasnodar cluster as an economic system

Cluster conditions

The Krasnodar agro-industrial cluster is a territorially localized economic system fulfilling the following conditions:

1) It can act as a single entity.
2) Its members are companies – independent participants of business relations (joint stock companies, limited liability companies).
3) One company forms the core of the cluster and it determines the decisions made by other economic entities who are participants in the same cluster.
4) A common policy can be pursued within the cluster (investment, technological, industrial, economic, financial decisions).

The agriculture cluster in the regional economic system of the Krasnodar region is formed within its territory, and is characterized by the collaboration of all relevant enterprises and infrastructure in the region with specialized production and economic ties.

Enabling environment for agro and food processing cluster in Krasnodar region

A cluster should identify factors of the internal and external environment with the potential to influence the activity of individual business entities in the cluster. So doing allows the cluster to adjust its plans to maximize profits and increase the efficiency of territorial control of localized economies.

The internal and external factors potentially able to influence the business entities in the Krasnodar agro-industrial cluster include: [13]

A. Access to the market and competition
- Availability and quality of raw materials
- Distributors and efficient market channels
- Market power of buyers (consolidation)

B. Human capital
- Availability of skilled workers
- Availability of engineers and related specialists
- Availability of business development educational programmes

C. Financial resources
- Availability of short-term financial resources (less than 1 year)
- Availability of long-term financial resources (more than 5 years)
- Availability of leasing services

D. Infrastructure
- Quality of logistic infrastructure
- Availability of production (industrial) real estate
- Availability of land

E. Technological capacity
- Availability of new process technology and equipment
- Improved technological level of companies
- Improved technological level of suppliers

F. Administrative barriers and regulation
- Level of administrative barriers
- Quality of tax administrative process
- Customs procedures

Cluster formation is based on the exchange of information about the needs and technologies between enterprises of related industries, as well as customers and suppliers. A key instrument of cluster formation is mutually beneficial cooperation between enterprises located in the same area, due to a decrease in transaction costs and the emergence of positive feedback, ensuring intensive development of all the organizations, as well as mu-

tual industrial and economic relations within the cluster. Clusters not only reduce transaction costs, they also increase the efficiency of production specialization due to the concentration of consumers and providers in a single economic space.

Goals for cooperation in the agro and food processing industry in the Krasnodar region

- Joint promotion in the national market
- New product development
- Human capital
- Quality improvement and cost reduction
- Joint procurement
- Joint promotion in the international market

3.8.8 LESSONS FOR SME POLICY

The main problem for SMEs is financing. The current discount rate of the Central Bank of Russia is 11% per year. Commercial banks offer loans to SMEs at the level of 20-22%, with the rate rising to 30% in some cases. In addition, loans are usually provided for a short period, up to one year. In 2013, before the introduction of sanctions, when the Central Bank rate was 8.5%, Russian banks could easily borrow abroad, while the commercial banks provided loans at 15-20% per annum. As the government has artificially curbed inflation, it is very difficult for small businesses to find a niche in the market that would enable the cost-effective production to repay a bank loan at a rate of more than 20% a year. [14]

3.8.8.1 Development of SME policy

Generally, development of SME policy for the enhancement of innovations and cluster has to consider the following factors:

- Differences in enabling environment across Russian regions and clusters are the key challenge for national SME policy.
- Some regional differences can be explained by the efficiency of SME policy of regional administration.
- Regional and local governments will play greater roles in SME development.

Regional SME policy (short and medium-term) can be focused on some important issues such as infrastructure (i.e. industrial and suppliers' parks),

availability of financial resources, regional innovation, and infrastructure and administrative barriers. In contrast, national SME policy should be more focused on stimulating and supporting regional SME policy.

3.8.8.2 Key elements necessary to the development of dynamic and fast growing SMEs:

- Favourable tax environment
- Sound and stable macroeconomic environment
- Favourable legal environment based on a strict application of the rule of law and right of contracts
- Large and easy access to financing
- Minimum bureaucratic interference, allowing easy entry and exit to the market

3.8.8.3 Key barriers to the market of technologies:

- Lack of information about the needs of businesses
- Russian businesses' lack of confidence in the transfer of the patent for the implementation
- Lack of tools for patent transfer in a business project that would attract investments
- Lack of resources for a wide promotion

3.8.9 CONCLUSIONS

The global economic crisis and the following post-crisis development of the regional economy demonstrate the need for an improved model of social and economic relations. Improved social and economic relations within cluster governance mechanisms can ensure the connection of enterprises in various sectors of the economy, which will in turn mutually contribute to the growth of competitiveness of the regional economic system. This mechanism is able to provide the most effective concentration, and related economic activities in various sectors of the economy can result in higher economic indicators of business entities.

Areas that should be improved so as to achieve synergies for the development of clusters are:

- Technical and technological re-equipment of enterprises based on the use of the latest scientific and technical developments, and nanotechnology.

- The formation and implementation of high-tech industries should be ensured through the promotion of scientific and educational institutions as well as innovative, high-tech centres.
- Implementation of long-term regional plans and programmes to develop the innovative potential of the cluster.
- Restructuring the industry and design institutes into business organizations with developed financial, marketing and commercial business structures.
- Creation of favourable conditions for investment and innovation so that agricultural and industrial cluster forms of entrepreneurship in rural areas can be developed.
- Optimization of promising conditions for functioning by improving human and scientific information support, and promoting innovation.
- Improving the forms and conditions of management by promoting cooperation and integration of all types of enterprises of different organizational forms in the production, processing and marketing of products, service maintenance, and trade and lending; and promoting the formation of unions and associations of producers.

Thus, the status of clusters is dependent on obtaining synergies and increasing the competitiveness of the Russian economy.

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3.9 SME CLUSTERING IN SERBIA: FINDING THE RIGHT BUSINESS PARTNERS AND IMPROVING THE BUSINESS ENVIRONMENT FOR SMEs

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ABSTRACT
Relevant strategic documents have demonstrated the positive effects of clustering. Serbia, as a small transition economy, should consider clustering as a means of strengthening competitiveness of enterprises and regions, improving the structure of business activities, and strengthening cooperation and links between businesses and public and scientific institutions. Clusters' contribution to economic growth and development is limited by the poor implementation of relevant strategic documents. The main objective of this paper is to identify specific government measures for the improvement of the existing business environment, the implementation of strategic documents, and the development of innovative SMEs and clusters. To promote SME innovation activities, it is necessary to introduce a national innovation system based on a feedback mechanism between science and businesses, and to raise awareness on the benefits of innovation for improved competitiveness. More dynamic cluster development also requires promotion of cluster development policy, evaluation of cluster activities, more intensive cooperation with the EU in the field of cluster policy implementation, as well as supervision and evaluation of these policies.

Keywords: innovative and technology oriented SMEs, clusters, business environment, measures, competitiveness, incentives, policy

JEL Classification: G21, G 23, G 24, G 28, O30, L53

3.9.1 INTRODUCTION

SMEs play a key role in transition and developing economies. Thus, SME development is one of the most important factors determining the further course of convergence of the Serbian economy towards a developed market economy. However, SMEs are facing numerous obstacles in their growth and development. These obstacles are mainly due to their isolation, rather than their size. The growth of individual SMEs is often constrained by limited access to both human and financial resources, limited access to information on new technologies, limited knowledge and managerial skills, lack of economies of scale, as well as weak negotiation power and market position. The concept of clusters provides the opportunity for SMEs to expand their resources and capabilities to levels that would not be achievable for individual firms.

The main objective of this paper is to identify specific government measures to improve the existing business environment, the implementation of strategic documents and the development of innovative SMEs and clusters. We will do that by analyzing the current level of SME cluster development in Serbia as well as the business environment in which they operate.

This paper is composed of four logically linked sections. The first section pinpoints the role and importance of SMEs, while the second section presents the survey results on the current state and development of clusters and their contribution to economic growth. The third section analyzes the institutional framework as well as the existing regulations and initiatives for the development of innovative SMEs and clusters. The fourth section proposes the improvement measures for more successful implementation of strategic documents, and more dynamic development of innovative SMEs and clusters.

3.9.2 THE ROLE AND IMPORTANCE OF INNOVATIVE AND TECHNOLOGY ORIENTED SMEs

Innovation activities are the backbone of improved business processes, individual entrepreneurial development as well as of the entire economic and social development. While operational efficiency and productivity of enterprises strengthens the economy, knowledge as a basis of every innovation activity is the key driver of society's overall development. Innovation is the leading engine of economic growth and a key element in making

businesses competitive, generating new jobs, and achieving smart and sustainable development (Erić, Beraha and Đuričin 2011, 61)

According to the Summary Innovation Index (SII), Serbia falls into the category of moderate innovators. However, the evaluation of Serbia's improved performance in innovation activity indicates that the country had an average annual growth rate of 6.31%. Furthermore, based on the value of performance and indicators determining innovation level, Serbia's relative output has notably improved against the EU average from 48.36% in 2007 to 69.37% in 2014.

Table 1: Summary Innovation Index (SII) time series

	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	Growth rate
EU28	0.519	0.519	0.529	0.543	0.545	0.542	0.554	0.555	0.98%
Serbia	0.251	0.252	0.259	0.271	0.261	0.334	0.355	0.385	6.31%
Relative to EU	48.36%	48.55%	48.96%	49.91%	47.89%	61.62%	64.08%	69.37%	

Source: European Commission, Innovation Union Scoreboard 2015

Although Serbia operates below the EU average, certain dimensions of innovativeness have significantly improved in the country. The value of the public-private co-publications indicator within the dimension of Linkages and Entrepreneurship rose by 22%, while Non-R&D innovation expenditure, and license and patent revenues from abroad within the firm investment and economic effects dimensions rose by 19.7% and 19.5% respectively. The indicators of Innovative SMEs collaborating with others and SMEs with marketing or organizational innovations increased considerably by 12%, while the value of the community design indicator showed the most severe reduction with a 23% drop.

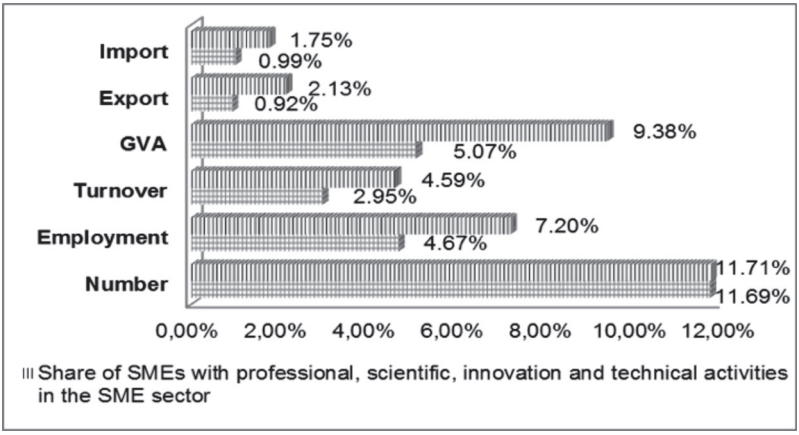
Table 2: Innovation dimensions and indicators, Serbia vs. EU-28

	EU-28	Serbia
ENABLERS		
Human resources		
1.1.1 New doctorate graduates	2.6%	7.9%
1.1.2 Population completed tertiary education	3.6%	6.1%
1.1.3 Youth with upper secondary education	0.5%	0.0%
Open, excellent and attractive research systems		
1.2.1 International scientific co-publications	6.7%	3.5%
1.2.2 Scientific publications among top 10% most cited	1.5%	n/a
1.2.3 Non-EU doctorate students	3.5%	-2.5%
Finance and support		
1.3.1 R&D expenditure in the public sector	1.9%	-1.2%
1.3.2 Venture capital investments	-7.9%	n/a
FIRM ACTIVITIES		
Firm investments		
2.1.1 R&D expenditure in the business sector	1.9%	6.3%
2.1.2 Non-R&D innovation expenditure	1.9%	19.7%
Linkages & entrepreneurship		
2.2.1 SMEs innovating in-house	-0.8%	-1.4%
2.2.2 Innovative SMEs collaborating with others	2.5%	11.7%
2.2.3 Public-private co-publications	2.3%	22.0%
Intellectual Assets		
2.3.1 PCT patent applications	-0.4%	n/a
2.3.2 PCT patent applications in societal challenges	2.0%	n/a
2.3.3 Community trademarks	5.1%	9.5%
2.3.4 Community designs	1.7%	-23.3%
OUTPUTS		
Innovators		
3.1.1 SMEs introducing product or process innovations	-1.7%	6.6%
3.1.2 SMEs introducing marketing and/or organizational innovations	-3.3%	12.3%
3.1.3 Employment of fast-growing firms' innovative sectors	0.5%	n/a
Economic effects		
3.2.1 Employment in knowledge-intensive activities	0.6%	3.2%
3.2.2 Medium & high-tech product exports	-0.8%	9.6%
3.2.3 Knowledge-intensive services exports	0.7%	0.3%
3.2.4 Sales of new-to-market and new-to-firm innovations	-0.8%	3.1%
3.2.5 License and patent revenues from abroad	9.8%	19.5%

Source: European Commission, Innovation Union Scoreboard 2015, p.84

A rise in the value of indicators determining innovation activities in Serbia has not been followed by the growth of innovative SMEs. Innovative SMEs are SMEs that continuously seek out innovation activities and create value by improving existing products and services, or producing and distributing new ones (Đuričin and Beraha 2013, 45). The number of highly innovative enterprises (i.e. enterprises with high innovation potential) in the SME sector is relatively small. Low levels of innovativeness among SMEs (which form most of the businesses in the country) lead us to conclude that economic growth in Serbia is not knowledge-driven.

Graph 1: Share of innovative SMEs in the total economy of the Republic of Serbia



Source: Ministry of Economy and National Agency for Regional Development (NARD), Report on Small and Medium-sized Enterprises and Entrepreneurship 2013

SMEs engaging in professional, scientific, technical and innovative activities represent 11.69% of all businesses in the Serbian economy, and 11.71% of the entire SME sector. They generate 4.67% of total employment, 5.07% of gross value added (GVA) and account for 2.95% of total turnover. Their contribution to total exports and imports of the Republic of Serbia is rather low at 0.92% and 0.99% respectively.

Table 3: Structure of SMEs with professional, scientific, innovation and technical activities

	Structure of SMEs with professional, scientific, innovation and technical activities (%)				
	Entrepreneurs	**Micro enterprises**	**Small enterprises**	**Medium-sized enterprises**	∑
Number	**69.96**	27.58	2.21	0.25	100.00
Employment	21.27	**35.99**	26.82	15.92	100.00
Turnover	19.02	**30.75**	26.63	23.59	100.00
GVA	**28.81**	23.53	26.80	20.87	100.00
Export	0.46	21.78	9.88	**67.88**	100.00
Import	0.29	33.06	24.65	**35.89**	100.00

Source: Ministry of Economy and National Agency for Regional Development (NARD), Report on Small and Medium-sized Enterprises and Entrepreneurship 2013

Of all SMEs engaging in professional, scientific, technical and innovative activities, 69.96% are held by entrepreneurs (69.96%). Microenterprises

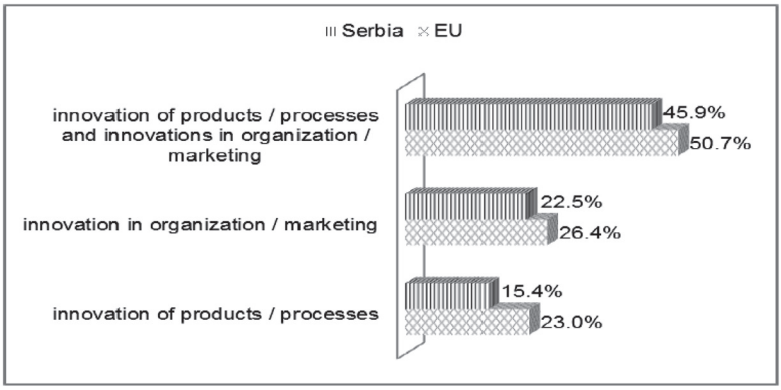
account for the largest share of employment and turnover at 35.99% and 30.75% respectively. Middle-sized enterprises (which account for only 0.25% of total number of enterprises) generate 67.88% of exports and 35.89% of imports.

The low share of innovative SMEs in the Serbian economy, as well as the disproportional relationship between their number and participation in key macroeconomic indicators highlight the need for more intensive measures supporting the growth of these enterprises. The need to provide more proactive support is further justified by the facts that only a small number of innovative SMEs have modern equipment, comply with high quality standards, and are capable of protecting their innovative research through the intellectual property rights and developing close cooperation with other enterprises.

The findings of the National Agency for Regional Development of the Republic of Serbia (NARD) 2014 Survey covering 10% of the total number of SMEs in Serbia showed that 52% of respondents have owned their equipment for 5-10 years, every third enterprise owned equipment for more 10 years, and every fifth enterprise owned equipment for less than 5 years. The survey also showed that 23% of respondents comply with quality standards and have certificates, while only 18% plan to implement them in the future. Innovation activities were engaged by only 31% of the surveyed SMEs; 54% of enterprises within this group engaged in energy and raw materials saving innovation, while the remaining 46% referred to labour cost reductions. Intellectual property rights are protected by only 7% of respondents, out of which 5% protected the company's brand and 2% protected industrial design.

According to Eurostat data, 50% of the total number of SMEs engaged in innovation activities pertaining to information technology (IT) and graphics, while the other half concentrated on production and processing. Product/production process innovations were introduced by 15.4% of enterprises; organizational/marketing innovations were introduced by 22.5%; and 45.9% introduced both product/production process and organizational/marketing innovations.

Graph 2: Structure of innovative enterprises by type of innovation



Source: Eurostat, 2010

3.9.3 CLUSTERS IN THE REPUBLIC OF SERBIA

Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g. universities, standards agencies, trade associations) in a particular field that compete but also cooperate (Porter 2000, 15). A cluster-based approach refers to the idea that geographic proximity, networking and specialization lead to increasing productivity, innovativeness and competitiveness of SMEs (Aćimović and Beraha 2010, 291).

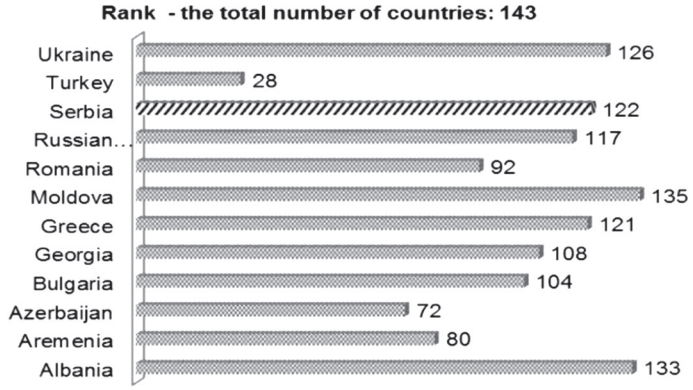
Membership in clusters can enhance the competitive advantage of SMEs by improving their productivity and innovative performance, as well as by reducing their operational costs. Through clustering, individual SMEs can improve productivity and innovativeness by increased access to finance and international markets, open exchange of knowledge, as well as through skills, ideas and technology transfers. Reduction in operational costs can be achieved through collective action allowing greater specialization and possibilities for economies of scope and scale, efficiency in marketing efforts, gaining considerable market share, easier introduction of quality standards, etc.

A cluster's level of development determines the impact it has on SME performance and innovation. Advantages associated with clusters do not emerge through the simple existence of a cluster. Only clusters in the

growth and commercialization phase can reach the critical mass of knowledge needed for innovativeness, productivity and competitiveness.

There are a significant number of cluster initiatives in Serbia. However, the level of economic clustering is unsatisfactory. According to the level of cluster development, Serbia ranks 122 out of 143 countries. Among the Organization of the Black Sea Economic Cooperation (BSEC) countries, Serbia's position is only relatively better than Ukraine, Albania and Moldova.

Graph 4: State of cluster development 2014



Source: Soumitra Dutta et al., Global Innovation Index 2014

According to the latest available data, 58 clusters are present in the Serbian economy. The clusters are classified according to their stage of development as follows:

- 20% of clusters are cluster initiatives (first stage),
- 30% of clusters are in the initial stage of operation (second stage),
- 20% of clusters are in the growth and commercialization stage (third stage),
- 30% of clusters are in the sustainability stage (fourth stage).

In order to evaluate the current state, level of development and role of clusters in economic development, the authors conducted a survey covering 35% of the total number of existing clusters in Serbia. The evaluation was based on the share of clusters in key macroeconomic indicators.

The findings of the survey showed that the Automotive Cluster of Serbia (AC Serbia) is the most developed cluster in the Serbian economy, as it generates the largest share of employment and a significant share of turnover (37% and 22% respectively). AC Serbia consists of 47 members, of which 44 are companies and 3 are scientific research institutes. It is a network of enterprises and institutions engaged in the manufacturing of automotive components and equipment, and providing services in the automotive industry. The Automotive Cluster was established in November 2005 with the support of the Government of the Republic of Serbia and the German Technical Cooperation Agency (GTZ) with an aim to support its members in the process of strengthening competitiveness, reaching profitable positions in the supply chains of international equipment manufacturers (OEMs), and consequently improving the economic situation of the Serbian automotive industry as a whole.

Only the Cluster for Organized Collection and Recycling of Used Batteries and Accumulators (Galenit) generates a greater share of total turnover than AC Serbia, while accounting for larger share in the total number of surveyed clusters.

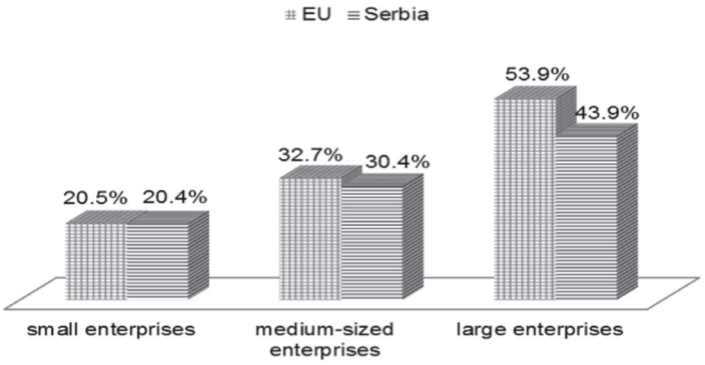
Table 4: Share of clusters in selected macroeconomic indicators

	Number of clusters	Number of enterprises in the cluster	Number of scientific institutions	Number of employees	Total turnover
Agriculture and food industry	15	22	20	5	0
Metal processing and manufacturing	10	3	6	3	3
Automotive industry	5	5	6	37	22
Wood processing industry	10	25	8	23	13
Chemical industry	5	3	6	5	0
Leather and footwear industry	5	4	5	1	0
Recycling industry	10	4	6	7	56
Information technology	10	5	9	6	2
Construction	5	12	8	6	0
Tourism	25	17	25	6	3
∑	100	100	100	100	100

Source: Authors' research

A fifth of all innovative enterprises cooperate with other companies and every sixth is a member of local associations, while only 5% is involved in clusters. Innovation through cooperation was realized by 20.4%, 30.4% and 43.9% of the total number of small, medium-sized and large innovative enterprises respectively.

Graph 3: Structure of innovative enterprises that have made innovation cooperation



Source: Eurostat, 2010

Although Serbia has far fewer innovative enterprises than the EU economy, it is not significantly lagging behind the EU in innovation through cooperation. Innovation through cooperation is important, as it provides a mechanism for knowledge sharing and resource transferring between cooperating enterprises. The interfirm sharing of knowledge and resources is particularly important for SMEs because they often lack knowledge and resources of their own. When cooperating with other entities such as suppliers, customers, universities, and public and private research and scientific institutions, SMEs perform better and make greater contributions to economic growth and development. The extent to which clusters' business networking contributes to economic development can be observed by their participation in key macroeconomic indicators (see Table 4).

Clusters in the field of tourism account for 25% of the total number of surveyed clusters, but generate only 6% of employment and 3% of total turnover. The survey findings are rather similar regarding clusters in the field of agriculture and the food industry. Their significant share in the total

number of clusters is not followed by an appropriate share in employment and turnover.

In view of the importance and role of clusters in promoting competitiveness and innovativeness of SMEs, job creation and economic growth, as well as their current stage of development, policymakers should focus on providing more efficient support to clusters and clustering in the Serbian economy. Before sufficiently high levels of productivity can affect an increase in SME efficiency and innovation activity, specific macroeconomic policy as well as the provision of functional and strong institutional capacity must first be implemented (Đuričin, Stevanović and Baranenko 2013, 46).

3.9.4 CLUSTER POLICY AND INCENTIVES FOR SUPPORTING CREATION OF CLUSTERS AND INNOVATIVE SMES

Given the role and impact of clusters on economic development, specific policies should be designed to promote clusters (Beraha 2012, 74). National innovative SME and cluster support programmes ought to strengthen the capacity of enterprises through mutual cooperation and partnership with scientific research and supporting institutions.

The Serbian government has prioritized support for the small and medium enterprises and entrepreneurs (SMEE) sector since 2000, due to the poor market conditions negatively impacting the survival and growth of private businesses. An insufficiently developed banking system, distrust in financial institutions, high level of shadow economy, large companies' monopoly of trade, unsuitable regulatory framework and low level of consciousness of the importance of private business engendered the need for more intensive and direct financial and non-financial support of the development of SMEEs.

Institutional support for innovative SMEs and clusters through the introduction and implementation of appropriate regulation contributes to efficiency and productivity growth of the economy as a whole. Development programmes for innovative SMEs and clusters enhance competitiveness, export performance and productivity. More productive operating will result in lower unemployment rates and improve standard of living, thus increasing the welfare of the entire society.

For highly flexible and adaptable enterprises contributing significantly to economic growth and development, institutional support makes it easier for them to access resources they lack and engage financial institutions in specialized business arrangements that were previously closed to them (Erić et al. 2012, 147). Institutional support can be delivered to SMEs directly or through authorized government entities, and it can take various forms such as non-refundable grants, donations, favourable interest rate loans, guarantees, etc. The institutions involved in providing financial and non-financial support to SMEs are the Ministry of Economy, Development Fund of the Republic of Serbia, Serbian Export Credit and Insurance Agency, Serbia Investment and Export Promotion Agency, National Agency for Regional Development with a network of accredited regional development agencies, Innovation Fund, Ministry of Education, Science and Technological Development, and the Chamber of Commerce and Industry of Serbia.

The Cluster House plays a very special role in cluster promotion and development in Serbia. It was established in 2011 with the technical support of the Danish government via the Local Economic Development in the Balkans (LEDIB) programme, following an initiative of seven existing clusters from Southeast Europe. The Cluster House is engaged in cluster development activities, as well as in promoting business associations and SMEs. It is also a coordinator of the Balkan Network of Clusters, which consists of 170 cluster organizations and relevant supporting institutions. A specific model for SME and cluster development in transition economies was introduced to incorporate cross-border cooperation and synergy effects in the region so as to contribute to its sustainable development. Cluster House aims to be the cluster of excellence in the Balkan and Black Sea area.

The Strategy for the Development of SMEs and Entrepreneurship 2003-2008 points to the introduction of national regulations supporting clusters and innovative SMEs. The implementation of the Strategy encouraged the adoption of the Programme for the Development of Business Incubators and Clusters 2007-2010. Within this Programme, a project called Cluster Development Promotion 2006-2011 was realized. In the first year that Cluster Development Promotion 2006-2011 was implemented, four pilot clusters, including the Automotive Cluster of Serbia, reached the stage of growth and commercialization. The four pilot clusters, as well as other clusters supported by the project were provided assistance as part of the Strategy for the Development of Competitive and Innovative SMEs 2008-

2013. This Strategy for the Development of Competitive and Innovative SMEs 2008-2013 also aimed to provide support for cluster development, implement best practices learned from various cluster programmes, help SMEs to access large companies' supply chains, etc.

In 2011-2013, €12,145,080 was spent on programmes supporting innovative SMEs and clusters; 3% of which was dedicated to cluster development support and the rest on promoting innovation.

Table 5: Cluster development and innovation support programmes, 2011-2013

- in EUR -

	2011.	2012.	2013.	∑
Programmes supporting cluster development	138,259	100,000	155,696	393,955
Programmes supporting innovation	3,289,700	4,960,833	3,500,592	11,751,125
∑				12,145,080

Source: Ministry of Economy, and National Agency for Regional Development (NARD), Reports on SME and Entrepreneurship 2011-2013

The most important initiative promoting the development of innovative clusters began in 2010, following the public call for the realization of the Programme for Innovative Cluster Development (PICD). PICD's main objective was SME capacity building in technology and innovation through cooperation among companies and research and scientific institutions. It offered non-refundable grants to SMEs to improve their trading in both national and international markets, as well as to strengthen cooperation with clusters in the region and foster realization of mutual projects. In the last six years, a total of €652,929 was allocated to the implementation of PICD.

Table 6: Non-refundable funds granted through the Programme for Innovative Cluster Development

	2010.		2011.		2012.		2013.		2014.		2015.	
	€	clus.	€	clus.	€	clus.	€	clus.	€	clus.	€	clus.
PICD	141.666	8	155.000	9	100.000	15	103.388	17	69.542	n/a	83.333	n/a
Total for 6 years												652.929

There are two most notable programmes currently supporting the development of innovative SMEs and clusters: the Strategy for the Development of SMEs, Entrepreneurship and Competitiveness 2015-2020, and the Strategy for Cluster Development 2015-2020.

The Strategy for the Development of SMEs, Entrepreneurship and Competitiveness 2015-2020 determines the implementation of measures promoting SMEE and competitiveness in the medium-term period through six pillars:

1. Improving the business environment,
2. Improving access to finance,
3. Continuous human resource development,
4. Strengthening SMEE sustainability and competitiveness,
5. Improving access to new markets, and
6. Enhancing the entrepreneurial spirit as well as promoting women, youth and social entrepreneurship.

The implementation of measures promoting SMEEs and competitiveness creates opportunities for the establishment of new clusters, as well as for the growth and commercialization of existing ones. Consequently, the adoption of the Strategy for Cluster Development is a logical follow-up in the national regulatory progress in this field. The Strategy for Cluster Development 2015-2020 seeks to encourage cluster policy implementation, cluster mapping and coordination, specialization of regions and creation of a regional cluster map. In order to accomplish these objectives, it is necessary to successfully implement measures aimed at improving the business environment, access to finance and access to new markets, as well as continuous human resource development and entrepreneurial spirit encouragement.

Successful implementation of measures contained within the six pillars of the Strategy for the Development of SMEs, Entrepreneurship and Competitiveness 2015-2020 would strengthen the SMEE sector, thereby reducing government spending for SMEEs. While budget expenditure supporting SMEE development and competitiveness are necessary, they remain inadequate for two reasons.

Firstly, actual monetary policy and market conditions are not associated with economic growth, which in turn casts doubt as to the efficiency of budget spending vis-à-vis its effects on the level of SMEE development. It is impossible to sustain long-term increases in budget spending for the promotion of self-employment, SME development and entrepreneurial spirit when the overall budget deficit is rising (Đuričin and Pantić 2015, 53). Despite the progress made between the beginnings of the transition

process of the Serbian economy in 2000 until the outbreak of the world financial crisis in 2008, Serbia's economy is still in a precarious position (Beraha and Đuričin 2011, 290).

Secondly, Serbian enterprises have scant knowledge of the institutional support available to them. According to the findings of the survey on SME financing in Serbia (Erić et al. 2012, 150), the largest share of respondents (30%) is only partially aware of eligible government financial assistance programmes, an almost equal share of respondents is mainly informed and mainly uninformed (23% and 25% respectively), 13% of surveyed SMEs is completely unaware, and only 8% is completely aware of government financing programmes.

An adequate implementation of current strategic documents towards enhancing competitiveness and internalization of SMEs, cluster development policy, cluster mapping and their more efficient coordination as well as greater specialization of regions and regional cluster map creation would eventually lead to a reduction in government spending. Before this can be achieved, a set of measures improving the business environment, access to finance and new markets, human resource development and entrepreneurial spirit encouragement must be adopted.

3.9.5 MEASURES FOR MORE SUCCESFUL IMPLEMENTATION OF STRATEGIC DOCUMENTS AND DEVELOPMENT OF INNOVATIVE SMEs AND CLUSTERS

There is no doubt that Serbia has achieved continuity in the last fifteen years through the adoption of strategic documents promoting SME development and competitiveness via innovation and cluster networking. However, the expected outcome of such documents implementation is missing. Before measures for more successful implementation of strategic documents and development of innovative SMEs and clusters can be proposed, it is necessary to identify the advantages and shortcomings of the current business environment, availability of financing, level of human resource development and entrepreneurial spirit. This is because the development of innovative SMEs and clusters is predicated on the successful implementation of strategic documents.

A stable macroeconomic environment will contribute to more dynamic development of SMEs. In the period following 2008, the business environment in Serbia deteriorated due to the negative effects of world financial

crisis. The recovery of the Serbian economy began in 2013 when positive signs were recorded, i.e. growth of economic activity, low level of inflation, an increase in foreign exchange reserves, and a decrease in current account and fiscal deficits. However, the Serbian economy is still facing significant developing problems and an increase in key macroeconomic indicators needs to be sustained over a longer period of time. The most important problems of the Serbian economy are high unemployment, constantly increasing foreign and public debt, and low levels of foreign direct investment (FDI).

The regulatory environment is the most significant aspect of the business environment because of its impact on economic growth and development. A regulatory aspect of business environment can be evaluated through efficiency of administrative procedures, as well as in the implementation and transparency in adopting laws and regulations. Despite the unstable macroeconomic environment of the previous fifteen years, significant regulatory reforms were undertaken in Serbia. In 2009-2011, the comprehensive regulatory reform resulted in the abolition of hundreds of rules and regulations, which in turn led to a significant reduction in administrative costs. However, the positive effects were mitigated by the adoption of new rules and the low level of consistency in implementing the improvement proposals.

Efficiency in the implementation of administrative procedures is the first aspect of regulatory reform that must be improved. To that end, a normative framework for the provision of services such as various certifications, licenses, etc. must be introduced in order to ensure that each service provided is done so in an optimal amount of time. A service must also declare objective, clear and transparent terms, if it is to be eligible.

Regulatory reform should increase transparency in the adoption of laws and regulations. This could be achieved firstly by active involvement of SME representatives in the process of adoption; and secondly, by evaluating the effects of implementation. A systematic evaluation of effects would provide relevant information for further improvement of regulations.

Besides the adoption of specific measures to improve business environment, an adequate implementation of strategic documents requires the improvement of SMEE access to existing and alternative sources of fi-

nance. According to the World Economic Forum's Global Competitiveness Report 2014-2015, Serbia ranked 110 out of 144 countries in terms of finance availability, 121 in terms of finance accessibility, and 132 in terms of entrepreneurial capital availability. In order to improve existing financial sources for SMEs and introduce new avenues of SME financing, a set of measures improving SMEs' access to financial resources under favourable terms should be implemented.

Regular loan repayments reduce the financial flexibility of an enterprise; and if not made on time, can ruin its credit rating and make borrowing in the future very difficult (Đuričin and Beraha 2012, 499). For these reasons, the first improvement measure should encourage banks to issue loans to SMEs under convenient terms. Banks can be encouraged to expand their lending to the SMEE sector through various mechanisms such as a more efficient judiciary, an introduction of reliable credit ratings, an integral registry of credit information, etc.

The development of alternative financing sources is the second improvement measure that ought to be introduced. A legal framework enabling the development of microfinance institutions will reduce the gap between supply and demand for microcredit, improve SMEs' accessibility to finance, reduce poverty and unemployment, boost overall economic growth and development, and result in more dynamic involvement of domestic financial institutions in EU developing programmes (Beraha and Đuričin 2015, 169).

As microfinance aims to provide financial support for initial entrepreneurial ideas, improving access to finance will allow enterprises in later stages of development to obtain loans under more favourable conditions. The most common alternative financing sources include forms of equity finance such as private equity, venture capital, and business angels. The use of alternative sources also requires the introduction of an adequate legal framework in this field as well as more successful implementation of previously adopted measures for business environment improvement.

Successful implementation of measures aimed at improving availability of existing finance support and developing new alternative financing sources require a continuous expansion of SME awareness in financing possibilities

at various stages of its life cycle as well as an enhancement in the financial management skills and capabilities of enterprises.

The next aspect of more successful implementation of strategic documents is related to continuous human resource development. Continuous human resource development is crucial to mitigating the high unemployment in Serbia as well as the key developing problems of the economy. This is because continuous human resource development contributes to economic growth and social inclusion. Consequently, it is necessary to adopt and implement measures supporting the development of entrepreneurial education. The following measures for continuous education of SME sector are proposed:

a) Introducing an appropriate mechanism to follow the needs of SMEs for particular employment profiles.
b) Adjusting formal education with the needs of SMEs for particular employment profiles, inclusion of entrepreneurial education in all levels of the formal education system by engaging highly competitive human resources in this field.
c) Enhancing the necessary skills, competencies and knowledge through the informal education system.

Introducing necessary business profiles and continuous enhancement of SME skills, competencies and knowledge in accordance with the needs of modern economy would have a positive impact on the innovation activities of these enterprises, thus improving the national economy's competitiveness.

The identification of measures for more successful implementation of strategic documents through mitigation of all key weaknesses of the business environment, SME financing obstacles and enhancement of SME knowledge, competencies and skills would lead to more innovation and more dynamic cluster development.

Cooperation and links between the science and business sectors have to be strengthened as well, if the economy is to be regionally and internationally competitive. Thus, the Serbian government should promote the innovation activities of enterprises through implementation of the following support measures:

a) Introducing a national innovation system based on the feedback mechanism between science and businesses.

b) Raising awareness of SMEs on the benefits of innovation for improving competitiveness.

The innovation activities of SMEs, i.e. the implementation of new technologies and investments in product development with higher added value, are one of the ways of strengthening their competitiveness. Cluster networking is another means of creating surplus value and gaining competitive advantages. Due to their ability to develop new products in a more effective manner, highly flexible and innovative SMEs are more likely to get involved in clusters.

Since clusters contribute significantly to more effective SME operation and the economy as a whole, the Cluster Development Strategy 2015-2020 was proposed in Serbia in 2015. As Serbia is a small transition economy, the key clustering benefits contained in this Strategy are:

a) Strengthening competitiveness of enterprises and regions
b) Improving the structure of business activities through restructuring and new technology introduction
c) Stronger networking between businesses and public and private research and scientific institutions

The measures aimed at strengthening competitiveness of enterprises and regions, new technology introduction and stronger networking, and collaboration between businesses and public and private research and scientific institutions include the following:

a) Cluster mapping
b) Creating a regional map of clusters
c) Promoting cluster development policy
d) Evaluation of cluster activities
e) Cooperation with the EU in cluster policy implementation

A precise definition of tasks has to be drawn up and liable institutions should be appointed to successfully implement these measures. When support measures are in place, they would support existing cluster development programmes. Together, these measures and programmes would facilitate interest of the research and scientific sector in clustering, and encourage more enterprises to participate in clusters. However, there are a number of obstacles to the efficient implementation of policies and strate-

gies related to cluster operation and development. These are marked by the absence of the following:

a) Coordination and coherency between related policies and participants
b) Supervision and evaluation of policies

To eliminate these obstacles, it is imperative that measures are adopted to improve the business environment, SMEs' access to finance as well as enhance SMEs' knowledge, competencies and skills. Consequently, the mitigation of business environment weaknesses, financing problems, and insufficiently developed knowledge, competencies and skills would lead to more innovation activities and more dynamic cluster development.

3.9.6 CONCLUDING REMARKS

A set of strategic documents was adopted in Serbia in 2000 to promote the development, competitiveness and cluster networking of SMEs. The poor state of the existing business environment, inadequate availability of financing, and low level of human resources and entrepreneurship development have made it difficult to implement these strategies.

The proposed improvement measures, which are expected to facilitate the implementation of strategic documents and contribute to the development of innovative SMEs and clusters, will enhance the efficiency of administrative procedures' implementation and transparency in laws and regulations. In so doing, these improvement measures would promote availability of finance and continuous human resource development.

Two specific measures have been conceptualized to improve the efficiency of administrative processes. The first measure introduces a normative framework for the provision of administrative services, while the second measure requires a service to declare objective, clear and transparent terms before it can be eligible. SME representatives must be involved in the process to increase transparency in the adoption of laws and regulations, as this will lead to a systematic evaluation of the effects of implementation.

In order to improve SMEs' access to financing, a measure was proposed to promote SME activities so as to encourage banks to expand their lending to the SME sector. This proposed measure is to be further bolstered by the

introduction of an adequate legal framework seeing to the development of microfinance institutions and the availability of alternative financing sources such as private equity, venture capital and business angels.

Measures to promote continuous education include following the needs of SMEs for particular employment profiles, and strengthening the system of informal education to enhance the necessary skills, competencies and knowledge.

Successful implementation of these proposed improvement measures would significantly contribute to SME innovation activities and cluster development. SME innovation activities cannot be promoted without the introduction of a national innovation system based on the feedback mechanism between science and businesses, nor can SME innovation activities be endorsed without raising awareness of the benefits of innovation for improving competitiveness. Cluster mapping, regional cluster map creation, promotion of cluster development policy, evaluation of cluster activities and improving cooperation with the EU in the field of policy implementation would considerably aid cluster development in Serbia as well.

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3.10 SMEs' TECHNOLOGICAL INNOVATIONS AND TEXTILE CLUSTERING IN TURKEY

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ABSTRACT
The success of business firms may be facilitated by a favourable political and legal environment or may be impeded by an unfavourable environment. The government shapes this environment through legislation. This study investigates the relationship between R&D, technology and firms' progressional challenges resulting from wrong laws and regulations; challenges that are expected to grow in magnitude as they come to influence small and medium enterprises in the future. On the other hand, a firm's technological improvement levels in territories can be assumed to be an important indicator of future innovative collaboration where empowering clustering capabilities of firms might be a good initiative. Therefore, the goal of this paper is to analyze clustering's impact on the innovation performance of firms in different regions of Turkey. The findings suggest the existence of a textile cluster formation within Turkey in the Marmara region, while the Aegean and Cukurova both appear to be cultivating clusters. Policy improvements for the empowerment of textile regional innovation capabilities will also be discussed. All in all, the results strengthen the notion that SME performance has a significant effect on the economic performance of the country.

Keywords: SME, challenges, improvement, economic performance

JEL Classification: C38, L67

Motto:
'A company which wants to
survive must innovate.
The innovative performance of a company is affected
by the conditions of the economy in which it operates.
These in return are largely affected by the actions
of the Government. (David Budworth, 1996)

Research and development (R&D) is believed to be one of the main engines of economic and productivity growth, as it engenders technological improvement. There have been many empirical studies on the significant relationship between low research, innovation, technology and growth, most notably Mansfield (1980), Griliches (1988), Cameron (1996), and Griffith, Redding and Van Reenen (2004). Innovation, knowledge and/or creation of technology are crucial for Turkey, which is seeking to close the so-called technology gaps between developing and developed countries. There is always the likelihood that technology and R&D development would lead to results that differ from expectations, as different economic, political and sociological environments will influence the R&D process differently. However, if the technology is imported, rarely is it combined with the production of new products to local or international markets (James 1979). Even in manufacturing and industry, the science and knowledge produced in other countries have to be adapted to local environment conditions such as weather, consumer requirements and preferences. Therefore, even less developed countries have to be able to utilize innovation in order to take advantage of global knowledge and technological improvements (World Economic Forum 2014).

As businesses make gradual technological progress, a series of changes with obvious improvements must be built into the existing technology of firms (Nelson and Winter 1982). Generally, studies on Turkey's economic and productivity growth concentrate on the policies of government, the legislations and their role in this process, ignoring the effect of the private sector and the entrepreneurs on this process. Yet, it cannot be denied that entrepreneurs contribute significantly to the modernization of structures of both economic and political development. A comprehensive look at Turkey's SMEs will analyze the ways in which technology and R&D have impacted the country's development. Evolutionary theorists have observed a positive relationship between entrepreneurs, innovation and growth, as

well as between entrepreneurial activity and GDP per capita of a country (Audretsch and Feldman 1996; Reynolds et al. 2003; Romer 1994).

Despite the analytical evidence developed to account for this conundrum, there is still a lack of analysis between entrepreneurship, technology and R&D. Therefore, the relationship between entrepreneurship, technology and R&D is not only relevant for Turkish entrepreneurs, but also useful for other developing countries desirous of comparing the challenges and burdens of insufficient entrepreneurial activity. Turkey is a good example of a developing country because almost all other developing countries are facing similar problems. All in all, the performance of SMEs' administrative burdens as well as support programmes for R&D and technological innovation have yet to be explored. Figures and data for SMEs in Turkey suggest that there is a positive relationship between levels of entrepreneurship and technological innovation. After briefly reviewing entrepreneurship literature, the paper will analyze the surprising ways in which environmental performance has affected the country's economic performance. The implications for practice on firms' progressional challenges resulting from wrong laws and regulations will be discussed in the last section.

3.10.1 SMEs IN THE TURKISH ECONOMY

The changes in the economic and financial structure of businesses today require SMEs to join other organizations in an effort to create products through collaborative work. The structure of this venture focuses on the process of producing goods and services for a customer-based demand. In the literature, the private sector focuses on the comprehension of technology by small and medium-sized firms. This limited focus can be explained for two reasons. Firstly, about 90% of Turkish businesses fall into this category. Secondly, large firms generally have access to financial credit and capital – both domestic and foreign – and have apportioned part of their budget to high-tech related activities and production.

Turkey's economic performance in various indicators has been studied by the Organisation for Economic Co-operation and Development (OECD), and it was discovered that the country's main challenges in economic, financial and social development are educational, structural, institutional, technological and organizational upgrading. To foster structural change, R&D and technology policies should become a central objective of Turkey.

Apart from this, Turkey needs more professional engineers, scientists, mechanics and technicians with larger innovative infrastructure to support the modernization of industrial, service, public and private administration. Therefore, the country needs a wider number of enterprises with high-tech standards capable of competing with international firms on the basis of product quality, customer loyalty and satisfaction rather than low labour costs (OECD 2012). Recently, more Turkish small and medium-sized enterprises (SMEs) have been exploring new market strategies, cross-border networking and various types of joint ventures for their survival. In order to apply internationalization to their enterprises and to gain competitive advantage to keep up with increased domestic and global competition, most SMEs have to come up with new strategies, organizational structure, products and policies.

	Number of enterprises					Total employment					Value added		
	Industry		Services		Total	Industry		Services		Total	%		
	No. firms	%	No. firms	%	%	No. engaged	%	No. engaged	%	%	Industry	Services	Total
Micro	383,577	93.8	1,889,647	99.1	98.1	1,113,081	32.5	3,512,942	75.9	57.4	12.2	44.4	28.2
Small	16,149	3.9	12,190	0.6	1.2	521,934	15.2	314,797	66.8	10.4	11.1	11.5	11.3
Medium	7,795	1.9	4,362	0.2	0.5	799,763	23.3	286,359	6.2	13.5	21.7	13.2	17.5
SME	407,521	99.6	1,906,999	100	99.9	2,434,778	71.1	4,114,098	88.9	81.3	45	69.1	57
Large	1,537	0.4	938	0	1.1	991,465	28.9	514,680	11.1	18.7	55	30.9	43

Table 1: Structural indicators on enterprise population
Source: OECD, Structural and Demographic Business Statistics, 2014

3.10.1.1 SMEs' Share of Enterprises and Employment

Turkey's SME definition was revised in 2003 to keep it in line with the European Union's. It defined SMEs as enterprises having between 1 to 29 employees, with an annual balance sheet and sales revenues of up to 25 million TRY (OECD 2004). SMEs make up a significant share of active enterprises and play a critical role in the Turkish economy. In 2014, they accounted for 99.9% of active enterprises, employed almost 81.3% of workers in these enterprises and contributed 57% of value added. Microenterprises (with fewer than ten employees) make up the vast majority of enterprises (98.1%), 57.4 % of the SME workforce and 28.2 % of their value added. Microenterprises form 96.6% of the SME sector. Although the average microenterprise firm has 2 workers, they collectively employ almost 4.6 million workers or 42% of SME employees in Turkey (TUIK 2014).

They also account for one third of the SME sector's contribution to value added. If the economic growth of a country is dependent on the development of SMEs, a country should both support and analyze SMEs in detail (Jutla, Bodorik and Dhaliwal 2002).

3.10.1.2 Sector Distribution of SMEs and SME Employment

In 2014, the majority of non-agricultural Turkish SMEs were in the trade and repairs sector (38%), followed by the services sector and manufacturing (28%). About 5% of SMEs are in the construction sector. The growth of SMEs in energy and mining has not increased as much as other services.

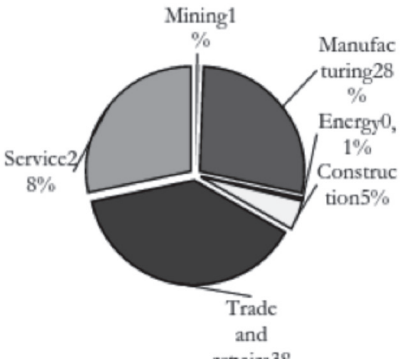


Figure 1: Sector distribution of non-agricultural SME employment, Turkey
Source: TUIK, Industry and Service Statistics, 2014

3.10.1.3 SMEs' Innovation Performance

While private sector R&D spending was 0.05% of GDP in the 1990s, it increased to 0.92% in 2013. However, this rate is still very far below the OECD average of 1.68%. As Figure 2 shows, Turkey is lagging behind many EU Countries in most dimensions of innovation. The level of innovation investment in Turkey is lower than the OECD average, especially among SMEs (OECD 2013). Turkey's share of total exports of high-tech products (aerospace, computers, pharmaceuticals, scientific instruments, electrical machinery) is not at the desired level in comparison with selected countries. Statistics for 2013 show that large Turkish firms spend almost three times more than SMEs on R&D. Only about 1% of Turkish

microenterprises are interested in investing in their own R&D or purchasing external R&D works. To overhaul the policies of medium and high-tech products, the 11th development plan should continue to expand the support of innovation for SMEs.

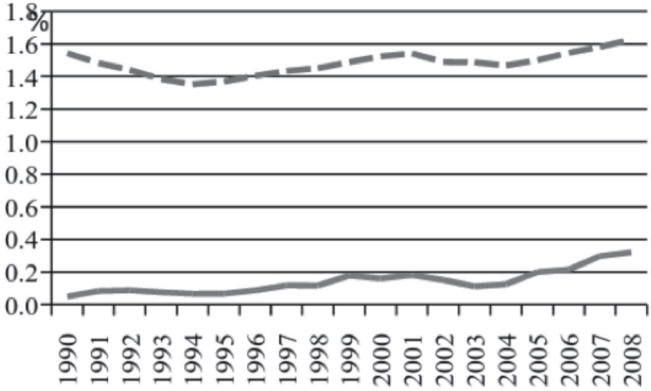


Figure 2: Share of R&D spending in GDP
Source: OECD Science, Technology and Industry Outlook, 2013

3.10.1.4 Government Policy and Problems

To neutralize economic instability and boost innovation growth, the Turkish government needs to provide a coherent and sustainable policy framework. In this situation, two elements are essential –firstly, the education and legal, financial and industrial policies must be integrated with each other; and secondly, this framework must remain stable over a sufficient period of time so that firms may authorize effective strategies. But neither is a holistic approach in Turkey. The lack of coordination within public and private agencies as well as between government authorities overthrows the sustainability of strategies. Of course, the volatile and unstable macroeconomic and political environments have undermined those initiatives as well. The bureaucratic uncertainty causes problems for SMEs when they concentrate on short-term targets instead of long-term aims. Therefore, risky policies and steps taken in a volatile environment will backlash against the strategies of the R&D and technological process. For an economy to be fully mature, the connections between R&D, technology, economic and political performance must be successfully formed.

3.10.2 TECHNOLOGY POLICIES AND CLUSTER DEVELOPMENT IN TURKEY

Turkish SMEs are disadvantaged due to their lack of sufficient capital and technology. Thus, unlike their EU counterparts, Turkish SMEs are more likely to have problems arising from the bureaucratic regulatory and procedural environment, poor infrastructure, high labour costs and low access to finance (KOSGEB 2012). SMEs also face problems in practicing new technology and new forms of management because they lack qualified labour. On the other hand, administrative and bureaucratic procedures are the primary challenges faced by SMEs. Therefore, more attention has to be devoted to the education of SMEs in order to increase their share in manufacturing. While the lack of resources, capital and social awareness restrains their access to technology, the high cost of patents, licences and certificates, funding in R&D as well as know-how complicates the situation. Most technology policy literature on Turkey dates from the period of import substitution. Very little has been written that expressly addresses the questions of technology policy under trade liberalization.

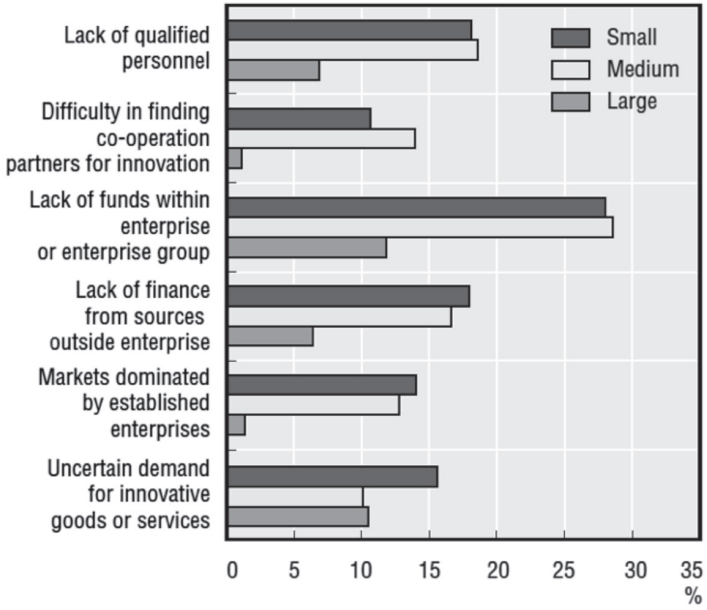
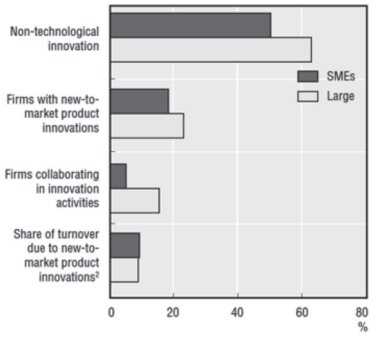


Figure 3: Factors hampering innovation, 2012-14
Source: OECD, Structural and Demographic Business Statistics, 2014

Turkish R&D is mostly based in universities and public research institutions. Most of the research and technological activities are carried out in these institutions. However, new market-oriented ideas and policy proposals are gaining grounds throughout the business and economics professions. Protectionism, inward-oriented policies, speculative risks and direct investment subsidies are rapidly identified as the causes of SMEs' poor economic performance resulting from the government's economic intervention (Katz 1995). However, technology and innovation are crucial to building up international competitiveness in a global market.

Thus, the Turkish government should strengthen the workings of the national system of innovation. The government in Turkey has much to do in supporting the generation, diffusion, utilization as well as knowledge of technology for the competitive production of goods and services (OECD 2013). Therefore, the traditional role of the government in relation to industrial and technology policy is challenged. It is also important to understand the role played by the public sector in relation to innovation and technical change within this framework (Gregersen 1992).

Turkish entrepreneurs and SMEs consider the government to be the main promoter of R&D and innovation development, which is beneficial for society as a whole. According to the surveyed firms, the federal government plays a very important role in the promotion and support of the country's technological development.



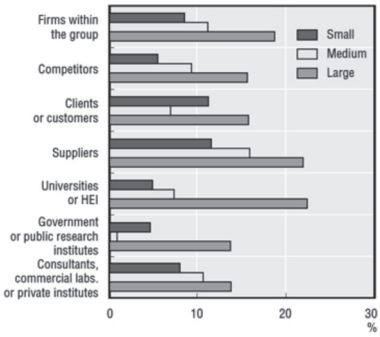


Figure 4 (left): SMEs' and large firms' innovation performance, 2012-14

Figure 5 (right): Types of innovation cooperation, 2012-14

Source: OECD, Structural and Demographic Business Statistics, 2014

While effective structural industrial transformation is dependent on the abilities of managers, CEOs and owners, public policies also have an important role to play in this process. Public policies can enhance the technological potential of both individual companies and public R&D institutions. Governments can promote an overall environment for firm-based investment in R&D activities, and public bodies can create an innovation demanding market through their procurement activities (Rothwell 1986). Measures behind the Turkish government's policies to increase R&D and innovative will be outlined below.

3.10.2.1 Stability and Instability of the bureaucratic appliances

Stable infrastructure, and clear policy and strategy implementation that are consistent and supportive of users are imperative to the formation of close ties with the consumer community. According to the Republic of Turkey Small and Medium Enterprises Development Organization (KOSGEB 2014), Turkey's legal and political institutions are expected to change dramatically in the following years because Turkey currently ranks 64 out of 144 countries in institutional stability, and has a score of 3.9 within the range of 1-7 (World Economic Forum 2014).

In the Global Competitiveness Report 2014, Turkey ranked 59 out of 144 countries in time spent by entrepreneurs dealing with government bureaucracy (World Economic Forum 2014). Turkey must ameliorate its political stability through better rules, regulations and deregulations (61st place), increasing the education of its labour market (130th place), preventing corruption and bribery in every part of work and social life (58th place), raising awareness on work ethics in the labour market (63rd place), efficiency of legal framework in challenging regulations (52nd place), and reinforcing the efficiency and transparency of its public institutions (58th place) in order to increase its international competitiveness.

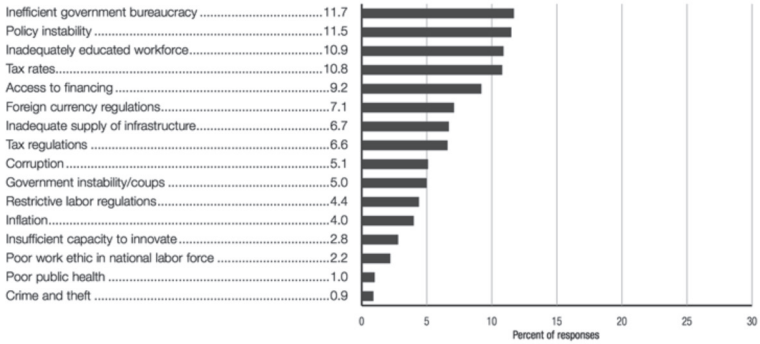


Figure 6: The most problematic factors of doing business in Turkey
Source: World Economic Forum, The Global Competitiveness Report 2013–2014

3.10.2.2 Size of firms and technology development

Since research is a costly activity, firms will engage in it when they feel the pressure to do so. These pressures can take the form of constraints that have to be overcome if firms are to avoid loss of market share or tap into the promise of future gains. Pressures can arise from within the firm as well as from the firm's environment (Romijn 1999). Turkey's technological gap shows that the sectors with a narrower gap are less protected. Tariffs and technology experience are opposingly correlated. Furthermore, many factors operate in a given firm's environment and some firms are presently engaged in technology-related activities. The following factors affect firms wishing to undertake technology-related activities:

- Quality of scientific research institutions (64th)
- Degree of competition and market size (95th)
- Availability of latest technologies (45th)
- Government policies aimed at increasing capacity for innovation (77th)
- Government investments in an infrastructure supportive of science and technology as well as availability of research and training services (57th)

Most literature on technological capacity tends to focus on large and advanced firms, even though such enterprises only constitute a small segment of the total industrial structure in the majority of developing countries. SMEs, which are typically much more influential than large firms in

the creation of employment and income, are not deemed to play a noteworthy role in the development of home-grown technological capability.

To foster the domestic creation of technology and innovation, the Turkish government supports productive research by responding to market forces and establishing the necessary conditions for the private sector. Firms need to develop a more active and aggressive attitude to forge significant links between their associates and those institutions that can help them to improve their technological platform. However, few firms have built up adequate technological promotion activities. Global competitiveness, forefronted by technology, internationalization and business-government partnerships, is changing the market structure of the industry. SMEs are still weak in dealing with the government and are easily affected by socio-economic weaknesses. The opening of the economy has seen many large and medium-sized firms as well as some small ones adapt to global competition. Turkish entrepreneurs are now increasingly aware of the importance of the new technological culture. However, Turkey needs to produce goods and services more effectively if it is to become sufficiently competitive in the domestic and international markets. Therefore, government policies have to be more effective, coordinated and long-term oriented.

3.10.3 TECHNOLOGY POLICIES AND TOOLS

There are substantial differences in the innovation policies adopted by countries. While some implement general policies to create the right environment for innovation, others are directly involved in the innovation process. The specific forms of public policies for innovation support are as follows:

Policy	Tools
Direct financial support	Grants, subsidies, loans, provision of equipment or services, loan guarantees
Indirect financial support	Schemes encouraging investment in innovation, venture capital
Information	Networks, advisory centres, consultancy services, specialist libraries, databases
Scientific and technical infrastructure	Public laboratories, research associations, learned societies, research grants
Educational infrastructure	General education system, universities and polytechnics, technical education system, retraining system
Taxation	Company, personal, indirect and payroll taxation, tax allowances
Regulations	Patents, regulations like environmental control, inspectorates, monopoly and antitrust legislation
Public enterprise	Innovation by public-owned industries, use of these as pioneering facilities, establishment of new industries
Political	Planning, regional policies, honours and awards for innovation, encouragement of mergers or joint ventures
Trade	Trade, tariffs and currency regulations

Table 2: Technology policies and tools for innovation support
Sources: Braun 1994; Dodgson and Bessant 1996; Rothwell 1986; and Schienstock 1994

Political shifts in Turkey have resulted in policy/strategy/law/regulation shifts; these shifts are the major problems to building consistent, significant, sustainable and realistic long-term technology and innovation policies. There are no historical institutional strategies, plans, programmes designs and policy implementations that may be amended from previous mistakes. However, the annual changes of public officials, who bring their own teams of people to the board, have led to new ways of seeing things. Therefore, the bureaucracy has to comply and put the new programmes into practice. Entrepreneurs have learnt over the years that regional and local representations have very little decision-making power and cannot deal effectively with the government. Instead of encouraging SMEs to look for potential technology projects in firms, very little responsibility is delegated to them; this increases the costs of applying for support from the government.

3.10.4 CLUSTER DEVELOPMENT IN TURKEY

Turkey has a wide range of clusters in the textile, automotive, construction and tourism industries. The western part of Turkey, specifically the Marmara region, has the greatest concentration of cluster economic activity, due to the existence of better technical, logistical and educational infrastructure. The transport, health and education infrastructure is well-developed in the western region due to the high migration there from other parts of

Turkey. This, in turn, decreases the overall competitiveness of the country. To stop this mass internal immigration to western Turkey, the government has launched many incentive programmes to increase investment and cluster development in the eastern regions.

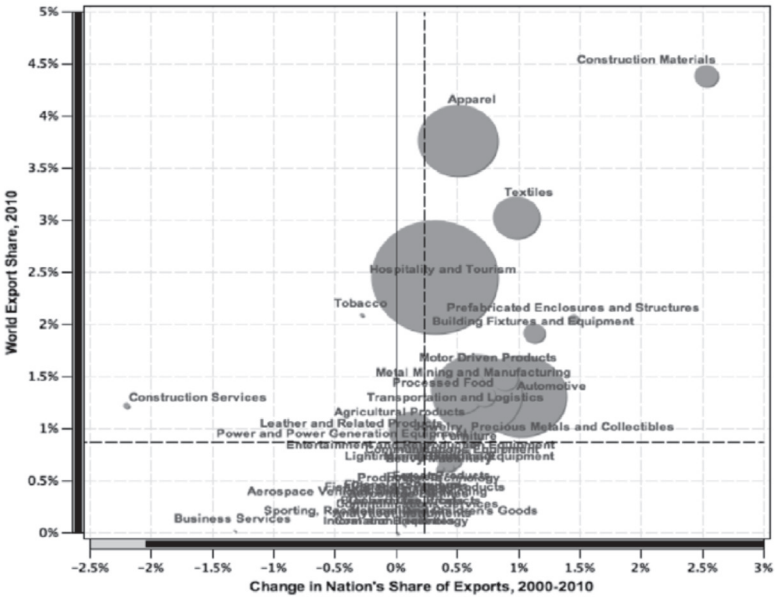


Figure 7: Turkey's Cluster Map
Source: Institute for Strategy and Competitiveness, 2011

When the Technology Development Centers (TEKMERs) were established within universities under the auspices of the Small and Medium Enterprises Development Organization (KOSGEB) in the late 1990s, they played an important role either in R&D or in the formation of cluster-related policies. However, Turkey did not have defined strategies for the promotion of industry clusters until the beginning of the 2000s. Research and development incentives for companies, technological incentives, infrastructural investments as well as legal regulations for the development of a better environment for firms were all put on the back-burner. Thus, application of cluster policies in industries started in the beginning of 2000s. The first project was the Competitive Advantage of Turkey (CAT), which later turned into the International Competitiveness Research Institute (URAK). Through URAK and its predecessor CAT, the cluster approach became part

of the Turkish government's agenda to intensify competitiveness between domestic regions and the global arena. By using Michael Porter's (1990) methodology, URAK re-defined the sectors where Turkey may have competitive advantage in the global market. Let us now analyze these sectors using the cluster approach. The Turkish textile industry is one of the most important sectors to have undergone clustering.

3.10.4.1 Textile and Apparel Cluster in Turkey

The textile and apparel sector has been the backbone of the Turkish economy with a high share in the total production, employment and exports. Turkey is one of the main actors in the world clothing industry. It ranks 8th in world cotton production, and 4th in world cotton consumption. It also ranks 3rd in organic cotton production after India and Syria. Therefore, the Turkish clothing industry is the 7th largest supplier in the world, the 3rd largest supplier to the European Union and the 8th largest textile supplier in the world. It ranks 5th among the countries exporting knitted clothing and is 9th among the woven clothing exporters in the world. All in all, the Turkish textile industry is the 2nd largest supplier to the European Union.

Many Turkish universities and vocational schools are training workers for this sector. Thus, there are textile engineering departments in 12 universities, departments of textile and clothing education in 3 universities, and textile technician departments in more than 100 advanced vocational schools. 7,500 students graduate as textile technicians every year, while 2,500 textile technicians are required by the sector each year. Despite the educational sector's efforts at producing a knowledgeable textile industry workforce, low labour skills still have to be addressed if the industry's competitiveness and R&D are to be improved. The Customs Union between Turkey and the EU has led to the redesign of regulations in the textile and clothing industries, enabling them to benefit from various forms of support such as R&D and market research support from the Undersecretariat of the Prime Ministry for Foreign Trade; state aid for reducing environmental costs; training aid; employment aid; overseas office support; patent support; utility model support; industrial design support; support for trade and industry fairs; and support for Turkish products to become brands in the international market (Ministry of Industrial and Trade 2014).

3.10.4.2 Regional Cluster of the Turkish Textile Sector

Although the geographical clusters in Turkey are not very well-developed, there are some textile and apparel clusters in Marmara, the Aegean and the southeast of the country. The Marmara and Aegean regions are the most industrialized regions in Turkey due to the effect of other developed industries. Marmara, the Aegean and Cukurova are the leading regions in terms of number of companies, employment as well as trade because they have very specialized industrial cities.

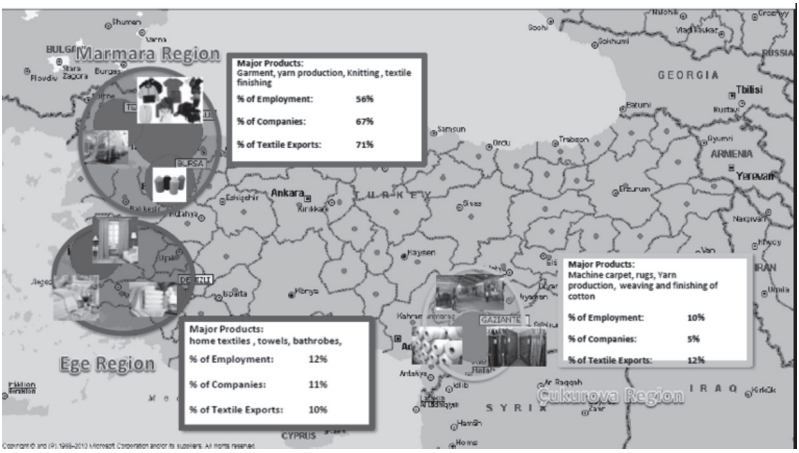


Figure 8: Regional Concentration of Textile Production in Turkey
Source: Ministry of Labour and Social Security, 2011

Factor Conditions
+ Turkey is the sixth biggest producer of cotton in the world
+ Good physical infrastructure; location is advantageous with high roads and ports
+ Availability of low cost labour
- Lack of blue collared and skilled employees at the administrative level
- Lack of educational and vocational training
- High domestic prices compared to international tariffs and power cuts
- Limited capital accumulation and high dependency on banks
- Low textile machinery production

Firm Strategy, Structure and Rivalry
+ Advantage in labour flexibility with less labour rigidity through seasonal employment
+ Strong local competition with many small and medium businesses
- Lack of e-business knowledge
- Price cuts because of rivalry
- Lack of well-trained management and lack of professional management
- Supported investments by borrowings with insufficient capital
- Insufficient investment in technology

Related and Supporting Industries
+ Access to the most cost effective inputs
+ The diversified and established structure of the Turkish textile sector
+ Other strong clusters to facilitate free and open information flow
- Lack of coordination across sectors
- No cluster-based incentive programmes
- The geographical clusters are not very well-developed
- Lack of cooperation and disputes between participants
Demand Conditions
+ Large and growing local and international market
+ Higher sophistication of demand from high-end boutiques
- Increasing demand changes of purchasing behaviour of consumers to more imported brand names
- Dependence on exports

Figure 7: Turkey's Textile Cluster
Source: Export Promotion Centre of Turkey (IGEME), Undersecretariat of the Prime Ministry for Foreign Trade

Marmara Region: The textile and apparel sector is concentrated in the cities of Istanbul and Bursa. It is the largest textile cluster in the Turkish economy with a share of 56% of the total textile employment in the country. Moreover, this region has 67% of the total number of textile companies, and 71% of total textile and apparel exports.

Aegean Region: Household textiles such as towels and bathrobes are the main products of this region. Izmir, Denizli and Usak are the main cities of textile production. This region has 11% of the total number of textile companies, and 10% of total textile and apparel exports.

Cukurova Region: Cukurova is a growing region for textile production. The government has provided companies with the incentives to be part of this sector. Adana and Gaziantep are the main cities of textile production. This region not only has 27 textile companies that have high competition with their Western counterparts; it also has better human capital and productivity levels.

3.10.5 CONCLUSION

Technology has an effect on countries' economies. As discussed throughout the paper, existing literature posits technology's direct link to economic and productivity growth. Therefore, both developing and developed countries are in the process of strengthening their technological and R&D capabilities. The same is true for firms, businesses and organizations within these developing and developed nations. Turkey and Turkish SMEs are no exception. There has to be a strong relationship between entrepreneurship and technological capacity if Turkish SMEs are to be domestically and internationally competitive. Owing to each enterprise and region's particular context, it can be very difficult to start a new business or develop local and international networks. A legal framework protecting the rights of technological development at international standards should be instituted to remedy this. Turkish industries are presently faced with the problems of lack of coordination within public and private agencies, the long-term nature of technological and R&D developments, lack of continuous policies, lack of sustained bureaucratic environment, and a lack of effective strategies.

This paper focused on the problems of SMEs in Turkey's textile and apparel sector. The textile and apparel industry in Turkey is standing at the intersections between technological innovation and unfavourable environment, low cost and high quality of goods. The textile and apparel sector is a very established one with an experienced and skilled workforce. To gain competitive advantage, industries have to produce high quality goods, have good brand creation and excellent retailing facilities. Government policies are not enough to enhance the consistency of clustering in the textile industry. Other things that can contribute to improved clustering of this sector are developing emerging clusters, increasing the competitiveness of Turkish textile and apparel products, increasing R&D on technology and machinery, opening more schools to train engineers and designers, and providing substantial energy and raw material resources for the production of goods at low cost. Additionally, links between SMEs at the local and regional level should be strengthened in order to ensure technological advancement through collaborative and regional innovation systems. Vocational training has to be enhanced as well, if the quality of the workforce and demand for skilled labour in the SMEs within a cluster are to be met. It is only through the achievement of interfirm collaboration and technological advancement that the cluster and the firms in it

can achieve sustainable and broad-based growth amongst internationally competitive manufacturers. Policymakers should analyze the textile and apparel clusters' capacity for economic growth as well as the challenges they face in order to have more quantitative data on the ways of improving the clusters' international competitiveness.

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3.11 THE SME CLUSTERING SITUATION IN UKRAINE

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ABSTRACT
The concept of business clusters is still a novelty to most Ukrainian small and medium entrepreneurs, despite the first regional clusters appearing in the country almost twenty years ago. Though scholars from various economic universities and the National Academy of Sciences of Ukraine have discussed this topic from time to time at scientific arenas, and government officials have mentioned the idea of clustering in their documents, the country is severely lagging behind in the practical application of clusters. The legislation on innovative business clusters is also incomplete. However, the lack of proper legislation did not deter cluster pioneers from registering their networks as associations or from developing activities. Some of these entities have proven to be quite successful.
The findings in the author's research on the contemporary cluster situation in Ukraine are not very optimistic. Though Ukrainian clusters exist in different fields in most regions of the country, they do not present a visible trend in contemporary Ukraine's economy.

Keywords: Ukraine, innovation, business clusters, regional economic development, anti-crisis measures

JEL Classification: M14, M38

3.11.1 LEGAL FRAMEWORK FOR CLUSTER DEVELOPMENT IN UKRAINE

The legislation on enterprise unions in Ukraine was passed in the early 1990s, and it laid the foundations for the evolution of a new system of production or clusters in various fields of business. The Competitiveness Institute, a non-governmental organization (NGO), was established in 2002 to promote competitiveness programmes based on network value chains such as clusters, strategic partnerships and alliances. The government presented the concept of clusters development in 2008, and the working

group on cluster development was launched in the Ministry of Economy of Ukraine. However, the process of clustering in the country has been very slow due to lack of attention.

Since the Ukrainian Ministry of Economy legalized clusters in 2008, four types of clusters have appeared in the country: industrial, innovative technology, travel and transportation, and logistics. The Ministry of Economy suggested that emerging clusters use the infrastructure of industrial parks; it also promised to reduce administrative barriers.

3.11.2 PRACTICE OF CLUSTER DEVELOPMENT IN UKRAINE

Unfortunately, the frequent changes in government in Ukraine have resulted in little to no continuity in their decisions and promises. As a result, the state's declared policy to improve the competitiveness of domestic products has only mustered a slow increase in the number of innovative clusters in Ukraine. Cluster units have not yet become a developed form of intra or inter-sectoral cooperation of interested stakeholders. Clusters with strong relationships between members, developed infrastructure and information database do not yet exist in Ukraine. Most clusters in the country are "difficult clusters" or clusters of the lowest type, according to Julia Fedotova, an economist from the Kharkiv National Academy of Municipal Economy.

The idea of clustering on the regional level started in Khmelnytskyi Oblast in 1998. It was raised at Khmelnytskyi National University at the initiative of the Peace Corps volunteer and American economist Wolfgang Price, who was hosted by the university. Thus, the first three clusters were created in the areas of textiles, construction and food processing.

Clustering also took place in other regions in Western Ukraine such as the Ivano-Frankivsk, Lviv and Rivne Oblasts. Since then, the number of clusters in Ukraine has grown. Other Ukrainian regions that have successfully formed clusters are the Zaporiz'ka, Cherkas'ka, Poltavs'ka, Sums'ka, Ternopilska, Donets'ka, Kharkivs'ka, Khersons'ka, Odessa, and Mykolayivs'ka Oblasts. Thus, more than half of the country's twenty-five administrative regions have clusters.

3.11.3 AHROBUM CLUSTER

One of the most interesting and successful Ukrainian clusters is the Ahrobum innovation agricultural technology cluster, which is registered as an NGO in Melitopol (in Zaporiz'ka Oblast) with the support of the Canada-Ukraine Regional Governance and Development (RGD) Project in July 2009. Ahrobum is a cluster comprising 35 SMEs, Tavrijskyj Agrotechnology University and the local authorities. The initiators believed that clustering was an effective anti-crisis measure for the Melitopol economy as it would attract new orders, produce innovative products and create additional jobs.

The Ahrobum cluster has the following goals:

- Providing its members with information support;
- Representing the interests of members who are local government and fiscal authority representatives, while also protecting small businesses from fiscal pressure and corruption;
- Coordinating the member SMEs' manufacture of innovative products for the agricultural machinery industry;
- Coordinating member SMEs' cooperation with engineers and scientists from Tavrijskyj Agrotechnology University together with the support of authorities in the Melitopol district administration and Zaporiz'ka Oblast state administration;
- Joint development of innovative solutions for the market;
- Using cluster members' existing infrastructure in metalworking and assembly of metal structures for clients in Ukraine and abroad;
- Joint stock supply and marketing efforts, lending services, search for investors, etc.

The Ahrobum cluster initiative was very successful. Joint participation in exhibitions saved the advertising budgets of cluster members by up to fifteen times in 2010. Joint commercial proposals of 6,000 products on behalf of ten member companies also brought the cluster more than half a billion US dollars in 2010. Five producers of the cluster attracted new orders amounting to one million UAH after they started acting as subcontractors. Three developments of the local university were selected for implementation as the innovation component of the cluster.

3.11.4 LVIV IT CLUSTER AND BUSINESS SERVICES

Lviv is one of the leading informational technology (IT) centres in Ukraine, owing to its numerous large and medium IT companies and highly qualified IT personnel. Lviv's geographical, cultural and mental closeness to Europe, developed infrastructure and high number of technical universities provide great potential for economic development in IT.

The Lviv IT Cluster is a community of more than 30 leading IT companies, three Lviv-based universities and local authorities dedicated to the improvement and development of IT in the city. It seeks to implement projects with high value added and rapid results so as to make systemic changes to the business environment of the city.
Some examples of other working clusters in Ukraine are:

- Construction cluster in Khmelnytskyi
- Folk crafts cluster in Ivano-Frankivsk
- Jewellery cluster in Kramatorsk
- Lifting equipment cluster in Lviv
- Wood and furniture cluster in Lviv
- Eco-tourism cluster in the Carpathians

3.11.5 OTHER CASES OF CLUSTERS IN UKRAINE

Thanks to enthusiasts of clustering, there are about thirty clusters successfully operating in different regions of Ukraine.

Tourism clusters have been actively developed in Western Ukraine. Khmelnytskyi Oblast is a pioneer in this area as well. The Kamianetz tourism cluster in Kamianets-Podilskyi brings together local travel agencies, hotels, restaurants, law firms, museums and parks. Cluster members work on joint projects of reconstruction and construction of hotels, catering and development of new tourist routes, and development of the souvenir industry. They are also actively involved in creating the "Golden Ring" tourist routes in Western Ukraine, which span the interesting historical and architectural sights in Lviv, Ivano-Frankivsk, Uzhhorod, Chernivtsi and Kamianets-Podilskyi. These and other working clusters are building a foundation of economic growth on the new intellectual and technical contributions of separate regions and the Ukrainian economy as a whole. In so doing, they promote the development of innovative entrepreneurship in the country.

According to the Socio-economic Development Strategy of the Kharkiv Oblast for the period until 2020, the following industries were slated for development as potential clusters: oil, gas production and processing; manufacturing, food processing; textile; construction materials, high technology; research and education; health; transport; trade and logistics.

3.11.6 THINK TANKS IN THE AREA OF CLUSTERING

There are several NGOs and universities actively promoting the cluster approach in Ukraine. One of them is the International Foundation for Market Assistance founded in 1997 and headed by Stanislav Sokolenko, the director-general of JSC Ukrimpex. In 2002, the Foundation formed the Competitiveness Institute, which has been supporting Ukrainian entrepreneurs, removing their communication and cooperation barriers, and promoting business development through network value chains such as clusters, strategic partnerships and alliances.

On 26 September 2014, the ninth Plenum Session of the Union of Economists of Ukraine, the National Academy of Sciences of Ukraine and Khmelnytskyi National University held an international conference on "Clustering as a significant factor in increasing the competitiveness of the economy of Ukraine". The conference concluded that the clustering-based innovation model was the only way for the Ukrainian economy to recover. It stressed that the cluster development process is hampered by an insufficient regulatory system and the inaction of government agencies. It also emphasized the fact that existing clusters in Ukraine work only at the regional level, and it is now time to form national clusters to support certain sectors of the Ukrainian economy.

Agriculture is one sector of the national economy with the potential to benefit from clusters. Cluster development in the rural areas could breathe new life into the national agricultural industry. As cluster organization of agricultural production promotes socially-oriented economy focused on the interests of local communities, agrarian scientists propose to integrate agro-industrial and socio-economic clustering with high levels of specialization. In the opinion of experts, this will improve the living standards of the rural residents and create a more attractive image of Ukrainian villages.

3.11.7 RECOMMENDATIONS

Since the first cluster was established in 1998, cluster development in Ukraine rests on the shoulders of its enthusiasts. A long-term strategic programme of innovative business development based on clusters should be developed and approved by the Ukrainian parliament. A cluster-based development programme of this nature must take into account forecasts of the socio-economic development of Ukraine and its separate regions, as well as sectoral and regional priorities targeted by the state. Such an approach would provide new impetus for the development of small and medium businesses in Ukraine because it will ensure more predictable conditions for the SME sector, revive small towns and villages, prompt wider involvement of people in entrepreneurship, and create new jobs. Furthermore, it will produce a snowball effect because the development of small businesses will necessitate the strengthening of financial support for SMEs, and the development of a more efficient system of loans and insurance. This would in its turn increase revenues of local budgets.

The legislation regulating SME activities has to streamline the development of clusters. The abovementioned ninth Plenum Session of the Union of Economists of Ukraine recommended providing additional incentives for local authorities to create a favourable climate for small businesses through increasing the share of tax revenues that remained in the local budget for instance.

Other recommendations formulated by the cluster lobby in Ukraine are:

- Analyze regional products' competitiveness so as to identify points of growth that would be the foundation for the development of clusters;
- Preparation of guidance and other materials on clustering for participants of cluster associations and their candidates;
- Development of inter-regional innovation clusters and cross-border clusters with European regions where Ukraine is a party;
- Raising the professional level, economic knowledge and business skills of clusters participants;
- Launching educational programmes in universities to train and retrain specialists in the development and operation of innovative clusters;
- Media coverage and promotion of cluster-based businesses, highlighting the best practices of their activities.

The EU-Ukraine Association Agreement has been recently ratified by all EU members and is ready for full application after 31 December 2015. Through closer integration into the EU market and exploitation of the country's favourable geographical location, rich natural and production resources, Ukraine has got real opportunity for more active implementation of clustering policy in business development. It is indeed time for Ukraine to actively support SMEs and raise the competitiveness of locally produced goods in the European and global markets.

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4. CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

The following points were made in conclusion:

1. The concept of competitiveness has numerous interpretations. Competitiveness is the ability of a nation or a firm to offer products and services meeting the quality standards of local and global markets at competitive prices; it also includes the provision of adequate returns on the resources employed or consumed in the sustainable production of those goods and services.

2. The World Economic Forum's Global Competitiveness Report defines competitiveness as "the set of institutions, policies, and factors that determine the level of productivity of a country."

3. The concept of competitiveness includes static and dynamic components. Productivity and competitiveness are driven and influenced by many factors. Nowadays, investment in physical capital and infrastructure is insufficient. In recent years, good governance, macroeconomic stability, education and training, research and development (R&D) as well as technology transfer are as important as capital and infrastructure investment for competitiveness.

4. Innovation, talent development and institutional strength continue to play defining roles in determining the world's most competitive economies. The Global Competitiveness Index (GCI) calculated by the World Economic Forum (WEF) presents the current achievements of the BSEC Member States in the last few years. According to WEF, Azerbaijan is the highest ranked BSEC country in the GCI, followed by Turkey, Russia, Bulgaria, Romania, Georgia, Ukraine, Greece, Moldova, Armenia, Serbia and Albania.

5. The cluster-based approach is a new way of organizing and structuring the economy. There is no common universal definition of a cluster. A cluster is a system interconnecting private and public sector entities such as firms and institutions. It usually comprises a group of companies, suppliers, service providers and associated institutions like testing and quality control institutions, educational institutions, vocational training schools

as well as trade companies/distributors/associations in a particular field, linked by externalities and complementarities. They often include financial institutions and various government entities.

6. Successful clusters are characterized by three main pillars:

i. Geographical concentration of interconnected firms;
ii. The number of participating partners reaches a critical mass both in resources and competencies;
iii. The firms' interactions and cooperation are driven by their needs and capabilities.

7. Entrepreneurship activities, SMEs and cluster development are three important components of economic development.

8. Clusters play an important role in regional development, as they contribute to the improvement of participating firms' competitiveness, create jobs, and promote marketing of local products and services.

9. Key elements necessary to the development of dynamics and growth in SMEs and clusters should be based on:

- A favourable tax environment;
- A sound and stable macroeconomic environment;
- A favourable legal environment founded on the strict application of rule of law and right of contracts;
- Sufficient and easy access to financing;
- Limited bureaucratic interference, allowing easy entry and exit in the market;
- A secure framework for investments.

10. The EU considers innovative clusters to be the drivers of economic development and innovation. They represent a framework for business development and collaboration among companies, universities, research institutions, suppliers, customers and competitors located in the same geographical area.

11. Central to EU cluster policy is the development of ten branches of emerging industries. Emerging industries are those that stem from the establishment of an entirely new industrial value chain, or the radical reconfiguration of an existing one. Emerging industries are driven by a disruptive idea (or convergence of ideas) that is then transformed into new products/services with higher added value.

12. In Albania, cluster development in the tourism, meat processing, medical herbs, leather goods and software industries are supported by donors. With the decrease of foreign donor resources, none of these clusters are currently active. A cluster policy is presently in the process of development within the framework of the new Business Innovation and Technology Strategy (BITS).

13. In Armenia, the Participatory Appraisal of Competitive Advantages (PACA) facilitates the development of local economic development by using the community as a cluster. It is an initiative of the GIZ ProSME programme. 40 PACA initiatives have been created and implemented since 2005.

14. The State Programme on the Development of Industry in the Republic of Azerbaijan in 2015-2020 earmarks the creation and development of regional industry clusters. An action plan for the preparation of relevant proposals has been elaborated by the Ministry of Economy and Industry of the Republic of Azerbaijan.

15. In Ukraine, no specific legislation has been adopted for clustering. Instead, local practices in the spheres of IT and business services (in Lviv), lifting equipment, construction, organic farming and eco-tourism sectors, as well as a project of German technical assistance have been developed.

4.2 RECOMMENDATIONS

The following recommendations were made:

1. The governments of BSEC Member States are encouraged to develop national cluster promotion programmes.

2. National policies must follow priorities such as creating a favourable business environment for growth and innovation, diffusion of knowledge, enlargement of innovation support, mission-oriented strategies, upgrading human resources, access to skills and competencies, promotion of organizational and technological change, productivity and competitiveness.

3. To increase economic competitiveness, the development of innovation infrastructure, dissemination of research results, and knowledge transfer for industrial and commercial applications should be encouraged.

4. Cluster initiatives should be part of national economic development programmes. BSEC Member States need short and long-term strategies. National policies must encourage the main drivers of innovation.

5. Suitable local, regional and national strategies are needed in correlation with local particularities and needs.

6. Awareness should be raised as to the benefits of clustering. The concept of clustering should be promoted through workshops, round table discussions and media support.

7. Cluster development policies should be improved through:

- Cluster mapping;
- Identifying the specializations of regions and the creation of regional cluster maps;
- Promoting cluster development policies;
- Monitoring and evaluation of clusters;
- Cooperation with the UN and EU in the implementation of cluster policies.

8. Technology transfer, commercialization of academic research and entrepreneurial culture should be promoted and supported in all BSEC Member States.

9. BSEC Member States should transpose EU regulations and best practices in pre-commercial Procurements (PCPs).

10. The Investment Agencies of BSEC Member States should promote outward foreign direct investments (FDIs) as a sustainable growth channel for innovation.

11. Government schemes should support SMEs' participation in international fairs, as many successful firms find new partners and joint venture opportunities at such events.

12. Regulations and the legal basis for academic entrepreneurship and university-industry research schemes should be improved in order to promote innovation.

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