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Smart Specialisation Strategy and the Role of Strong Clusters: As a Development Leverage in Asia

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Abstract

In this increasingly globalised and rapidly-changing world, the various challenges that can arise are also increasingly globalised and complex. These may range from economic, environmental, societal or even demographic challenges. Solutions should therefore be applicable world-wide, but they need to be properly adapted to the specifications and needs at the regional and country level. This implies that past models of centralised innovation can be progressively substituted by new approaches based on openness and strategic collaboration between the various players involved. There are various models of openness and collaboration in research, development and innovation creating scientific networks at different levels.

This paper is designed in a way to present the concept of smart specialisation and clusters and how they are linked and contribute to the support of Smart Specialisation Strategy in the Asian countries. The following paragraphs describe how smart specialisation is applied and the importance of clusters in developing a S3 strategy. In addition, the status of cluster policies in Asia as well as the steps towards S3 are also presented. The status of cluster policies and their steps towards S3 policies in Asia are described. The approach of China to adopt S3 in their R&I policy is also presented. The scope of this paper, is to demonstrate the policy framework of cluster and S3 policies in the region of Asia and how they are applied. China has been further analysed as a case, since they are more active in applying such policies.

Keywords

Smart specialisation; Cluster policy; Asia

1. INTRODUCTION TO SMART SPECIALISATION STRATEGY (S3)

The actual crisis all over the world and the euro debt crisis within Europe have increased the pressure on policy makers

to target long-standing structural problems. As stated by OECD (OECD, 2013), 'Smart Specialisation, both as an economic concept and a policy framework, provides a novel avenue to pursue the dual objectives of fiscal constraint and investment in longer-term growth potential in a context of rapid technological change and globalisation'.

The European Union represents a good example of an ideal environment, fit to host open innovation models between countries, but more importantly between regions, either sub-national or cross-border. In fact, openness and diversity have become priorities for the EU Commission; reflecting the European values, while the notions of risk-taking and change have

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Fig. 1. European Smart Specialisation approach, motivation and future investment plans

Source: European Commission (2016)

also become more and more important. Various tools and methods have been used to implement this culture of openness and collaboration in the EU. Among those we can find the concepts of entrepreneurship, smart specialisation and innovation clusters. For policy makers, this could be a challenge as Governments and Ministries often follow a 'Silo approach' instead of integrating an end-to-end methodology across responsibilities. The difficulty to break down those 'silos' is already known from industrial approaches in Smart Manufacturing or Industry 4.0, where 'silo approaches' are replaced by horizontal and vertical collaboration in order to increase efficiency.

Starting in 2009 the European Commission started to revise the public policy approach via Smart Specialisation, in order to find an alternative for public investments in knowledge and innovation to be better spent, i.e. not only in key technology research fields like biotechnology, ICT or nanotechnology. According to the OECD (OECD 2013) definition, the Smart Specialisation approach combines industrial, educational and innovation policies to suggest that countries or regions identify and select a limited number of priority areas for knowledge-based investments, focusing on their strengths and comparative advantages. Key idea of this approach is to encourage national, but also regional governments investments

in domains that would 'complement the country's other productive assets to create future domestic capability and interregional comparative advantage' (OECD, 2013).

The infographic below summarizes the plans for 2014-2020 and 'why' Europe started the new approach within Europe (European Commission, 2016):

At that level of detail, the concept sounds maybe simple and not new; as an approach to maximize the impact of structural funds, especially in the newest version of the approach in the EU 2020 Agenda, but the conceptual and the policy implications of smart specialisation are complex and go beyond the three distinct areas:

- the underlying role of scientific, technological and economic specialisation in the development of comparative advantage and more broadly in driving economic growth;
- policy intelligence for identifying domains of present or future comparative advantage and;
- governance arrangements that give a pivotal role to regions, private stakeholders and entrepreneurs in the process of translating specialisation strategies into economic and social outcomes.

The most important difference to former policies is within the entrepreneurial approach, prioritization and interactive

processes, in which market forces and the private sector get more involved. In case of positive outcome government empowers the most capable actors to realize the potential (Foray et al., 2009). This is a shift in the focus from particular industries to ‘enabling knowledge-based assets’. It is important to mention that the implementation of smart specialization can work as a regional policy framework for innovation driven growth and it has a specific potential especially for developing countries.

Developing countries can learn from the mistakes made in the past. Often other regions have been copied by trying to create “miracle growth” in headline industries like semiconductor or biotechnology this has lessens the chances for the imitating regions to succeed and it has perpetuated patterns of market dominance with leaders and followers . The smart specialisation approach also signals a movement away from regional development policies emphasising flagship high-technology initiatives or the advocacy of large-scale infrastructure building and instead focuses on fostering development via the promotion of local entrepreneurial processes aimed at the technological upgrading of the existing industrial fabric of the region (McCann and Ortega-Argiles, 2016).

There are many examples of regional innovation strategies that have suffered from one or more of the following weaknesses (European Union, 2012):

- They lack an international and trans-regional perspective, i.e. the regional innovation and economic system is often considered in isolation.
- They are not in tune with the industrial and economic fabric of the region; there is too much public involvement in R&D, which is not sufficiently business driven.
- A sound analysis of the region’s existing assets is missing.
- There is a ‘picking winner’s syndrome’.
- The best performing regions are copied without consideration of the local context.

The smart specialisation concept therefore promotes efficient, effective and synergetic use of public investments and supports countries and regions in strengthening their innovation capacity, while focusing scarce human and financial resources in a few globally competitive areas in order to boost economic growth and prosperity. The central element of the smart specialisation concept that differentiates it from traditional innovation and industry policy frameworks is the focus

on the ‘entrepreneurial discovery process’ or ‘self-discovery’ which is the process through which an entrepreneur realises that a good or activity, that may or may not already exist in other regions, can be produced locally, with some variations and possibly at lower cost (OECD, 2013; European Union, 2012).

Priorities will be identified where and when opportunities are discovered by entrepreneurs. Prioritisation is no longer the role of the omniscient planner, but involves an interactive process, in which the private sector is discovering and producing information about new activities, and the government assesses potential and then empowers those actors who are more capable of realising this potential (Rodrik, 2004).

2. MARKET DRIVEN CLUSTERS AS PREREQUISITES OF SMART SPECIALISATION

Every Smart Specialisation Strategy (S3) needs actors and those are mainly Higher Education Institutes, Science Parks, SMEs (MNEs) and Research and Technology Organisations (RTOs)¹. In order to specify which of those actors are suitable for being part of the strategy they should specifically:

- participate in entrepreneurial discovery process,
- contribute to the development of S3 strategies and their implementation,
- provide advice on how to match regional development needs with R&I and vice versa,
- support particular technologies, industries or clusters,
- provide an adequate innovation ecosystem,
- form the quadruple helix of innovation actors,
- be involved in international networks and thus they add the needed external and outward-looking dimension to smart specialisation strategies.

But where could we find such actors and bring them together, without starting from scratch and reinventing the wheel? This is where we would like to create the link to clusters, as they are –if well functioning-, bring together those actors and use the synergy effects that clusters are supposed to create.

Analyzing the actual literature about Smart Specialisation and actual use cases from different countries, Clusters are of-

¹ Smart Specialisation Platform (Last accessed October 2017) “What are the S3 Actors”. Available at: <http://s3platform.jrc.ec.europa.eu/s3-actors>

ten mentioned as a prerequisite of a sound Smart Specialisation strategy. There are different types of Clusters like regional-, industry- and business-clusters and they are also defined differently by various authors. We prefer an updated version used by Todeva (2015) for business clusters to define the prerequisite: 'Business clusters are agglomerations of firms and other organisational establishments that make strategic choices and as a result become geographically and technologically co-located and connected by value-adding activities. Such organisations benefit from localised access to input/output markets, to infrastructure, and to environmental coordination via institutions and policies by the public sector'.

Those Clusters are focal points where interaction and collaboration between the key players (Industry, Government and Universities, Research Centres) is taking place.

Analysing the role of clusters within a Smart Specialisation Strategy (S3), European Commissions Directorate General, RTD expert group (2013) concluded (European Union, 2013):

- S3 integrate cluster policies into a broader transformation agenda for the entire regional economy.
- S3 complement cluster policies with other cross-cutting and technology /knowledge-domain-specific activities.
- S3 cluster measures move beyond the current cluster policy practice (adjust to regional environment, level of maturity of the cluster, address emerging new domains cutting across sectors, new actors).

Clusters are core elements of policy makers worldwide and in practice since decades. If properly designed they are providing and mobilising the necessary resources and cluster managers should take care to have a significant amount of start-ups and entrepreneurs within their members to support the important element of entrepreneurial spirit and risk taking. Clusters can be used to identify the industrial strengths and assets in a region, contribute to set strategic priorities and make the right political decisions. For this purpose, cluster mapping and benchmarking are valuable tools that can be used to identify regional specialisation patterns and compare economic activities, including agriculture, and strengths with other regions. In the S3 implementation phase, clusters foster cross-sectoral cooperation, can contribute to implementing thematic-based strategies addressing new society challenges, and create new competitive advantages in a region.

It should be mentioned that identification of regional

strength and benchmarking of cluster initiatives is not an easy task and it requires reliable and historical statistical data and in-depth analysis. Cluster mapping like in the European Cluster Observatory² are powerful tools within the EU and others could follow the methodology in order to benchmark their regional competences. Policy makers have the possibility to revisit existing cluster initiatives towards the goals and objectives of a future smart specialisation strategy and also use it for improving the linkages between the different initiatives already put in place. Therefore, Clusters can be seen as prerequisite for a successful S3 approach, but it is as well, the beginning of a loop process, as Clusters have to be measured and streamline their services in order to fully support the smart specialisation strategy. One example for successful cluster benchmarking is the European Cluster Excellence Initiative providing labels. Gold Labels are awarded to clusters with particularly good quality and suitability of services (Foray et al., 2009).

When it comes to the execution on the HOW to use clusters for designing and implementing smart specialisation strategies the RIS3 Guide gives a starting point that can of course be adopted.

Using cluster mapping to identify regional competences and assets:

- Identify specialisation patterns in the region through cluster mapping analysis, in particular, by using for example the European Cluster Observatory tool;
- Perform benchmarking activities to better understand the position of the region in a particular sector in comparison to other regions. The European Cluster Observatory tool offers such benchmarking opportunities;
- Collect, if necessary, more detailed statistical data and perform qualitative-based surveys to better understand the dynamics of regional clusters to be used for implementing smart specialisation strategies.

Support clusters to meet the objectives of smart specialisation:

- Launch, if necessary, new cluster initiatives or strengthen existing ones, and ensure appropriate budgetary provisions by streamlining regional, national funding support;
- Support existing clusters to work more closely with research infrastructures, incubators and science parks and other knowledge institutions as well as integrate large

² Cluster Observatory (Last accessed October 2017). <http://www.clusterobservatory.eu>

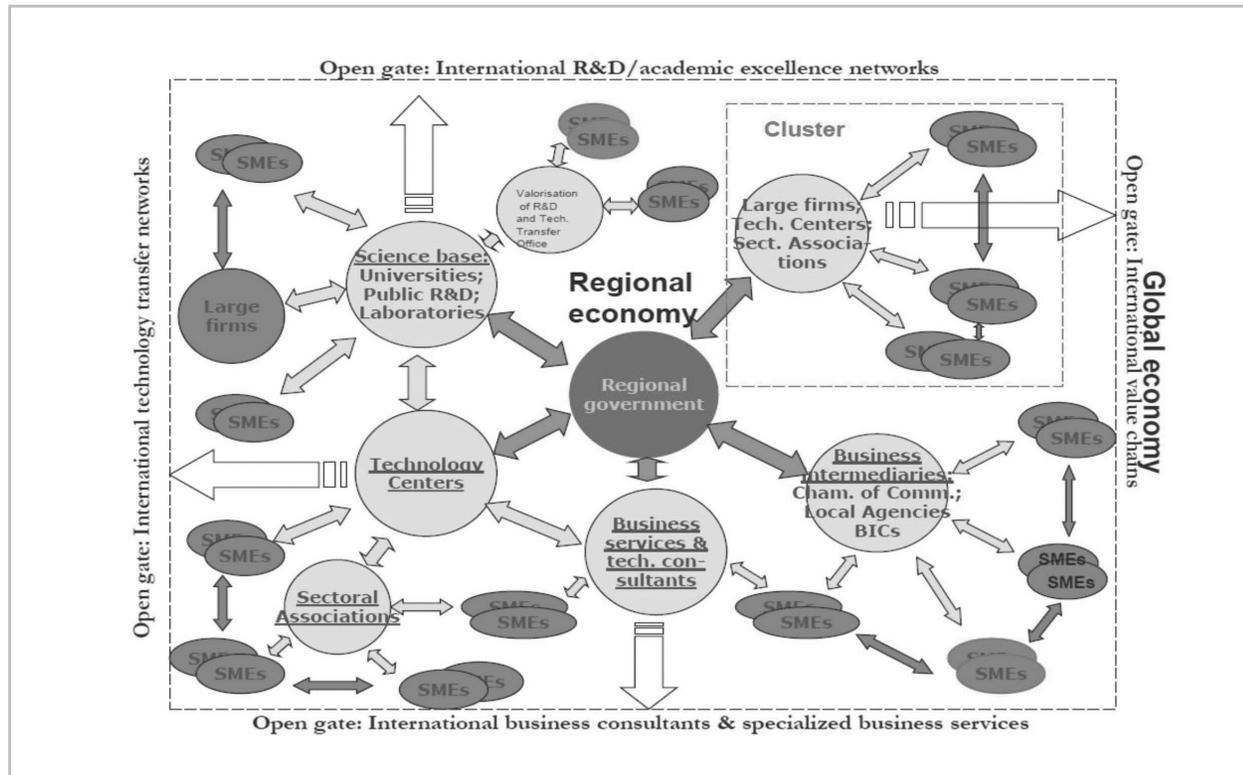


Fig. 2. Regional Economy; actors and collaboration

Source: Reppel (2015)

scale demonstrators for promoting Key Enabling Technologies and better involving user communities;

- Promote cluster management excellence by using the European Cluster Excellence initiative (European Commission, 2017) to develop competent clusters that are able to sustain regional growth in the long run.
- Increase collaboration between all players in the Regional Economy to overcome silo approach of support end clients but also between the intermediaries.

Strengthen local and international cluster cooperation, in particular for addressing emerging industries:

- Streamline funding resources to support joint projects between clusters working in different industries with a view to creating new competitive advantages under the smart specialisation strategy;
- Identify and create optimal cluster-specific conditions to facilitate the emergence of new industries through clusters in the context of the smart specialisation strategy;

- Promote internationalisation, including trans-national cooperation, in particular by making use of the European Cluster Collaboration Platform (McCann and Ortega-Arquiles, 2016).

Especially the collaboration between actors and players turns out to be the most complicated, as players in the ecosystem compete on funding and clients; collaboration with competing initiatives is not necessarily in their mindset. Figure 2 below shows a well-connected and collaborative design for a regional economy that is as well internationally connected (European Union, 2012):

Cluster Initiatives objectives can vary greatly from one to another, both in scope and intensity. These can be classified under six different segments, which are further differentiated under their importance of frequency. The most common objectives will be found in the centre while the outer part contains the objectives pursued by a much smaller number of Cluster Initiatives.

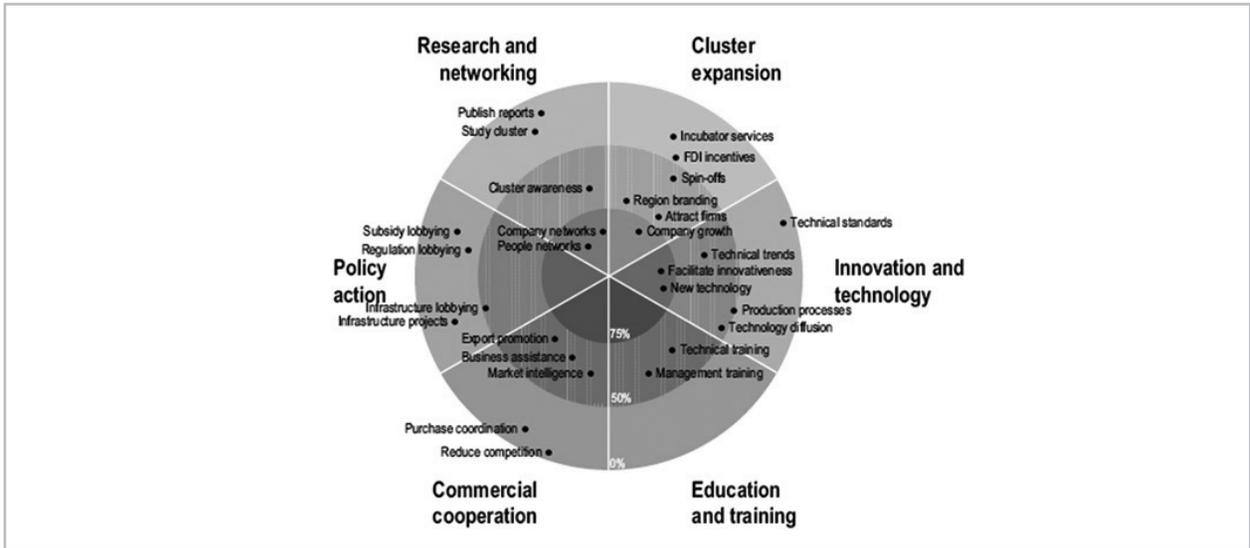


Fig. 3. The Cluster Initiative Target Board

Source: <http://growthclusters.com/cluster-activities.php>

3. DESIGNING SMART SPECIALISATION STRATEGIES (S3)

In order to support the implementation of Smart Specialisation Strategies to all regions, the European Commission has developed a portal with all necessary information and also tools to support the information flow and knowledge exchange. At the Smart Specialisation Platform S3 (Smart Specialisation Platform, 2017c), interested actors and regional governments can access the necessary material.

Via a specific Guideline (Smart Specialisation platform, 2017a) which has been conceived as a methodological guidance for policy –makers and implementing bodies users can learn on how to prepare for and how to design, draft and implement a national/regional research and innovation strategy for smart specialisation. This guide intends to highlight new features and aspects that improve the previous knowledge and make innovation strategies and policies more effective. Countries and regions that already have gained experience in designing and implementing innovation strategies should now support activities for revisiting and upgrading them, while for the others the challenge is to engage in this process and develop their own innovation strategies for smart specialisation. A six step approach (Figure 4) guides the process with additional implementation advice, methodological approaches and further useful references.

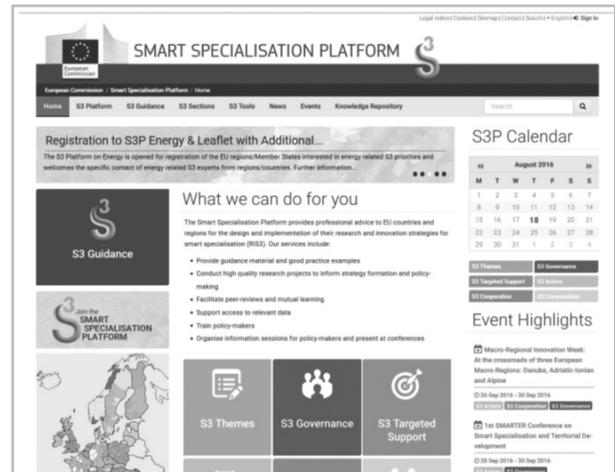


Fig. 4. The Smart Specialisation Platform

Source: Smart Specialisation platform (2017c)

Designing a specialisation Strategy can only be initiated by lead actors or institutions. They have to be strongly committed and well positioned leaders, being able to mobilize resources and collaborate with other stakeholders in order to set the strategic framework for the further actions. The role and diversity of these lead actors and institutions in setting the priorities and designing of the strategy permits a more diverse, interactive process, comparing to the purely vertical decision

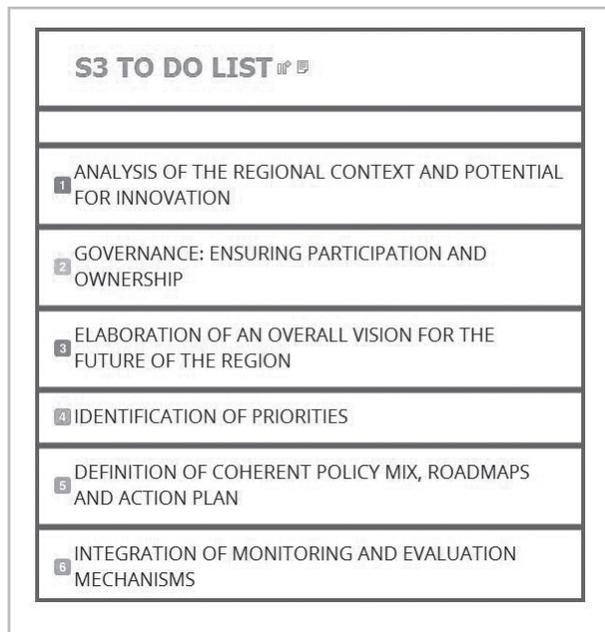


Fig. 5. Smart Specialisation to do list

Source: Smart Specialisation Platform (2017a)

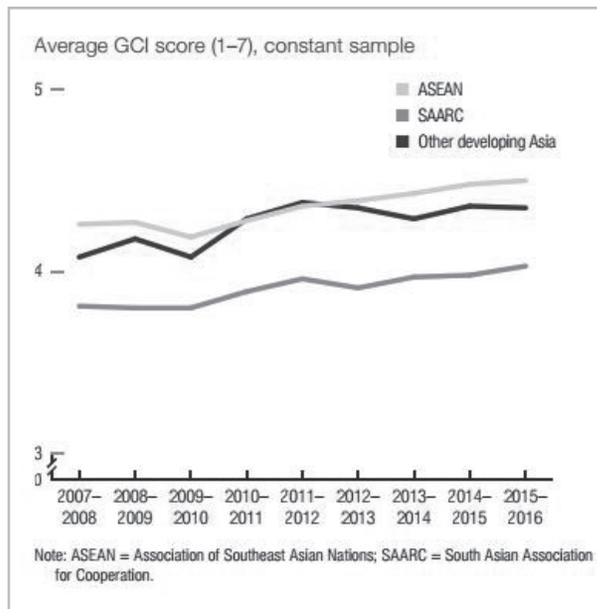


Fig. 7. Emerging and Developing Asia competitiveness trends

Source: Schwab (2015)

4. CLUSTER POLICIES IN ASIA

The previous sections have analyzed the importance and the conjunction of Smart specialization Strategy and clusters in order to achieve sustainable development. The following sections will analyze the status of Clusters policies and their steps toward Smart Specialization Strategy in Asia.

According to the Global Competitiveness Report 2015-2016 (Schwab, 2015), Asia has been characterized as the fastest-growing region since 2005 and it seems that it retains this status in the medium term. The region of Asia, accounts approximately 30 percent of global GDP, and China alone holds 16 percent. As can be seen in Figure 7, the competitiveness trends have been mostly positive, from the beginning of the crisis. China (28th) and most of the Southeast Asian countries are performing well, while South Asian countries and Mongolia (104th) continue to lag behind.

The region faces many challenges, despite the impressive results. One of which is the deficit in infrastructures due to lack of investment. In addition, the region does not seem to uptake the developments of ICT, and the innovation capacity for the middle-income countries is limited. All these might result in jeopardizing their long-term growth. As it has been revealed by the results of the Executive Opinion Survey

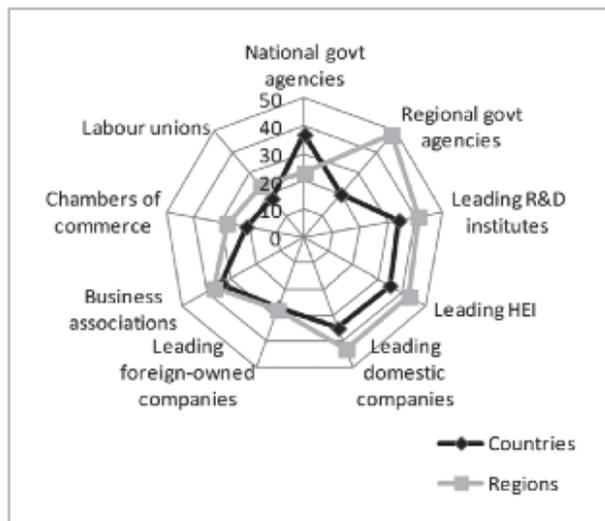


Fig. 6. Type of lead actors and their involvement (OECD-TIP),

Source: OECD (2013)

by government agents, oftentimes at the expense of a market-driven allocation of resources (OECD, 2013). As already stated before the whole smart specialisation approach requests for an ‘entrepreneurial-way’ allocating resources.

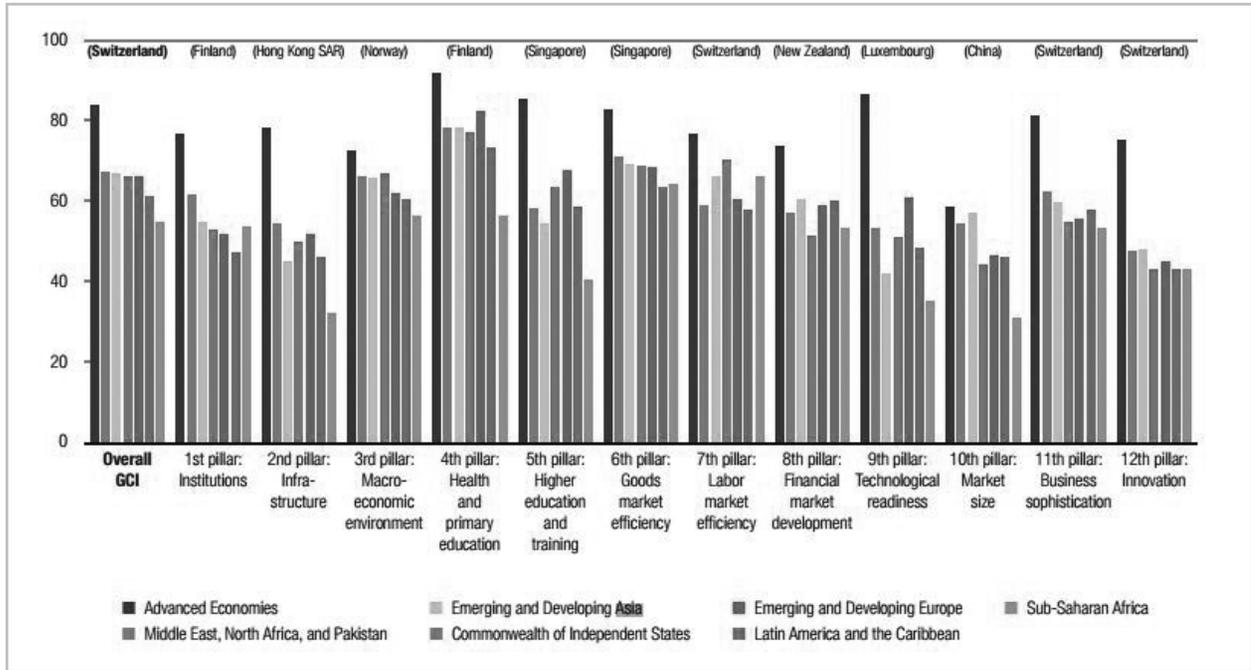


Fig. 8. Distance to the best-performing economy in GCI and pillars (index value (0-100, 100=best performing economy listed in parentheses)

Source: Schwab (2015)

(Schwab, 2015) the difficulty of innovating has become the biggest concern of the business community in China.

In order to characterize the status of the Asian countries, the Global Competitiveness INDEX, applies a methodology and computation based on the 12 pillars of competitiveness. As seen in Figure 8, the 11th pillar examines the Business sophistication. Business sophistication concerns two elements that are intricately linked: the quality of a country’s overall business networks and the quality of individual firms’ operations and strategies. The quality of a country’s business networks and supporting industries. The quantity and quality of local suppliers and the extent of their interaction is measured. Thus, the “clusters” are also evaluated, since they contribute by creating greater opportunities for innovation in processes and products. In addition, they reduce the barriers for new firms to enter the market. By taking a closer look at Figure 8, one can see that Emerging and Developing Asia, still ranks low and all the countries need to continue implementing structural reforms to achieve higher levels of competitiveness.

When it comes to cluster policies in the Asian countries, it is argued that differentiation of cluster policies discloses even at a fundamental level. According to Mazurek (2014), Japanese Knowledge Clusters are strictly connected with the policy pro-

moting innovations but at the same time they are a part of the strategy of boosting regional economies and replace older approach of industrial policy. Japan, has a different approach when it comes to define the clusters. Japan supports the Knowledge Clusters and is used to contribute in their economy recovery. Japan has identified as a knowledge cluster the network of academia, industry and government. Therefore, a number of entities are affected by the implementation of cluster policy, such as core government organizations, universities, and companies. Knowledge Clusters are utilized by the government to boost the Japanese economy by stimulating innovation. The Chinese approach is different, they focus on geographical concentration and specialization (with and additional component of R&D and innovations). Chinese follow the concept of Specialised Towns, that is between industrial and regional policy. Chinese Specialised Town Program or Vietnamese craft village concept is addressed to local authorities but still focuses on supporting companies in a specific area. While in India the MSE-CDP scheme was designed to support local consortia of small companies directly.

Nevertheless, the broad differentiation of clusters in Asia is not considered an obstacle to apply Smart Specialization Strategy. The table below depicts the cluster development support

Creating and consolidating clusters	Creation of new clusters through co-ordinated action for R&D activities (e.g. public funding programmes)	Argentina, Chile, Norway
	Promotion of network structures, service support for entrepreneurs, cluster co-ordination	Argentina, Austria, Australia, Belgium, Canada, China, Colombia, Denmark, France, Germany, Greece, Ireland, Japan, New Zealand, Norway, Sweden
Networking platforms	Science-science (e.g. promotion of collective research centres, centres of excellence)	Belgium, Canada, Denmark, France, Norway, South Africa, Spain, Switzerland
	Industry-science (e.g. promotion of public-private networks, science parks)	Argentina, Australia, Belgium, Canada, Colombia, Denmark, Finland, France, Germany, Italy, Norway, Poland, Portugal, United Kingdom
	Industry-industry (e.g. promotion of sectoral networks)	Belgium, Colombia, Denmark, Germany, Poland, Portugal, Spain, United Kingdom
Technology specialisation (RTA index)	Biotechnology and nanotechnology	Australia, Belgium, Canada, Denmark, India, Ireland, Israel, Netherlands, New Zealand, Poland, Spain, United States
	Environment-related technologies	Australia, Austria, Canada, Czech Republic, Denmark, France, Germany, Hungary, Japan, Norway, Poland, Spain
	ICTs	Canada, China, Finland, Ireland, Israel, Japan, Korea, Sweden, United States
Internationalisation	Cluster competition and cluster excellence programmes	Austria, Belgium, Germany, France, Ireland, Japan, Netherlands, EC
(Towards) smart specialisation		Australia, Austria, Belgium, Czech Republic, Estonia, Finland, Germany, Ireland, Israel, Netherlands, Poland, Russian Federation, Spain, Turkey, United Kingdom, EC

Fig. 9. Cluster development support policies and specialisation patterns in selected OECD countries

Source: OECD (2010), and OECD (2014)

policies and specialization patterns in selected OECD (2012) countries. China and Japan have policies to promote the creation of networking platforms and collaboration among cluster members. In addition, Singapore and Japan have policies to foster cluster development around enabling technologies.

As mentioned in previous sections, clusters are often mentioned as a prerequisite of a sound Smart Specialization Strategy. As it can be assumed from the table above, China, Japan and Singapore have adopted policy tools to support clusters and specialization.

Smart specialization is a process addressing the missing or weak relations between R&D and innovation resources and activities on the one hand and the sectoral structure of the economy on the other (Foray et al., 2011). Therefore, Clusters should be used as a leverage of development in the Asian countries.

5. THE CASE OF S3 AND CLUSTERS IN CHINA

China has been developing in impressive rates since 1978, and according to World Bank, has 10% average GDP growth, making China the fastest sustained expansion by a major economy in history (The World Bank, 2017). China has been taking

actions to reform its market, nevertheless policy reform and adjustments are required to make China's growth sustainable.

In the Science, Technology and Industry Outlook 2014 (OECD, 2014) the Chinese STI system is described. More specifically, clusters and smart specializations have been highlighted. Despite the disparities in China's national innovation system, the government uses innovation demonstration zones to establish competitive innovation capabilities in specific regions. Three zones have been identified, Zhongguancun in Beijing, East Lake in Wuhan and Zhangjiang in Shanghai. Different policies and public support is provided to the enterprises located in those regions to promote and advance their innovative activities. In addition, China following up the global developments, has established the Framework for Development and Reform Planning for the Pearl River Delta Region (2008-2020) aims to make the region an innovative centre in the Asia-Pacific area. It is worth mentioning that, by 2012, China had 105 high-technology zones, hosting about half of the national technology incubators, and 132 Economic and Technological Development Zones, which have in recent years expanded from the fast-growing coastal cities to other regions. Following the geographical concentration and specialization cluster approach, China has planned future steps to stimulate their growth. China has established the Great West-

ern Exploration Strategy, to develop the western region by investing in research infrastructures, research collaboration and human resource mobility between the eastern and western regions. China's approach on clusters' policy is focused on geographical concentration and specialization.

Even though R&I policy agenda of China is appointed by the central government, it is the regional governments that move towards the Smart Specialization Strategy, by taking in reference the region's competitive advantage. Nevertheless, this does not always apply, since the final decision about the priority areas is made from the central government. Smart Specialization Strategy is approached through the policy making process of China in the described process. Chinese policy makers collect feedback from business communities and stakeholders. The Chinese policy makers go through discussions with entrepreneurs and stakeholders, either by calling the "expert committee" to discuss the major policies. They have established a think tank that participates in such meetings. In addition, they conduct consultation meetings. They also conduct visits and on-site meetings. Periodically, the officials at the central government and local governments will visit companies, science parks, universities, research institutions and have discussion on-site with entrepreneurs, scholars and researchers on the issues related to R&D. Another tool that the policy makers use, is to commission a research study (Huang et al., 2016).

6. CONCLUSIVE REMARKS

Smart Specialisation is for policy makers like Industry 4.0 for the manufacturing industry, requiring the integration of an end-to-end approach in the supply chain, including all players and facilitate horizontal and vertical integration. It embeds a serious chance for policy makers in developing countries, to better develop their own customized and fitting innovation policy for the future with a new approach. The actual crisis and the euro debt crisis have changed the mindsets of many policy makers and other will or must follow. The most important elements are, in our understanding, the empowerment and the support of entrepreneurs -who create new business's and support the difficult prioritization approach.

Market Driven Clusters are a strong pillar for a Smart Specialisation Strategy and all those who build a sustainable cluster in their region could be proud having a good starting point for a new Smart Specialisation Strategy. It should be highlighted

that clusters have been developing in the emerged Asia in different forms. Thus, giving the ground to those countries to plan their own "customized" Smart Specialization Strategy.

Although, through Smart Specialisation and Cluster Initiatives, the goal is to strengthen a region's economy, minimise costs and generate profits, they also target to reduce failure to the minimum possible. Yet, failure acceptance is a crucial factor in what determines success, especially in the cases of entrepreneurs and start-ups and this is one issue that Europe also needs to address.

An important factor for the development of smart specialisation strategies for policy-makers is to study the existing policy landscape and in particular cluster policies. Both policies share many basic characteristics, which means that policy-makers can learn and build on their previous experience, for the design and implementation of smart specialisation.

As it can be concluded from the chapters above, Asian countries have been introduced to R&I policies, including cluster policies. It is evident that the region of Asia creates a mosaic of policies, but they are adjusting the policies to their needs. China is one of the developing countries that took steps to establish cluster policies and S3 policies to contribute in the development of their region. In addition, in June 2017, it was announced that new framework arrangement will focus on areas linked to the EU–China Strategic Agenda 2020 for Cooperation, and in particular on air quality, renewable energy, climate, environmental protection, digital economy, regional innovation policy, smart specialisation and support to evidence informed policies. (EU Science Hub, 2017)

If we would like to conclude in a few words, we could easily say, that for the developing countries, implementation of Smart Specialization could become a key enabler to foster their development, especially due to their differentiation of policies and needs.

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