ClusterPoliSEE

Smarter **Cluster Poli**cies for **S**outh-**E**ast **E**urope

Foresigh exercise -
recommendations

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1 INTRODUCTION

This document lays out the key recommendations suggested by the ClusterPoliSEE project for the development of clusters and cluster policies in the South-East Europe (SEE) area. In particular, it develops a common framework to understand all the main elements that are to be considered for the development of effective policies for cluster development.
Such elements will give important information aiming to identify precise cluster policy measures in the subsequent documents of the projects, considering each of the 6 WG areas of the project:

1. Innovation, R&D driven Cluster development (WG1)
2. Sustainability through Cluster Development (WG2)
3. International Cluster Cooperation and networking (WG3)
4. Financial Framework Improvement (Cluster Financing) (WG4)
5. Clusters and Regional Specialization (WG5)
6. New skills and Jobs creation (WG6)

Such recommendations have been developed based on diversified sources, being partly developed within the ClusterPoliSEE project and partly developed outside the project itself. The aim of this approach has been to increase both the reliability and the pertinence of the emerging indications for policy development at the European level. In other words, the recommendations reported, based on the analysis of their current situations and needs being complemented by information coming from the experience of other regions and other clusters, giving useful knowledge on potential goals to achieve or mistakes to avoid, are useful not only for the regions participating to the project, but also for other European regions.
More precisely, the sources used are the following:

- the documents produced so far within the ClusterPoliSEE project (including the regional-based SWOT and foresight exercise analyses and the subsequent documents that have analysed them collectively, such as the 'Foresight exercise - scenario building report' and the 'Foresight exercise - diagnosis report'), where information about the current situation of clusters so as the priorities and needs for future development of the regions participating to the projects are reported;
- the academic and practitioner literature on clusters, industrial districts and regional innovation systems, which supported the

pertinence of the emerging recommendation and gave a useful benchmark;

- the documents produced within other European projects focused on clusters, such as TACTICS (Transnational Alliance of Clusters Towards Improved Co-operation Support, funded by the EU programme FP7) and Clustrat (boosting innovation through new cluster concepts in support of emerging issues and cross-sector themes, a Central Europe program) so as other relevant documents produced by the European Commission (i.e. the 'Guide to Research and Innovation Strategies for Smart Specialization (RIS 3)', etc.).

The framework proposed in this document has been validated by the discussion made with the project lead partners at the transnational meetings.

1.1 Defining clusters

Before we proceed with the outline of the proposed set of recommendations, it is useful to briefly discuss what do we mean by clusters. Several definitions of (geographical) clusters have been developed, but the most diffused and wide-spread accepted by scholars and policy makers is the one formulated by Michael Porter, who defines them as "geographic concentrations of interconnected companies and institutions in a particular field" (p. 78).[1] The author adds that "clusters encompass 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 and laterally to manufacturers of complementary products and to companies in industries related by skills, technologies, or common inputs. Finally, 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" (p. 78). Following this definition, the main elements that characterise a cluster are three:

1. the concentration in a regional or subregional area;
2. the existence of a number firms and institutions being interconnected;

[1] Porter M.E. (1998), Clusters and the new economics of competition, *Harvard Business Review*, 76(6): 77-90.

3. the presence of firms specialised in the production of different intermediary or final goods, services or technologies, but all related to one category of products ("a particular field" to put it in Porter's words).

It is important to notice that this definition of cluster prescinds from the presence of a cluster management organisation (CMO), but considers the existence of a recognised set of actors, mostly firms but also institutional actors, operating in that industry, or in those related industries[2]. Also, it does not include just clusters specialised in traditional manufacturing industries, such as clothing, eyewear, furniture, but also geographical concentrations of firms and institutions specialised in the production of high-tech products and service. Actually very often firms specialized in services (e.g., service providers, logistics, designers) or advances technologies (e.g., nanotechnologies, ICT,…) co-exists within clusters specialized in the production of 'traditional' products, such as furniture, and vice versa. Moreover, firms that were initially mainly manufacturing ones develop over time into service firms, such as in the case of a shoemaker that became a designer or a distributor of shoes manufactured by others.

1.2 The proposed framework for policy recommendations

In the following, policy recommendations are proposed along the four most relevant axes which support the development of clusters within the SEE area:

1. *Considering the variety of clusters*; which support the importance to consider differences in terms of size, specialization, history, governance, stage of the life cycle across clusters in order to develop proper policies;
2. *Entrepreneurial Cluster Management Organizations;* which highlights the importance for the Cluster Management Organizations (CMOs) to take on an entrepreneurial character to support the development and evolution of clusters, opening up opportunities of collaboration for firms;

[2] This statement has not to be understood as in opposition with what proposed in the CluStrat framework in par. 2.2, i.e., the importance of an entrepreneurial CMO. In fact, even tough existing clusters without a CMO may exist, its presence is needed to develop successfully toward emerging industries and take on societal challenges.

3. *Supporting SMEs cooperation*; which suggest that, considering for the small size of firms part of the cluster of the SEE regions, cooperation and aggregation possibilities among them should be fostered[3];
4. *Supporting innovative new ventures development;* which posit that clusters should not only support cooperation and development of existing firms, but also the creation of new ventures, able to create new jobs and develop new markets.

FIGURE 1 – THE PROPOSED FRAMEWORK FOR POLICY RECOMMENDATIONS OF THE CLUSTERPOLISEE PROJECT

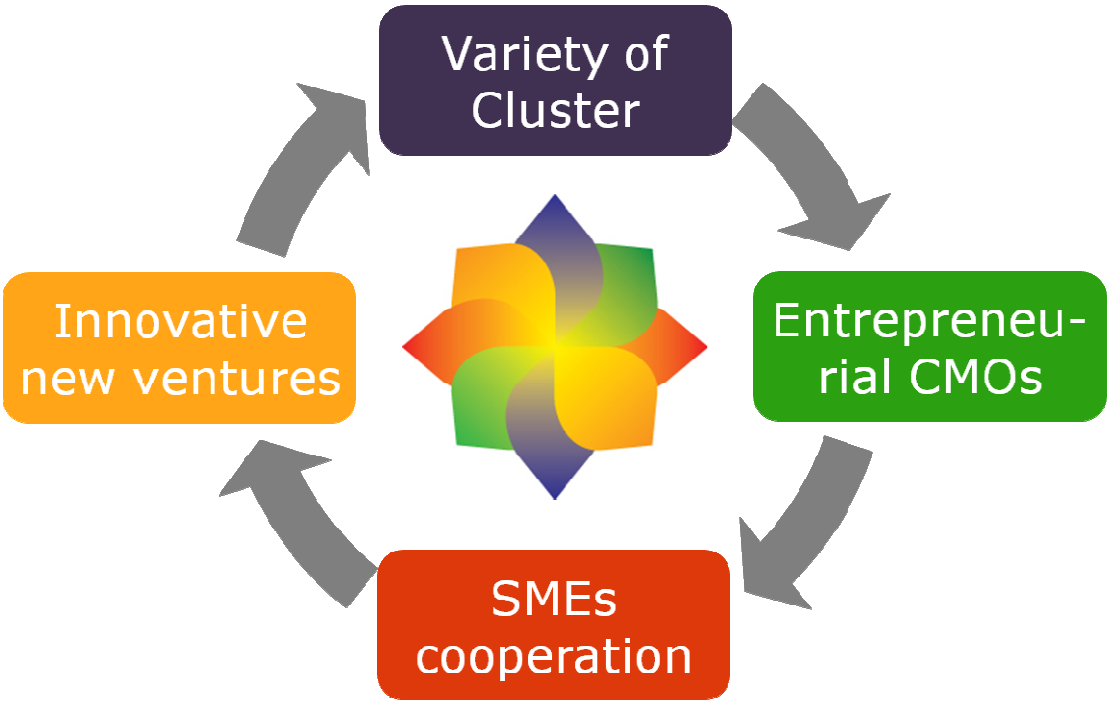

Figure 1 depicts the four axes of the policy recommendations. As suggested in the figure, the four elements are not to be understood in isolation: rather each of them is emphasizing a different aspect of a common framework. They are all together instrumental to develop effective cluster policies for the SEE regions and complementary to better describe how to achieve them.

In the following sections, each axis will be discussed in detail so to highlight useful policy recommendations for the development of cluster policies for

[3] According to the European Legislation Small and Medium sized Enterprises (SMEs) are firms which employs fewer than 250 persons and whose annual turnover does not exceed EUR 50 million or whose annual balance-sheet total does not exceed EUR 43 million.

the SEE area. The final section will discuss a final axis, being cross-cutting with respect to the four proposed so far, highlighting the *multi-level perspective* of the model proposed, i.e., the importance to consider the cluster, regional and national level of policy making.

2 CONSIDERING THE VARIETY OF CLUSTERS

The number of clusters officially identified in Europe is very large, by far larger than what the Porterian definition would lead to consider. In this regard Figure 2 gives us an idea about the number and dispersion of clusters. According to the "The European Cluster Observatory", the SEE countries participating to the ClusterPoliSEE project host 359 clusters: 42 in Austria, 15 in Bulgaria, 13 in Greece, 120 in Hungary, 18 in Romania, 5 in Serbia, 14 in Slovakia, 15 in Slovenia, 122 in Italian regions part of the South East European macro-region[4].

FIGURE 2 - REGION: SEE COUNTRIES PARTICIPATING AT CLUSTRPOLISEE PROGRAM

Source: the European Cluster Observatory website. 09/07/2014

Within the regions participating to the ClusterPoliSEE project and more generally European regions, clusters are very diversified in relation to their structural characteristics and competitive capacity. Since when experts and researchers started studying and writing about the concept, the structure and the purpose of clusters, a wide range of characteristics emerged.

[4] In the European Cluster Observatory there are no data available about number of clusters present in Albania and Croatia.

Throughout the years, this variety has led to the creation of different definitions and to the classification of clusters by category depending on their structure, their dispersion on the territory and accordingly to the relations among their participants or with external stakeholders. In the following we will first review the most relevant facets of this variety in the context of SEE regions and we will report the general models toward which existing clusters can be classified.

2.1 The facets of the cluster variety

The economical contexts in which the clusters were born and developed by one side, and the differences, with respect to the cultural factors, by the other, are essential elements in shaping the EU cluster heterogeneity. In fact, within the EU context a wide range of differences exists among clusters relating to their sector of specialization, their dimension and composition, the reasons behind their establishment, the strategy adopted, the type of governance and the life cycle stage that they are experiencing. To better understand the variety of clusters within the EU context, in the next paragraphs various dimensions of analysis, including the sector, the dimension, the top-down/bottom-up approach, the governance and their stages in the life-cycle have been selected.

2.1.1 Industry specialization

Based on the European Cluster Observatory data, it emerges that in both West and East EU countries there are "powerful clusters in traditional industries", even though the technological content and the characteristics of the final market change considerably across areas.
Adopting the Cluster Observatory breakdown, those clusters can be grouped in five broad industry categories. The "Standard sectors" category includes a wide assortment of specialization, 44 in total, ranging from the aerospace, to the agricultural products, from the pharmaceutical sector, to the tourism one or the transportation and logistics, or else as IT, and many others. This variety of specializations grouped as "**Standard sectors**" explains the high number of clusters in this field in South East Europe, being 317 (88,3%). Second in number of clusters specialized, but with a big gap if compared with the "Standard sectors" are the "**Green Technology sectors**", with 39 clusters (10,9% of the total), which includes the following areas: bio-energy, eco-construction, environmental technology, hydrogen and fuel cells, recycling, renewable energy, solar energy, sustainability, water, wind energy. In the "**Creative and Cultural Industries sector**", (artistic creation and literary creation, culture, design, fashion and general creative

industries) are working 9 (2,5%) clusters. The "**Micro and Nanotechnology sector**" and the "**Optics and Photonics sector**" are both present with 3 (0,8%) clusters[5].
Data collected through the ClusterPoliSEE project provide a different classification of clusters, but confirm the high heterogeneity across clusters in terms of industry specialization. The sector representing the largest share of districts among South East Europe regions is the "**production and engineering**" (18.5% of the total number clusters), followed by the "**information and communication technologies/ ICT**" (14.8% of the total), the "**energy and environment**" and the "**food and agricultural industry**" with a share of 7.9% and 7.4% respectively.

2.1.2 Size: geographical extension and actors

Clusters vary considerably also in terms of size, both considering for their geographical extension and for the number and types of actors they embed. As far as the first aspect is considered, within Europe there is on one hand the presence of sub-regional scale clusters, which occupy an area of few cities - like in the case of industrial districts – ; on the other hand the presence of clusters large as an entire region, like in the case of high-tech clusters. This structural difference results not only in a larger number of connections, opportunities and visibility, but also in a wider geographical extension. Moreover, clusters may differ considerably in terms of the number of firms active within the cluster. For example, the Rumenian cluster 'Pro Wood Cluster' reported 18 firms in 2010, whereas the Italian footwear cluster 'Riviera del Brenta', being much older reported 536 firms. Large differences occur across clusters of the same country as well, both in terms of total number of actors involved and their size. In Slovakia the 'Automotive cluster West Slovakia' reported a majority of large or medium-sized firms (18 out of 36), whereas the cluster 'Claster Smolenice' specialized in tourism, reported just micro firm. Similarly, while the first reported also the presence of two universities and one R&D institute, the second reported none of them. Other than (small, medium and large-sized) firms, in fact, also universities, key enabling actors (KEA), specialized in key enabling technologies (KET) and (institutional) knowledge-intensive

[5] If a sum of clusters by sector is made, the total amount of clusters (371) result exceeding by 12 units the data reported in the paragraph above. This is explained because in some cases it is possible to observe a cross specialization, with some clusters belonging to more than one of the main sectors, especially when it started as specialized in a traditional sector but subsequently developed toward new technologies.

business services (KIBS) should be involved into cluster activities, which support the transfer of knowledge among the cluster's actors and their innovation processes. However, knowledge institutions are involved just in few clusters.

In Box 1 examples of two such different clusters are presented. While in the Livenza Furniture Industrial District the network is mainly among firms located in sub-regional areas, in the case of Clusterland Upper Austria, the cluster network is the result of cross-sector collaborations among clusters members cooperating in a regional dimension.

BOX 1 – SIZE DIFFERENCES: COMPARING THE LIVENZA FURNITURE INDUSTRIAL DISTRICT AND CLUSTERLAND UPPER AUSTRIA LTD

Livenza furniture District is an example of a sub-regional cluster. Specialized in the timber and furniture sector with a focus on an "environmental friendly" production, obtaining for this reason, the EMAS certificate in 2006. This cluster is composed by an average of 914 firms (data 2012), and it is situated in an area delimited by the Italian regions of Friuli-Venezia Giulia and Veneto; between the province of Pordenone and Treviso, for a total amount of 19 small towns, which cover a territory of 407 square kilometres.

With a regional dimension, Clusterland Upper Austria Ltd. is coordinated and composed by seven clusters members specialized in different sectors (automotive, plastics, furniture & timber construction, health technology, mechatronics, environmental technology and information technology) and two networks, which collaborate with a common focus: "innovation through co-operation". Since its establishment, over 410 clusters project have started. As of 2013, the cluster was growing and it was composed by 1927 companies operating in a region with a territory of 12.000 square kilometers.

For further information: http://www.distrettodelmobilelivenza.it/asdi.php (accessed 10/07/2014), http://www.clusterland.at/index_ENG_HTML.php (accessed 10/07/2014)

2.1.3 Approaches to the cluster establishment

Cluster may have been established through a top-down or a bottom-up approach, which differ for the actors taking the lead in their establishment.

In the top-down process the decision to form the cluster organization is made by the regional or national authorities and by policy makers with precise objectives, such as to enhance the internalization process or the innovation and economical capabilities of the local economy and to support the development of a local production base. The creation of a CMO is then essential and instrumental in order to support the development of such clusters.

In a bottom-up approach, the cluster is rather created spontaneously. Because of historical, geographical or other reasons, a large number of firms specialized in the production of different intermediary or final goods, services or technologies, but all related to one category of products develop together, within a rather delimited area. Only in some cases the firms that are part of the clusters, recognizing the presence of common interests, may decide to join forces in order to collaborate and acquire visibility locally, nationally or internationally and develop a CMO to put in practice such common projects.

Sometimes a cluster is the result of a combination of both, the top-down and bottom-up approaches. This is the case of Clusterland Upper Austria, where a top-down strategy was considered for the cluster initiation and structure, while a bottom up approach was implemented by the individual firms with regard to the operational business of the cluster organization[6]. At EU level it is possible to find different initiative approaches, with respect to the objectives, the cluster typology, the background and the environment. In this regard Velo[7] (2011) distinguished between traditional districts, with a bottom-up approach, and technology clusters, organized through a top-down method coordinated by the government.

In Box 2 examples of a top-down and bottom-up approach are proposed, presenting the ZápadnéSlovensko cluster, which establishment was promoted by the Trnava Self Governing Region (Slovakia) and the Vojvodina ICT Cluster (Serbia), that was the result by the common effort of ICT companies and several supporting institutions.

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[6] INNO Germany AG (2010), Cluster and clustering policy: a guide for regional and local policy makers, Catalogue n.: QG-80-10-194-EN-C; ISBN: 978-92-895-0506-2; DOI: 10.2863/22994 *European Union*, Belgium

[7] Velo, D. (2011), La varietà dei sistemi locali per l'innovazione emergenti in Europa, *Sinergie,* 29 (84), 5-20

BOX 2 - TOP-DOWN VS. BOTTOM-UP APPROACH: THE ELEKTROTECHNICKÝKLASTER – ZÁPADNÉSLOVENSKO AND THE VOJVODINA ICT CLUSTER EXAMPLES

With the aim to increase the innovative capacity of the regional economy, supporting the development, the innovation, the education in the area and also enhancing the cooperation among the businesses in the electronic sector, the Trnava Self Governing Region, Slovakia, promoted the establishment of the Elektrotechnickýklaster – ZápadnéSlovensko cluster. The Elektrotechnickýklaster - ZápadnéSlovensko, that was established in the 2008 and is based in Galanta, is operating in the electronic and technology sectors. According the ClusterPoliSEE data, the cluster includes mainly public members: it is composed by two public bodies, a university and a large company (>250 employees). The lead organization in the cluster is the public administration - self-governing region and city. The cluster is financed for the 80% by public bodies and for the remaining 20% by private funds.
Vojvodina ICT Cluster – VOICT has been developed through the bottom-up initiative of ICT companies and several supporting institutions. As evidenced within the ClusterPoliSEE project database, the cluster financing provenience is 10% from the public sector and 90% from private. Most of the 34 members' business (2012 data) is tied to foreign markets (over 90%) in the EU, North America and Middle East.

For further information:
http://www.trnava-vuc.sk/sites/default/files/data/podnikatelsky-region-roka/elektrotechnickycluster-ga21032913.pdf (accessed 10/07/2014)
http://vojvodinaictcluster.org/ (accessed 10/07/2014)

2.1.4 Governance and presence of Cluster Management Organizations

As mentioned earlier, clusters differ also as far as the presence and characteristics of a Cluster Management Organization (CMO) is concerned. Among the SEE regions participating at ClusterPoliSEE project, Cluster Management Organizations are composed, on average, by a staff of 2.9 people. However, while there are countries where the staff in as low as 0.9 (Slovakia), other with an average as high as 5.7 (Austria).
More interestingly, there are clusters with the presence of a CMO and others where this organization is absent. Two explicative examples collected through the ClusterPoliSEE project, are made by the Slovakian "Balnea Cluster Dudince" from one side and by the "Plastics Cluster Austria" on the

other. Due to the fact that "Balnea Cluster Dudince" is structured as a simple association of members, it has no cluster management staff and no CMO activities are implemented; on the contrary, the "Plastics Cluster Austria" has a CMO composed by ten members working to: foster the R&D and innovation capacity, initiate collaborative projects, foster qualification of SMEs, enhance networking and internationalization, help the development and the creation of favourable conditions for members.

2.1.5 Stages of the cluster life cycle

Differences among clusters are also based on the life cycle stages. The literature has identified five stages, during which a cluster experiments different necessities and have to undertake the appropriate action in order to be able to perform at best level and to move successfully to the next step. However, the different stages are not in historical sequence: a cluster may move from a very initial "pioneer phase" to the last one "crisis phase" without experiencing those in the middle. As in Enright (2003)[8], clusters like cycle phases are:

1. wishful thinking clusters;
2. policy driven clusters;
3. potential clusters;
4. latent clusters; and
5. working clusters.

The last three stages are the most interesting ones for the purpose of this analysis. The literature suggests it is important to build a platform, creating cohesion among members and enhancing framework conditions in the "potential cluster" stage. In the "latent clusters" stage, the focus is on the creation of cooperative activities in order to strengthen interactions and improve the critical mass. In the last stage, "working clusters", the attention will be aimed at creating activities and enlarging the cluster sphere.

2.2 Describing the variety of clusters: four models

[8] Enright, M. J. (2003), 'Regional clusters: what we know and what we should know,' in J. Bröcker, D. Dohse and R. Soltwedel (eds), *Innovation Clusters and Interregional Competition*. Springer: Berlin, pp. 99–129.

As suggested above clusters are not only very numerous in Europe, but they are also very different from each other, considering for several aspects. The literature on clusters attempted to address such variety identifying some models of clusters. In this following, we report a classification of clusters' models elaborating on the existent literature, also considering of emerging results from the previous documents generated in the ClusterPoliSEE project. Among the relevant literature, a prominent role is played by the seminal analyses by Markusen[9] (1996), where she identified and studied four typologies of clusters describing their business structure, their distinctive characteristics and the inter- and intra-district relations at various levels. The author classified clusters considering features such as the firm size distribution, the industrial linkages and firms' network within the district, the degree of vertical disintegration, the governance structure, the innovative capabilities and the organization of the production. Moreover, the investigation regarded other aspects as the role of the large firms, the way companies were embedded within the district's network, nationally and internationally; the major industries' development dynamics, the region potential trajectories and the role of the state as rule maker, producer and consumer at the local/regional and national level and in assuring innovation. Markusen identified four models of clusters:

- Marshallian Industrial Districts (including what she named the 'Italianate' variant),
- Hub-and-Spoke Districts,
- Satellite Platforms and
- State-anchored Districts.

Leveraging on other authors' contributions and on the evidences emerging from the ClusterPoliSEE project, we added to such classification the high-tech clusters as a further cluster category, adapting and revising Markusen's classifications in the light of the current European context. In the following paragraphs, each category is presented in detail, including examples from EU regions.

It is important to notice at this point that this list of models is not a prescriptive but rather descriptive: each model has its own evolutionary path, advantages and disadvantages, also considering for different geographical areas and no one-best-way is available for regions. Similarly, it is not to be considered complete but rather indicative of the variety of clusters (more specific models may describe the variety of clusters

[9] Markusen, A. (1996), Sticky Places in Slippery Space: A Typology of Industrial Districts, *Economic Geography*, 72, (3), 293-313

characteristics the EU context). Moreover, beyond such a static variety, i.e., focused at a point in time, it is worth mentioning the existence of a dynamic variety, i.e., the presence of a plurality of evolutionary trajectories of cluster that could once be ascribed to the same model. Such trajectories include the "concentric diversification" – the progressive enlargement of the cluster business specialisation, such as in the case of the Medical Technology Cluster in Tuttlingen (Baden-Württemberg, Germany) that passed from the production of surgery instrument to a much larger variety of applications for medical engineering[10] – and the "glocal cluster", moving from a prevalence of cluster-contained inter-organizational relationships to a local-global configuration.

2.2.1 Marshallian industrial district

In her paper, Markusen (1996) defined the Marshallian industrial district as an "agglomeration of firms characterized by the predominance of locally owned SMEs that to some extent cooperate together in a specific sector and make local production decisions; sharing a common identity and bonds". It includes also the presence of local financial institution offering "patient capital". The Italianate variant of Marshallian industrial districts has a high degree of cooperation among competitor firms, a high frequency of exchanges of personnel between customers and supplies, a disproportionate share of workers and the presence of strong trade associations providing common infrastructure. In this case, the role of the local government in promoting and regulating core industries is strong. Beccatini[11] (1990) further the Marshallian model, underlying that its "socioeconomic" identity is characterized by the interaction between a "community of people" and a "population of firms". More in details the author underlined the strong correlation between the production sphere of firms and the community that share common rules, behaviours, language, values and that contribute along with the geographical proximity, within a limited territory, to generate relationship with buyers and suppliers.

[10] Halder G. (2004), Local upgrading strategies in response to global challenges: The surgical instrument cluster of Tuttlingen, in Schmitz H. (ed.), *Local Enterprises in the Global Economy: Issues of Governance and Upgrading*, Cheltenham, Edward Elgar, pp. 200-232.
[11] Becattini, G. (1990), The Marshallian industrial district as a socioeconomic notion, .In: F. Pyke, G. Becattini & W. Sengerberger, eds. *Industrial Districts and Inter-firm Cooperation in Italy*. Geneva: International Institute of Labour Studies.

Starting from this perspective, Grandinetti and De Marchi[12] (2014), highlighted how the Marshallian features of Italian IDs are disappearing, due to the effects of the globalization process on the enterprises, the surfacing within the district of a multi-ethnical society and due to the cultural changes resulted from the generational turnover. A further characteristic highlighted by the authors mentioned above is the role of institutional players that collaborate with the district with regulatory and promotional purposes.
To better explicate this type of cluster, Box 3 describes the Sportsystem District of Montebelluna as representatives of the Marshallian Industrial District typology.

BOX 3 - A MARSHALLIAN INDUSTRIAL DISTRICT: THE SPORTSYSTEM DISTRICT OF MONTEBELLUNA

Since the 19th century in the Montebelluna area the specialized production of boots have been developed moving from an artisanal local production to an industrial one. At the beginning of the '80s the Montebelluna district counted 511 firms with a total of 12.000 employees. The presence of a large number of co-operating family owned firms allowed to classify the district as a "Marshallian" one. In line with the description made by Markusen (1996), the Montebelluna Sportsystem District is mainly composed by SMEs; in fact on an average of 1.766 firms (data 2012) the number of enterprises with at last 49 employees are 1132 (data 2011) being 64% of the total. Moreover, the district, that covers a territory of 28 towns in the province of Treviso, is well integrated with the local community entertaining frequent interpersonal contacts aimed at the development of common projects among firms, privates, associations and public bodies. In this regard, the CMO (Association & Foundation Museum of the boot and Sportsystem[13]) is involved, within its operating activities, in the interaction with the local community and schools, with the aim to inform about the history and characteristics of the district enhancing the district visibility.
In more recent years the district has now partially transformed, especially because of internationalization dynamics and because of the growing importance of large lead firms.

[12] Grandinetti R. & De Marchi V. (2014), Industrial Districts and the Collapse of the Marshallian Model: Looking at the Italian Experience, *Competition and change*, 18(1), 70-87
[13] http://www.montebellunasportsystem.com/it/organizzazione (15/07/2014)

2.2.2 Hub-and-spoke and satellite platform districts

If Markusen presented Hub&Spoke and Satellite Platform Districts as two different models, in this analysis we have been combined. The main characteristic common to both is the presence of large firms surrounded by smaller companies, such as suppliers. In the Hub-and-spoke district local decision and cluster firms integration is higher, while for Satellite platform decisions are mainly taken externally (such as in the case of a cluster built around a secondary branch of a multinational company). Concerning the focus of this analysis and given the characteristics of the European context we have aggregated these models being their differences less marked than in other world regions.

In such districts, one or more large firms dominate, being often externally owned and headquartered, with low degree of cooperation among large competitors that are surrounded by suppliers. The core companies are located abroad with links outside of the district, the decisions are made locally or externally but then they extend globally. Moreover there is the presence of low or null "patient capital" while there is a high degree of public involvement in providing the needed infrastructure and other business incentives. This type of districts is often used "as a way of stimulating regional development in outlying areas and simultaneously lowering the cost of business for competitively squeezed firms bristling under relatively high urban wages, rents, and taxation.[14]"

The case study reported in Box 4 represents an example of the Hub-and-Spoke variant because of the presence of large multinational companies surrounded by smaller suppliers, whose role is complemented by an active cluster management that enhances cluster collaboration and networking, organising training programs and conferences for its members and for other firms operating in the sector.

BOX 4 - AN HUB-AND-SPOKE VARIANT: PANAC –PANNON AUTOMOTIVE CLUSTER

PANAC, the Pannon Automotive Cluster was established in 2000 by the West-Transdanubian Regional Development Council with the support of the Hungarian automotive companies (i.e., LuKSavaria, Rába Holding) and of multinationals having their branches in the country, i.e., Audi, Suzuki, Opel. Service companies are present among the founding members as well, like Citibank, so as regional authorities and institutions, i.e., the Industrial Research and Consulting Ltd., and the West-Transdanubian Regional

[14] Markusen, (1996), p.304

Development Council. Furthermore, the Ministry of Economy actively supported of the initiative.
In the cluster there are about 250 companies, most of them SMEs. The cluster aim is not only to promote the internalization of the Hungarian automotive industry, providing services in the industry, but also to enhance inter and intra cluster cooperation and networking activities among members and with international partners. Another goal is the preparation of new educated experts in the sector in order to provide the specialized needed skills.

For further information: http://www.autocluster.hu/content_2-en.html (accessed 15/07/2014)

2.2.3 State-anchored industrial districts

As for Hub-and-Spoke clusters, also state-anchored industrial districts are characterized by the presence of a main player surrounded by small companies. Markusen (1996) described the State-anchored district as characterized by the predominant presence of a government institution or a non-profit body, as large public universities or military bases that are the major actors in the district. The strategy applied by politics depends from the government's role. In this type of structure the scale of economy is relatively high. Moreover, there is a high degree of public investments in providing infrastructure and the supplier sectors development is related to the public expenditure. The role performed by local companies is minor if compared with firms operating in the Hub-and-spoke or Marshallian districts.

In the European context an example could be represented by the French "Pôles de compétitivité" or competitiveness clusters. In Box 5 is reported an example of a "Pôles de compétitivité": the "MEDICEN Paris Region" cluster.

BOX 5 - GOVERNMENT ENHANCEMENT OF COMPETITIVENESS CLUSTERS: MEDICEN PARIS REGION CLUSTER

One of the 71 competitiveness clusters operating in France, the "MEDICEN Paris Region" cluster, founded in 2005, is specialized in innovative therapies and advanced technologies in healthcare. Competitiveness clusters have been enhanced by the French government since 2004 with the aim to

encourage and increase innovation and projects in order to become leaders at national and international level within a specific field. De Gery[15] (2014) explains that this type of cluster is composed of different organizations, such as universities, research/training centre and companies, both large and small, that collaborate at joint projects with the government acknowledge and support.
The Medicen cluster is focused on the translational medicine, biological tools and bio-digital technology for the diagnosis and cure of disease as cancer, neurodegenerative pathologies, infectious and cardio-vascular and nutrition health. The Medicen Paris Region is composed by *several* research institutions including more than 300 public research centres, 9 universities, 20 "GrandesEcoles" and the 40% of France's academic research and Institutes like Curie, Pasteur, GustaveRoussy. Furthermore it includes several large Companies of which 26 healthcare leading companies and R&D and approximately 391 innovative health oriented SMEs which constitutes the 50% of France's biotechnology companies. Finally it includes several Public bodies such as the Ile-de-France regional Council, economic development agencies, government bodies and some private partners (business angles network, value capital, capital development).

For further information:
http://www.medicen.org/en (accessed 16/07/2014)
http://competitivite.gouv.fr/home-903.html (accessed 16/07/2014)

2.2.4 High-tech cluster

Specialized in technological innovative sectors and located in vaster areas, if compared with Marshallian Industrial District, this type of clusters is not included with the models described by Markusen (1996). They are characterized by some distinctive elements such as the presence of knowledge institutions that collaborate and interact with cluster companies and large enterprises that invest in R&D; moreover they underline the necessity for the cluster firms to possess the adequate absorptive capacity, necessary to understand and apply the codified knowledge. Such cluster models resemble the concept of 'regional innovation system' (RIS)

[15] De Gery, C. (2014), Do competitiveness clusters reduce uncertainty for SMEs, or do they increase institutional complexity? An examination of support policies for SMEs, *SASE* Chicago 10-12 July 2014

introduced in the middle of the 90s by Cooke and Morgan[16] to describe the highly innovative capability of the Baden-Württemberg region. The authors identified three key characteristics, namely dynamic networks between firms, a rich institutional system and science and technology infrastructure (public and private) that are supportive of the highly innovative performance of the firms based in the region.
An example of an high-tech cluster is the Green Building Cluster of Lower Austria, described in the Box 6.

BOX 6 - HIGH-TECH CLUSTER: GREEN BUILDING CLUSTER OF LOWER AUSTRIA

Lower Austria with Vienna and Burgenland "form the Vienna Region which has the highest concentration of research institutions and universities in Austria[17]" being largely a high-tech region. Is not by chance then that the Lower Austria region where Green Building Cluster (GBC) is situated is becoming an innovative high-tech European business site.

One of the six initiatives was managed by the Ecoplus (started in 2004) and 100% owned by the regional Government of Lower Austria; the Green Building Cluster is an example of a cluster where the specialization in the construction and building sector is mixed with the implementation of the latest technologies and investment in R&D, which results in projects focused on sustainability and energy efficiency, such as building passive energy houses or the refurbishment of old building with low-energy standards and healthy interiors. In fact, when data were collected, in 2012, the Green Building cluster was running 42 R&D&I project and was in contacts or working at joint projects with Technology parks, Technology networks, Centres of excellence and incubators. (Data collected in 2012, within the ClusterPoliSEE project)

The cluster is being financed mostly by public bodies for the 76%, and just for 24% by private firms. Founded in 2003, with about 233 cluster members, for 11,792 total companies' employees, it is mainly composed by micro, small and medium enterprises.

[16] Cooke, P. and Morgan, K. (1994), The regional innovation system in Baden-Württemberg, *International Journal of Technology Management*, 9 (3-4), 394-429.
[17] Ortega-Argilés, R. (2012) "Economic Transformation Strategies. Smart Specialization Case Studies", S3 - Smart Specialization Platform (www.s3platform.jrc.ec.europa.eu)

For further information:
http://www.recommendproject.eu/docs/GBCpresentation11apr13.pdf (accessed 18/07/2014)

3 ENTREPRENEURIAL CLUSTER MANAGEMENT ORGANIZATION

As discussed in the initial paragraphs, not all the clusters have a cluster management organization (CMO) that leads and coordinates joint activities. In principle, the presence of a CMO is not a requisite of the cluster's competitiveness (as suggested by the Silicon Valley example)[18]. Moreover, not all of them have the same size or characteristics. From the information collected among clusters participating at the project ClusterPoliSEE, it results that CMO are constituted by project managers (2.2 persons on average), director or manager of the cluster (0.9), secretary staff (0.6); so as technicians, experts, consultant, assistant, development coordinators.

However, considering the challenges connected with the current economic scenario, which require a great deal of collaboration with firms and institutions being located both within and outside the cluster and having a different knowledge base, the role of the CMO became crucial, and should therefore be recognized, also even in the form of participation fees, by cluster partners. In a demanding and increasingly competitive global market environment, cluster organizations have to **cooperate internationally** in order to succeed and increase their business. Consequently it becomes important, for cluster initiatives to rely on expert personnel able to understand and to deal with the various related aspects, developing and leading the organization's firms successfully.

Not all CMOs, however, have the ability to play this role, but just those that we define "**entrepreneurial CMOs**". In the literature, entrepreneurship is defined as the ability to seek, identify and exploit new business opportunities[19]. Even if this term normally refers to firms, we consider appropriate to extend it also to CMOs and suggest that they should take on the task of search, recognition and pre-exploitation, even if they are non-profit organizations and are public or publicly funded institutions. Entrepreneurial CMO should also support entrepreneurship at cluster firms and the development of the needed competences, facilitating the

[18] Saxenian A. (1994), *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*, Cambridge, Harvard University Press.

[19] Stevenson, H.H. and Jarillo, J.C. (1990), A paradigm of entrepreneurship: entrepreneurial management, *Strategic Management Journal*, 11 (Special Issue): 17-27; Shane, S. and Venkataraman, S. (2000), The promise of entrepreneurship as a field of research, *Academy of Management Review*, 25 (1): 217-226.

emergence of strategic initiatives responding to the strategic challenges of the clusters.

Entrepreneurial Cluster Manager Organization (CMO) should be able to consider and recognize its cluster members' specificities and promote contacts and opportunities not only within the cluster but also outside and internationally, with external actors and stakeholders, recognizing and attracting opportunities that cluster members alone could have difficulties to recognize or approach. Because of the increasingly complex scenario CMOs now are operating in most European clusters, focusing not only on the aspects related to inside necessities of the cluster but also on developing, creating connections and recognizing opportunity to the outside.

In the case study reported in Box 7 are reported the strategy and the process adopted by the CMO of NCE Marine cluster to help the SMEs members, within the internationalization process. To achieve this result, from one side useful knowledge and information have been shared in the cluster; from the other side, member's specificities and needs have been considered with the aim to offer targeted opportunities. Similarly, Box 8 reports another interesting example of how entrepreneurial CMOs are creating successful occasions for firms to engage in international projects.

BOX 7 - AN EXAMPLE OF EFFECTIVE CMO STRATEGY FOR THE INTERNALIZATION OF SMES: THE NCE MARITIME CLUSTER (NORWAY)

Situated in Møre, Norway, NCE Marine is a world leading cluster in the Advanced Marine Operations for the offshore industry. This cluster is composed both by global companies and younger SMEs, which operates mainly at national level. Thanks to the different cluster companies composition, and in order to enhance and accelerate a successful internalization process of the smaller and younger companies within the cluster, the cluster development organization created an "International Package" providing assistance to the SMEs within the various stages of the process, offering diverse opportunities and sharing the bigger and older companies' experience. The activities undertaken to achieve this result have foreseen different actions. The first step has been to conduct a market research among 16 selected countries to understand how their cluster and companies were perceived and if there were opportunities for the whole cluster or for part of its members. As a result of these analyses, selected companies were invited to seminars, held by experienced speakers, to inform them about that specific market opportunities and in case they resulted interested, providing private meeting with the speakers. The package also includes a "Culture school" to make them aware about the

cultural differences in respect to the new market and the opportunity to meet also in loco, relevant companies, also with joint participation to exhibitions in order to enhance alliances and identify opportunities.
The results of the "International Package" from a SMEs perspective have been a better targeting of the market and consequently an increase rate of success. When the case study was collected, 2010/2011 several companies were experiencing different steps, as creating a business or setting alliances.

For further information: Christensen, T.A., Thomsen, M.S. and Lomholt, H.H. (2011), '24 proofs of Cluster Excellence - Successful Stories from Clusters in Northern Euroe',, The Nordic-German-Polish Cluster Excellence Project, The Danish Agency for Science, Technology and Innovation, Copenhagen.

BOX 8 - AN EXAMPLE OF EFFECTIVE CMO STRATEGY FOR THE INTERNALIZATION OF SMES: CLUSTER 55 (DENMARK/SWEDEN)

Based in Sweden, in the Øresund region, but also actives in the greater Copenhagen area, Cluster 55 is a Danish-Swedish ICT cluster, non-profit organization, composed by 92 members. Born with a different name in 1999, in the 2011 it changed it becomes Cluster 55. Focused on the creation of this international networks, the organization works to provide internalization opportunities to start ups and SMEs in the ICT sector.
Based on the company member needs and objectives, the organization arranges business trip, provides contacts (contacting potential customers or partners) and assistance support within the country or area where the enterprise would like to establish and will search for funds.
About the cluster financing method, Cluster 55 is funded by the industry for the 20% and from the EU and the Swedish State for the 80%.

For further information:
http://www.regx.dk/en/news/news-2012/maanedens-facilitatorportraet-micael-gustafsson-cluster-55.html

3.1 Entrepreneurial cluster managers skills and duties

A solid background is essential to understand the cluster and cluster members' strength and necessities in order to develop an efficient strategy for the cluster positioning and development. In this context, particular relevance should be given to the role of the cluster manager. In fact its

skills impact on the CMO performance and as a consequence on cluster results and members satisfaction. To start, **the background of the CM** seems to be relevant to enable the CM to fully understand the cluster sectors and to see through the successful opportunity and collaborations having repercussion on the cluster's performance. In this regard, respondents participating to the ClusterPoliSEE project underlined the cluster manager's role significance and the importance to hire trained and qualified personnel. Furthermore, years of experience in cluster initiatives have a positive impact on the performance and competitiveness[20]. Another essential ingredient is the CM **integrity**, especially important in the early stage of the cluster development, in order to build **trust and connections**. In fact, to create stable collaboration and cohesion among cluster members and to efficiently enhance the networking with the other stakeholders the CM have to gain the participants trust. Moreover, in the competences mix, **communication abilities and interpersonal skills** also plays their roles in developing networking and lobbing through the organization of various event and meetings, to enhance an open learning environment and to enable capabilities in the cluster. In fact, focusing on the communication aspects, the rate of contacts and the collaboration priority between cluster managers and firms, other clusters or the global market is related to the performance.[21] The relevance of the ability to communicate merged also within the ClusterPoliSEE project from data collected within different analyses, where respondents affirmed to consider important to improve the communication between cluster members, building trust and enhancing the active participation.

Within the management capabilities comes the capacity to successfully guide a team; this imply to possess also project management and analytical skills, necessary to be able to find connections, resources and opportunity and to organize them efficiently. Moreover, supported by his sector knowledge and experience, a CM has to be able to guide his cluster through a common path that he has to be able to communicate, share and pursue. In fact, lack of consensus and vision, which are usually influenced by the facilitator role, result in cluster's life cycle failure or stagnancy[22]. Last but

[20]Sölvell, Ö., Williams, M. (2013),
Building the Cluster Commons. An Evaluation of 12 Cluster Organizations in Sweden 2005-2012, *Ivory Tower Publishers*, Stockholm (p. 9)

[21] Sölvell, Ö., Williams, M. (2013), Building the Cluster Commons. An Evaluation of 12 Cluster Organizations in Sweden 2005-2012, Ivory Tower Publishers, Stockholm

[22] Ingstrup M.B. and Damgaard T. (2011), Cluster facilitation in a cluster life cycle perspective, Competitive research paper Submitted for the IMP 2011 Conference at

not least, the CM has to possess leadership skills to be able to motivate, empower and help the cluster member to work together in order to overcome possible internal competition and to obtain consensus and member satisfaction. In fact the **facilitation** should enhance the network among members, through the creation of infrastructure, listening and supporting cluster members and their expectation with specific projects.
In order to better perform in a complex environment and to face future challenges the managerial team has to possess not only a solid background and personal skills but also a clear understanding of its cluster's development stage and of the needs and opportunities related to the context in which it is operating. In fact, as explained by Christensen (2012), specific cluster programmes and policies have to address the individual stage of development of the cluster. Moreover, CMOs should consider for the other characteristics of their clusters, discussed in section 2, so that the CM duties and competences vary considering the various development stages of a cluster, focusing and answering to the specific cluster life cycle's needs and objectives.

3.2 Certifications, platforms and training tools to support cluster management organization

Nowadays Cluster managers can rely on courses, certifications and support from international organizations with online platforms, that provides training programme, books and reports related to clusters thematic and CMOs. In fact, the development of common standards for excellent cluster management is required to enhance a better mutual understanding, essential for the transnational cooperation among networks and clusters organizations[23]. In the same document is also explained that the European Cluster Excellence Initiative (ECEI) proposed **31 indicators used by "Cluster Analysis Expert"** for assessing the excellence cluster management organization status. Excellent clusters will be awarded with a label and also recommendations will be provided if necessary. Furthermore, as underlined in a document by ECEI [24] the quality label is also aimed at

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University of Strathclyde, UK, Department of Entrepreneurship and Relationship Management . University of Southern Denmark

[23] Hagenauer, S., Kergel, H. and Stürzebecher, D. (2011), European Cluster Excellence BASELINE, Minimum Requirements for Cluster Organisations, http://www.cluster-analysis.org/downloads/20111128_European_Cluster_Excellence_BASELINE_web.pdf

[24] European Cluster Excellence Initiative: "The quality label for cluster organisations -

motivating cluster managers to improve their performance by comparing with others and learning from best practices.

The large number of web platforms and blogs offering different types of support and information to CMOs, cluster facilitators, entrepreneurs and researchers may have both a global perspective and a focused perspective on a specific area or country. Below are considered only few examples of the broad variety available on the web.

The following example of online platforms is specifically focused on European perspectives and it is the result from analysis conducted on a large number of European cluster organizations:

- The **Cluster Observatory Platform** is aimed at researcher, policy maker and cluster organizations and it provides data on clusters organizations mapping and cluster related reports.
- The **Cluster Excellence Initiative** is the result of the experience and work of European professionals and organizations. The various web platforms connected to the Cluster Excellence Initiative are focused on diverse purposes as providing connections among cluster organizations, courses and quality indicators for cluster management. In this context the ESCA is responsible for clusters and cluster management benchmarking and quality labelling.

Finally, a case of a national initiative that becomes international is represented by REG X. Based in Denmark, interacting with Danish clusters and collaborating with Danish and international experts, REG X is a website looking at becoming one of the leading clusters' development centres.

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criteria, processes, framework of implementation". (2012) http://www.cluster-excellence.eu/fileadmin/_cluster-excellence/downloads/GOLD-Assessment.pdf

4 SUPPORTING SMES COOPERATION

4.1 The prevalence of SMEs in Europe

As reported by European Commission data[25] in Europe nine out of ten companies are micro enterprises with less than ten employees, and SMEs represent the largest share of companies. Such a prevalence of SMEs characterizes also European clusters, as from the analyses conducted within the ClusterPoliSEE project[26], where it resulted that in most of South-East Europe regions, clusters are mainly composed by micro companies (less than 10 employees). Among the exceptions it is interesting to evidence two clusters named "TECES" and "GIZ ACS", respectively from the Slovenian regions of Podravje and Osrednjes Iovenska that are composed for the 78% and 66% from large companies and that are followed, with a large gap from the "Auto Muntenia Competitiveness Pole" (Romanian region of SudMuntenia) whose large companies represent the 39% of the total. These data are confirmed by another analysis within the same project, where all the 45 clusters organization analyzed are composed by small innovative companies (less than 50 employees) while in only 29 out of 44 there is the presence of large companies (more than 250 employees) as part of the cluster[27].

On the one hand, the prevalence within the European context of SMEs emphasizes the crucial economic importance of these organizations, being not only the backbone of European production but also an opportunity to create future employment and innovation. On the other hand, due to their dimension, these types of companies have to face different kind of issues that may negatively affect their performance when competing in an international market environment. A case in point is represented by their relatively limited financial capabilities that result in troubles to invest in R&D and to compete globally; another aspect is connected to the difficulties to access human resources[28]. Finally, the low number of large companies among SEE countries – that may collaborate and support SMEs to enhance

[25] European Commission, data update: 27/05/2013

[26] In the document "WP4.1" 121 clusters, representing in different number the eleven countries participating to the ClusterPoliSEE program, have been interviewed.

[27] In the document "WP4.1" 47 cluster organizations from the countries participating to the ClusterPoliSEE program, have been considered.

[28] Kim, Y. and Vonortas, N.S., (2014), Cooperation in the formative years: Evidence from small enterprises in Europe, European Management Journal

the innovation process – stress the importance to focus on collaboration strategies to pool resources, according to the analyses conducted among the SEE nations within the ClusterPoliSEE project.
In this direction, within a EU perspective, goes the creation of the SBA (Small Business Act[29]) adopted in June 2008 by the European Commission, that, aware of the economical relevance of SMEs and of the difficulties that prevent their growth and productivity, implemented the SBA with the aim to "improve the overall approach to entrepreneurship, permanently anchor the 'Think Small First' principle in policy making from regulation to public service, and to promote SMEs' growth by helping them tackle the remaining problems which hamper their development." The SBA is composed by ten guiding principles whose focus is to implement national and EU policies, also creating a level playing field for SMEs[30].

4.2 Fostering cooperation among SMEs

The main tool to overcome such limitations and weaknesses of SMEs, while valuing their flexibility and innovation potential, is to **promote cooperation among them**. In fact, the positive effects of firms' networking from an intra-cluster perspective have been widely underlined within the literature and collaborations seem important in strengthening SMEs innovation capabilities and competitiveness. As Villa and Bruno[31] pointed out in their 2013 paper: "through networking, individual SMEs can address the problem related to their size and improve their competitive position". Cooperation is a key factor, essential at both intra-and inter-cluster level because it enables to achieve innovation, competitiveness and to efficiently implement a S3, allowing the various actors to find synergies with other partners, to learn from best practices and to improve their capabilities.
Cooperation within the cluster for the development of innovative projects involves not only SMEs but also other actors. If the main aim of the cooperation is to develop innovations, so the collaboration between research organizations, universities and enterprises in the form of start-ups

[29] http://ec.europa.eu/enterprise/policies/sme/small-business-act/index_en.htm

[30] Commission of the European Communities (2008) "Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the regions." "Think Small First" A "Small Business Act" for Europe.
[31] Villa, A. and Bruno, G. (2013), Promoting SME cooperative aggregations: main criteria and contractual models. International Journal of Production Research,51(23-24), 7439-7447.

and SMEs are particularly relevant. Cooperation with other cluster stakeholders such as R&D institutions, universities or training and education providers, is considered extremely important for their contribution in increasing performance and achievements. In fact universities and SMEs represent two communities that strongly differ for culture values and mission and that can both benefit from their collaboration. From SMEs' perspective, which often lacks of suitable research equipment, this type of collaboration means to acquire new technologies that allow them to maintain or become competitive on the national/international market and to improve employment; moreover SMEs may individuate and hire new and young, employees with a high formation. Nevertheless, R&D institutions, universities or training and education providers seem to represent altogether less than half of the cluster composition both in Central and South East Europe areas. The low amount of universities, technical colleges and education providers involvement in the activities of clusters of most SEE countries is also confirmed by the "Foresight exercise Diagnosis report" developed within the ClusterPoliSEE project, where different subjects interviewed lamented the **low collaboration with these stakeholders** and someone underlined the necessity to reconsider the education programs in order to encounter the market demand.

4.2.1 Collaborating within and outside the cluster

Such cooperation initiatives may be temporary and very targeted, being thematically-driven and flexible in their composition[32], but can even constitute the starting point for the formation of a new and permanent regional cluster. Moreover, they may take place at different levels, that is among cluster firms or involving firms and institutions located outside the cluster, which possess competences that are relevant for cross-cluster cooperation. In this sense, SMEs may collaborate at different levels:

- Intra-cluster, cooperating with firms part of the same cluster, e.g., to support the entrance in new, international markets. These collaborations are likely aimed at finding synergies and combining clusters knowledge to improve their competences and performance, to better respond to the market needs and to increase their international visibility;

[32] Such non-permanent targeted innovation networks or clusters are already described as example for Finland´s cluster policy in the TACTICS publication: 'Where the cluster winds are blowing - Better cluster policies and tools for implementation', by Emily Wise and Cecilia Johansson, Vinnova in October 2012.

- Extra-cluster but intra-industry, cooperating with firms and/or institutions specialized in the same industry but located outside the district, i.e., international lead firm;
- Extra-cluster and extra-industry, cooperating with firms and/or institutions specialized in complementary or alike sectors, especially to develop innovative projects and embed new technology within the traditional district specialization.

Extra-cluster or trans-regional networking may be especially useful to enhance synergies and to improve innovation capabilities. In this regard at EU level there are many programs and projects, enhancing inter-cluster collaborations that result in different forms of aggregation and involve diverse actors located in different regions within the same or diverse countries. In the following examples, are described various types of trans-regional cluster networking: within the same country at box 20, among different nations at box 21 and last but not least a meta-cluster case study and definition (box 22).

Box 9 - Trans-regional collaboration within the same country: Smartcommunitiestech

An example of Trans-regional cooperation within national boundaries is made by "SmartCommunitiesTech" that is the Italian Technology Cluster for Smart Communities. Its goal is to implement innovative models aimed at answering to social issues like as mobility, health, energy efficiency and renewable energies justice, security and land monitoring education on an urban and metropolitan scale developing "a new idea of citizenship". This cluster is organized as a cooperative network with a central point of coordination, also considering the regional interests and sharing a common strategy. The Coordination Management Board is composed by ten board members located in different Italian regions and with different structures like as a High Tech District, a company in ICT, a Consortium composed by the university, public research centers and regional bodies. This board manages cluster members and managers activities supporting R&D projects and services. At the moment the cluster is working at four different projects in mobility, energy, tourism and education.

For further information: http://smartcommunitiestech.it/organization-2/

Box 10 - Trans-regional collaboration among different countries: The Alpine Space Programme

The Alpine Space Programme (2007-2013, 2014-2020) is aimed at enhancing the cooperation among participating regions from the following states: Austria, France, Italy, Slovenia, Germany, Liechtenstein and Switzerland to achieve a smart, sustainable and inclusive growth strategy and an economic, social and territorial cohesion. The programme is currently running many projects in different sectors; examples are the "Alps Bio Cluster" and "Alps4EU". Enhanced by "Alpine Space Programme" and specialized in the Biotech and Medtech sectors the Alps Bio Cluster was the result of a European project started in 2008 and ended in 2011 co-funded by ERDF. It was composed by eight partners from six Alpine regions collaborating together to support the transalpine cooperation among R&D, universities, start-up and SMEs on specific thematic networks. The aim and achievements have been the creation of connections between research centers and young, innovative SMEs enabling their cooperation in innovative ventures and facilitating their access to this competitive market.

For further information: http://www.alpine-space.eu/en/home/

4.2.2 Contracts forms supporting aggregation among SMEs

At this point it is useful to point out that several forms to support the aggregation of SMEs have been developed within the European Union. Despite the different contractual conditions or structure, they all share a focus on the collaboration aspect, giving SMEs a concrete instrument to cooperate on innovation, internationalization or other relevant issues that directly related with their competitiveness. In the following paragraphs some of such instruments, which seems particularly interesting in the context of SEE regions, are reviewed.

One of such instruments is the "**business network contract**", developed recently in Italy through the Law 99/2009 following the European "Small Business Act"[33]. The contract is a written, private agreement between two or more enterprises which sets common objectives aimed at increasing innovation and competitiveness, rights and duties; preserving their legal independence and business autonomy. As Villa and Bruno (2013)

[33] Ferrari, C. (2010), The Italian "network contract": a new tool for the growth of enterprises within the framework of the "Small Business Act"? The Columbia Journal of European Low Online, 16: 77-83

underlined, "the law does not force the enterprises to be of the same nationality, thus international networks are allowed." Box 11 reports an explicative example of this type of contract's application highlighting the benefits for firms participating to it, which resulted in the collaboration agreement among four different companies and a financial institution under the name of "ENERGY & LIFE".

BOX 11 – THE ITALIAN BUSINESS NETWORK CONTRACT, AN EXAMPLE: ENERGY & LIFE (ITALY)

Located in the province of Verona, Italy, "Energy & Life" has been one of first business network created in Veneto region and the first in its sector in Italy since the law introduction. Energy & Life was founded in 2010 by four enterprises specialized in the same sector, energy, but different for the dimension, the specialization and the markets targeted. All based in the Verona province, these enterprises have different specialisations as described below:

- ForGreen is a company specialized in the development of models, projects and services in the renewable energy sector.
- ESCO Europe is an energy service company specialized in clean energy solutions and in energy efficiency systems.
- ICI CALDAIE SpA is leader in Italy and Europe in residential and industrials boilers production aimed at the development of energy efficient, costs saving and environmental friendly systems.
- Linz Electric SpA is an industrial company specialised in the planning, production and sale of alternators and rotating welders.

The common goal for these enterprises is to reach new market opportunities through projects aimed at the development of energy saving and renewable energy technologies. In January 2011 a financial institution, Cassa di risparmio del Veneto-Gruppo Intesa San Paolo, become part of the network as financial advisor and coordinator. While all the companies still operates in their own sectors, they are also now able to offer a wider range of technologies, thanks to the collaboration with the partners that results in a common product list. Furthermore the members benefit from a cost reduction and a better access to financial credit and R&D.

Another possibility for firms to increase their cooperation potential is represented by the Science and Technology Parks with examples in different European countries. Science and Technology Parks are "aggregations of independent bodies" where both firms and research institutions collaborate with the aim to enhance high-technology and innovation production, sharing

services and the facilities[34]. Among the various examples named by the two authors, in this report the Greek "Patras Science Park" is described below.

BOX 12 - SCIENCE AND TECHNOLOGY PARK, AN EXAMPLE: PATRAS SCIENCE PARK (GREECE)

To overcome the unemployment and the negative growth the Greek government decided to enhance the connection between research bodies and enterprises establishing, in 1989 Patras Technological Park, that lately, 1992 changed its name as Patras Science Park (Villa and Antonelli, 2008)[35] Today the PSP has twenty-four members companies and institutions for a total of 124 employees. Its mission is the international recognition as a leading competitive pole for the technological and innovative entrepreneurship that will be achieved working as an incubator for start-ups, spin-outs and new technology based enterprises. It will also act as a business park and as a support centre through the development of initiatives and services aimed at supporting companies and delivering Regional development projects.

A third possible form of enterprises aggregation within a cluster is the **consortium**. A consortium can be defined as a short-term arrangement in which several firms pool their financial and human resources to undertake projects benefitting all group member but that they would have not afford to develop alone. Box 13 reports an example of an Italian Consortium resulted from an agreement of companies and other actors with the aim to improve competitiveness and visibility.

BOX 13 – AN EXAMPLE OF AN ITALIAN CONSORTIUM: DISTRETTO TECNOLOGICO TRENTINO SCARL

Part of the District Energy and Environment Habitec, Distretto Tecnologico Trentino was founded in September 2007 by 149 private members and 11 public bodies including research centres, university and municipalities, with the deposit of shared financial resources.
The main objectives are to enhance the collaboration between public institutions, private companies and agencies, to improve the regional

[34] Villa, A. and Bruno, G. (2013), Promoting SME cooperative aggregations: main criteria and contractual models. International Journal of Production Research,51(23-24), 7439-7447.doi: 10.1080/00207543.2013.831503
[35] Villa, A. and Antonelli, D. (2008), A Road Map to the Development of European SME Networks: Towards Collaborative Innovation, Springer

energy and building sectors, becoming competitive and providing solutions for the national and international markets. Efforts are placed in R&D, to develop new environmental friendly and low consumption buildings and to adopt new energy production systems.

5 Innovative new ventures

In the previous chapters we observed how SEE clusters differ, among the various specificities, for dimension, composition, organization and life cycle; reflecting an heterogeneous framework that implies the need for specific policies and actions aimed at supporting their development and at achieving their objectives. In this perspective, the representatives of clusters located within the regions participating at the ClusterPoliSEE project underlined the importance to invest in innovation and R&D, internationalization and cooperation among clusters and with important stakeholders as universities, in the development of skilled workforce and sustainable growth within a S3 strategy. In order to reach such goals and because of the importance of innovative and fresh ideas, other than supporting the cooperation among SMEs and among SMEs and institutions, special attention should be given to the growth of new enterprises as well. New ventures, in fact, detain a high innovation potential, being often founded to exploit new technological applications or markets. Moreover, they are a driver for growth and new jobs formation.

TABLE 1 - A TAXONOMY OF NEW VENTURES

Category of new venture	***Sub-category***	***Founder***
Parent-company venture	Parent spin-off	One existing company
	Joint-venture	More existing companies
	Franchising	One existing company and a franchisee
De novo	(De novo) spin-off	(One or more) employees of (one or more) existing company from the same or different industries
	Other de novo types	(One or more) person not previously employed in the same or other industries

Our elaboration from Helfat and Lieberman, 2002

Helfat and Lieberman[36] provide the most systematic taxonomy of new entrants, which is summarized in Table 1. At the core of the theoretical framework of the authors there is the idea that new businesses are not equal but spring from different generative mechanisms. The authors

[36] Helfat, C. E., & Lieberman, M. B. (2002), The birth of capabilities: market entry and the importance of pre□history, Industrial and Corporate Change, 11(4), 725-760.

postulate that each type of entrant is different according to its heritage particularly with regard to the strength of ties to existing firms and to the types of resources owned at the time of entry. They advance a taxonomy of new entrants that goes beyond new ventures comprising also established firms that diversify into new or established markets by internal growth or acquisitions.

Among the entrants that enter markets by setting new legally, and organizationally, separate new ventures, there are the "parent-company ventures" which are created out of an initiative of an established firm. Parent-company ventures are classified in parent spinoffs, i.e. new ventures partially owned by an existing firm, joint ventures, i.e. new ventures created by two or more existing companies, and franchises, i.e. new ventures created by an established firm (franchisor) and a contractual partner (franchisee). The final category of entrants, "De novo entrants", does not involve an established firm but are founded by one or more individuals. Within this category, Helfat and Lieberman distinguish "entrepreneurial spinoffs" and start-ups. In the case of "entrepreneurial spinoffs", the founders are ex-employees of a firm that operates in the same industry of the new venture. In the case of start-ups', the founder lacks such a previous employment ties to other firms in the industry.

As in the case of clusters, also new ventures may be of different types and their creation process is influenced by different factors, like the environment where the start-ups process take place.

5.1 New ventures and resources accessibility

For new ventures, especially for the "de-novo" ones, the possibility to access funds and other valuable resources is even more important than for incumbent firms, due to the importance of investing during the early stage of the start-up and the limited financial availability at this stage. At this regard venture capital and business angels may play a key role. With respect to the Venture capital industry, a recent analysis[37] supported that the "European tech sector" has been growing during the last years thanks to VC investments, accelerators and business angels. The venture capitals share appeared being decreasing since 2007, but a positive trend emerged during the very last year[38]. Other than such financing opportunities, universities may play a key role as well, becoming the provider of

[37] http://startupxplore.com/blog/5-facts-better-understand-european-startup-ecosystem/
[38] http://startupxplore.com/blog/will-2014-record-year-european-startups/

"university venture facilities, as valuable as funds" like equipment, infrastructures, contacts as well as training, research fields and students.
The possibility to support new ventures is a key object for the European Commission. It has included entrepreneurship among the "European measure of success" and it has undertaken action to support entrepreneurs through the launch of initiatives, from one side, and to increase funding and networking opportunities for SMEs and Start-ups from the other, stimulating Business Angels and Venture Capital investors. In this perspective, in 2013 the Commission adopted a new "**European Venture Capital Fund**"[39] label, providing a single set of rules aimed at enhancing the venture capitalists' investments to support young and innovative firms across EU. Indeed also private venture capital companies are working in this direction, an example is provided by Credo Ventures[40] that focuses its attention on early stage firms, located in Central and Eastern Europe, with high growth potentials and interested in expand out of the regional borders.
Box 14 reports an example of the measures developed at the EU level to support new firms formation and development.

BOX 14 – STARTUPS EUROPE INITIATIVE IN THE ICT SECTOR

Within the Entrepreneurship 2020 Action Plan, the European Commission Vice President Neelie Kroes launched the initiatives Start-up Europe aimed at fostering the business environment for web and ICT entrepreneurs in Europe. The initiative' objectives are to reinforce networks among people and association, to inspire entrepreneurs providing role models, success stories and through the reporting about new and innovative start-ups, for example by way of the Tech All Stars (http://techallstars.eu/) web and competition. Furthermore ICT start-ups may rely on advices, legal assistance, support from EU funded projects available on the Start-ups Europe Hub website (http://www.startupeuropehub.eu/).
Start-up Europe's Accelerator Assembly is the industry-led network for start-up accelerator programs in Europe.

For further information: http://www.acceleratorassembly.eu/home
http://ec.europa.eu/digital-agenda/en/about-startup-europe

5.1.1 Supporting gender and diversity in new ventures

[39] http://ec.europa.eu/internal_market/investment/venture_capital/index_en.htm
[40] For more information see: http://www.credoventures.com/credo/company

Initiatives at the European level has been undertaken also to bridge the gap between man and female entrepreneurship, supporting and fostering women participation. The object of these policies is to unleash the creativity and innovation potential entailed in the participation of a wider and more diverse set of entrepreneurs. In this regard opportunities and incentives have been developed at public and private level. Considering at first the European Commission level, among the actions undertaken it is worth to mention the Women Entrepreneurship portal[41], aimed at supporting women entrepreneurship providing information such as: "links to the websites of women entrepreneurs' representative organizations, networks, projects and events that relate to the promotion of female entrepreneurship".
Among the leading European platforms with a gender dimension, it may be interesting to consider ECVT (European Centre for Women and Technology) that working in a 2011-2020 perspective is the result of a multi-stakeholder partnership of organization and individuals representing high-level expertise regarding women and technology development and coming from different sectors as universities, business and government. All these members collaborate with the aim to foster women presence in the technology and specifically in the ICT sector.

5.2 Innovative new ventures and clusters

Considering for the favourable characteristics of clusters described in paragraph 1.1, if the cluster is well functioning it is a favourable place for new firms foundation. The high knowledge flows taking place within the clusters, the presence of an high number of specialized companies and of skilled workforce, the coexistence of different firms and institutions working on different stages of the same value chain and entailing complementary knowledge bases, are all aspects that support an higher rate of new venture formation and a lower mortality rate of newly-formed ones.
In their report Lindqvist and Sölvell[42] explain that the two "seeds of innovation" are the research by one side and firms and entrepreneurs by the other. These "seeds" have to be connected with clusters where they find the "soil" to transform knowledge and ideas into innovation. In this regard

[41] http://ec.europa.eu/enterprise/policies/sme/promoting-entrepreneurship/women/portal/index_en.htm#h2-3
[42] Lindqvist, G. and Sölvell, Ö. (2011), Organising clusters for innovation: lessons from city regions in Europe, CLUSTNET final report.

Gilbert et al.[43] underlined: "(…) ventures located within geographic clusters absorb more knowledge from the local environment and have higher growth and innovation performance, (…)." In this direction goes also a European' s cluster policies analysis conducted by Oxford Research AS., where in regard to clusters' importance it is underlined: "(…), the level of business formations tends to be higher in clusters. Start-ups are more reliant on external suppliers and partners, all of which they find in a cluster. Clusters also reduce the costs of failure, as entrepreneurs can fall back on local employment opportunities in the many other companies in the same field."[44]

In this sense, other than providing funds for new firms to be founded within clusters, it is important to create occasions for potential entrepreneurs to access knowledge flows and to **combine knowledge available within the cluster,** often specialized in traditional industries, **to knowledge developed elsewhere**, especially when entailing the possibility to insert new technologies within the clusters and develop new applications and markets. New firms to be supported, however, should not be the 'replicative ones', i.e., those that serve the same markets of the founding firms using the same technology and having the same business model. Cluster policies should indeed support the creation of innovative new ventures, being companies founded with the aim of introducing new product, processes or business models, able to combine in novel and smart way the competences available within the clusters with that of external institutions.

[43] Gilbert, B.A., McDougall, P.P. and Audretsch, D.B. (2008), Clusters, knowledge spillovers and new venture performance: An empirical examination, Journal of Business Venturing, 23 (4) 405-422. p.405

[44] Oxford Research AS, (2008), Cluster policy in Europe. A brief summary of cluster policies in 31 European countries, Europe Innova Cluster Mapping Project, p.5

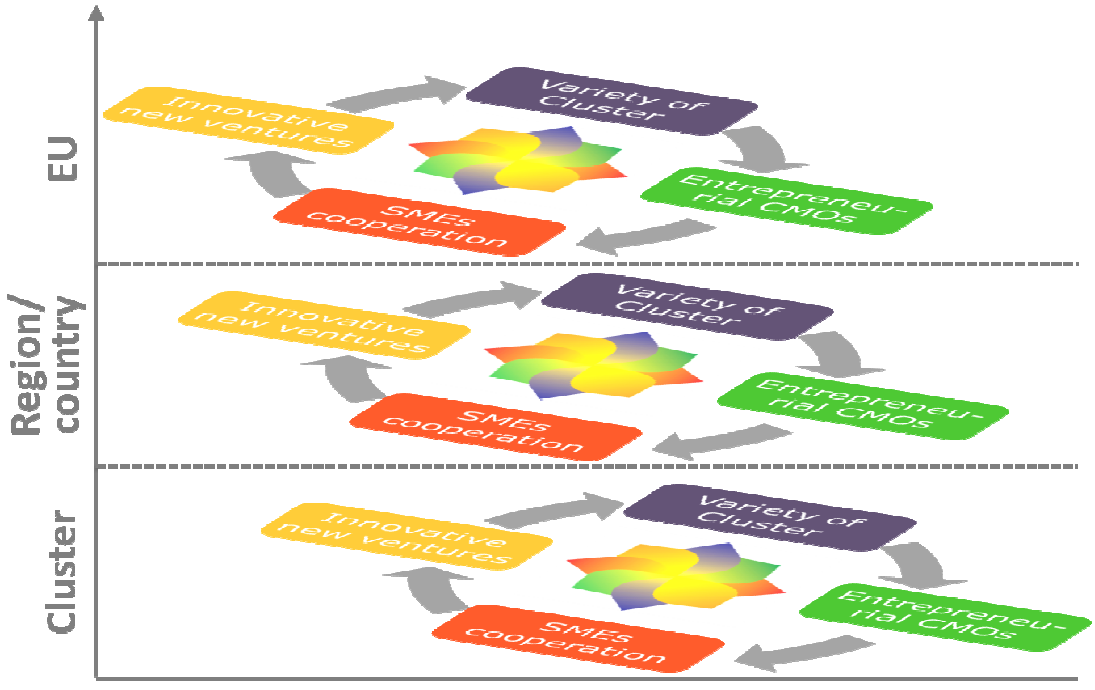
6 A MULTI-LEVEL PERSPECTIVE FOR CLUSTER POLICY MAKING

In the previous paragraphs, the proposed framework for policy recommendations has been discussed highlighting the key element of the four axis presented, being:

1. Considering the variety of clusters;
2. Entrepreneurial Cluster Management Organizations;
3. Supporting SMEs cooperation;
4. Supporting innovative new ventures development.

In this paragraphs we will introduce a fifth element – the multi-level perspective of the framework proposed – which is cross-cutting all the preceding elements and that is depicted in Figure 3.

FIGURE 3: A MULTI-LEVEL PERSPECTIVE OF THE PROPOSED FRAMEWORK FOR POLICY RECOMMENDATIONS WITHIN THE CLUSTERPOLISEE PROJECT



The fifth element of the framework – *the multi-level perspective* – aims at highlighting that the elements proposed so far as axes for recommendations for cluster policy development should not be understood only at the cluster level. Rather, in order for successful cluster policies to be developed,

policies developed at the cluster level have to be complemented and co-developed with policies developed at the regional-national and EU level. If the three levels are not aligned, even the best cluster-level policies will be vain or, at best, not efficient.

6.1 Smart Specialization Strategy, clusters and the multilevel perspective

The Smart Specialization Strategy (S3) approach, which is embedded in the WG3 (International Cluster Cooperation and networking) and WG5 (Clusters and Regional Specialization) of the ClusterPoliSEE framework, is supportive of this need for a multi-level perspective in cluster policy development.
This concept was developed by a group of academicians in 2008 and had a significant impact on the EU policy audience very quickly. According to the smart specialisation concept, regions have to focus on their peculiar strengths. Such strengths may be defined as activities and industries well diffused in a region, which hold a competitive advantage at the global level and for which it seems appropriate to develop innovation policies aimed at support their competitiveness. Following the triple helix approach, a S3 comprises three types of actors:

1. firms, being manufacturing or service;
2. knowledge institutions (including universities, KEAs and KIBS);
3. policy makers, first of all the regional ones.

In order for the selected specialisation to be truly smart, such three subsystems need to interact in an effective and efficient manner, such is suggested in the triple helix model. The involvement of all the three category of actors is particularly relevant for the S3 to be effective. "Smart specialisation must not be associated with a strategy of the simple industrial specialisation of a particular region in tourism or fisheries (to take two fairly low tech sectors as an example). Instead, smart specialisation is about R&D and innovation and it might suggest that such a region should specialise in R&D and innovation related to the sector of tourism or fisheries. This means that smart specialisation is a process addressing the missing or weak relations between R&D and innovation resources and activities, on the one hand, and the industrial structure of the economy, on the other." (p. 5)
Obviously, clusters represent a fundamental resource to design and implement smart specialisation strategies, considering that they likely constitute a large part of the strength of the region. The relevance seem confirmed by the results of various analysis conducted within the ClusterPoliSEE project. In fact, among the 46 Cluster Organizations interviewed, the 65% of respondents affirmed that their cluster office was

involved in the elaboration and implementation of smart specialization strategies in their region. Despite the S3 development is at different implementation stages among the various regions, the analysis highlighted the importance for most respondents to achieve the cluster competitiveness and sustainability through the development of an efficient Smart Specialisation Strategy. The relevance of clusters for the S3 is explicitly recognized by the EU "Guide to Research and Innovation Strategies for Smart Specialization"[45]. More precisely, to ensure that this resource can be effectively used in the prospect of smart specialisation, the policy makers have to bring three types of action onto the field:

- using cluster mapping to identify regional competences and assets;
- support clusters to meet the objectives of smart specialisation;
- strengthen local and international cluster cooperation, in particular for addressing emerging industries with the aim of making use of complementarities between regions.

A smart specialisation strategy shall therefore begin with an analysis of potential partners in other regions to avoid unnecessary duplication. In this sense, regional smart specialisation and trans-regional (trans-national) cooperation are two sides of the same coin. As the S3 approach makes evident, cluster policies and cluster development measures cannot be developed in isolation. In fact, Cluster policies have to be realized considering specialization and the S3 strategy of the region so as complementary specialisation of other regions within the same countries or also within other EU countries.

In this sense, the proposed framework for policy recommendation for SEE regions needs to be understood within this three level of analysis:

- the cluster level, being the level at which specific needs and strengths are identified and tackled;
- the regional or country level, being the level at which S3 strategies are developed;
- and the EU ones. being the benchmark level to identify the key strength of the region and where key complementary resources, being other firms, knowledge institutions or clusters are located.

6.2 Cooperation at the regional and EU level: regional clustering and meta-clusters

[45] http://s3platform.jrc.ec.europa.eu/en/c/document_library/get_file?uuid=e50397e3-f2b1-4086-8608-7b86e69e8553

The multilevel perspective of the model proposed is particularly evident at SMEs cooperation level. Other than taking place among firms within the cluster, cooperation can take place at the cluster level, involving clusters within the same region (regional level) or clusters located in other EU regions (EU level).
Cooperation is a key factor, essential at both intra-and inter-cluster level because it enables to achieve innovation, competitiveness and to efficiently implement a S3, allowing the various actors to find synergies with other partners, to learn from best practices and to improve their capabilities. The cross-cluster collaborations sees the participation of different actors at different level, leading to the Regional clustering or Trans-Regional, Trans-National cooperation with the aim to become more competitive and acquire visibility in the global market, sharing knowledge, competences and jointly working at projects.
As far as **regional clustering** is concerned, it involves the collaboration among clusters specialized in the same or different sectors, which decide to foster common projects – i.e., related to innovation or internationalization – or even to merge the existing clusters in order to concentrate their energies on the regional strengths and to develop along the smart specialization strategy defined. In other words, such regional cooperation projects may stem from existing sub-regional (industry-based) clusters and potentially from businesses and institutions which, even if not part of a cluster, still possess competences that are relevant for cross-cluster cooperation being temporary and very targeted initiatives, thematically-driven and flexible in their composition[46], that even constitute the starting point for the formation of a new and permanent regional cluster. The option of regional clustering is meaningful if it allows to put together existing actors (including firms, knowledge institutions, sub-regional clusters) specialised in different fields that are complementary, so that the system as a whole will have better chances than its single parts. In other words, the idea of regional clustering is based on two conditions:

1. the elements part of the regional clustering are adequate in terms of their number and quality;
2. the result of such process is to improve the chances of the region to reach a competitive position in one of the emerging industries.

[46] Such non-permanent targeted innovation networks or clusters are already described as example for Finland´s cluster policy in the TACTICS publication: 'Where the cluster winds are blowing - Better cluster policies and tools for implementation', by Emily Wise and Cecilia Johansson, Vinnova in October 2012.

The same holds true for cooperation across cluster at the EU perspective, among clusters located in different regions that share complementary specializations or objectives, which is especially useful when highly innovative and high-tech trajectories have to be explored. **Trans-regional and trans-national networking** may be useful to enhance synergies and to improve innovation capabilities. Many programs and projects are developed at the EU level enhancing inter-cluster collaborations that result in different forms of aggregation and involve diverse actors located in different regions within the same or diverse countries. The trans-regional cooperation may also acquire the name of Meta-cluster if the collaborations are among cluster located in at least three different regions. Within the Alp4EU project[47] run by the "Alpine Space Programme", in fact, meta-cluster concept are defined as a "trans-regional network of cluster initiatives, which focuses on the same or complementary specific technological field or sector. A meta-cluster consists of at least three cluster initiatives in three different regions." The objective of Alps4EU project, which took place between September 2011 and March 2014, was to overcome clusters initiatives fragmentation and favour the emergence of meta-clusters (trying to get a common definition), applying a macro-regional vision and driving Alpine area clusters to be more competitive in the European scenario for the benefit of all Alpine Space's economy.
An important EU project related to the meta-cluster concept is Cluster Cord where clusters specialized in the same field but located in different EU regions participates together and whose main characteristics and outcomes are described in box 15.

BOX 15 – META CLUSTERS: THE CLUSTERS-CORD PROJECT WITHIN THE CENTRAL EUROPE PROGRAMME

The CLUSTERS-CORD Project, which run between March 2010 and February 2013, took place within the Central Europe initiative programme and co-financed by ERDF. The project has been created with the objective to promote best practices among CM and to enhance the cooperation among clusters in the same sector while located in different geographical areas. The Cluster Cord project has been aimed at the creation of several meta-clusters. An output of the project was the formation of the "Energy and Environment Meta-cluster", formally created in Prague in February 2013. The meta-cluster is composed by the following clusters: Clusterland

[47] Welck, H. (2012), Concept of Meta-Cluster in the Alpine Space - Overcoming the Fragmentation of Cluster in the Alpine Space -, Alps4EU (pag.8)

Umwelttechnik-Cluster (an Austrian cluster for environmental technologies), CREA Hydro & Energy Cluster (a Czech republic cluster focused on renewable resources, water and waste management), ENERGOKLASTR (specialized in renewable energy resources and lowering of technologies' and buildings' energetic demand, based in Czech republic), Ecopolis (an Hungarian cluster active in the environmental protection, innovation support and sustainable development), Lombardy Energy Cluster (Italian cluster working in the power generation, transmission and distribution field), SIDE-CLUSTER (a Polish cluster in the wood industry) and Energy Cluster West Slovakia (a Slovakian cluster which main fields of interest are the energy industry, regional development and education support). The main purposes of the Meta-cluster includes fostering the international R&D cooperation, sharing skills, services, facilities and technologies, developing common marketing activities and to stimulate the awareness of policymakers.

For further information: http://www.clusterscord.eu/

The discourse on the diversity of clusters is of course valid also when analyzing regional or transnational clustering or meta-clusters. In the effort to demonstrate the usefulness of transnational networking and clustering – being identified as a way for SMEs to achieve the necessary size to overcome "insufficient critical mass" of companies in a sector locally – a 2012 report by the Europe Innova initiative by the European cluster Observatory[48] analyzed 84 transnational networks of cluster organisations throughout Europe. Based on this extensive analysis, they provide a classification of transnational network of clusters based on two dimensions: sector specificity and actor diversity. They identify four categories of transnational cluster networks, summarized in Table 2, being:

- DTGN - Diverse Transnational General Network: non-sectorial network with a diverse membership base without a dominant actor. (i.e. Cluster-Excellence.eu)
- DTSN - Diverse Transnational Sectorial Network: sectorial network with a diverse membership base without a dominant actor. (i.e. Alps Bio Cluster)
- HTGN - Homogeneous Transnational General Network: non-sectorial network with a dominant type of actor that could be for example Cluster Organizations (i.e. Cluster Cord Project is a HTGN-CO).

[48] Walerud C., Viachka A. (2012) Transnational networks of cluster organisations. Deliverable for the Europe Innova – European Cluster Observatory

- HTSN - Homogeneous Transnational Sectorial Network: sectorial network where more than 50% actors belong to an actor type. (i.e. Energy and Environment meta-cluster should be defined as a HTSN-CO).

TABLE 2 - CLASSIFICATION OF TRANSNATIONAL NETWORK ACCORDING

		Sector Specificity	
		General	Sector-Specific
Actor Diversity	No Dominant Actor Type	Diverse Transnational General Network (DTGN)	Diverse Transnational Sectoral Network (DTSN)
	One Dominant Actor Type (>50%)	Homogeneous transnational Sectoral Network (HTGN)	Homogenous transnational Sectoral Network (HTSN)

Walerud and Viachka (2012), p.2