

THE STRATEGIC POLICY FRAMEWORK for SMART SPECIALISATION in FLANDERS

Policy Note of the Department Economy, Science and Innovation (rev. 12/2014)

CONTEXT

The 'Strategic framework for Smart Specialisation in Flanders' describes the ongoing policy process that will lead to the designation of prioritised areas in the evolving innovation and transformation strategy of Flanders.

Smart specialisation has been adopted by the Flemish Government as a guiding strategic policy principle for innovation and industrial policies in the Concept Note 'Smart Specialisation Strategy for a Targeted Cluster Policy' (8 March 2013). Because of the recognition of this key role of the smart specialisation strategy for Flanders' future (going beyond the inclusion in European cohesion policy) the formal identification of specific prioritised areas has to be supported by a governance process that requires a new policy cycle that is starting after the 2014 elections.

The political and stakeholder commitment is an essential feature of the smart specialisation strategy. The smart specialisation strategy of Flanders is therefore still at the stage of building the foundations for a strategic governance of priority setting and mutual commitment for smart specialisations. This governance for identifying smart specialisations is conceived as a bottom-up 'self-discovery process', guided by a challenge driven political and societal commitment that builds on 'Flanders in Action' and other strategic processes involving stakeholders in the past decade.

This search for new future growth opportunities for Flanders accelerated with the new challenge driven innovation strategy and New Industrial Policy of 2011. The smart specialisation strategy emerges as the 'international proofing' of an innovation driven economic transformation of the Flanders' economy. Investments in innovation are more effective if they fit in innovation eco-systems (so-called triple and quadruple helix systems) supporting entrepreneurial opportunities in a globalised knowledge-driven economy. These place-based innovation systems have unique characteristics that provide comparative advantages. Smart specialisation therefore is indissolubly connected to the construction and strengthening of such eco-systems.

Priority domains for a new industrial policy cannot be decreed from above: the smart specialisation strategy is intrinsically linked to a strategic cluster policy encouraging the bottom-up development of new value chains in such eco-systems or regional clusters. But at the same time these regional clusters are defied to provide solutions for global challenges and to upgrade into world-class clusters of critical dimension in order to preserve competitiveness of the region. The European internal market will offer lead-markets for our Flemish 'spearhead clusters' (linked with complementary clusters), and European innovation and industrial policies will support their further internationalisation. Regional as well as

federal and European policy levels therefore need to support through complementing instruments the bottom-up dynamics of value creation in strategic European domains (such as identified by the European industrial policy). The smart specialisation strategy of Flanders will result from the interaction between new governance for priority setting in Flanders and for alignment in interregional cooperation and in European roadmaps for common challenges. The 'Vanguard Initiative for New Growth through Smart Specialisation', started on 8 November 2013 at the initiative of Flanders, is the emanation of this approach.

This document elaborates further on the policy vision behind the smart specialisation approach in Flanders in chapter one. The second chapter presents a short assessment of the starting position of such policy approach in the present specialisation structure of the economy. In the third and fourth chapters the policy evolution is presented that has shaped the design of the new policy approach and its implementation in Flanders. The last chapter describes the present status of the smart specialisation strategy and of different components of the emerging governance of smart specialisation at this stage.

This document is addressed mainly to policy observers and policy makers outside Flanders. It is a reference document for further policy discussion and mutual policy learning about the development of smart specialisation strategies. Some core concepts are defined in annex.

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1. INTRODUCTION: THE POLICY APPROACH TO SMART SPECIALISATION IN FLANDERS

Smart specialisation is a key element in the articulation of the future's strategy of Flanders.

There is a wide consensus among stakeholders in Flanders' socio-economic institutions in the last decade that the present 'business model' of our economy has become obsolete under the impact of economic globalisation, new technological revolutions and the geo-political effects of demographic and climate change. The economic transformation is on the agenda, but how can this be managed? As a small open economy in the hearth of the European Union, Flanders has no other option than to be in the forefront of the societal transitions that will determine the future of Europe. And this is also the explanation why Flanders has adopted the smart specialisation approach - that has been developed at first for a more efficient allocation of investments for innovation in the European Union - as a core principle for its own transformation strategy. The international positioning of Flanders' economic spearheads in markets of the future, which are shaped by European objectives for new growth, is a fast road to transformation.

The articulation of smart specialisation as an 'entrepreneurial discovery process'¹ of the new opportunities in a context of structural change, was decisive for its gradual inclusion in policy development since 2010 (starting with the Green Paper on New Industrial Policy). This new policy approach has enabled a new balance between a targeted policy for transition and transformation on the one hand, and the bottom-up drivers for value creation on the other. This policy development has been underpinned by the active engagement in 2011 in the policy learning project of OECD on 'Innovation-Driven Growth in Regions: the Role of Smart Specialisation'² by means of two case-studies and the development of strategic monitoring on the emergence of smart specialisations in Flanders³. The lead-role taken in the establishment of the 'Vanguard Initiative for new growth by Smart Specialisation' in 2013 has further consolidated the policy vision on smart specialisation as a guiding principle for connecting bottom-up entrepreneurial innovation activities in regional clusters with priorities for lead-markets in a European industrial policy⁴.

Flanders doesn't hide its ambition to be a **top region in Europe**. Smart specialisation is giving guidance to the development of the Flemish economic and innovation systems by a differentiation strategy based on comparative strengths. Development of a smart specialisation strategy is therefore now part of the overall future strategy of Flanders and not only a response to the 'ex ante conditionality' of the European cohesion policy. It is considered to be the next step for the operationalisation of the targeted policies that emerged in the last years for the societal transitions and the economic transformation which have been expressed in 'Flanders in Action', the 'New Industrial Policy' and the targeted innovation policy on six 'innovation hubs'.

¹ See D. Foray et al (Expert Group Knowledge for Growth), Smart Specialisation – The Concept, http://ec.europa.eu/invest-in-research/pdf/download_en/kfg_policy_brief_no9.pdf?11111

² See OECD, Synthesis Report on <https://community.oecd.org/message/20683>

³ See the case-studies on Sustainable Chemistry and Nano for Health, and the work on specialisation indicators by ECOOM, <http://www.ewi-vlaanderen.be/ewi/wat-doen-we/programmas-subsidies/industrieel-beleid/slimme-specialisatie>

⁴ Website EWI

Therefore the development of this smart specialisation strategy is embedded in the course of our **evolving policy** and **institutional frameworks**. In the last thirty years Flanders has emerged as a constitutional region: many competences in economy, science and innovation policy gradually shifted from the federal to the regional level. The new institutions have been very much oriented to the needs of the actors (companies and researchers) and governed to a high degree by their intermediary organisations to guarantee a bottom-up approach. From the strengths in the science system emerged strong strategic research centers and also a large number of other innovation initiatives that eventually created too much fragmentation⁵. Since 2006 a discussion has been going on the need to focus more on a limited number of 'spearhead clusters'⁶. But it was difficult to determine a '(self) selection principle'. Smart specialisation is such a policy approach for focusing the prioritisation process in the government efforts for innovation and transformation.

After the 'Pact 2020' in 2009, followed by launching its 'New Industrial Policy' and 'Innovation Center Flanders' for a challenge driven innovation policy in 2011, the Flemish Government adopted on 8th March 2013 a Concept Paper on 'A smart specialisation strategy for a targeted cluster policy'. This policy development is the culmination point of growing **strategic targeting** in government policies, while keeping to the tradition of strong bottom-up steering.

The particular appeal of the smart specialisation approach is the emphasis on the 'entrepreneurial discovery process', by positioning this bottom-up process driven by entrepreneurial actors in the wider context of structural change that is marked by great uncertainties and can be given orientation by pro-active policies to enable new market creation based on challenges.

However, it can be noticed that the entrepreneurial discovery process since years has structurally been embedded in the Flemish policy through the so-called VIS-projects (Flemish Innovation Partnerships), managed by the IWT (Agency for Innovation by Science and Technology). Within this framework, from a specific problem or question driven opportunity, a collective of companies will offer innovative solutions that are applicable in the short term and result in visible changes with a clear (and economic) value to a broad target group.

In order to perform an enabling role for new spearhead clusters, important changes have to be fulfilled in the functioning of governments. Smart specialisation is therefore a focus strategy for systemic changes at the level of economy, the innovation system and government. But it is grounded in the recognition of the steering role of innovation actors in the 'self-discovery'⁷ of these smart specialisations.

⁵ Soete Report: <http://www.ewi-vlaanderen.be/ewi/nieuws/tweede-rapport-soete-over-innovatie-vlaanderen-17-aanbevelingen>

⁶ On the basis of an extensive Foresight exercise the Science and Technology Council VRWI detected six priority clusters for technology and innovation: logitech, i-healthtech, meditech, nanotech, sociotech en ecotech. (<http://www.vrwi.be/publicaties/clusterbrochure>)

⁷ See Dani Rodrik , Industrial Policy For The Twenty-First Century, <http://www.hks.harvard.edu/fs/drodrik/Research%20papers/UNIDOSep.pdf>

The development of a smart specialisation strategy is therefore intertwined with the development of an adequate **governance** process. The Concept Paper adopted 8 March 2013 describes the next steps for preparing such a governance structure in a policy advice to the new Flemish Government (to be delivered May 2014). These steps cover the different dimensions of this governance process (or multi-level governance) to foster new strategic partnerships around smart specialisations, both at the regional level and the European level (and including the sub-regional). This preparation of a targeted cluster policy by smart specialisation is conducted as a structured learning process (with 'policy testing').

The remainder of this document will develop the strategic framework for expanding these different learning steps to a full blown strategic cluster policy. This framework will lead to a governance method for smart specialisation by examining the starting position (existing specialisation structure, the policy evolution, and the policy design, as well as the policy learning (the experiments and Vanguard initiatives), to identify and capitalise on smart specialisations.

2. PRESENT SPECIALISATION STRUCTURE IN FLANDERS

2.1. The economic and innovative performance of Flanders

Flanders has been a 'growth country' in the sixties of last century when new industries (automotive, chemicals, electronics), that were attracted by the central location in the emerging European internal market, an expanding infrastructure and a relatively cheap but well-educated work force, settled down. In the Belgian context, a strong 'welfare state' was developed but, together with a growing economic divide between its regions, the Belgian state evolved towards a federal state with the transfer of competences to the regional level which resulted in a complex mix of political competences and instruments that are distributed among different authorities. In the last decades, Flanders has been subject to a strong outsourcing and delocalisation of its industry while new service functions were developing (logistics, banking, media). The dominant competition strategy to preserve the socio-economic model in Flanders, based on high-wage and high-tax regime, were the very strong productivity gains in industry thanks to process automation by capital deepening. Since the mid-nineties, the lead in productivity was gradually eroded by a relative decrease in productivity growth in many industries because other countries were catching up and the technology frontier in mass production technologies was stagnating. Already long before the economic and financial crisis of 2008 it became clear that 'a new business model' was needed. The labour market reforms in Germany put pressure on the relative rise of wage costs in Belgium. In addition to the relative decline in productivity this resulted in a relative rise of labour unit costs and a sharply deteriorating trade balance. Despite the strong financial position of companies and households, the investments in the real economy went down. Although these trends are in line with the general stagnation of growth in Europe, of which the Flemish economy is highly depending (with an export ratio of more than 100% to GDP), many problems are of a structural nature that affect the more advanced countries first. Many advanced countries try to promote a shift in the structure of the economy to more innovation driven activities with high-added value as a way to increase productivity again.

The analysis that lies at the basis of the New Industrial Policy of the Flemish government was that the particular structure of the Flemish economy had to be taken into account if a

new productivity boost has to occur. The weak position as intermediate supplier in B2B relations, the strong dependence on multinationals with headquarters abroad and subsequent few decision centres that are sensitive to the local cluster opportunities, the high fragmentation of the industries and insufficient readiness for open innovation, the mismatch between important segments of a strongly performing science system with the local industrial strongholds, the complexity of regulations and relative decline in infrastructures: these are all structural elements that contribute to a weakening of 'total factor productivity' of our companies and industries at large. Flanders is ranked as a medium innovator because the R&D expenditures are not enough turned into new products and processes in Flanders. The private investment in research, innovation and industrialisation is not well leveraged by the synergies and spillover effects of thriving industrial eco-systems. Therefore the Green Paper on New Industrial Policy developed a vision on the 'Factory of the Future'⁸ based on the transformation of the industry by value chains and clusters that capitalises on these synergies. One of the most important sources of synergies and of economies of scale is smart specialisation. Smart specialisation triggers the 'Factory of the Future' by giving direction to the necessary co-investments of cluster actors.

2.2. Present specialisation structure

The potential for smart specialisation for the future has a point of departure in the present specialisation structure of the economy and the innovation system⁹. A more than average share of a specific activity compared to the world can be considered to be a revealed comparative advantage that has been constructed over the years. In addition to this, the coherence of specialisations in the subsequent stages of the innovation trajectory for a specific industry, from idea to (export) market, can also be considered as competitive advantage of a region or country for this specific industry. The strategic intelligence derived from a (even high-pitch) specialisation analysis is a useful instrument for the process of smart specialisation strategy development in Flanders.¹⁰

Science base

The specialisation pattern of Flanders is rather typical for a mature economy with a long tradition in scientific research that covers the whole spectrum. In general this is close to the world distribution, but with some deviations.

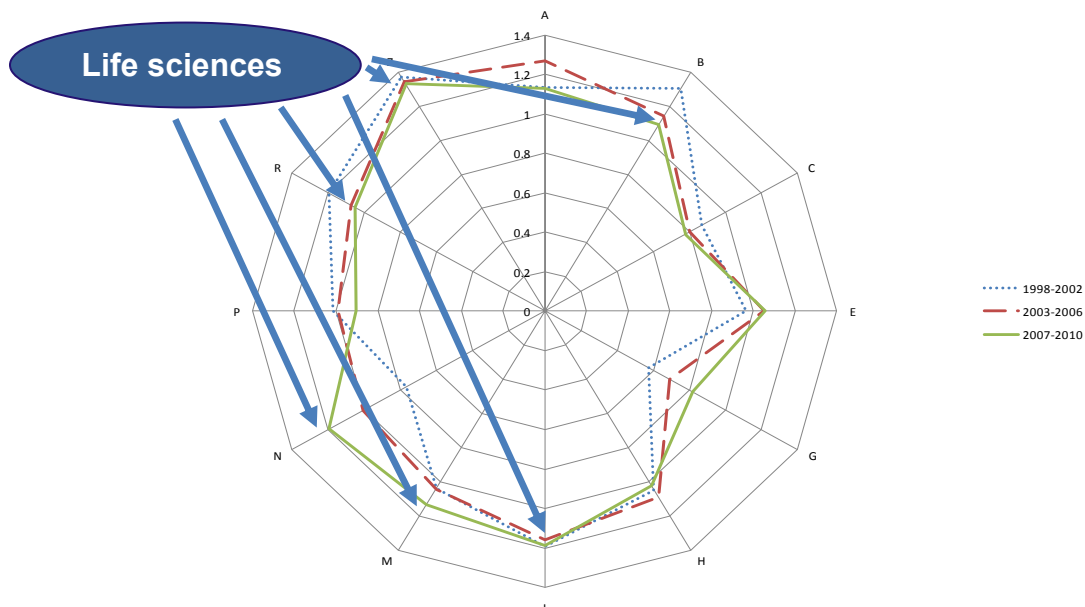
⁸ "The traditional approach regarding competitiveness by productivity growth based on increasing capital investments in automation reaches its limits. Flemish industry must switch to a new competitiveness model based on the increase of 'total factor productivity', among other things by open innovation, greening of the production system and smart specialisation, in order to develop new value chains. This requires system innovation." White Paper p 47 (<http://www.flanders.be/en/publications/detail/white-paper-a-new-industrial-policy-for-flanders>)

⁹ The relative specialisation index compares the distribution of activities in science production, technology production, economic production and exports in a region of country with the average distribution of the same type of activities in the whole of Europe (or the world). The statistics on scientific publications, patents, value-added are used as proxies for these kind of activities that can be considered as successive steps in the innovation trajectory, from idea to market. But the concordance between these classifications is only partially assured, therefore there is no direct match between science classifications and technology classifications. Between technology and economic classifications this matching has been achieved on the basis of the Fraunhofer classification (see ECOOM)

¹⁰ All data and graphs are produced by the Flanders Expertise Center for R&D Statistics, ECOOM.

The analysis of the scientific production from the point of view of its distribution over the main science fields reveals a strong specialisation in life sciences. Specialisation in clinical and experimental medical sciences - internal (I) and biology (Z) have remained consistently high (with microbiology, parasitology and veterinary sciences as strong sub-disciplines in the latter). Other fields in clinical and experimental medical sciences - non internal (R) have expanded, with strong sub-disciplines such as infectious diseases, tropical medicine, critical care medicine, gynecology, radiology and medical imaging. Biomedical research (R) and biosciences (B) remain strong specialisations but are slowly declining (with strong sub-disciplines such as reproductive biology). But neurosciences (N) has been a very fast growing area (mainly in psychology, e.g. mathematical psychology). There is also a specialisation in agricultural sciences (in particular a strong sub-discipline in soil sciences).

Relative scientific specialisation (activity index according main disciplines)



Flanders has average-to-world level publication levels in mathematics (H) (with a strong specialisation in statistics & probability) and engineering (E). In the latter field different sub-disciplines have international specialisations, such as electrical and electronic engineering, medical informatics, nuclear science and technology, computer science and a fast growing transportation discipline.

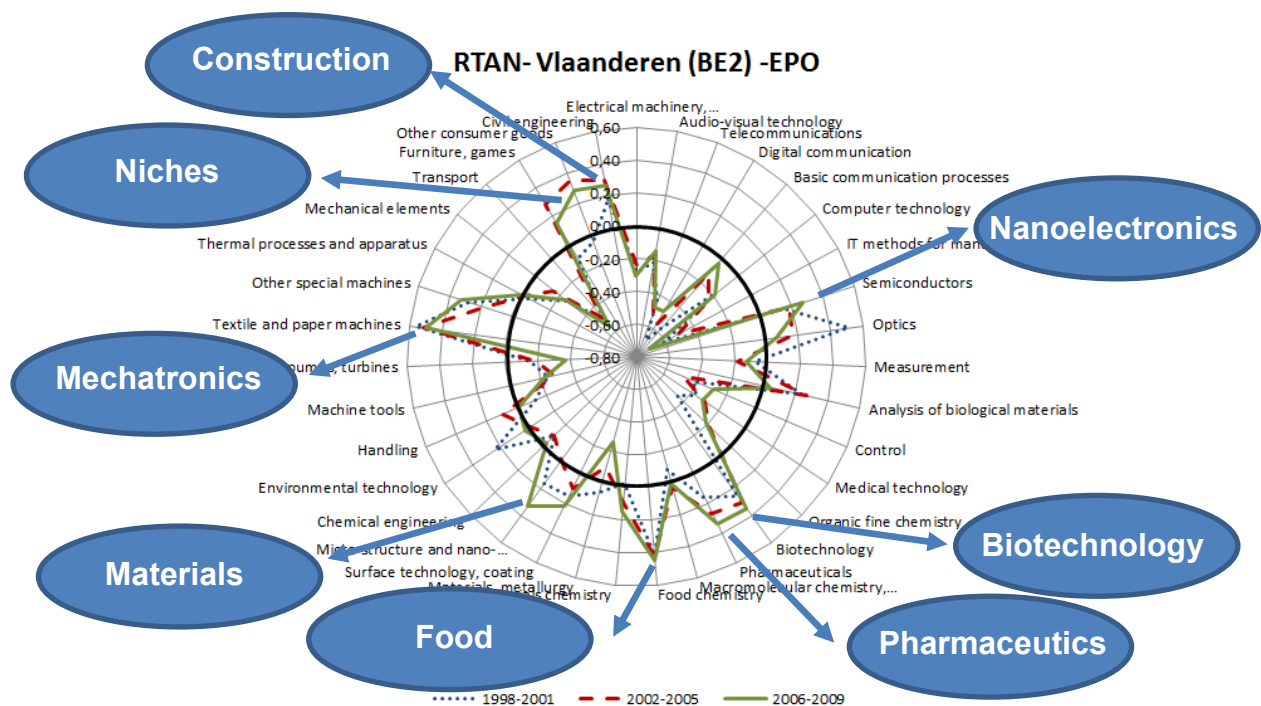
Because of the overrepresentation of life sciences Flanders has a relative underrepresentation of scientific activities in the domains of physics (P) (but strong in acoustics), geosciences and space (although expanding), and mainly chemistry (with strong sub-disciplines in analytical chemistry and medical chemistry). The latter is seemingly at odds with a strong economic specialisation in chemical industry.

The absorption of science production in technology and eventually economic production is not well measurable but there are clearly links with specific high-tech industries such as bio-pharma, electronics and informatics, imaging, soil treatment and other niches.

Technological potential

The technological specialisations of Flanders (on the level of European patents with Flemish inventors) reflect the activities of a relatively small number of companies and research institutes¹¹. The specialisation patterns for technology are therefore more dispersed than for science. On the one hand there are a number of companies with in-house R&D in sectors as machinery/mechatronics, food, materials, civil engineering and in particular pharmaceuticals (that is the biggest high-tech sector in Flanders) that contribute to strong international specialisations of Flanders. But also different niches in consumer goods, furniture and games are specialized in technology production compared to their counterparts abroad.

Relative technological specialisation



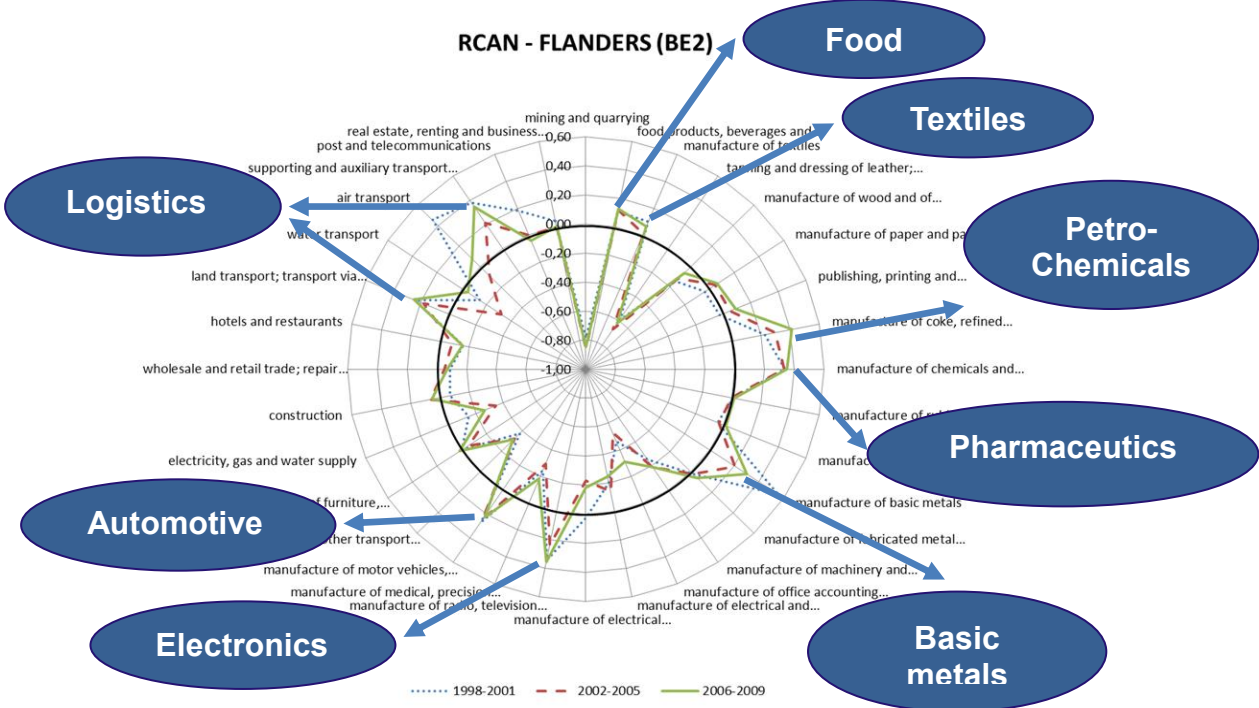
On the other hand these specialisations also reflect the activity of the strategic research institutes in Flanders for nano-electronics (IMEC), biotechnology (VIB), materials and energy (VITO) and specialised research departments at the five universities.

Economic structure

¹¹ The annual number of patents with Flemish inventors deposited at the EPO is xx .

The economic specialisation pattern of Flanders reflects very well the still highly diversified character of its economy. Mining is an obvious de-specialisation of Flanders because of its geological conditions, and the leather industry practically disappeared, but in most sectors the Flemish economy still maintained a critical mass to remain competitive. Until the economic crisis of 2008 the relative de-industrialisation of the economy has mainly resulted in a large fall in employment while added-value was maintained because of the steady increase in labour productivity that was the main driver of the competitiveness strategies of the Flemish industry. That strategy to maintain Flanders at the world frontier of productivity was rather successful and explains why the specialisation pattern has remained therefore rather stable. In recent years the competitiveness position weakened as a result of both increasing relative labour costs and decreasing relative productivity growth. Therefore the challenge for smart specialisation of the Flemish economy is double: to accelerate the transformation of its core industries and acquire a presence in new emergent industries.

Relative economic specialisation



The present sector statistics only show partially the potential of the Flemish industry because the science and technology base is still relatively decoupled.

On the one hand there is the specialisation pattern of a mature economy, with strong international specialisations in the petrochemical sectors (Flanders is the home of the largest such cluster in Europe around the Antwerp harbour), basic metals, specialized electronics and logistics. These are sectors that are closely linked to the intermediate position of Flanders in international value chains that is linking Flanders to larger economies, in particular Germany. But there are also competitive traditional sectors such as food, the

largest industrial sector in employment with a wide set of specialisations in pork meat, frozen vegetables, and the famous beer and chocolate. Textiles has gone already through a long restructuring process to remain competitive because of the limited home market. Textiles is therefore still relatively overrepresented in Flanders thanks to a strong transformation, with an increasing part in the turnover of technical textiles for niche markets, besides the specialized carpet industry. Sometimes this restructuring results in a decreasing relative specialisation (such as in automotive), but the Flemish industry is developing more and more niches with international potential within the traditional sectors (e.g. the treatment of soil and sludge in the construction industry).

Such innovation driven transformations are now taking place in the whole of the industry. Furniture, paper and printing, and plastics have maintained their positions because of the increasing role of innovation. Logistics is transformed more and more into third-party logistics. The role of specialized logistic services (e.g. for pharmaceuticals, food) is a competitive advantage of the manufacturing sectors. The development of services such as software is an important transformative power because artefacts are parts of 'solutions'. The 'internet of things' can become a powerful business model for the informatisation of the industrial value chain (with high productivity gains), if there is a common vision and strategy among complementary actors. Therefore, the smart specialisations of the future will be more and more embodied in clusters of technology providers, component developers, producers and service providers that are able to co-invest in new value chains.

The other face of Flemish industrial and economic future is more hidden in the scientific and technological base. In the eighties Flanders has been pioneering a 'Third Industrial Revolution In Flanders' transition process that has resulted in a number of strong strategic research institutes and university based research departments (IMEC, VIB, ...). The very strong pharmaceutical (biotech) sector is absorbing a large part of the life sciences and biotechnology research in Flanders (VIB) but it is not a specialisation in export of products. The cluster of spin-off research companies is one of the largest in Europe, but vulnerable without companies that reach maturity. The world-class nano-electronics base (IMEC) is too large for the industrial potential in Flanders. These two knowledge industries have their own international dynamics. The challenge for the smart specialisation strategy in Flanders is to find smart specialisations in unique combinations of Flemish strengths, e.g. cross-fertilisation between nanotechnology and health sector for the emerging industry of molecular diagnostics in personalised medicine (Nano4Health). The knowledge base in informatics (iMinds) or material research (VITO) are also important fertilisers of new activities, such as apps for mobile services or recycling.

2.3. Outlook

The Flemish economy has structural advantages but also disadvantages. To be attractive for investments in smart specialisations (i.e. relatively more attractive than other places nearby or world-wide, depending on the nature of the activity), the framework conditions have to be competitive and the particular place-based strengths of the innovation system have to offer extra localisation advantages. The central geographical position of our small open economy offers scope for 'through-put' type of activities in the global value chains, but these activities should pick-up more value-added on the basis of specific attractors of the innovation system. The challenge is to improve the matching between the industrial system and the research and education system: the transformation by innovation of industry and the modernization of

education and training need both to be aligned to the societal requirements of the 21st century.

The opportunities arise from a forward looking perspective and ambition. The high-density and diversity of scientific, technological and economic activities created in the past, are a springboard for new innovation clusters. But the historical legacy has also created a fragmented institutional environment .. Therefore the governance of decision making is at the heart of the transformation challenge for Flanders. The proximity to 'Europe' (as a Capital, a space where strategic processes are shaped, but also a daily live reality) should be exploited to leverage a prioritisation process that helps to direct investments and decisions towards Flemish smart specialisations for the future.

3. POLICY EVOLUTION

The smart specialisation approach has emerged in recent years as a strategic framework for implementing priority setting in the policy development for structural change. In Flanders the development of the smart specialisation strategy can also fulfill an integrative function for converging policy developments in the last decade, because of its international reference framework.

2.1. General policy evolution towards a targeted approach

Structural change and new economic destinies are on the political agenda since 2005, when the Flemish Government launched a discussion on a 'new business plan for Flanders' as a consequence of increasing pressure on the competitiveness position, resulting in accelerating de-industrialisation (in electronics, automotive and several other branches) while not enough new innovative branches could take the relief.

Therefore the Flemish Science and Innovation Council started in 2006 a SWOT analysis of the scientific and technological potential of Flanders compared to a European Foresight study¹². By means of a wide expert consultation, six thematic 'clusters' were identified that would be prioritised for further S&T support by 'spearhead initiatives'. These clusters were: logis-tech (transport, logistics, services and supply management); i-health-tech (ICT and services in health); medi-tech (Healthcare, food, prevention and treatment); nano-tech (new materials, nanotechnology, manufacturing industry); socio-tech (ICT for socio-economic innovation); eco-tech (energy and environment for services and industry). The initiatives were intended to strengthen research and innovation base in domains with economic potential to initiate breakthroughs. Therefore the focus was mainly technology-driven and in addition the thematic domains were very broad. The orientation on demand-side and opportunities for value creation was still too weak.

Meanwhile 'Flanders in Action' was adopted in 2007 by the Flemish Government as a comprehensive Future Plan for the change management of the economy in a broad societal perspective, including broader societal priorities to foster a sustainable economy on economic, social and ecological levels. The wider involvement of more than 100 stakeholder organisations resulted in 2009 in a 'Pact 2020' with 20 clearly stated objectives for 2020 that underpinned the new governmental declaration after the elections in 2009. The **Pact 2020** consists of **twenty objectives** with concrete target figures. The signatories want to book progress within **five principal domains**: 1) greater prosperity and welfare; 2) a competitive and sustainable economy; 3) more workers gainfully employed, in more suitable jobs, and for longer average career terms; 4) a high quality standard of living; 5) an efficient and effective administration.

From that moment on, the government set-up a number of 'breakthrough programmes' to ensure structural changes in the domains of energy, materials, health, spatial, poverty, Important new initiatives were the launch of a 'New Industrial Policy' and a new challenge driven innovation policy in 2010-11, as a policy response to the crisis that erupted in 2008. In 2012 the most important structural change actions of Flanders in Action were consolidated in 13 large 'transition projects' that are coordinated at a whole-of-government level (see

¹² www.vrwi.be/en/node/332

further). But the core societal transitions (in energy, materials, health care, mobility, housing) were only loosely connected in this transition framework to the transversal innovation and industrial policy transitions, because the operational instruments of innovation and economy are not directly linked directly to this policy framework.

By that time an important policy shift occurred in Flanders, from a mainly 'horizontal' approach towards a more 'targeted' approach of innovation and transformation, supported by a transition method that stressed the importance of a strong vision to lead a systemic change. While economic and innovation policies were in the years before nearly exclusively build on a 'bottom-up' approach for rewarding 'good' projects and innovation initiatives of all kinds (mostly incremental innovation), this needed now to be supplemented with methodologies to induce a sense of direction and a greater selectivity (to enable more radical innovations and experiments). Two expert group reports (the so-called 'Soete reports' in 2007 and again in 2011) had concluded that a too large spectrum of innovation initiatives caused a large fragmentation in the Flemish Innovation System that weakened a targeted approach. The Action Plan of the NIP for the first time tried to operationalise an integrated approach for transformation and innovation among the different ministries in 2012.

A stronger strategic focus was needed. This shift to a stronger pro-active strategic approach emerged in recent years from a multitude of partial and overlapping strategy exercises. The smart specialisation approach is recognized to be a methodology for accelerating and converging the strategic exercises in different policy domains towards effective decision making and prioritisation, because it unites a bottom-up 'discovery process' and a top-down 'challenge-driven' orientation towards future markets. So the smart specialisation strategy can enhance an integration of policy domains in relation to a common outward orientation.

This adoption of the smart specialisation approach in Flanders was also catalysed by the active participation in the OECD-project on the 'Design of smart specialisation strategies' in the period 2011-2012. The two Flemish case-studies contributed to this project helped to articulate better the structural challenges of the economic transition in Flanders and the way smart specialisation can leverage this change process¹³. 'Sustainable chemistry' evoked a mismatch between the strong economic specialisation in petro-based chemicals and the science base for the industrial transition that urges for a smart specialisation in bio-based materials to preserve this industrial base. 'Nano for health' started from the world leading position of IMEC in nano-electronics to search a better matching with the Flanders economic basis through smart specialisation in targeted health care applications. The strategic

¹³ "The idea or concept of "smart specialisation" is based on long standing economic theories and empirical evidence and mobilises well tested policy instruments. As a regional and place-based growth policy framework it aims to improve the allocation of public investment in R&D and innovation related investments, in order to stimulate competitiveness, productivity and economic growth through entrepreneurial activities. Smart specialisation "strategies" can be viewed as a mix of modern industrial policy with innovation policies that emphasise a bottom-up approach (the entrepreneurial discovery), transparency (*e.g.* monitoring and evaluation) and flexibility (*e.g.* abandon failure programmes). But the emergence of this policy approach is by no means independent from the present economic and political context of disruptive change at the global level." (OECD, Synthesis Report on innovation-driven growth in the regions: the role of smart specialisation, p16)

intelligence of specialisation indicators (ECOOM) helped to shape an evidence-based approach.

2.2. Smart specialisation as an integrative policy framework for innovation and industrial policy

On 17 May 2011, the Flemish Government adopted both the White paper on 'New Industrial Policy' and the Concept paper on 'Innovation Centre Flanders'. These policy papers paved the way to a targeted approach in which smart specialisation is the strategic focusing methodology.

- The 'Concept paper' introduced the targeted innovation policy based on societal challenges. On the basis of the previous iterations to identify strongholds on a technological basis, this policy framework identified six so-called 'innovation hubs' that are identified on the basis of a combination of both S&T strengths and need-driven themes: transformation by innovation in industry, innovation in care, sustainable mobility and logistics, green energy, eco-innovation, social innovation. Innovation Steering Groups (expert groups) have developed advises for innovation strategies for many of these domains on request of the Minister of Innovation. The recommendations are more of systemic nature; so smart specialisation is the next step to focus innovation strategy.
- The 'White paper' introduced an Action Plan of 50 actions to launch an integrated transformation policy supported by the Ministers of economy, innovation and work. Several strategy documents for industrial strategies in energy provision, materials resource management, export and trade are being developed. In addition, several calls were launched to set-up cluster initiatives and strategies for the Factory of the Future. The calls of the innovation agency IWT in June and the Enterprise Agency in November 2013 have focused on the development of roadmaps for clusters with smart specialisations.

The convergence of innovation and economic policy on smart specialisations is based on a widely shared analysis of what the overall policy challenges for structural change in Flanders are: a strong productivity offensive based on innovation will be needed to improve the competitive position. This is necessary because of a relative decline in productivity growth compared to our immediate competitors caused by the erosion of the traditional lead-position in process automation in mature sectors. Therefore innovation at system level is needed to transform existing industries and promote emerging industries with new product-service combinations that provide solutions for the needs in the 21st century. There is a clear link between the transformation of industries and the transition to a new resource and energy base, new urban and space organisation for mobility and housing, new health and care systems as a consequence of the global challenges. The type of response of regional economic systems their innovation eco-systems will determine their competitive position.

The Flemish government has adopted in its New Industrial Policy a new approach towards structural change by value chains and clusters and by promoting great systemic projects. The decisive factor of productivity growth is the organisation of the eco-systems that capitalise on synergies and knowledge spillovers that are the motor of productivity growth in a knowledge economy and of competitiveness. Specialised clusters therefore are the motor

of renewal. They provide enough diversity to be adaptive to a changing environment but are able to focus resources on well-defined market opportunities.

The strategic angle of international competitiveness of clusters by smart specialisation is based on differentiation strategies and on seeking complementarities that reap the advantages of international scale and scope in the new international value chains. Smart specialisation can be enhanced by cooperation strategies that accelerate the mutual alignment and co-investments for the co-creation of new markets. The European scale is the minimum scale in most markets for a needed endogenous growth dynamics.

A shared analysis (and its further diffusion) of the structural change challenge will bring about a faster restructuring of the economy. The smart specialisation strategy is based on a systemic approach that joins together two leading governance principles:

- the entrepreneurial discovery at the supply side, at micro-level (driving the provision of radical innovations), and
- the challenges or common goals at a higher macroscopic level, articulating the demand side (driving the creation of new markets).

A bottom-up and a top-down principle that combine the opportunity driven creativity and the long-term view to enhance transformation.

4. POLICY DESIGN

4.1. The new policy framework for a targeted cluster policy

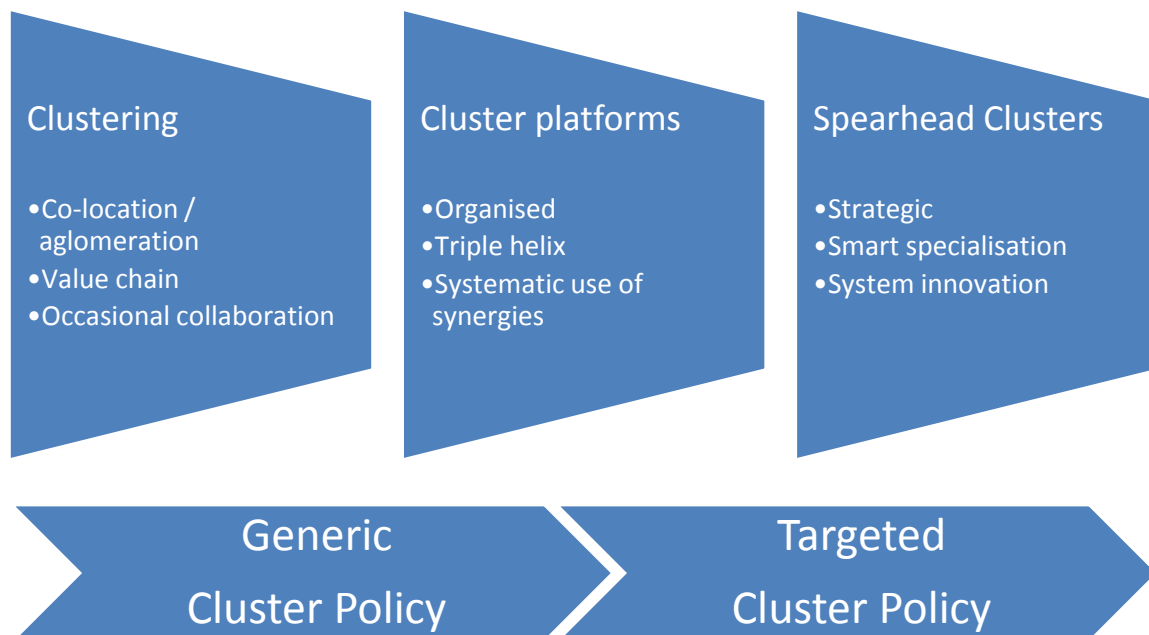
On 7 March 2013 the Flemish government adopted a new Concept Paper 'A Smart Specialisation Strategy for a Targeted Cluster policy'¹⁴. This policy document can be considered to be the result of the policy evolution in the last ten years and a completion of the strategic convergence of different policy domains into a targeted approach with 'spearhead clusters'. These spearhead clusters are a limited number of strategic cluster platforms composed by triple helix actors which are recognized by the Flemish government. This recognition because of their capacity to organize a transforming or emerging cluster with high economic and societal value-added for Flanders will entitle them for prioritisation in support..

The smart specialisation approach guarantees an international proofing of the spearhead and is therefore a strong selection principle for prioritising according to competitive strengths. In addition the European strategies for tackling societal challenges (or mega-trends) are mirrors for the local strategies. The 'smart specialisation strategy' is proposed as a methodology for identifying the spearhead clusters, and the spearhead cluster strategy is operationalised by developing their smart specialisations. Both strategies are closely linked.

The concept paper makes a distinction between two kinds of cluster policies. The generic cluster policy is a horizontal policy to encourage the networking, open innovation and spillover production in the knowledge economy. It is open to all kind of actors, sectors and

¹⁴ See <http://www.ewi-vlaanderen.be/ewi/nieuws/conceptnota-slimme-specialisatiestrategie-voor-gericht-clusterbeleid>

domains. The targeted cluster policy is a strategic policy of vertical nature that aims to identify a limited number of spearhead clusters that will be prioritised for public support. In addition to the criteria of additionality (non-substitution) that all governments support should comply for, there are also other criteria of strategic nature that are distinctive for such a government support (see annex). The pre-condition of a targeted cluster policy is a strong generic cluster policy that stimulates new cluster formation. But the spearhead clusters also need to have a structural bias towards dynamic (fastgrowing) SMEs.



The capacity for a government to conduct such a policy is depending on the availability of the necessary strategic competences, including the strategic monitoring of eco-system construction and of smart specialisations in particular. But the present policy of the government is to rely on the capacities of the entrepreneurial discovery process to self-select such spearhead clusters.

The show-case of this organic evolution in Flanders is the FISCH platform for sustainable chemistry. The platform has been recognized by the Flemish government as ‘innovation hub’ (in innovation policy) and a learning model for the evolution towards a targeted cluster approach on the basis of smart specialisation (in industrial policy). This platform came out of a large mobilization of 300 stakeholder organisations, conducted over more than two years, to build a cluster programme with three components: a strategic research programme, an open infrastructure programme and a business model programme based on the sustainability principle. This platform was awarded a ‘light management structure’ (6 full-time equivalents) to implement the innovation programme with a yearly budget of 5 million euro that is earmarked for submitting projects to the innovation agency IWT. The present organization that is established in 2011 for the research programme only is challenged to evolve towards a broad cluster platform that will be a connection point to all relevant government departments and agencies.

The targeted cluster policy will be supported by a set of interrelated instruments for a new generation of strategic cluster platforms:

1. The reference point is a **strategic roadmap of the cluster organisation** aimed at the development of value chains of international quality (smart specialisations) in a well-defined area (comparative advantage). The lead-companies (including high-potential starters) and lead-institutes should have a guiding role in the development of the vision and strategic programmes but the roadmap has to be supported by the large community of innovation actors in the domain, including the key government agencies that are knowledgeable partners in the implementation of the roadmap. The design of such roadmaps by the cluster platforms is supported up to 80% of costs by government programmes.
2. The capacity to support the roadmapping process, i.e. the **strategic management** of the implementation of the roadmap and adaptation when needed, including cross-cluster and international relations, has to be organised in a professional but lean way. The staff of such strategic innovation platforms can be subsidized because of the public good nature of such activities. .
3. The center piece is a formal **partnership agreement** that will stipulate joint objectives and complementary commitments. This will organise a structured dialogue to execute this agreement. Because of the broad nature of such cluster roadmaps for structural change a wide set of government competences can play a more or less important role at different stages in the innovation and transformation trajectory of the cluster (from regulation to infrastructures, over education and training to the more traditional innovation instruments). This will require an internal coordination on the side of the government, in order to be able to anticipate on these needs and design a coherent instrument mix. The method of 'account management' can be used for coordination between the front office (relation management) and the back office (toolbox of instruments).

Instruments of a targeted cluster policy

1. **A 'strategic roadmap'** that specifies objectives, milestones and commitments will be further developed in cooperation between the spearhead cluster and the Flemish government
2. **A 'light' management structure** will be supported by the Flemish government to strengthen the strategic capacity of the cluster platform
3. **A 'partnership agreement'** will seal a long term commitment of all partners engaged in the execution of the roadmap. Operated via a 'structured dialogue', accompanied by 'account managers', supported with earmarked budgets in the government instruments.

This governance process relies on the 'entrepreneurial discovery' driven by frontrunners that have a profound knowledge about opportunities in their domain, but the evolving strategic context at European level will be influential. Therefore the Concept Paper attaches great importance to mapping the Flemish cluster strategies on European strategies in the related domains, as a method of fast operationalisation of smart

specialisation strategies. In particular the start of the new financing period of the European Commission 2014-2020 is a window of opportunity for better positioning the regional strategies and developing a programmatic approach towards identifying priorities for Flanders in the European work programmes. The operational programmes of the cohesion policies are obvious levers for support of the emerging smart specialisation strategies of the cluster platforms and their interregional collaboration. Their financial impact is rather limited for Flanders (as a high-income region). But there is a strategic role (e.g. in restructuring the automotive sector and developing interregional initiatives).

4.2. Implementation of a targeted cluster policy by smart specialisation

The political process of strategy development for targeted policies for transition, innovation and industrial transformation is evolving in the direction of a new governance for spearhead clusters for the new government period 2014-2019. The Concept Paper on the Smart Specialisation Strategy has identified several preparatory steps that are executed according to plan in order to underpin a policy report on the governance implications of such a new policy that will inform the government formation in May 2014.

On the one hand, these preparations are in continuity with present policy development in targeted innovation policy and new industrial policy. On the other hand, such a policy entails qualitative changes in the traditional policy design towards a more integrated and selective approach. Therefore this new spearhead cluster policy anticipates a full integration of industrial policy and targeted innovation policy domains under a whole-of-government approach for transitioning our economy and making adequate choices.

The policy preparations in 2013-14 focus on the materialisation of the necessary preconditions to support the processes of entrepreneurial discovery and of international alignment that are the core processes for a smart specialisation strategy of Flanders.

3.2.1. Preparing the establishment of 'spearhead clusters'

The Concept Paper identified several building blocks for a whole-of-government support to prioritised spearhead clusters: the development and validation of entrepreneurial roadmaps for the spearhead cluster, the establishment and support of a strategic management structure, the conclusion of a partnership agreement and organisation of a structured dialogue with this platform to accelerate the validated roadmap by means of all available government instruments, the organisation of government bodies to operate in an integrated way.

- In the course of 2013 a methodology for strategic cluster roadmapping has been developed ¹⁵and first calls are launched by the innovation and enterprise agencies to support the development of such roadmaps¹⁶.
- Also the governance of strategic innovation platforms has been strengthened to ensure continuity on a stronger basis .

¹⁵ <http://www.ewi-vlaanderen.be/ewi/wat-doen-we/programmas-subsidies/industrieel-beleid/handleiding-roadmapping>

¹⁶ IWT launched a Call for Flemish roadmaps for the six European Key-Enabling Technologies that will be implemented before Summer 2014. The Enterprise Agency has launched an open call for business driven roadmaps.

- In addition, a policy learning exercise was launched in the period November 2013 - April 2014 to experiment with three specific transformation trajectories, to learn what kind of 'whole-of-government' policies are needed and what type of governmental organisation will be required to partner in the implementation of these new value chains. The role of 'account managers' and the presentation of better coordinated 'instrument tool box' are key elements for that. The chosen 'test trajectories' are: 3D-printing, recycling of critical metals in vehicles, renewable chemicals based on algae's. These trajectories will identify the full set of policies that have to be put in place for achieving the transformation objectives, and mechanisms for partnership in spearhead clusters.

The preparation of a strategic cluster policy by means of smart specialisation strategies will also be supported by international policy learning from good practices (studies and workshops) and interactive international policy discussions. The alignment of strategic innovation and industrial platforms (triple helix) with the broader transition eco-systems (quadruple helix), in which they are spearheads for accelerating transformations, will also be studied in an OECD-study on the governance of system innovations (in cooperation with other countries)¹⁷.

These (and other) elements will be used to prepare a Policy Advice of the Department EWI for an operational governance for the spearhead clusters for the next government.

3.2.2 Preparing the international positioning of the spearheads and multi-level alignment of the Flemish smart specialisation strategy.

The smart specialisation approach implies a good international positioning and comparative assessment of potential strengths. This will lead the deployment of targeted internationalisation strategies to reinforce the emerging spearhead clusters and align supporting policies in different policy levels.

An important precondition is the development of the necessary strategic intelligence to allow an evidence-based assessment of the smart specialisation potential of Flanders and to monitor progress in the formation of the new clusters. Several elements of this strategic intelligence are now in construction and will be further completed.

- The Expertise Center on innovation indicators ECOOM has developed a series of international specialisation indicators.
- The Flemish Science and Innovation Council (VRWI) is conducting its periodic foresight activities, now on the basis of an analysis of six 'transition areas' that can breed new opportunities and smart specialisations for Flanders. These transition areas are: Society 2.0; E-society; Life enhancement - Food Related; Life Enhancement - Health Related; Smart Resources Management; Urban Planning and Mobility Dynamics; New Energy Demand and Delivery.
- The trade and foreign investment agency FIT has develop a methodology for 'gap analysis' to be more focused on attracting foreign lead companies that fit well in our core clusters.

¹⁷ OECD-project 'System innovation: concepts, dynamics and governance'

- The roadmapping methodology is applied to establish a better coordination with European level roadmaps for the H2020 strategy, such as these for the Key Enabling Technologies. The innovation agency IWT has awarded KET-roadmapping projects to business driven consortia that will develop Flemish KET-roadmaps to identify the smart specialisations for Flanders in these domains.

The work of our trade and investment agency, the focus of international trade missions and the implementation of international bilateral agreements is already targeted at the promotion of our core industries, lead companies and leading knowledge institutes and to the establishment of international collaborations in these domains of excellence and future potential. Recently an agreement with Nordrhein-Westphalia and The Netherlands is concluded to build a cross-border world-class cluster in sustainable chemistry and the bio-based economy.

This dynamics of international positioning as an accelerator of smart specialisation strategy development, is exemplified in the Vanguard Initiative 'New Growth through Smart Specialisation'. This Initiative was launched by political representatives of 10 European regions at the invitation of Flanders on 8 November 2013 at the occasion of the High-Level Conference 'The Role of Regions for New Growth by Smart Specialisation', co-organised by the European Commission (DG Regio) and supported by President of the European Council, Herman Van Rompuy, and the Committee of Regions. These regions unite behind the position that new growth is based on entrepreneurial and innovation dynamics in the regions and that smart specialisation strategies therefore are a core element in the European industrial policy. The political leaders of 15 partner regions gathered on 30 January to sign an open Letter to the European Council in anticipation of its Spring debate on European industrial policy. This engagement of regions for the Renaissance of Industry in Europe implies a multi-level policy support for aligning the roadmaps of the regions and their smart specialisation clusters mutually and with European level roadmaps and priorities. The aim is to promote a new investment boost in common European priority areas for the future of industry, such as bio-based value chains, advanced manufacturing and KETs, smart energy systems. The partners of the Vanguard Initiative will lead by example in strengthening cross-border cooperation in these domains, according their smart specialisations. The focus is on the establishment of a European network of pilots and demonstrators to leverage private investment in the uptake of the European internal market in these spearhead domains.

This European policy dimension of smart specialisation requires an active networking of the Flanders policy administration with policy administrations in other regions or countries and in the European Commission to enable the European networking of the innovation clusters. The regional smart specialisation strategies can only work in synergy with other smart specialisation strategies in an European wide coherent governance of smart specialisation for new growth.

3.2.3. Sub-regional dimension of smart specialisation.

The multi-level policy alignment to support the internationalisation of cluster strategies also has to take into account the role of local authorities, such as provinces, cities or harbours in Flanders. Many of these 'sub-regional' actors have grasped the smart specialisation approach as an occasion to articulate better the future options of their region and their attractiveness for localisation of indicative smart specialisations. E.g. the province of Western-Flanders has organized a cluster study in order to identify the local potential and then started platforms to empower identified eco-systems in three domains: offshore services, fresh and frozen vegetables, technical textiles and carpeting.

The mutual alignment of the different sub-regional strategies and the coherence with the new cluster policy at Flemish level is therefore put on the agenda, in particular by the organisation

of peer-reviews and ‘cross-border’ cooperation at Flemish level, based on the cluster roadmapping of identified strengths in international perspective.

The smart specialisation and spearhead cluster strategies can be intertwined with smart cities strategies that recognize the role of city eco-systems as drivers of transitions and smart specialisation. Flanders is developing its ‘metropolitan area’ strategy for spatial development, based on the unique characteristics of a densely populated area with many interconnected mid-sized and smaller cities at the heart of the European market. The ‘territorial capital’ of sub-regions is at the basis of developing ‘hot spots’ for different clusters. The coordination between spatial policies and cluster policies therefore is part of a the wider transition strategy for Flanders (ViA).

5. PRESENT STATUS OF THE SMART SPECIALISATION STRATEGY

5.1. The policy discovery process

The Smart Specialisation Strategy of Flanders is emerging as a result of a transition in the policy system towards a more **targeted approach** that should catalyse the transformation of our economy and society. The Flemish government has started several strategic processes that are converging in the smart specialisation strategy. But the political context is dynamic because of the evolving discussions on handling the budgetary and competitiveness challenges of Flanders and Belgium in an election year.

The Flemish government is developing an economic recovery and restructuring policy that is based on two complementary axes:

1. a ‘competitiveness pact’ that will restore the level playing field in which Flanders has to align to international evolutions in costs of production factors such as labour and energy and to assure favourable framework conditions for transformation;
2. the ‘new industrial policy’ that is geared towards a new productivity offensive via targeted transformation of value chains and clusters, in which smart specialisation holds a key role, i.e. moving from cost competition to differentiation strategies in new markets that service the societal needs of the 21st century.

Smart specialisation is adopted as a **policy approach** for prioritizing governmental efforts in a period of structural change towards areas of innovation and transformation that can secure the future welfare of the region with high added-value creating activities in strong value chains and clusters. The Flemish government has different roles to play to enable such activities: this role is not limited to innovation policy in the traditional sense. An integrated industrial policy and transition policy is to be put in place where different policy domains will need to co-design new structures for horizontal coordination to support transitions and in particular spearhead clusters. A joint commitment towards priority areas at whole-of government level is therefore a fundamental requirement for next governmental cycle.

The key factor for the coming period is the further articulation of the **governance mechanisms** for prioritising and implementing strategic cluster roadmaps in a coherent, whole-of-government framework. Therefore three conditions have to be fulfilled:

1. This governance mechanism will elaborate the long-term perspective on the transition of our society and economy that has been started with **Flanders in Action**. Therefore enabling eco-systems (quadruple helix) need to be stimulated that will take ownership of these societal transitions (now 13 transversal themes), and transversal coordination need to be strengthened between governmental administrations which are partners in these transitions.

Flagship Initiatives of Flanders in Action: 13 Transversal themes

1. New Industrial Policy
2. Gazelle leap
3. Streamlining of targeted Innovation Policy
4. Everyone participates, Everyone is active
5. Child Poverty
6. Flanders' Care
7. Renewable Energy and smart grid
8. Sustainable Living and Building
9. Sustainable Materials Management
10. Space for tomorrow
11. Smart Mobility
12. Accelerating Investment projects
13. Towards a sustainable and creative city

2. The governance mechanism will acknowledge the key role of **targeted innovation policy** to address societal challenges with a clear policy vision on societal priorities (according the former transition programme). This 'mission oriented' research and innovation will also incentivise the closer matching of the strategic roadmaps of the 5 Flemish strategic research centres with the roadmaps of (emerging) spearhead clusters, in an international perspective.

Streamlining of Targeted Innovation Policy: linking of Flanders' scientific and technological strengths (targeted innovation policy) to the major social and economic challenges has identified → **6 multidisciplinary innovation hubs:**

1. transformation by innovation,
2. green energy,
3. green mobility and logistics,
4. eco-innovation,
5. care innovation,
6. social innovation.

3. The core of this governance mechanism is the government-wide supported spearhead cluster policy for economic transformation in domains of high impact on the transitions and international potential. This cluster policy with smart specialisations is the spearhead of the **integrated new industrial policy** of Flanders by means of whole-of-government partnership agreements with a limited number of strategic cluster platforms that are driven by leading companies. In addition the range

of instruments to cover the 'Valley of Death' (in particular piloting and demonstrating which involves close integration with roadmaps of spearhead clusters) will be completed and packaged for a tailor-made policy support.

The governance mechanisms in times of rapid changes have to be adaptive. They evolve along the self-discovery process of future options in Flanders and its interaction with strategic European policy frameworks, such as EU 2020 and its Flagship Initiatives (which are mirrored by the Flanders in Action and its Transition initiatives). In particular, the articulation of the smart specialisation strategy of Flanders in relation to the strategic roadmaps that are developed by European public-private partnerships for advancing the industrial renewal (technology-driven) and answering the societal needs (demand driven) is an important reference in effective governance building. The 'matching' of evolving smart specialisation strategies of regional cluster platforms with European strategies is also a way of multi-lateral coordination of the mutual matching of regional smart specialisation strategies to enhance cross-border collaboration and the emergence of European world-class clusters.

The Vanguard Initiative for New Growth through Smart Specialisation¹⁸ that is initiated by Flanders will act as a political instrument to enhance multi-level and inter-regional governance of support to investment strategies of clusters that are the spearheads to new European growth in the priority domains, based on synergies and complementarities by smart specialisation in interregional cooperation. In particular this will involve Flanders in stronger in European interregional cooperations that will 'lead by example' in developing smart specialization strategies in transregional cluster networks for European priorities. A first big test case is the establishment of a trilateral cluster initiative for bio-based chemistry between Flanders, Netherlands and Northrhine Westphalia.

Matching EU industrial policy priority action lines and Flanders priority setting:

EU Priority Action Lines	Flanders Initiatives
Markets for advanced manufacturing and technologies for clean production	New Strategic Research Center for Manufacturing (i.e. Additive Manufacturing)
Markets for key enabling technologies	Strategic Research Centres: IMEC, VIB, VITO, iMinds. Roadmaps for KETs by Innovation Platforms (SIM, CINBIOS, FMTC, Photonics Flanders, DSP Valley, ..)
Bio-based product market	BBE Strategy FISCH BB Europe Pilot plant (GEBEV)
Sustainable industrial policy, construction and raw materials	MIP (Environmental Innovation Programme) Materials Programme Testing Ground 'Renovation in residential construction'
Clean vehicles and vessels	Testing Ground 'Electrical Mobility'
Smart grids	Vlaams Smart Grids Platform

¹⁸ See Letter of Engagement for a European Industrial Renaissance

5.2. Strategic focussing process for smart specialisations

At present the search for smart specialisations in Flanders is combining the two types of cluster policy. On the one hand the development of a generic cluster policy, promoted by calls from the Enterprise Agency that are encouraging a bottom-up process for better targeted, innovation driven cooperation in all competitive domains. On the other hand the preparation of a new targeted cluster policy that will focus on a limited number of such clusters (and that might consolidate a number of existing innovation platforms). The identification of spearhead clusters is at this moment conceived as a **process of 'self-selection'**, that will be validated according criteria that are already indicatively formulated in the Concept Note of March 2013¹⁹. The new government will need to validate submitted roadmaps and decide on a 'portfolio' of spearhead clusters - a distribution of risks and synergies for the economic transformation - that exploits complementarities at regional and international level. Therefore a **selection and evaluation cycle** will have to be designed as part of the governance model.

The bottom-up search process is increasingly geared towards a European and international positioning by means of the process of **roadmapping** that is driven by transformation approaches²⁰. The actors that are engaged in these exercises represent domains in which Flanders has constructed comparative advantages and has the innovation potential to derive smart specialisations. Some core domains in which smart specialisation initiatives are occurring are taking shape; a consolidation of support organisations for research and innovation in these domains might be required. These domains can be described as **cluster domains** in which **spearhead clusters** might be selected on the basis of the entrepreneurial capacity to develop strong roadmaps for new transition-driven and competitive value creation.

The determination of priorities is a dynamic process, responding to current developments and policies (both from Flanders and Europe). As mentioned before, the Flemish Council for Science and Innovation (VRWI) has formulated six spearhead domains from a technological / scientific perspective. Responding to guidelines from Europe (Great Societal Challenges) in 2011 these six domains (scientific / technological strengths) were linked to the major societal and economic challenges. This resulted in six multidisciplinary innovation crossroads (2011).

From the experience of the RIS3 Platform and (again) responding to current policy developments (New Industrial Policy, Targeted Cluster Policy,...) **seven strategic cluster domains** for smart specialization were identified:

¹⁹ See annex 2

²⁰ Several exercises are running: Within the FISCH platform different roadmaps have been finalised (e.g. for algae production and its use as an alternative feedstock); The Agency for sustainable materials management OVAM has completed end of 2013 a 'circular economy' roadmap (with focus on construction materials, plastics, critical metals, organic materials). The VRWI will deliver strategic priorities on the six transition areas in its foresight exercise. The KET-roadmaps will be finalised before Summer 2014 and several business-driven cluster roadmaps start in Spring 2014.

- 'Sustainable chemistry': cluster domain for the transition in the chemical industry, connected to clusters in plastics, sustainable construction or technical textiles. Innovation will drive new bio-based value chains (enabled by advances in materials sciences, industrial biotechnology). FISCH is possible model for establishing a spearhead cluster for smart specialisations.
- 'Specialised manufacturing solutions': cluster domain for customised production in 'factories for the future' (e.g. niches in specialized components, intelligent textiles, new materials, graphics, urban mining) that emerge thanks to new business models (e.g. for open manufacturing, value-added logistics, recycling of materials and energy efficiency) and new production technologies (such as mechatronics, 3D printing). The new strategic research centre will be supportive for the modernization of manufacturing.
- Personalised cure and care: cluster domain connected to a well-developed health system, an eco-system for clinical trials and a strong pharmaceutical industry, with specific focus domains such as neuro-degenerative diseases and infectious diseases, and new opportunities in molecular diagnostics and other medical technologies. This value-chain is supported by VIB, CMI, Flanders Care.
- Value-added logistics: cluster domain with strong connections to specialised industrial value chains in food (frozen products, meat, chocolate) or pharma, and providing specialized services, e.g. for recycling (reverse logistics, urban mining) or the off-shore cluster (maintenance).
- Specialised agro-food: cluster domain with diverse value chains in meat, vegetables, fruits that are capitalising on values such as life quality (health and experiences) and the reduction of food waste as competitive advantages.
- Integrated building-environment-energy cluster: cluster domain seeking affordable solutions and new ways of housing in smart and sustainable cities (including smart grids and utilities).
- New ICT-platforms: cluster domain for hardware and software developments (including embedded systems, based on micro-electronics and photonics) for smart systems and services (including mobile applications, internet of things, e-health or digital media, which are enabling the eco-systems that produce smart specialisations), often in new product-service combinations; also crucial for increasing productivity of service sectors (including public services). This domain is supported by strategic research centres such as IMEC and iMinds.

In the ERDF Operational Program 2014-2020 eight strategic cluster domains for smart specialization were mentioned. The cluster domain 'new ICT Platforms' was split into 'smart systems' and 'creative industries and services', as this matches better the existing Flemish reality.

These eight cluster domains exhibit opportunities for **cross-fertilisation** in unique smart specialization activities because of 'related variety'. This will need a comprehensive process of strategic interactions across spearhead clusters to enable the entrepreneurial discovery of such unique combinations (e.g. nano4health). Another element of the governance model.

In the coming period, the governance system in Flanders will have to accommodate increased budgetary pressures as a consequence of the sixth Belgian state reform and related pressures for administrative simplifications in the innovation landscape. Smart

specialisation is a proactive and offensive strategy to make **tough choices on priorities** in a perspective of structural change, to do more with less in an intelligent way.

The future of Flanders is depending on the success of the European innovation and industrial policies. The challenge for new growth in Europe is to align the smart specialisation strategies of the regions with mainstream macro-strategies that are still too much disconnected from the real economy. Flanders will contribute with the 'Vanguard Initiative for New Growth through Smart Specialisations' to a European multi-level industrial policy that presents a **new growth perspective** for Europe and its regions, by **matching smart specialisations of the partner regions with European strategies for priority domains**. This matching of regional and European strategies for the future of industry in Europe can support lead-markets for endogenous new growth in the European internal market and new export opportunities in global value chains.

Flanders doesn't fully exploit the innovation and transformation potential of its diversified industry and its innovation system, as is revealed by a declining total factor productivity. Smart specialisations are typically new combinations of existing strengths with large future potential. The likelihood that they can emerge out of entrepreneurial discovery should therefore be increased by an active cluster policy in which connections can be made more systematically and with a strategic viewpoint. The Flemish government has been encouraging networking among innovation actors by many channels already, but to accelerate entrepreneurial discovery, in an environment of structural change, the new instruments of cluster policies such as roadmapping will stimulate appropriate smart specialisation strategies through modernisation, diversification and transition of existing activities or the emergence of new activities out of technological strengths for which local eco-systems are readily available. The spearhead cluster policy will accomplish this targeted approach with strategic partnerships in spearhead clusters to prioritise and customise its resources for innovation and transformation.

5.3. Monitoring and evaluation of the strategic focusing

In accordance with the ex ante conditionality linked to the ERDF program, a monitoring or evaluation system has to measure the progress in the defined cluster domains. An extensive set of existing monitoring systems is available for this purpose.

- Information Guide Enterprise and Innovation: an annual publication of the Department of Economy, Science and Innovation, which provides an overview of all funds within the Department and bundles an overview of the budget for science and innovation across all departments of the Flemish Government.
- Research Centre Entrepreneurship and Regional Economics (STORE): advisory body to the Flemish government based on fundamental and applied economic research.
- PACT 2020: Within the policy strategy Flanders in Action (ViA) – PACT 2020 several objectives were defined. Those objectives are linked with specific indicators and targets.
- VRIND: describes the demographic, macroeconomic and social context of Flanders. More than 700 indicators give an overview of developments in matters within the

competences of the Flemish government. The choice of indicators is in accordance with the policy priorities.

- Flemish Book of Indicators: contains the processing of the indicators that measure the development of the Flemish potential in the field of science, technology and innovation. The Flemish Book of Indicators is published by the Centre for Research and Development Monitoring (ECOOM). ECOOM is an interuniversity consortium with participation of all Flemish universities (KU Leuven, UGent, VUBrussels, UAntwerp and UHasselt). Its mission is to develop a consistent system of R&D and Innovation (RD&I) indicators for the Flemish government. This indicator system has to assist the Flemish government in mapping and monitoring the RD&I efforts in the Flemish region. ECOOM's activity supports the Flemish government's ambition to consolidate and to further develop its position as a European innovation intensive region. To serve this ambition, a well-developed RD&I indicator system has been established. To this end, ECOOM collaborates intensely with all relevant actors in the Flemish RD&I system: universities, research institutes and industry.
- Flanders Outlook: The annual analysis of Flanders Outlook aims to detect regions that are yet a step ahead of Flanders as far as innovation is concerned. It thus wants to depict how Flanders is positioned compared to those excellent regions. In the process a database containing statistics of 131 EU regions has also been developed. The analysis concentrates on the socio-economic performance of Flanders and a set of benchmark regions.

From these monitoring systems, necessary data on the cluster domains can be provided. Those monitoring systems make it possible to measure the evolution of the cluster domains, without establishing a new system.

ANNEX 1 : Concepts

1. 'Smart Specialisation' (the process) is a choice approach for structural change. It is based on self-discovery process for cluster platforms that develop strategies driven by innovation and international competitive advantage that is differentiating Flanders at an international level.
Smart specialisation is in particular a policy approach for prioritizing public resources in support of the bottom-up discovery process in identified clusters. This policy approach is also a means for promoting coordination of these efforts in a systemic way.
2. 'Smart specialisations' (the activities) are knowledge-based, value-creating activities (often in transsectoral value-chains) that make use of specific localisation advantages to derive competitive advantage. Such localisation advantages are the constructed comparative advantages (the regional strengths), in particular the innovation eco-systems or clusters that create local synergies and spillovers between actors in these value chains.
3. 'Smart specialisation strategies' are the innovation driven strategies of the region that are geared towards structural change and new value creation. The smart specialisation strategy is a cross-cutting public strategy that is targeting the public resources on selected domains that drive the structural change and are co-shaped by all relevant stakeholders.
4. A 'value chain' is a successive series of value creating activities to bring products or services to the market (from feedstock to service-after sale, including recycling and re-use)
5. A 'cluster' (or agglomeration) is a geographical concentration of interrelated companies and associated institutions for research, education and training and other supporting institutions, which are active in a the same or related domain of value creation. In these specific eco-systems synergies can emerge because of proximity. A 'cluster organisation' is a platform that can promote a strategic collaboration between complementary innovation and economic actors and foster the development of specific competences.
6. A 'spearhead cluster' is a cluster that is the subject of a targeted cluster policy and that can be addressed in a tailored approach by such policy via its cluster organisation. Spearhead clusters are selected in a transparent way by the Flemish Government.

ANNEX 2: Criteria for a targeted cluster policy

Following criteria are important to evaluate the roadmap of a spearhead cluster (and the linked projects) from a smart specialization perspective:

1. The orientation of the roadmap on societal and economic **value creation**, and on valorisation of human potential in sustainable employment.
2. The contribution of the spearhead cluster to the objectives of the **innovation and transition challenges of 'Flanders in Action'**.
3. The alignment of the roadmap (and its projects) with international/European roadmaps (**international positioning**).
4. The capacity for **strategic monitoring** of a **project portfolio** implementing the roadmap (including projects outside of the spearhead cluster). The articulation of projects in the roadmap according clear objectives and milestones (and in interaction with other projects).
5. The presence of strong '**frontrunners**' that are capable to have strategic impact on the level of value chains and international cooperation. The **support** of a broad alliance and the presence of **critical** partners that are required for success.

6. A clear international **differentiation** of activities in Flanders, for achieving **complementarities** with international partners and **competitiveness** in new international markets (specialisation built on comparative advantage, critical mass, international connectivity).
7. A focus on **cross-sectoral value chains** and **interdisciplinary innovation cooperation** to enhance **structural change** (scaling-up emerging industries, system innovation, challenge driven innovation).
8. The link of the strategy of the spearhead cluster with a sustainable **career and competence policy**.
9. The **leverage effect** of the pursued government intervention (additionality, multiplier, system effect ...)
10. The **financial engagements and pledges** of strategic partners.