



Wallonia – Aeronautic Cluster

MOC Cluster Analysis

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DISCLAIMER

The content of this report expresses solely the views of its authors and relies exclusively on data publicly available.

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Executive Summary

Belgium has historically been successful in designing policies that leverage its central location in Western Europe to attract massive flows of foreign direct investment. Nevertheless, our analyses show that in spite of favorable endowments and strengths in labor quality and infrastructure, Belgium suffers from structural weaknesses. Efforts should be made to reduce inefficiencies in the labor market, simplify the regulatory environment and reform tax policies.

Wallonia in particular has been struggling to cope with the consequences of massive deindustrialization. The region is lagging behind Belgian and EU averages on main economic and labor market indicators. However, our research suggests that the region has recently been catching up, partially thanks to the comprehensive development and cluster strategy supported consistently by the Walloon government since 2005 (i.e., Plan Marshall).

The aeronautics cluster is rooted in industrial activities dating back from early in the 20th century. It now comprises more than 100 members and accounts for a significant share of Walloon GDP and employment. Over the last 10 years, the aeronautics cluster in Wallonia has been underperforming when compared to its peers and the cluster is facing critical challenges.

We conclude this report by formulating recommendations for the Walloon aeronautic cluster. Most importantly, Wallonia and the institutions supporting the cluster should invest in strengthening the pipeline of talent, especially for technically qualified employees; support the competitiveness of local anchor tier-1 suppliers to mitigate the risk of concentration of the OEMs supplier base; strengthen internal linkages between tier-1 suppliers and SMEs and position Wallonia not as a self-standing isolated cluster but as a central cornerstone of a European-wide cluster.

Section I – Belgium Country Overview

INTRODUCTION TO BELGIUM

Short Country Profile

Belgium is located in the hearth of the European Union and has been actively engaged in the “*European Project*” since its early developments. It took part in an early experiments of regional economic integration when, in 1948, it was a signatory member of the Benelux custom union. Belgium joined the European Economic Community (EEC) in 1957 and adopted the Euro currency in 2002. Brussels, the capital city of Belgium, hosts high-level international organizations including the EU and NATO.

With a diverse population of around 11 million people, Belgium occupies a land area comparable to Maryland. The majority of the population (6.3 million) is located in the Flanders region, while Wallonia hosts around 3.5 million people. The remaining population is concentrated in the Brussels region. Main spoken languages are Dutch, German and French.

Belgium is a federal parliamentary democracy under a constitutional monarchy and regulated by civil law. Administratively, Belgium is divided in three independent regions that have substantial autonomy and decision-making powers at the local level: Flanders, Wallonia and Brussels. This administrative decentralization allows different regions to develop tailored strategies that historically have enabled them to advance in their economic development. Trade is an example of region-specific policies that has been successful to boost local competitiveness.

Macroeconomic Stability and Competitiveness

Similarly to other Eurozone member states, Belgium's **macroeconomic situation** is troubled. High level of public debt and heavy deficit spending positioned the government in a dangerous zone for long-term sustainability. As further detailed in next sub-section, main areas of concern are an exceptionally burdensome tax system, perfectible labor market efficiency and critical conditions of public finances. For the last ten years, the World Economic Forum and other international institutions have pointed out that in order to achieve its full potential, Belgium needs to reinforce its macroeconomic stability and enforce structural reforms.

Political stability is another area of concern for Belgium. Belgium holds the sad political world record *for the longest time in modern history that a country has been without an official government*. From 2010 to 2011, Belgium stayed for 19 months (549 days) without a Federal government as the Dutch speaking region in the North (Flanders) and the French speaking region in the South (Wallonia) couldn't find a common budgetary agreement and couldn't solve several linguistic issues.

As Belgium has already been through multiple episodes of political turmoil, international observers are not worried of the political risk *per se* but rather because those internal tensions distract political leaders from concentrating on passing the socio-economic reforms that would preserve the social inclusiveness of the Belgian welfare model while maintaining the competitiveness level and the relevance of Belgium on the global scene.

Selective Input and Output analysis of the Belgian Economy

In terms of **economic output**, Belgium is a high-income country with a \$43,100 GDP per capita. In 2011, Belgian GDP grew by 1.8%, the unemployment rate decreased slightly to 7.2% from 8.3% the previous year. Belgium has a diversified industrial and commercial base and can be

categorized as a small open export-led economy. Belgium exports a large volume of manufactured goods and high value products. The main trading partners are within the EU region, and the single most relevant commercial partner is Germany.

The Belgian economic performance is supported by strong **economic inputs**. Among others, the Belgian education system is well developed and supports the needs of a sophisticated economy. University research and private sector supports continuous innovation, as highlighted by the number of patents issued every year for new inventions. However, Wallonia lags behind Flanders and Brussels regions (63 patents issued in Wallonia versus 105 issued in the Flanders region). The stock of investment per worker, a measure of productivity, is also different when comparing regional data averages (€14.5k per employee in Wallonia, to €36.8k in Brussels).

Belgium and Foreign Direct Investment Flows

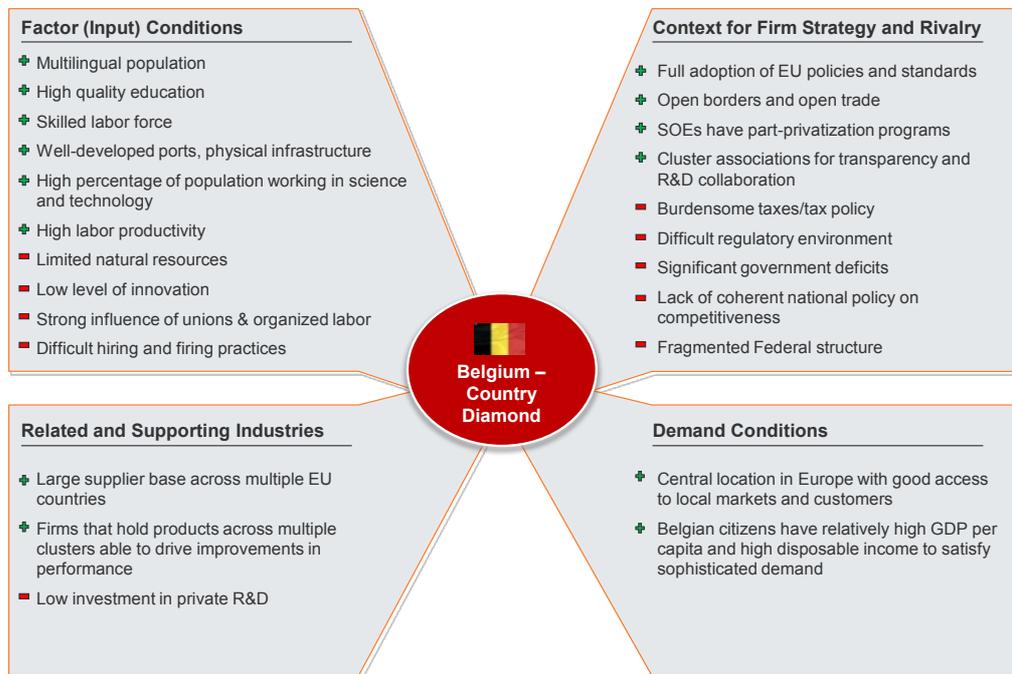
Belgium is a **net recipient of Foreign Direct Investments** (FDIs) in different sectors thanks to its endowments, such as its strategic location, skilled labor force and specialized support services. The percentage of inbound FDIs and percentage of GDP is extraordinary high, with 165% in 2011 compared to the Netherlands: 88%, France: 40%, UK: 49% and Italy: 17%.

BELGIUM COMPETITIVENESS AND DIAMOND ANALYSIS

According to the latest '*Global Competitiveness Report*', Belgium ranks 6th in terms of competitiveness¹. As highlighted previously, the country's strong infrastructure and high skilled labor force has contributed to this strong global positioning. **Exhibit 1** below synthesizes our research on the competitiveness of Belgium and structure it according the 'diamond framework'.

Exhibit 1

Belgium – Country diamond



SOURCE: Harvard Business School Institute for Strategy and Competitiveness

- **Factor Conditions:** Belgium exhibits high quality in both secondary and tertiary education based on the UN Education Index, which makes its labor force as competitive as nearby European competitive nations such as France and Germany. Furthermore, education programs have focused heavily on science and engineering studies. Workforce training and education in such subjects has supported growth of high technology industries such as biotechnology and aeronautics. In addition, Belgium's close proximity to several major European cities and strong infrastructure in rail and waterways has allowed it to become a strong manufacturing capital for several clusters and industries.
- **Demand Conditions:** As mentioned above, Belgium's location to many major European cities, such as Frankfurt and Paris, contributes to strong demand conditions due to ease of transport and distribution of goods for companies. Belgium ranks 18th based on IMF

2012 rankings on GDP per capita which promotes high disposable income of citizens and high level of internal demandⁱⁱⁱ.

- **Context for Firm Rivalry and Strategy:** Historically, Belgium has been a strong supporter of open borders and open trade policies to facilitate growth and establish interregional partnerships. Its early participation to regional trade partnership such as the Benelux and the early steps of the European Community demonstrates this. Belgium also does a strong job of ensuring transparency amongst its clusters and industries through a strong role of IFCs and cluster associations at the regional level. Partially under the pressure of EU regulation requirements, Belgium has since the late 1980s led successful processes to privatize and increase efficiency of its biggest state-owned enterprises.
- **Related and Supporting Industries:** Due to favorable demand conditions highlighted previously, Belgium serves as a large supplier base for multiple European countries. This is demonstrated by the presence of a large number of companies from the chemicals, biotech, pharmaceuticals and aeronautics clusters^{iv}. There are several synergies between firms in the aforementioned clusters with products held across multiple clusters.

Areas of Concern

Despite its strong endowments and strengths in labor quality and infrastructure, Belgium suffers from a couple of key weaknesses: **inefficient labor market** (i), a **cumbersome regulatory environment** (ii) and **unclear and high tax policies** (iii). Not addressing these critical areas will limit the region's future competitiveness and growth potential.

- **Factor Conditions - Inefficient Labor Markets:** Based on data collected from the World Bank and the World Economic Forum, research shows that Belgium ranks quite

low in terms of hiring and firing practices, flexibility of wage setting and poor labor and employer relations^v. As compared to many other European countries such as France and Italy, hiring and firing practices in Belgium are quite stringent and therefore limiting flexibility of the workforce. Poor labor and employer relationships are lead to an output of lower work productivity than in similar European countries. Belgium should implement measures to improve increase employment flexibility, such as revising its wage indexation system.

Besides flexibility, workforce participation is another critical issue of the Belgian labor market. As Belgium faces an aging population, the country should increase opportunities for continuous education, re-train its older worker and incentivize them by modifying the early retirement schemes currently in place. It is important to underline the political costs of those measures. Current political parties may be reluctant to implement this kind of policies as it would affect prospects for re-election.

– **Context for Firm Rivalry and Strategy - Cumbersome Regulatory Environment:**

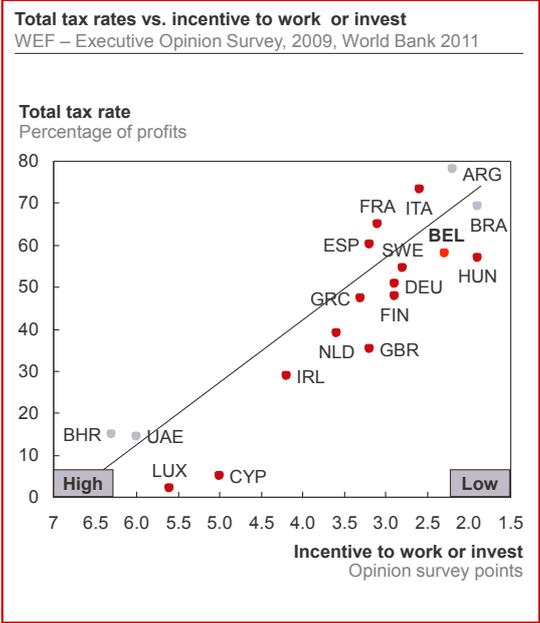
According to World Economic Forum data, Belgium is perceived quite negatively in terms of its administrative and regulatory policies as compared to its European peers (i.e., Belgium is ranked 133rd)^{vi}. Most notably, the ease of registering business is extremely negative and is comparable to levels found in developing countries such as Liberia and Eritrea as opposed to on par with Belgium's European neighbours. Although Belgium continues to experience strong outputs in terms of FDI, it is important that they address the increasingly high regulatory environment to continuously attract foreign investment. Specifically, it is recommended that the government establish a single-window administrative agency to continue attracting FDI rather than using its existing system of multiple decentralized regional entities.

As Belgium currently lacks from a culture that rewards entrepreneurship, it is important to incentivize risk taking and entrepreneurship by simplifying processes for establishing new businesses. Specifically, improving the business environment in Belgium could allow foreign and local companies to increase R&D expenditures more readily and contribute to a higher sophistication of the value chain in various advanced technologies.

Lastly, although the current labor force is highly skilled, in order to stay competitive with its European neighbours, it is imperative that Belgium continues to attract high skilled foreign talent who can bring in innovative ideas and help advance technological processes. This can be accomplished by improving foreign residence permit procedures for highly skilled workers and establish partnerships with educational institutions in top schools from R&D advanced countries such as Germany and Sweden. Although immigration reform is a highly political issue in Europe, lowering immigration barriers for high skilled foreign workers should not face much political upheaval.

- **Context for Firm Rivalry and Strategy - Unclear and High Tax Policies:** Based on our analysis, Belgium's tax policies are extremely high when compared to European peers^{vii}. With a total tax rate ranked 128th in 2012, Belgium scores low in comparison to the UK ranking at 67th, the Netherlands at 76th and Denmark at 26th. Such high tax rates leads to Belgium having one of the most expensive labor forces in Europe, potentially dettracting companies from investing in the country. Furthermore, high marginal tax rates not only increase labor costs but also disincentive workers from reaching high productivity levels.

Exhibit 2



In the short-term, Belgium should invest in marketing and distributing informational materials to businesses summarizing existing tax incentives and funding opportunities as a means to encourage opportunities for business. The country should emphasize existing business and tax advantages in place, such as the notional interest deduction, that can keep total taxes lower for business.

In the long-term, the government should look to reduce social security contributions, especially for low-wage young workers, as a means to encourage productivity. Although this is a very controversial social issue, policy makers should work to improve other social programs in Belgium, such as more job training programs for young workers, in conjunction with reducing social security contributions to reduce any political backlash.

Section II – Wallonia, competitiveness analysis

KEY CHARACTERISTICS OF THE WALLOON REGION

Wallonia is the Southern region of Belgium. It covers 55% of the total land area but only makes up 33% of the total country population. While the portion of landmass is the majority of the country, the portion of GDP is only 23% of the Belgian total. The three largest cities by population are Charleroi, Liege, and Namur, all with over 100,000 people.

Wallonia has its own separate competencies with respect to how it functions as a region within the overall Belgian federal framework. In particular, Wallonia is responsible for its economic policies and is allowed to pursue its own external trade policies, including the signing of treaties. This autonomy may be part of the reason why IFCs exist at the regional level and not at the national level.

The population of Wallonia is highly educated with a literacy rate of 99% and a good mandatory schooling. Furthermore, 26% of the working age population is college-educated. While these indicators signal strength in the quality of the labor supply, overall labor market data in Wallonia highlight crucial economic problems.

With an employment rate of 57.2%, Wallonia is doing worse than Belgium and the EU-27 on average. This, coupled with an unemployment rate of 9.6%, also higher than Belgian and EU-27 averages, raises some concerns about the region. One potential explanation for these severe underutilization indicators is the recent ‘de-industrialization processes that Wallonia has experienced over the second half of the 20th century, comparable to the process that US cities like Detroit or the Rust Belt have faced. The next section details this hypothesis.

SOCIO-ECONOMIC BACKGROUND OF WALLONIA

Wallonia 'de-industrialization' process

Abundant coal reserves and inexpensive labor pools helped catalyze heavy industries in Wallonia during the industrial revolution in the 19th century^{viii}. At the turn of the 20th century, the Walloon region is one of the most industrialized area and one of the wealthiest regions in Europe. However, as international competition increases, the future of mining and heavy industries become compromised in Western Europe. The 20th century witnesses a sharp decline of these industries in terms of employment and output in the economy.

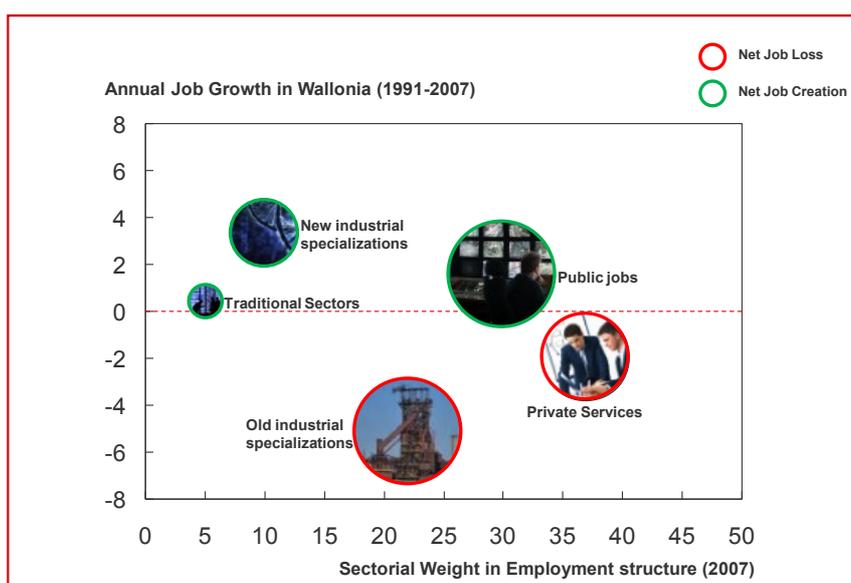
The analysis below illustrates clearly this trend in the Walloon employment structure (see **Exhibit 3**):

- The largest employment concentration still lies **in the old industrial specializations**, which include steel constructions, metal manufacturing and automotive. However, this pool of employment has been shrinking steadily over the last 20 years. This decline in industrial jobs is accompanied by a decline in private services.
- The **net losses in the private sector have been partially offset by job creation in the public sector** (growing at approximately 2% per year over the 1991-2007 period). While this can directly support employment and mitigate social impact of de-industrialization, it does little for the sake of competition and true economic growth through private sector firm creation, entrepreneurship and innovation.
- Interestingly, Wallonia has **observed growth in jobs in the new industrial specializations** that include life sciences, new materials and environmental technologies. These industries only represent a marginal fraction of the Walloon employment structure

but the growth observed over the last years is promising. This shift to new industries has been partially induced and supported by government industrial policy that is the focus of our next section.

Exhibit 3

Shift of employment structure in Wallonia 1991-2007, Eurostat



Methodology : Sectorial aggregates build based on NACE decomposition of employment structure (as synthesized in Eurostat SBS database 1991-2007)

SOURCE: EUROSTAT (SBS 1991 & 2007); Forem; Team analysis

The ‘Plan Marshall’ - Wallonia’s current industrial and cluster policy

In August 2005, pressed by the challenging socio-economic situation detailed previously, the Government of Wallonia decides to dedicate important budgets to a “Priority Action Plan”, also called the “Marshall Plan” which aims at giving a qualitative jump to the economy of the Region. This new industrial policy mainly focuses on the development of industrial networking through two complementary and linked policies: competitiveness poles and clustering.

- **The Competitiveness Poles policy:** The main objective of this policy is to develop some key growth sectors on the basis of strong partnerships projects between enterprises, research and training centers. It aims to implement leading industrial and technological projects within the 5 sectors considered essential for the regional economy: life sciences and health (BLOWIN), the agrifood industry (WAGRALIM), the Aeronautics and space industry (SKYWIN), mechanical engineering (MECATECH), transport & logistics (LOGISTICs in Wallonia).

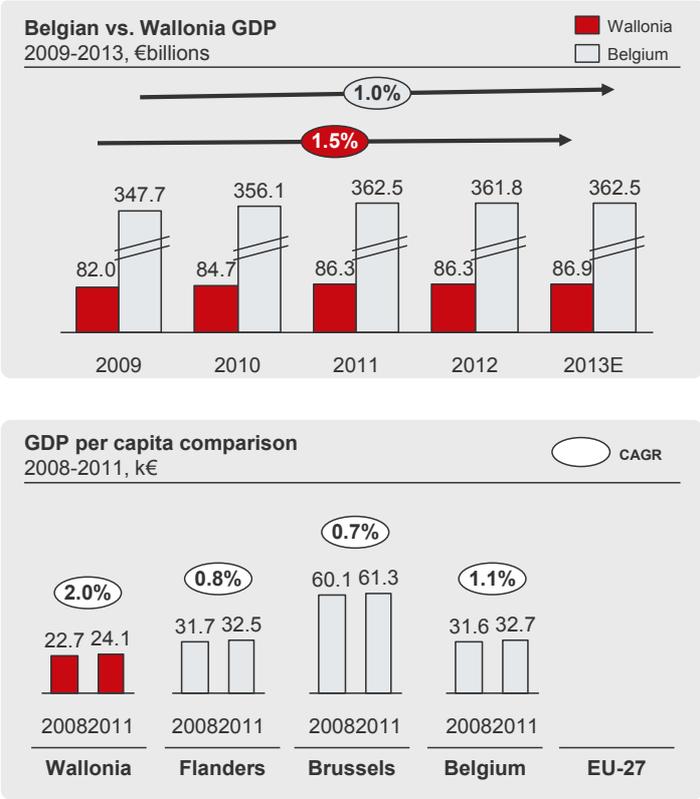
- **The Clustering policy:** The objective of this policy is to develop business networks in specific domains, eventually with research operators, and, develop a cooperation framework and a stronger economic structure within the sector.

In 2009, the orientations of the Marshall Plan are confirmed by the new government, ensuring continuity in policy, and expand with a "2.green" version that places greater emphasis on eco-efficiency and green technologies. The creation a Sixth Pole in environmental technologies (GREENWIN) is effective as of 2011.

Current situation and assessment of Wallonia industrial policy

From 2009 to 2013, the Belgian GDP has grown 1% annually while the GDP of Wallonia has grown at a slightly faster pace of 1.5%. GDP per capita of Wallonia is still lagging behind that of the Belgian average but seems to gradually catch-up (see **Exhibit 4**).

Exhibit 4



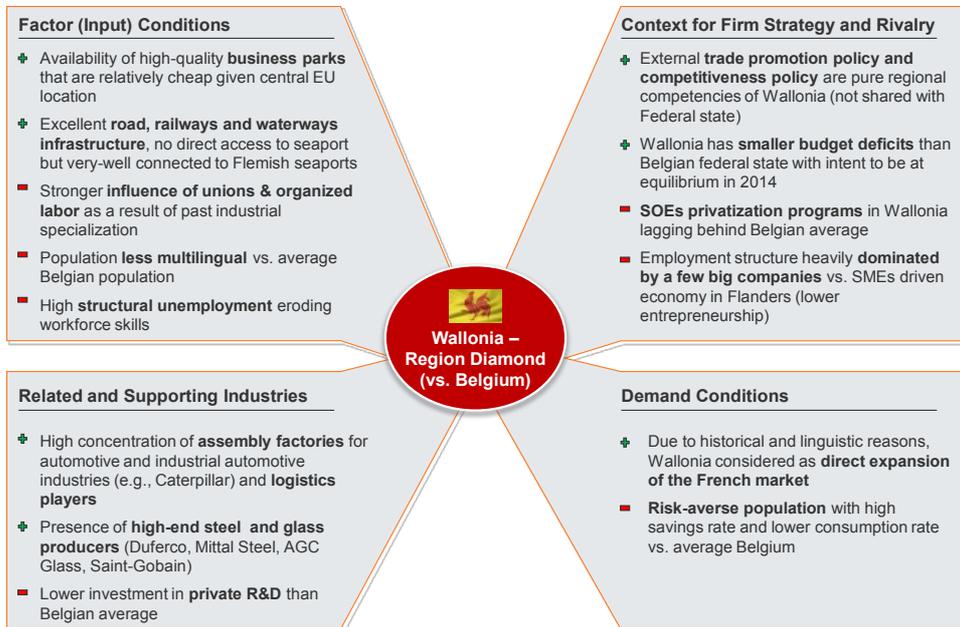
It would be misleading to infer causality between the recent relatively good economic performance of Wallonia (vs. EU and Belgian averages) and its industrial policy (i.e., Plan Marshall). Further analysis would be required, especially as a higher share of public jobs in the employment structure can potentially explain the higher resilience to the recent crisis. However, the job growth observed in new industrial specializations (see **Exhibit 4**) coupled with the good performance of Wallonia are strong indications that Wallonia’s strategy is yielding some results. It is certainly worth noting, though, that efforts should be continued as the job growth in new industrial specialization is far from compensating the net job losses that Wallonia has experienced in the old industrial specializations.

WALLONIA COMPETITIVENESS AND DIAMOND ANALYSIS

The Walloon competitiveness diamond differs from the Belgian one (see **Exhibit 5**)

Exhibit 5

Competitiveness of Wallonia vs. Belgian Diamond



SOURCE: Harvard Business School Institute for Strategy and Competitiveness; Eurostat; Team Analysis

- **Factor Conditions:** Wallonia currently has a cost advantage compared to the Flemish and Brussels-Capital regions. There is an availability of high quality business parks that are low-cost in a strategically located part of the European Union. Furthermore, because Wallonia is land-locked, the road, rail- and waterways infrastructure is excellent. However, because of the nature of the industries that originally arose in Wallonia, the influence of the labor unions is stronger than Belgium as a whole. Also, the linguistic capabilities of the working population, though excellent in comparison with EU standards, as lagging behind that of Belgium average.
- **Context for Strategy and Rivalry:** The autonomy of Wallonia can be perceived as strength as the government can pursue independent trade policies that are best suited to its economic structure. The employment structure in Wallonia is more concentrated than in

Flanders. A few large firms employ a significant share of the population. Besides signaling lower entrepreneurship, it is also a potential threat as the region's economy is heavily dependent of those employers.

- **Related and Supporting Industries:** Wallonia enjoys the presence of specialized assembly lines for the industrial automotive industry. There is also a high concentration of high-end steel and glass producers such as Mittal Steel and AGC Glass and strong logistics players.
- **Demand conditions:** Due to historical and linguistic ties, Wallonia is considered as a direct expansion of the French market. This benefits the region since France is one of the economies carrying the EU. Wallonia has lower cost of doing business, especially because the region is autonomous in making trade agreements with other countries, unlike many other regions in the EU. A downside on the demand conditions is that the overall population is more risk averse than the Belgian average. This is shown through higher savings rates and lower consumption rates. This also ties into the less entrepreneurial nature of people in Wallonia.

Section III – Aeronautic cluster in Wallonia

HISTORICAL BACKGROUND OF THE CLUSTER

The aeronautic industry in Wallonia dates back from the 1920's when planes are used on a large scale for the first time to support military efforts during World War I. After the war, technological progress continues and planes start to be used for passenger transport. Most countries launch their national airline at the time and Belgium is no exception. The Belgian national airline, “Sabena” (i.e., *Société Autonome Belge d'Exploitation de la Navigation Aérienne*) begins its operations on 23 May 1923^{ix}. The company starts by connecting major European cities to Brussels and rapidly expands to Africa with a route between Brussels and Kinshasa in Congo (former Belgian colony).

With a growing demand from the military and the new national airline, the aeronautic industry grows rapidly in Wallonia. Two anchor companies from the cluster, SABCA and Sonaca, date from that period. In the 1920's, SABCA is created as a state-owned company to manufacture planes for Sabena. Around the same time, in 1931, Sonaca, at the time Fairey, wins a contract with the Belgian military.

World War II marks a stop to the burgeoning industry. Commercial airlines cannot operate during the war, and at the end of the conflict, Belgian companies face increasing pressure from US based companies starting to compete in Europe. In addition, the end of the war marks the start of the decline of the mining and steel industries in Wallonia that were critical to the development of the aeronautic industry. Despite these challenges, the largest companies of the

cluster continue to operate as suppliers of major plane manufacturers but become increasingly specialized.

The cluster is revived in the 1970's when the Belgian government licenses a major military contract for F-16 to Lockheed Martin against the promise that the US company manufactures a significant part of its components in Belgium (common process in the defense industry called "offset"). Around the same time, Sonaca is chosen by Airbus to participate in the creation of the A310. This period also sees the rise of several small and medium size companies supplying the anchor companies of the cluster.

THE AERONAUTIC CLUSTER IN WALLONIA TODAY

Today, the aeronautic cluster is composed of over 100 companies, located mainly around two industrial poles: Charleroi and Liège. The cluster accounts for over 7,000 jobs in the region (~0.6% of total employment in Wallonia) and €1.4 billion turnover in 2011 (~1.5% of Walloon GDP). In addition, 90% of products manufactured are exported^x.

Belgian companies are part of tier-1, tier-2 and tier-3 groups with the largest enterprises, including Sonaca and SABCA, being tier-1 and supplying directly to plane manufacturers (i.e., original equipment manufacturers or OEM's") such as Airbus, Boeing or Embraer. Most SME's are part of the tier-2 and tier-3 groups, manufacturing smaller components and supplying to the subsequent tier.

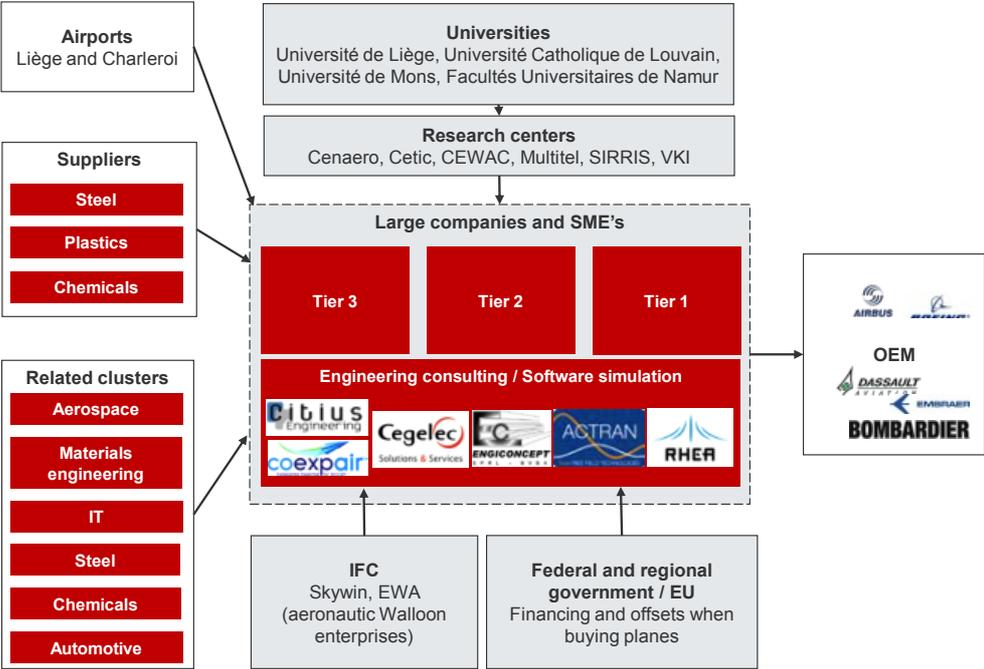
In addition to being spread in all three tiers, Walloon companies are also diversified in terms of the components that they produced. Although there is no plane manufacturer in Belgium today, Walloon companies build all types of components such as engines, aerostructure, navigation systems ("avionics") and other systems.

CLUSTER MAP AND FOCUS ON SPECIFIC ACTORS

Exhibit 6 below presents the aeronautic cluster map in Wallonia. All of the actors presented on the map are located in the region, except the OEM's that are all located abroad.

Exhibit 6

Map of the Aeronautic cluster in Wallonia

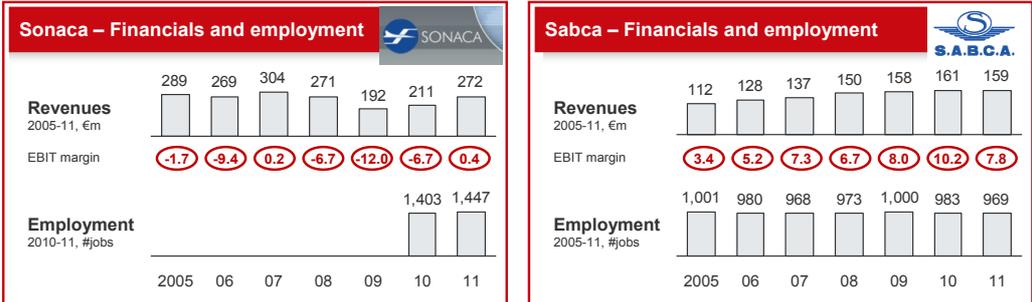


Large companies and SME's

As shown in **Exhibit 6**, the aeronautic cluster in Wallonia today is focused on tier-1, tier-2 and tier-3 companies. All of these companies produce components that will eventually be used by foreign OEM's in the plane assembly process. In addition to these manufacturing companies, a large number of organizations in the cluster specialize in services. They mostly work for tier-1 companies or OEM's and offer engineering consulting services ranging from project management to fluid mechanic simulations.

Sabaca and Sonaca are two important companies in the cluster, providing about 30% of the employment. They are Belgian tier-1 companies, manufacturing frames and supplying to the largest OEM's. However, despite these similarities, Sabca and Sonaca have very contrasted financial performance, as displayed on **Exhibit 7**.

Exhibit 7



SABCA is a private company that has been profitable for years with revenue originating almost evenly from sales to the aeronautic, aerospace and defense industries^{xi}. On the contrary, Sonaca’s largest shareholder is the government and the company has been experiencing large losses for at least 7 years. The company concentrates most of its revenue in two customers, Airbus and Embraer (86% in 2011, down from 90% in 2009), which makes it very vulnerable to downturns in orders from these two companies^{xii}.

OEM's

Companies in the Walloon aeronautic cluster are supplying the largest global OEM's but most of them are heavily dependent on Airbus. Airbus’s procurement process is competitive and transparent, with the suppliers list published on the company’s website. Airbus has recently redesigned its procurement process to reduce the number suppliers, therefore favoring large companies able to provide bundle services, also called “super tier-1”. This trend for integration,

reflected in Airbus new procurement process, does not seem to have affected the structure of the Walloon cluster yet, nor the strategy of the IFC that wants to promote SME's.

Airports

The existence of two main airports in Wallonia, Liège and Charleroi, helped support the growth of the cluster. Some companies are directly involved in providing services to the airports such as Simtech, a company specializing in the design and manufacturing of aeronautical fuel supply and aircraft recovery solutions for airports.

Suppliers and related clusters

Wallonia is home to several related clusters that have been critical to the development and sustainability of the aeronautic cluster. First, the aerospace sector is similar to the aeronautic sector and many companies are part of both. The two industries also share the same IFC, Skywin (for practical and coherence purpose, we decided to focus our work in this project on the aeronautic part). Second, some heavy industries that were the historical engines to the development of Wallonia's economy have become important suppliers to the aeronautic sector. For example, highly sophisticated steel and glass producers are still today key suppliers to the cluster. Because of these historical specializations, the region is home to many engineers that have allowed the development of strong material science, chemical and IT clusters that are providing important services to the aeronautic cluster. Finally, the automotive cluster has a tier structure that is very similar to the aeronautic cluster and both sectors share elements of the supply chain, allowing significant synergies.

Universities and research centres

Universities and research centers are also core to the cluster. R&D is a critical component of the industry's success since companies need to stay at the forefront of new development to remain competitive. In Wallonia, universities and research centers have developed complementary skills and participate in projects with large companies and SME's to develop future technologies such as lighter materials or energy recycling processes.

The four main French speaking universities have developed complementary skills contributing to the development of the cluster: UCL (Université Catholique de Louvain) on fluid dynamics, material science and processes, ULG (Université de Liège) on general aerospace engineering training, UM (Université de Mons) on chemicals and composite materials, ULB (Université Libre de Bruxelles) on optics and gravity simulations.

European, federal and regional government support

Different levels of governments are supporting the sector mainly through financial support. Companies have the opportunity to tap into several grants at the European and regional level to finance R&D projects. In addition, companies in the defense industry benefit from the "offset" mechanism when a military contract is given to a foreign company.

The IFC: SKYWIN

SkyWin is the aerospace/ aeronautic IFC that has been created in 2006 as part of the "Plan Marshall" initiative detailed previously. SkyWin's board, like the cluster itself, is composed of representatives of large and small companies as well as universities and R&D centers. The board is composed of 5 delegates from the largest companies in the sector, 4 from SME's and 5

members of academia. Nowadays, the director of SkyWin is a former employee of Thales, a large technology company that is part of the cluster.

SkyWin has three main objectives:

- Implementing and monitoring projects that involve several members of the cluster with the obligation to include at least one SME;
- Managing the regional government subsidies from Plan Marshall; and
- Promoting the cluster internationally and circulating information among members.

Since its creation in 2006, the IFC has been supporting companies to develop new technologies, leading to the creation of several start-ups. SkyWin also successfully supported 23 R&D projects for more than 110M€ budget and gave 182.400 training hours leading to 75% of trainees finding a job in the industry.

Despite these intensive efforts, SkyWin should make sure it provides services that create value for both SMEs and major players of the cluster. It appears from our interviews with market participants that SkyWin is mainly focused on SMEs . For example, funding from the Plan Marshall is only available to large companies if they partner with SME's but the small companies often do not have the capacity to work on these large projects. The largest companies are therefore unable to apply for this type of funding. Similarly, the trend among OEM's is to limit the number of suppliers and to concentrate supplier base into a reduced number of 'Super tier-1' suppliers. SkyWin's current strategy does not appear to be in line with this change.

CLUSTER COMPETITIVENESS AND DIAMOND ANALYSIS

Exhibit 8 below presents the competitiveness diamond for the aeronautic cluster in Wallonia. The emergence and the early successes of the Walloon aeronautic since the late 1970's can be explained by three key factors:

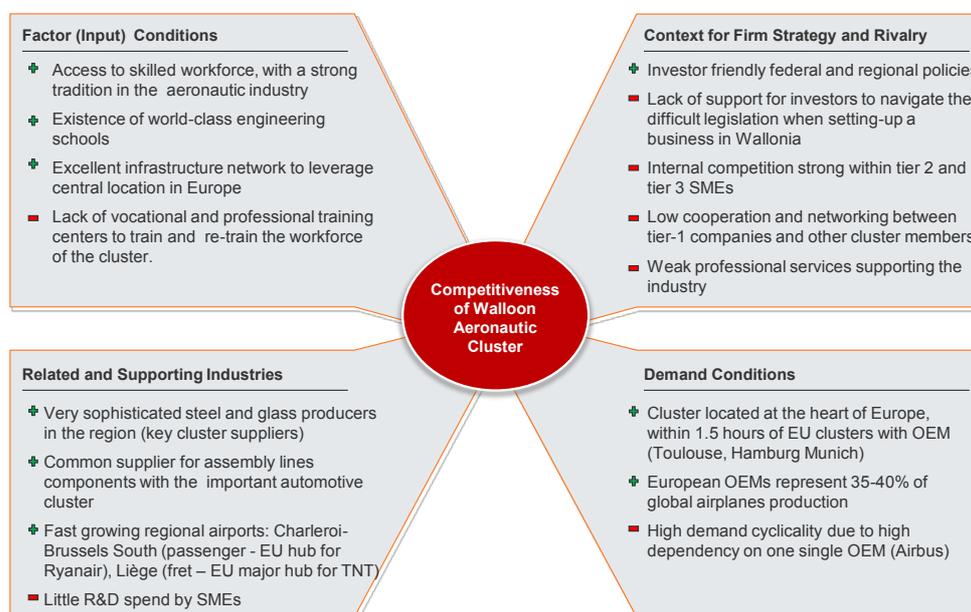
- **Good Factor Conditions** – Wallonia has an industrial legacy in the aeronautics and therefore historically benefitted from a skilled workforce. This was reinforced by the existence of several world-class research and training centers in Belgian universities;
- **Attractive Demand Conditions** – In the heart of Western Europe within day-trip distance from the biggest European aeronautic clusters (Munich, Hamburg, Toulouse), Wallonia is ideally located to seize a share of the European aeronautic market;
- **Strong Support industries** – Wallonia and Belgium as a whole were homes to industries that were critical suppliers to the aeronautic industry. For example, Belgium has historically been very strong in the automotive industry and hosts assembly lines for several car and trucks manufacturers. This is critical for the aeronautic cluster as many components of the production chain are shared. Also, very sophisticated steel and glass producers provide high quality supplies to the aeronautic cluster and allow it to stay at the forefront on innovation in aerostructure;

Based on these 3 factors, a small government stimulus in the early 1970's (through the offset system or direct support) has been sufficient to internationalize historic anchor companies of the cluster and build a dense SMEs network around them. Today however, these factors of early success are eroding and the cluster's competitiveness is threatened:

- Shortcomings in vocational and professional training system weakens the talent pipeline and the cluster fails to re-train and update skills of the workers;
- Weak levels of competition and cooperation (especially between tier-1 and tier-2/3 companies) prevent the cluster to benefit from aggregation effects. Today, the cluster can be perceived as a collection of independent firms exporting their entire production rather than a coherent entity of closely interlinked firms;
- High cyclical demand is inherent to the industry is reinforced by a strong dependency on Airbus. This threatens the long-term prospects of the cluster as it undermines feasibility of long-term investments and research projects;

Exhibit 8

Cluster Diamond – Competitiveness diamond of the aeronautic cluster in Wallonia

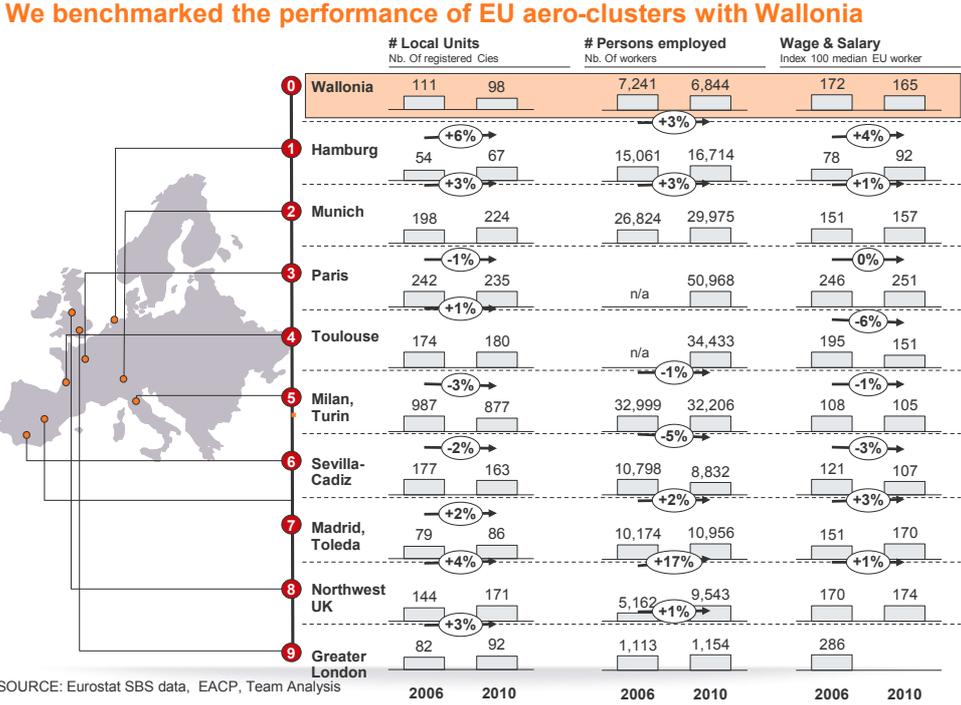


RECENT PERFORMANCE OF THE CLUSTER

The cluster has had a mixed performance over the last years^{xiii}. Employment has declined by 6% between 2006 and 2011 with roughly 400 jobs lost in the industry, the number of companies registered in the cluster dropped (2.5% yearly decrease between 2006 and 2011) and wage and salary have decreased by 1% annually between 2006 and 2011 in comparison with EU average.

Further research is required to distinguish if these results reflect a decline in productivity or an adjustment to a drop in cyclical demand. **Exhibit 9** presents several European aeronautic clusters and their performance compared to Wallonia.

Exhibit 9



Based on this analysis, two hypotheses can explain the Walloon performance:

- **Hypothesis 1:** Wallonia cluster performance is explained by an overall trend in the aeronautic industry in Europe

- **Hypothesis 2:** Wallonia cluster performance is explained by the absence of an OEM in the cluster

To assess “**Hypothesis 1**”, we benchmarked Wallonia against the average performance of peer European clusters. It appears that, as demand in the aeronautic industry has been **deeply hit by recent crisis** (up to 30% drop in demand in defense and civil airlines), growth in the sector has been sluggish. We observe an average yearly growth in the industry of 0.7% in number of companies, and 0.5% in total clusters employment between 2006 and 2011. Performance of Walloon cluster can be partially explained by this weak industry performance but even so, the cluster performance is still lagging behind the industry average.

“**Hypothesis 2**” is tested by comparing the performance of clusters that include major OEMs with those, like Wallonia, that host different tiers of suppliers but no OEM. The difference in performance between those two subgroups is significant. While average annual growth, both in terms of employment and number of units, has exceeded 2% over the last 5 years in the “OEM clusters”, it has been slightly negative for the “non-OEM” clusters. This trend may be related to the willingness of OEMs to concentrate their supplier base. This trend may result in a *de facto* concentration of the industry in a limited number of clusters around major OEMs.

POLICY RECOMMENDATIONS

Analysis of “Best-in-class” comparable cluster

To build robust recommendations for the aeronautic cluster in Wallonia, we analyze the case of a cluster with comparable historic determinants but with different economic outcomes. The underlying objective of this analysis is to identify policy measures that could be replicated to

support the growth of the Walloon cluster. The “aviation valley” in South-Eastern Poland is a comparable cluster for the following four reasons:

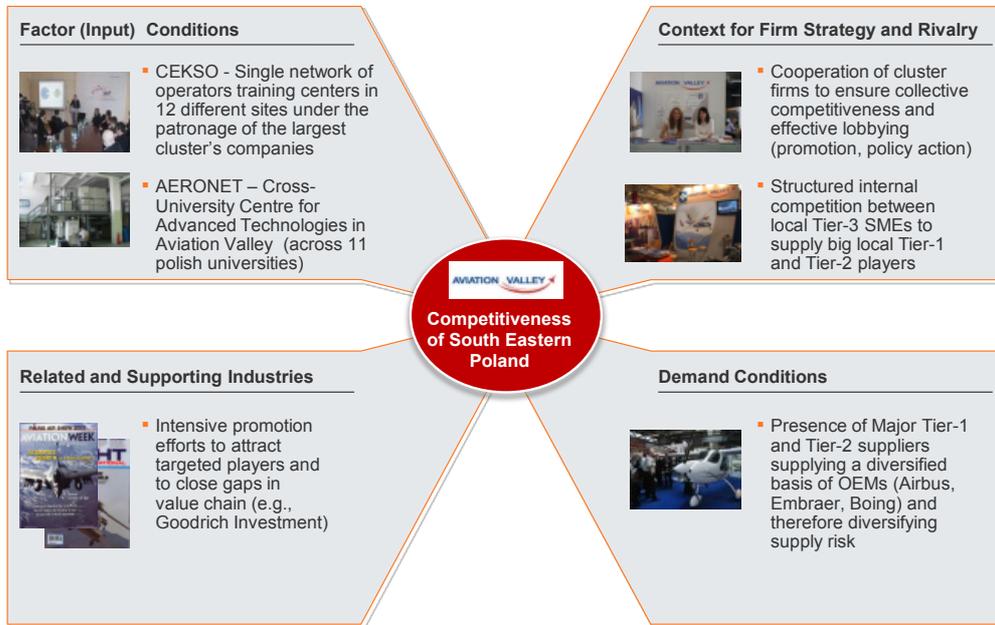
- Like Wallonia, the region of South-Eastern Poland benefits from the presence of an old tradition in the aeronautic industry with the emergence of the first plane manufacturers dating back in the 1930s;
- Like Wallonia, the Polish cluster does not host assembly lines of any major OEM;
- Like Wallonia, the cluster is strongly dominated by a few big tier-1 suppliers that concentrate a significant share of the employment (e.g., PZLM Elec, Pratt & Whitney);
- Like Wallonia, the “aviation valley” is supported by a strong network of universities with departments dedicated to the aeronautic industry. This network of supporting research centers is grouped around the Rzeszow University of Technology;

However, despite sharing those common determinants, the performance of the “aviation valley in Poland has been quite remarkable. The number of jobs in the cluster has grown by 12% p.a. between 2003 and 2011, reaching 22,000 jobs in 2011, and the number of companies in the aeronautic cluster has grown from 18 to 83 within the 2003-2011 period.

Our research and interviews have identified a number of key policies that were leveraged to support the competitiveness of South-Eastern Poland as an attractive location for aeronautic companies. **Exhibit 10** below presents our key findings structured around the four dimensions of the competitiveness diamond.

Exhibit 10

Several innovative policies to support the growth and the competitiveness of the Polish cluster could be replicated in Wallonia



SOURCE: Cluster websites; team analysis; Interreg

Conclusions for the Walloon cluster

The following conclusions and recommendations can be extracted from the above analysis.

- As far as **factor conditions** are concerned, efforts should be brought to strengthen the pipeline of talent in the cluster, especially for technically qualified entry-level employees. This could be implemented through the design of vocational training programs in partnership with major firms in the cluster. Also, similarly to what is being done through the “Marshall Plan”, applied research in step-change technology developments (environmentally-friendly engines, composite components, high-tech avionics) should be strengthened and collaborations across different players of the cluster should be encouraged.

2. The **context for firm strategy and rivalry** could be strengthened in order to benefit from aggregations effects within the cluster. Initiatives could be developed to organize better networking/cooperation and competition between tier-1 and tier-2/3 SMEs within the cluster. Moreover, knowing the structural trend and the willingness of OEMs to consolidate their supplier base into a few “super tier-1” suppliers within the next few years, it is critical to support the competitiveness of Walloon tier-1 players by designing appropriate policies.
3. In **terms of related and supporting industries**, similar efforts as the ones included in the Marshall Plan should be launched to support cross-industry research partnerships. For example, joint projects in intelligent glass components and composite materials could drive innovation within the cluster and allow the aeronautic to leverage its proximity with sophisticated glass and steel suppliers as a unique competitive advantage.
4. **Demand conditions** should also be addressed. As diagnosed previously, OEMs are likely to concentrate their suppliers’ base into a few ‘Super Tier-1’ suppliers in the coming years. This concentration is likely to induce further integration of the industry in a limited number of clusters around OEMs. It is therefore crucial for the Walloon cluster to position itself not as a self-standing isolated cluster but as a central cornerstone of a European-wide cluster that encompasses Western Europe from Toulouse to Hamburg. Also, members of the cluster should invest major efforts in diversifying their clients’ base and increase exposure to emerging markets to mitigate the effects of the dependency on Airbus and the strong cyclicity of the aeronautic demand.

ⁱ Schwab, Klaus. *The Global Competitiveness Report*. Publication. World Economic Forum, n.d. Web. Accessed March 28, 2013

ⁱⁱ EFA Development Index | Education | United Nations Educational, Scientific and Cultural Organization." *EFA Development Index | Education | United Nations Educational, Scientific and Cultural Organization*. United Nations Education, Scientific and Cultural Organization, n.d. Web. 17 Apr. 2013.

ⁱⁱⁱ International Monetary Fund. World Economic Outlook Database. Accessed April 19, 2013

^{iv} HBS Institute for Strategy and Competitiveness 2012

^v *Doing Business 2013*. Publication. The World Bank, n.d. Web. Accessed March 28, 2013

^{vi} Schwab, Klaus. *The Global Competitiveness Report*. Publication. World Economic Forum, n.d. Web. Accessed March 28, 2013

^{vii} Schwab, Klaus. *The Global Competitiveness Report*. Publication. World Economic Forum, n.d. Web. Accessed March 28, 2013

^{viii} European Industrial Relations Observatory On-line

^{ix} “Sabena : le progrès venait du ciel : l'histoire du transport aérien belge”, M. Coppens, Gent : Borgerhoff & Lamberigts, 2011 and “Cent ans d'aviation en Belgique”, D. Brackx, Editions Racine, 2002

^x Numbers provided directly by SkyWin, the IFC of the cluster

^{xi} Sabca Annual Report, 2012

^{xii} Sonaca Annual report 2011

^{xiii} Analysis based Eurostat SBS database at NUTS2 level – aeronautic data reconstructed based on NACE classification