Esch-Belval, Luxemburg

Blast off for new businesses

Conversion of a derelict iron and steel manufacturing area: creation of a business incubator in Belval (*Opération de reconversion des sites sidérurgiques d'Esch-Belval: Incubateur d'entreprises de Belval*).

This high-tech business incubator has been built within the new flagship science park which is part of an impressive steelworks conversion. Promoted under the Ministry of Economy's innovation policy, authorised by act of parliament, it was implemented by Fonds Belval, a public body and contracting authority and the beneficiary of the ERDF co-funding.

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Conversion of a derelict iron and steel manufacturing area: creation of a business incubator in Belval

The construction of the Belval high-tech incubator was completed in 2011 at a cost of €6 million, including an ERDF contribution of €1.5 million (25%). It is an entirely public investment project, promoted by the Innovation Department of the Ministry of Economy, and authorised by its own Act of Parliament. It was designed, implemented and co-funded by Fonds Belval, a public development body and contracting authority.

The incubator building is to become operational by mid-2012. It contains 4 240 m² of fully-equipped office and workshops space, to be rented to business creators for development of their business ideas, prototypes, feasibility studies or market studies. In addition to physical premises, the incubator offers soft support such as business advice and networking.

The project is located in a restored office building, with a high quality design. It belongs to the emblematic science park and national university in Belval, a new urban district under construction in Esch-sur-Alzette, a town of 30 000 inhabitants. The site is part of the largest steelworks conversion currently under way in the EU. It is also part of the cross-border European Development Pole and of the Greater Region (*Grande Région).*

The incubator's main objective is to support the creation and development of innovative high-tech start-up firms, as a new source of growth and jobs which will strengthen the region's economic fabric. It is expected to boost and promote R&D activities, and increase technology transfers from the main national Public Research Centres (CRPs) located in the science park and from private research centres expected to locate in or near the park.

Once operational, the incubator will build close links with the Henri Tudor research centre, to be located in the nearby Innovation House, and with the existing Technoport incubator. Priority is given to ICT and new materials projects stemming from them. The incubator is expected to be a positive step in the consolidation of Luxembourg's innovation system, owing to its proximity to the research centres.

The project is emblematic of a smart and sustainable growth approach. It is housed in a restored building registered as a national monument, and combines conservation with its modern use. The terms of reference for the architectural competition for all the science park buildings required an "energy concept" and an "integrated approach taking account of the economic, cultural, ecological and social objectives of urban planning".

The innovativeness of this project lies not only in the creativity it will nurture but in its environment. The project has turned a derelict steelworks into an impressive science park and university, integrated within a new urban district – learning and service-based city built on the principles of sustainability.

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The Esch-Belval incubator in Luxembourg was built during 2010 and 2011, at a cost of €6 million, with an ERDF contribution of €1.5 million (25%) and the remaining 75% coming from Fonds Belval. According to the representative of Fonds Belval and the Managing Authority, the project would have been implemented without ERDF funding but the size of the incubator would have been reduced.

The incubator offers 4 240 m² of office and workshop space for start-ups. It is part of the 27 340-hectare science park and national university, in the new Belval urban district which is under construction in Esch-sur-Alzette (30 000 inhabitants), as part of the reclamation of derelict steelworks. The area is part of the cross-border European Development Pole and of the *Grande Région*, a "domestic market" for firms from 4 EU Member States (Luxemburg, France, Belgium and Gemrany), with 11.2 million inhabitants.

A 10-years story

The idea for this incubator arose 10 years ago within the Innovation Department of the Ministry of Economy and Foreign Trade and at the Henri Tudor Research Centre, as a way to consolidate and expand the national innovation system and to promote business R&D and technological innovation. The government's plan for the Belval Science Park, which was to become the site of the national university and the main Public Research Centre, led to the incubator being located there. A feasibility study was commissioned by the Ministry of Economy in 2002. It helped to define the terms of reference for the architectural competition organised by Fonds Belval in 2003. The architectural project was selected in December 2003 but was postponed because priority was given to other projects and to buildings needed by university and research centres, which were moving in.

The decision to build the incubator was taken in 2006 when the parliament, passed a three-article law which authorises the restoration of a building close to the blast furnace and its conversion into an incubator, and asks the Fonds Belval to act as the contracting authority (*maître d'ouvrage*).

The Fonds Belval submitted the application to the ERDF Selection Committee and the project was agreed in October 2009. Construction started in 2010 and was completed in December 2011. The official opening and operational start took place in April 2012.

A purely public investment

Fonds Belval is a public contractor created by law in 2002 to construct the state facilities in the flagship Science, Research and Innovation Park *(Cité des Sciences, de la Recherche et de l'innovation)* – to which the incubator belongs. It is managed by a board of directors of 13 members, all representatives of different ministries, plus two consultative members from the municipalities of Esch-sur-Alzette and Sanem, where it is located.

As a contracting authority, Fonds Belval funded the building with government and EU subsidies and bank loans. It drew up a

detailed construction programme, set terms of reference for studies and managed the building works according the national public procurement rules under a single prime contract (*contrat de maîtrise d'oeuvre unique*). A consortium of building companies (*groupement de maîtres d'oeuvre*) led by a project management team – an architect and two technical engineers – was selected. The Fonds Belval, with a staff team of three professionals led by an in-house architect with two engineers, supervises the process, studying technical documents, timetables and plans and making weekly site visits. This function was carried out in consultation with an informal monitoring group of partners including representatives of the Ministry of Economy, the research centres and the city.

The Fund became the owner of the renovated facilities, and maintains them until the State, a Ministry or a public institution takes them over.

The strictly public investment approach of this project, its authorisation by law, its implementation by a public contractor, its funding by public authorities, its lack of leverage and its non-revenue nature all mean that no private stakeholders are involved.

2011: state of construction with the new university buildings and the restored blast furnaces

A global initiative

The objectives of the project should be seen within the context of a global initiative to redevelop the whole industrial brownfield area where the several considerations were the prime foundations of the approach, such as (i) to tackle the totality of the abandoned industrial areas and their territorial extension (cross-border); (ii) to integrate all possible land-uses (economic activities, public and private services, housing, leisure, culture and conservation initiatives; (iii) to adopt a multi-partner, multi-level participation (i.e. State, Municipality, land-owners); (iv) to accommodate governmental decentralisation; (v) to cooperate with and contribute to other relevant, targeted and long term policy initiatives (i.e. Regional Plan South) and in the short term to support intervention in the designated 4 priority sites (Belval Ouest - West, Ehlerange, Terre-Rouge and Rodange).

For the site Belval Ouest these principles were translated into a master plan (2002) for the development of a Cité des Sciences (Science Park) in conjunction with districts locating educational institutions, housing neighbourhoods, music centre and a site to accommodate the National Archive office – all set within a green framework of public open space.

All a new business could need

The main objectives of this project are to support the creation and development of innovative high-tech start-ups, as new sources of growth and jobs and to strengthen the region's economic fabric. It also aims to boost entrepreneurship, especially within the research and engineering communities of the science park, and to increase technology transfers from the main national Public Research Centres (CRP) located in the science park and from private research centres expected to locate within or near the park.

Future beneficiaries will be engineers and researchers working in the public research centres, other private research centres or existing firms, especially multinational firms who want to develop new products or services via spin-offs. During the first operational phase, close links with the Henri Tudor research centre, to be located in the nearby Innovation House, and with the existing Technoport incubator, have led to priority being given to projects in ICT and new materials.

When the project is operational (April 2012), it will offer start-ups 4 240 m² of space. Most of it will be devoted to fully-equipped offices and workshops suitable for independent use, which

business creators can rent privately to develop ideas and prototypes, or carry out feasibility or market studies. Additional shared space will be available for industrial and commercial use, and for support services and logistical and technological infrastructure, which will be used by new entrepreneurs. Of course some space is set aside for managing the incubator itself (offices, meeting rooms and attached premises).

In addition to physical premises, the incubator will provide soft support such as business advice and networking, along with basic business services such as secretariat, communication, safety, meeting rooms and teleconferencing. Technical and organisational services – including training, protection of intellectual property and location of companies – will be offered by experts, advisers, researchers, venture capitalists, business networks and clusters, the public innovation agency and other incubators.

The incubator is designed to attract, host and support innovative spin-offs from laboratories and companies. They will benefit from a 3 to 6-month rent-free period for the business planning and feasibility study stage, after which they sign a 3 to 5-year lease for the product development and consolidation stages. Its total capacity will be about 30 start-ups and 120 people. It is expected that each year from 6 to 8 new businesses and maybe 15 to 20 highly-skilled jobs will be created.

Focus on smart and sustainable growth

Part of the steel-works before its conversion into new urban districts

The business incubator project has been developed within two different frameworks. At the **national** level, the government's higher education, research and innovation policy is to consolidate Luxembourg's innovation system. The Ministry of Economy (Department of Research and Innovation) and Luxinnovation (the national agency for innovation) have encouraged companies to put more effort into innovation, and have promoted entrepreneurship, business creation and clusters. Two initial public business incubators (Technoport and Ecostart) were created in this context.

At the **regional** level the government and parliament decided to reclaim the derelict steelworks at Belval and to create four new urban districts: the first with a mix of housing, retail, culture, restaurants and hotels; the second comprising a park with leisure and recreation spaces; the third a residential district with different housing options; and the fourth, in the former raw cast iron production unit, devoted to training and research – where the science park is located. The purpose of this science park is to bring together the expanding national university and the major public research centres such as the Gabriel Lippman (190 researchers), the Henri Tudor (340 researchers from 30 countries) and the International Network for Studies in Technology, Environment Alternatives and Development (INSTEAD) with 40 international researchers.

The termination of steel production in the south of Luxembourg in 1997 led ultimately to abandonment of a huge industrial area covering some 640ha (stretching across 10 individual sites, 500ha in Luxembourg and 140ha in France). The scale, structural complexity of the site, pollution issues and cross-border dimension required a comprehensive but multi-faceted approach to redevelopment. It was recognised that in order to achieve a viable new functional pattern, regeneration would need to address economic, social, environmental and cultural aspects. Many diverse projects would need to combine in these fields within a coordinated and sustainable concept. In this context ERDF funding was sought to support one economic impulse in this massive intervention, to establish a business incubator in a former blast furnace. The project represents one component in this global, sustainable initiative guided by a master planning framework but is equally emblematic of a smart growth approach. It focuses on the creation of high-tech start-ups whose products or services will spin off from the nearby R&D centres in the science park.

According to the Ministry of the Economy's Department of Innovation, which is the promoter of innovation policy and of this project, start-ups nurtured in the incubator will diversify the regional economic basis, foster the endogenous development of new economic activities within clusters of firms, create highly-skilled jobs with high learning content, improve technological and innovative capacities of firms and valorise applied research.

The feasibility study confirmed the incubator's economic sustainability, pointing to a real and growing demand for R&D valorisation and commercialisation, and assuming that private research units and innovative companies would be attracted from abroad to the Belval site.

Combining conservation with innovation

The science park is a €1 billion public investment, including the completion of 25 buildings to be built from 2005 to 2020. It is planned around five thematic poles: teaching (university undergraduate level), social and cultural, human sciences, natural sciences and innovation.

The innovation pole occupies three buildings. The first is a €6.8m Research Centre for Systems Biomedicine of 3 300 square metres, with laboratory capacity for 100 researchers. The second is the €26.5m House of Innovation with 13 700 square metres of offices and space for 500 theoretical researchers, where the R&D activities of the Henri Tudor research centre on ITC and materials analysis will locate. Both are within easy reach of the third building: the new business incubator.

The incubator is located in a former blast furnace office building and the high quality of the design, based on an architectural competition, is respectful of this industrial heritage. The

winner of the architectural competition suggested “a building within a building” enabling the external appearance of the existing building to be retained with a second functional layer being integrated inside it. The restoration offered a unique opportunity to integrate the concepts of energy efficiency and sustainable development into the design of this building – and into all the 25 buildings in the science park. Indeed the terms of reference of the architectural competition for all the science park buildings defined an “energy concept”. The university and the science park designed a strategic action plan for reducing CO_2 emissions, energy and water use.

In terms of project design and construction, the project is quite remarkable because it has been built within an old steelworks building, which is registered as a national monument, and stands close to the preserved blast furnaces, the last symbolic witnesses of the area’s industrial past. It thus combines conservation with a very modern use. Such renovation and preservation were defined as “an integrated approach taking account of the economic, cultural, ecological and social objectives of urban planning”. The government decision to conserve the site was welcome, but the conversion of the three buildings comprising the Innovation Pole, which includes the incubator, suffered from many unforeseen construction problems, delays and overspends.

The science park within which the project is designed and implemented – and to a larger extent, the whole Belval conversion operation – are impressive and innovative in many ways. They promote the close integration of a university and research community, conducting teaching, research, innovation and knowledge-based economic activities, within a new urban district. It carries on a mix of urban functions (housing, work, leisure, learning, culture etc.) while conserving its industrial heritage in a modern learning city. This urban project is based on sustainable development and on civic engagement. Architectural and urban planning as well as energy efficiency will lead to a high quality of life.

Towards critical mass

The scale of site conversion is clearly a strong determinant factor in the planning of the former industrial districts in terms of functional zoning, while there has been a conscious decision to preserve certain buildings of industrial heritage value to keep the memory of an industrial past and maintain its specific identity in a future and sustainable development model.

No precise written regulation on the management and funding of the operational project has yet been defined. According to a Ministry of Economy official in charge of research and innovation projects, the incubator will be managed jointly with the existing Technoport incubator located nearby, and a new legal body will be established in partnership with the Henri Tudor research centre. Its property (and its loans) could be transferred to the science park i.e. the Ministry of Higher Education and Research.

This close cooperation with the Henri Tudor research centre is expected to boost the

valorisation and commercialisation of research and increase start-up creation in the ITC and new materials sector. But the incubator' smooth functioning will depend on several conditions being met. The research centres need the capacity to obtain, protect and exploit innovative results – by selling licences and patents, protecting intellectual property, creating spin-off enterprises, etc. They also need to be able to adapt the knowledge and capabilities they acquire from research to fit the economic environment. This relies on the inventiveness and entrepreneurial spirit of researchers and engineers in turning fundamental research results into applications, and on assessing the market opportunities for new products and services developed by these start-ups. Generating a critical mass of innovative research results will be crucial to the incubator's success.

The project provides an innovative response for this particular site, with a very mixed-use development scenario. The master planning approach means that buildings and land-uses are being developed in juxtaposition. The key initial idea is to get diversity of functions operating on-site in the short term while true integration of land use and interactive relationship between community and business education will be a longer term result. It is interesting to compare the example of the new town of Louvain-la-Neuve in Belgium conceived as a University town with spin-offs in the early 70s. It is only in the 21st century that we could really (begin to) describe it as a mature urban community representing a normal cross-section of civic society in its broadest sense.