



Green service innovation vouchers

Experiences from testing voucher schemes
for sustainable construction service innovators



Innovation in Services
GreenConServe



European Commission
Enterprise and Industry

The present booklet presents the outcomes and findings of the GreenConServe project - "Greening the construction sector – towards a value adding service industry" - co-funded by the European Commission under the Competitiveness and Innovation Framework Programme CIP.

GreenConServe is part of the European Innovation Platform for Knowledge Intensive Services (KIS-IP) that aspires to accelerate the take-up of service innovations.

Written and edited by Greenovate! Europe with contributions from the consortium partners.

Photos courtesy of:

Fotalia STOCK (p.6), Istockphoto - Dmitriy Shironosov (p.7), DGNB Strömungssimulation (p.8), MEDIACONSTRUCT Turning Torso (p.10), Istockphoto - Bart Coenders (p.12), Istockphoto - Elena Elisseeva (p.14), DGNB Thermographie (p.14 bottom), Istockphoto - Steve Cole (p.17), Istockphoto - Lya Cattel (p.18), GIE GreenConServe and Lions group (p.19), ARCHITECTURE DE COMMUNICATION Coupe Toiture Projet CapZED (p.20-22).

© Greenovate! Europe E.E.I.G., October 2011

The views expressed in this booklet are those of the consortium and cannot be attributed in any way to the European Commission.

Reproduction permitted, provided the source is acknowledged.

Copies may be ordered at Greenovate! Europe: assistant@greenovate.eu

Printed on Cyclus 100% post-consumer recycled paper in Belgium.

Design by www.mardi.be



This publication is financed under the Competitiveness and Innovation Framework Programme (CIP) which aims to encourage the competitiveness of European enterprises.

Foreword

60 kWh/m²/year total annual energy consumption – this performance requirement for new buildings was set by the European Commission in its research and innovation funding programme in 2010. It demonstrates how the construction sector is moving from a product-oriented activity to a service activity measured against performance indicators.

And it's not only about energy use over the life-cycle of a building. The construction sector is far from optimised in its use of resources – including financial resources – and it will not progress unless it widely embraces innovation through the entire construction process: Innovation in technology, design, planning, operation and systems integration.

Much of the required innovation is already available. We have ICT programmes for energy efficiency in buildings, design and simulation tools, inter-operability standards and building management systems. However, the sector does not adopt new knowledge at a sufficient pace. Small companies are especially reluctant to change their ways of working, and the construction sector is dominated by SMEs: 32 million people work in 2.7 million enterprises across Europe, of which 95% employ less than 10 people.

GreenConServe set out to help unlock the construction sector's largely untapped value-adding service innovation potential. GreenConServe is a public-private innovation partnership funded by the CIP's Innovation and Entrepreneurship Programme with contributions from national innovation funds. Its overarching goal is to design, implement and test new schemes to accelerate SME-based service innovation in the construction industry in Norway, France and Germany. Our challenge is to mobilise SMEs to eco-innovate and to support them with knowledge and financial resources throughout the process.

Our public partners, OSEO, Innovation Norway and Projektträger Jülich, are in charge of the management and implementation of innovation support programmes in their countries. Each has mobilised national funding to test innovation vouchers for SMEs in the construction value chain who want to develop a more sustainable service. With a budget for vouchers of 750,000 Euros in both France and Germany, and 225,000 Euros in Norway, the partners designed a new funding instrument that was so easy to use and so flexible that even SMEs new to public funding were encouraged to try it out. The green service innovation vouchers allow SMEs to buy external expertise to strengthen the technical and business aspects of their innovation project.

In addition, the private partners developed training material to raise small companies' appetite for innovation by highlighting greening trends, new regulatory requirements and showcasing how readily available innovation knowhow can be relevant to their daily business.

But all the support measures will only work if SMEs see a reason to eco-innovate. And micro actors will only be motivated if the final customer (the ultimate building owner) puts a value on eco-innovation.

We hope to have kick-started a useful initiative and invite interested stakeholders to contact us to find out how we can work together towards our goal of **GREENING THE CONSTRUCTION SECTOR**.



Katharina Krell
Greenovate! Europe
Project Coordinator

GREENCONSERVE PARTNERS

Belgium	Greenovate! Europe EEIG
France	OSEO Centre Scientifique et Technique du Bâtiment (CSTB) Mediaconstruct Technofi S.A.
Norway	Innovation Norway Norwegian Defence Estates Agency (NDEA) Catenda SA
Germany	Project Management Jülich (PtJ) German Council for Sustainable Building (DGNB) Institute for Applied Building Informatics e.V. (iabi) i.con innovation GmbH
Poland	Polish National Energy Conservation Agency (KAPE)

What are innovation vouchers?

Innovation vouchers are one of a number of innovation support instruments that public agencies have at their disposal, which they can use for various purposes and to reach different target groups.

Supply-side instruments focus on supporting the development of new technology and service solutions, while demand-side instruments aim to build a market for products and services. Innovation support instruments typically include grants and subsidies, equity, loans and guarantees, fiscal instruments and market stimulation.

Since innovation vouchers are deployed as grants, i.e. an amount of money given to a recipient that does not need to be paid back, they belong to the category: “Grants and subsidies”. The first innovation voucher scheme was introduced in 1998 by LIOF in the region of Limburg. Nevertheless, by 2006 there were only three schemes up and running in Europe (in the Netherlands and France). By 2010, however, the number had increased dramatically to at least 25, with schemes set up all across Europe.

All vouchers are grants... but not all grants are vouchers

The policy rationale behind vouchers is that SMEs typically have many innovative ideas but often lack the necessary technical and / or business expertise to make them a market success. Innovation vouchers represent a handy entry-level innovation support funding scheme as essentially very small grants that aim to encourage the innovation activities of SMEs.

A few features distinguish vouchers from normal grants. Firstly, vouchers buy access to external expertise. By financing the costs of experts from outside the SME, they seek to initiate and foster professional relationships with external knowledge providers such as research institutes, universities and consultants. They cannot, however, be used to fund innovation efforts like personnel costs, private R&D costs or investment in hardware and software directly for the recipient SME.

Secondly, vouchers can be obtained with greater speed and ease compared to grants, and their funding volume is also much smaller.

A simple, transparent and fast instrument which is flexible enough to meet the needs of SMEs is much appreciated by these mostly small enterprises which often do not have enough resources to develop and implement these types of projects.

Karen Böhme
Projektträger Jülich (PtJ)

Most European schemes have a relatively non-bureaucratic application procedure of 2-5 pages, and the majority offer around 5,000-10,000 Euros. The conditions which regulate their use to buy external expertise make them ideal instruments for lowering the barriers to first contact with external knowledge providers.

When to use vouchers?

Vouchers are user-friendly and can target groups not belonging to the “usual suspects” that normally line up to request public funding, including SMEs. Financing solely external expertise, they are suitable for making contacts with outside knowledge providers and for solving small innovation issues, and most require a contribution from the recipient SME.

Their modest funding volumes allow for the definition of clear R&D requirements (R&D voucher) to solve small-scale innovation problems (business vouchers), or to acquire a precisely defined piece of knowhow (audit vouchers). Vouchers are not supposed to provide full-scale innovation support or to help SMEs develop and market new products and services.

The voucher schemes are usually handled by national or regional agencies and are financed through regional, national or European funds, including the ERDF. They are highly flexible and can be designed according to the handling agency's interests and the needs of SMEs in a certain market or context. They can be shaped to offer non-bureaucratic innovation support at a reduced administrative burden and cost for both the applicant SME and the agencies running the schemes.

Green innovation vouchers

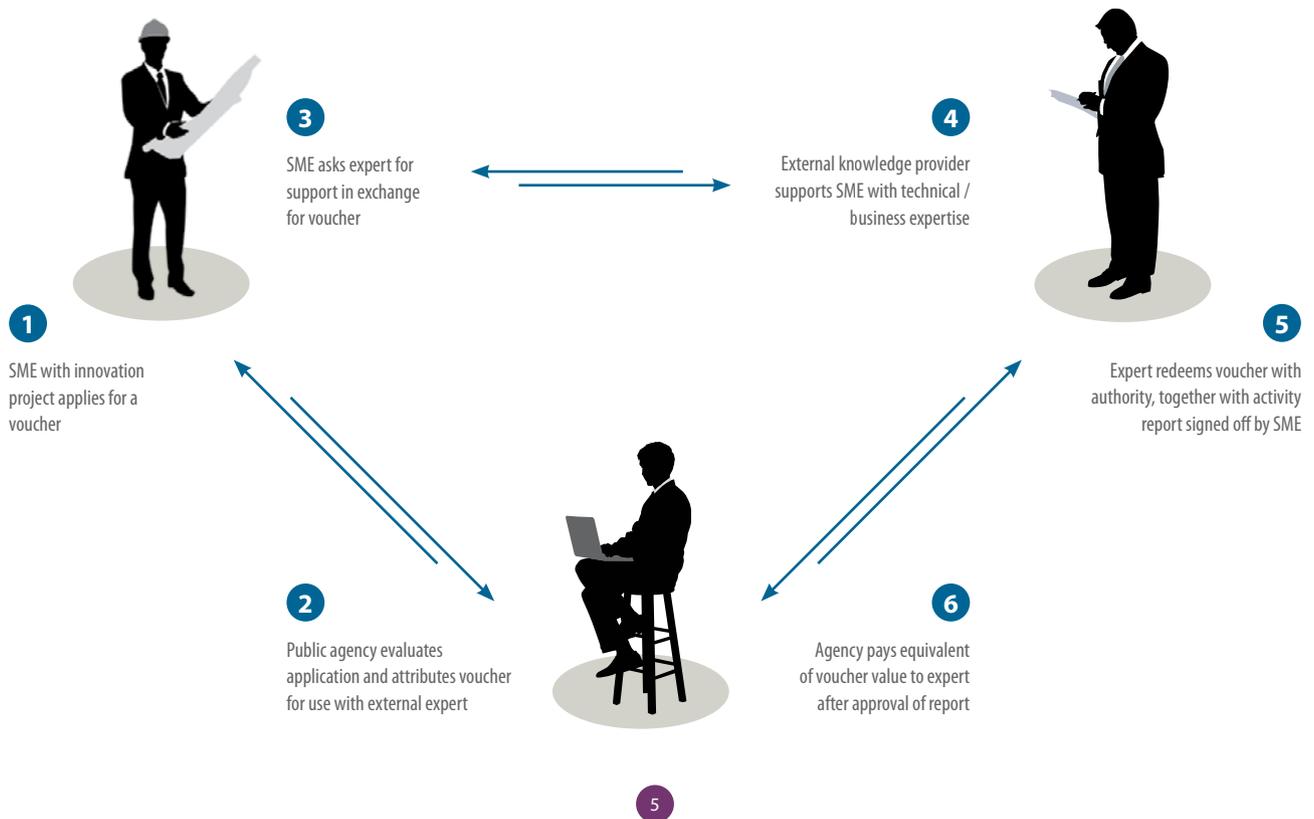
The first green voucher schemes emerged in 2008 in France in the framework of the KIS-PIMS project. Today, at least 19 countries or regions have set up green voucher schemes.

Green innovation vouchers have the same features as normal innovation vouchers except that they focus on particular sectors or areas with positive environmental impact. They are intended to promote the increased development and market introduction of sustainable technologies and solutions. Green vouchers thus support national or regional eco-innovation objectives, such as CO₂ emission reduction, introduction of renewable energies, investments in energy efficiency, etc.

Since innovation drivers and barriers differ between environmental technologies and other sectors, as do the political and legal frameworks they operate within, a sector-specific approach to innovation support is particularly beneficial.

The emergence of green innovation vouchers is a rather recent phenomenon, and until now the authors of this guide have only identified the following initiatives in Europe:

- vouchers supporting sustainable construction service innovation (the GreenConServe vouchers);
- vouchers supporting industrial material efficiency (DE);
- vouchers supporting resource efficiency, recycling and waste management in industrial processes (DE, FR, UK, ES – Navarra and Valencia, IT – Lombardy);
- vouchers supporting renewable energy service innovation (AU, FI, FR);
- vouchers supporting sustainable water and waste water management in industry and agriculture (NL, CY, UK – East England and North West, ES – Navarra).





Greening the construction sector

The construction industry is one of Europe's largest industrial sectors with a vast economic output. It employs around 32 million people and contributes over 10% of the EU's GDP. SMEs are prevalent in the sector, accounting for about 80% of the turnover. Within that, an overwhelming majority, 95%, are micro SMEs with less than 10 employees.

Buildings account for the largest share of the EU's total final energy consumption, at 42%, and produce about 35% of all Europe's greenhouse emissions. Construction has therefore been targeted as a key sector for CO₂ reduction in the Europe 2020 strategy. In terms of resource efficiency, about 850 million tonnes of construction and demolition waste is created in the EU every year, representing 31% of total waste generation. Recycling and reuse levels vary greatly between Member States, yet there is good potential for a reduction in all.

The life-cycle performance of buildings is crucial; qualities such as accessibility, flexibility and refurbishment potential are becoming more and more important, as well as meeting requirements for indoor air quality, thermal comfort levels and the safety of occupants. The performance of the building needs to be taken into account during the design, building, maintenance, use and decommissioning stages of its life-cycle, which can be spread over a century or more.

Sustainable construction

A construction sector company's market longevity depends on its ability to meet sustainability goals. As mentioned in the "Accelerating the of the Sustainable Development Construction Market in Europe" report released by the EC, a key influence on the future of the construction market is the concept of sustainable construction, which can be defined as the "dynamic of developers of new solutions, investors, the construction industry, professional services, industry suppliers and other relevant parties towards achieving sustainable development, taking into consideration environmental, socio-economic and cultural issues." Sustainable building has become more and more prevalent over recent years and has taken an ever-increasing share of the market.

A large number of aspects of the construction sector can be included under the umbrella of sustainable construction: the choice of materials, how the building is designed and managed, how it performs, as well as its place within wider urban and economic developments. New service models are developing which combine and/or specialise in design, construction, maintenance and financial services for buildings alongside guarantees on environmental and economic performances and indoor air conditions.



Challenges of the construction sector

The construction industry has significant economic, environmental, health and social impacts. While there is a large potential for increased sustainability in the sector, companies are faced with many challenges that hinder their innovation capabilities in the manufacturing as well as services aspects of their business:

- **Complex projects for a complex sector:** construction involves complex interactions between large numbers of stakeholders involved in complex projects, where the introduction of novel solutions is seen to be particularly risky;
- **Fragmentation of the industry:** construction firms are widely dispersed and there is little networking or interaction across borders;
- **Inflexibility of a traditional sector:** the conservative nature of the construction sector leads to slow take-up of new practices and technologies;
- **Regulations:** strict demands on quality, security, resources and energy efficiency can restrict innovation with prescriptive requirements that do not allow for alternative solutions;
- **Risk to SMEs:** SMEs dominate the construction sector, but they cannot manage the financial risks associated with innovation as easily as large firms;
- **Up-front cost over life-cycle performance:** construction projects are usually assessed on their initial cost rather than any improvements to their long-term performance.

Supply chain complexity and innovation

Another characteristic of the construction sector is the complexity and fragmentation of the supply chain, where a number of different groups have competing motivations and interests. This in turn hinders innovation in a sector which remains traditional and locked into established ways of working.

These stakeholders are:

- **The owners:** usually invest in the design and construction of the asset;
- **The users:** exploit the asset;
- **Architects and engineers:** in charge of the design and, sometimes, the coordination of the construction phase;
- **Contractors:** specialised in a wide variety of technical aspects related to the construction;
- **Product manufacturers:** producing the elements needed for the construction;
- **Product distributors:** intermediaries between product manufacturers and contractors;
- **Suppliers:** supply materials to the manufacturers;
- **Service providers:** partly or fully in charge of the exploitation and maintenance of buildings;
- **Insurance companies:** provide cover for professional liability and/or potential damages for the owners/users;
- **Funds:** invest in non-residential buildings according to a set of asset valuation criteria;
- **Inspection, certification and regulatory bodies:** insure that regulations are enforced.

These actors have different processes and potentials with regard to the innovation process. Manufacturers, for example, rely heavily on ICT and the development of new materials, while distributors are more interested in service and e-commerce.

Innovation in the construction sector

Innovation in this highly traditional sector is of utmost importance. Innovating in process, material, design, business models, services and management practices has become crucial in enabling the industry to overcome the myriad of challenges that it currently faces.

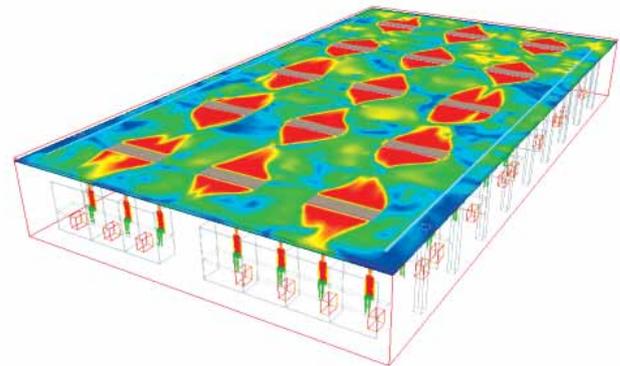
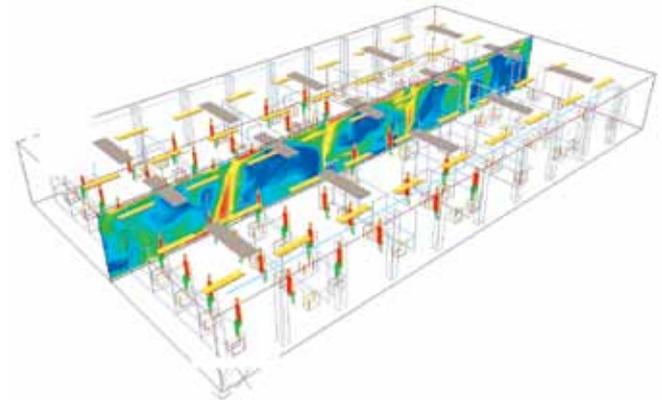
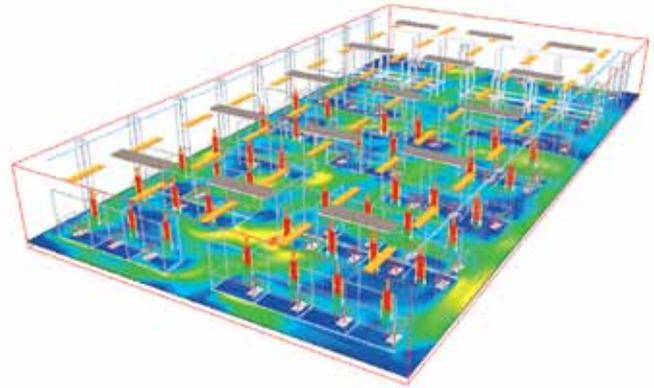
The drivers of innovation in the construction industry

Innovation leads to an increase in productivity and higher efficiency gains, while contributing positively to economic output and activity. Companies innovate for a number of reasons, particularly to keep pace with advancing technologies and the use of newer products and services in their own supply chains, as well as to meet stricter regulatory and customer demands. ICT is a key driver for innovation in the construction sector, leading to its slow but steady industrialisation. Similarly, national building standards or energy efficiency requirements, as well as voluntary certification schemes such as BREEAM, push companies to innovate to make sure they remain competitive. Procurement practices have a powerful leveraging effect and can drive SMEs to innovate.

Focusing on service innovation

While technological innovation has been prominent in the construction sector, currently there is also a trend to stress the importance of service innovation, as services are a main element throughout the life-cycle of a building.

A construction process encompasses the creation and management of the services provided to end users by buildings throughout their life-cycle, rather than simply to the physical living and working environment. It should be looked at as a whole system, and since a building typically has a long lifespan, a long term view should be taken of its impacts. According to data from the US, for example, a typical office building has an average lifespan of 73 years. Thus impacts beyond the design and construction phase should be carefully accounted for. The management, maintenance, improvement, demolition and reconstruction processes, all of which heavily rely on services, become key components of a building's financial and environmental performance and subsequent impact.



In Norway we have decided to combine the voucher scheme with other policy instruments, in particular public procurement, to further leverage and drive companies to innovate.

Tor Mühlbradt
Innovation Norway (IN)

Planning, constructing and maintaining a building is about providing its users with accessibility, comfort and user-friendliness; ultimately the services which will enable them to get the most out of their surroundings. At the same time, buildings are not passive objects and they have performance requirements in terms of energy and water use, waste water generation and waste generation, all of which have strict requirements that need to be met. Innovative services can and should be part of the whole process of designing, building, maintaining and decommissioning a building. They are in fact one of the major pillars of the life-cycle of a building, being present in all the stages of the process, and so have the potential to significantly decrease environmental footprint.

Focusing on services innovation in construction is therefore especially valuable and can lead to substantial improvements in the sector.

Barriers to innovation

While all the driving forces of innovation hold true in the construction sector, incentives to innovate are currently not always strong enough to push companies to change. The sector still remains highly traditional, locked into old methods of working, and large procurers, which are comprised of a handful of large private companies and governments, do not always set the bar high enough to push their suppliers, the SMEs, to innovate.

More can be done to exploit the potential that the industry has to innovate and become more sustainable, with the intelligent use of both incentives and restrictive measures; i.e. intelligent procurement practices and increasingly stricter regulatory demands.

The **GreenConServe project** set out to help unlock the construction sector's largely untapped value-adding service innovation potential. It is a public-private innovation partnership which aims to design, implement and test new funding schemes to accelerate SME-based service innovation in the construction industry in Norway, France and Germany.

The public partners, OSEO, Innovation Norway and Projektträger Jülich, are in charge of the management and implementation of innovation support programmes in their countries. Each has mobilised national funding to test innovation vouchers for SMEs in the construction value chain who want to develop sustainable services. With a budget for vouchers of 750,000 Euros in both France and Germany, and 225,000 Euros in Norway, the partners designed a new funding instrument especially suitable for SMEs.

The green service innovation vouchers allow SMEs to buy external expertise to strengthen the technical and business aspects of their innovation project.

BUILDINGSMART ENABLED BIM – STANDARDS FOR INTEROPERABILITY AND SUSTAINABILITY

Standards provide support for innovation and give companies a competitive advantage. Open standards contribute to the development of more efficient manufacturing processes as well as improved knowledge-intensive services through the common professional language they provide.

Building Information Modeling (BIM) based on open standards is a solution for SMEs. Various stakeholders such as architects, engineers, manufacturers, builders and building services providers can connect to the BIM where they can access and share building related information using interoperable software.

Open standards BIM allows for life-cycle costing, seamless communication, visualization, automatic rule checking, energy efficiency and structural analysis, cost calculations, clash detections, supplier product information and many other technical functions that render work more efficient and foolproof.

France

France is a second time user of green service innovation voucher schemes. The French innovation agency OSEO gained a first experience with green vouchers through its participation in the KIS-PIMS project: Knowledge Intensive Services in the Planning, Installation, Maintenance and Scrapping services for renewable energy production systems, and was able to build on lessons learned.

In France, the first call for green construction service voucher applications opened on 26 April 2010 and stayed open for 1 year. The second round was launched on 26 April 2011 and is open until 30 June 2012. The call for proposals has been officially launched on the OSEO website with a 3 page long application form, making it SME-friendly and keeping administrative burdens to a minimum.

Training seminars by other French partners of GreenConServe, such as CSTB, Mediaconstruct and Technofi, are being organised periodically to increase awareness of the scheme and address the concerns of French SMEs.

Vouchers can be used to fund half the costs of a project, with the SME contributing the other half, and they are available up to the value of 15,000 Euros. Four main eligibility criteria have been set out:

- Less than 2000 employees (although companies of less than 10 are mostly expected);
- Evidence of sufficient equity to fund their share of the project;
- Apply for only one GreenConServe voucher;
- Not be a "profession libérale" – i.e. self-employed without a payroll.

OSEO coordinates the selection committee, involving experts, green clusters and professional associations, which convenes virtually to ensure that proposals are evaluated quickly. When a proposal is accepted, the SME is given a list of suitable consultants to choose from. All the consultants have long experience of working on innovation projects, and many are specialised in start-ups and service innovation in green construction. During a project, procedures have been put in place to



ensure the quality of the outcomes and the smooth running of the scheme. Half the payment of an approved voucher is made up front, and half paid after the consultant has submitted a report at the end of the project. This is done to ensure that SMEs do not face any cash liquidity problems when implementing their innovation project.

MONITORING CARBON FOOTPRINT OF CONSTRUCTION PROCESS

A French start-up has developed a website allowing internal (and external) auditors to perform ex-ante and ex-post audits of sustainable building construction processes. Before a project begins, contractors can demonstrate added value in terms of reduced carbon emissions. During a project, the French company monitors its carbon footprint, ensuring that it understands the carbon reductions it is achieving versus those foreseen in initial forecasts. The contractor can then continue the auditing process to monitor and achieve further reductions. The result is not only a low carbon building, but also reduced costs due to more efficient use of materials, reduction of waste and higher energy efficiency.

With GreenConServe voucher support, several growth scenarios have been studied. These have given the start-up options such as selecting and training internal and external auditors, or using the website as an audit facilitator to monitor the carbon footprint of the construction process. A business plan has been defined for the next three years, including IPR protection and cash flow management.

An interview with Jacques Gautray from OSEO

Why did you decide to pilot test voucher schemes?

Our interest in establishing innovation voucher schemes in the French context over these past couple of years has mainly stemmed from our wish to stimulate economic activity, support SMEs and ultimately contribute to job creation in the French economy. Vouchers have become increasingly common in Europe, and the Europe INNOVA programme offered us an interesting platform to kick-start our pilot schemes. We also found cooperating with other innovation agencies across Europe to be highly valuable, giving us the opportunity to exchange knowledge and information, as had happened with OSEO and TEKES collaboration in another Europe INNOVA project called KIS-PIMS.

Why focus on services in construction?

As in Europe in general, France has a very large construction sector. SME's are prevalent, and 95% of them employ less than 10 people. Stimulating innovation in this highly traditional sector is therefore crucial, particularly as it tends to innovate slowly. Stricter requirements relating to material efficiency, energy efficiency and sustainability in general also makes innovation important. Services in the construction sector are particularly relevant given the variety of services required throughout the life-cycle of a building.

What are your experiences of the scheme so far?

The vouchers pilot schemes that we have tested in both the KIS-PIMS and GreenConServe projects have given us an interesting insight into their workings and potential. One of their greatest advantages is their flexibility, allowing us as innovation agencies to shape them to our own country's needs. We were able to combine service innovation with technological innovation in a single scheme, ensuring that both are tackled and brought to market through concrete innovation projects. In addition, the voucher schemes are an excellent tool for allowing us to support French SME's to bring tailor-made ideas to market. On the other hand, one of the challenges we have faced is identifying and reaching service innovation companies, as well as effectively communicating service innovation projects, which has not always been easy.

What is the future of voucher schemes in your country?

We are still running the project and our voucher scheme is still in its pilot phase. Further developments will depend on the outcomes of this project. We are happy to collect knowledge and experience through these Europe INNOVA projects, which are enabling us to better understand the potential of service innovation voucher schemes in our country.

Are you interested in finding out more about the French GreenConServe Vouchers?

Don't hesitate to contact: Mr Jacques Gautray at OSEO

Email: jacques.gautray@oseo.fr



Norway

Norway is a new user of green service innovation vouchers. The GreenConServe project is their first experience of running such a scheme, and the pilot programme will provide a better understanding of how these voucher instruments operate in the Norwegian context.

The targeted call for applications was launched in Norway in the second half of 2010, and is open throughout the first half of 2012. The scheme is coordinated by Innovation Norway (IN) in collaboration with the Norwegian Defence Estate Agency (NDEA), a large public procurer in the country.

To be eligible, SMEs have to employ less than 250 people and be registered as a limited company (Aksjeselskap). The voucher scheme is a two step voucher, where SMEs need to use both technical and business support to get their innovation project off the ground.

The first half is worth up to 7,500 Euros and should be used for technical consulting, while the second half is worth the same amount and must be used to acquire business development expertise. Together the two step voucher is worth up to 15,000 Euros. Vouchers can only fund 50% of a project's costs, while the SMEs need to contribute the other half, and they must be used to acquire external consultancy.



DEVELOPING MOBILE APPLICATIONS FOR THE CONSTRUCTION INDUSTRY

The publishers of the "Electrician's Handbook" for Norwegian electricians, containing compliance guidelines on complicated regulations, wanted to move their publication to a mobile application. They needed help with both the technological and business parts of the project: what pricing model to use, how to publish it through new channels, which app technology? With the help of a Norwegian GreenConServe voucher, the company was able to use outside business and technical expertise to develop a good business strategy and choose the right technology provider. This allowed full exploitation of the mobile platform while keeping traditional book-like features and buildingSMART compatibility. The publisher is convinced the new electronic handbook will ensure better compliance with regulations and greener electrical installation in the future.

The targeted call for applications recruits SME projects through an initial half-day seminar, called BIM-Lighthouse, held to raise awareness of the vouchers and help companies with the application process. Applications are then submitted through Innovation Norway's electronic application system. They are evaluated with the help of the Norwegian GreenConServe partners, taking into account two particular guidelines. Projects must be **transformative**, with the service improving sustainability in the construction sector, and **scalable**, in that the service can be rolled out to multiple customers.

It takes 15 to 30 days from the electronic application being received by IN for a decision to be taken. Normally, SMEs suggest the expert that they would like to work with, and these experts in turn are accepted or rejected based on strict guidelines set by the innovation agency. IN used the opportunity to develop a list of experts that could be called on in the future.

Projects are monitored throughout by a designated manager from IN, and it usually takes about a year from issuing a voucher for the company to finish the project and submit a report and financial statements detailing the outcomes. Payments are made after the report has been submitted.

An interview with Tor Mühlbradt from Innovation Norway

Why did you decide to pilot test voucher schemes?

We have observed how voucher schemes have become increasingly popular across the EU in the past couple of years, with many positive outcomes reported, and we wanted to learn more and test a scheme in Norway. GreenConServe was a good platform for this; the public agencies involved direct their own national schemes, and knowledge sharing among the European partners of the project brings added value.

Why focus on services in construction?

The construction sector in Norway has great potential for improved productivity. Innovation Norway has invested 50–60 million NOK (7 million Euros) in grants in BuildingSmart and BIM projects over the past two years, and wanted to see faster implementation of the technology in the sector. In addition, modern ICT tools have not been fully utilised in the construction sector and they have great potential to contribute to the paradigm shift needed. A focus on services was therefore also appropriate.

What are your experiences of the scheme so far?

We found that success depends on cooperation between the sectoral organisations and the consultants funded by the vouchers. The vouchers need to be disseminated and promoted in an SME-friendly way, and access to the pool of SMEs is often facilitated by these organisations which are in constant dialogue with them.

Have you found any innovative approaches to implementing voucher schemes?

In Norway, we have combined the voucher scheme with other policy instruments, in particular public procurement, to further drive innovation. This was possible with the cooperation of Innovation Norway and NDEA, the National Defence Estates Agency. NDEA is one of the country's largest public procurers, while Innovation Norway promotes innovation in Norwegian SMEs in a multitude of ways, including in this case with the use of vouchers. Together, we were able to combine our efforts and use the purchasing power of NDEA and the funding call from Innovation Norway in a complementary manner. We first demanded a service that is not widely available on the market (NDEA call for proposals for a Gas mixing building project with strict requirements on BIM use), and then suggested SMEs interested in the tender apply for a voucher to acquire the missing expertise, and they would then be qualified to apply for a tender.

We are therefore pushing businesses to adopt innovative practices while they are receiving the means to acquire the necessary external knowhow. This use of green public procurement together with innovation vouchers shows how public agencies can collaborate to leverage innovative behaviour.

What is the future of voucher schemes in your country?

There is a growing interest here for additional schemes to be set up in the near future. A scheme focused on service innovation has been proposed to the government by Innovation Norway to the value of 4-5 million Euros. If approved in the government's 2012 budget, it will pave the way for more national voucher schemes.



Are you interested in finding out more about the Norwegian GreenConServe Vouchers?

Don't hesitate to contact: Mr Tor Mühlbradt at Innovation Norway
Email: Tor.Muhlbradt@innovationnorway.no

Germany

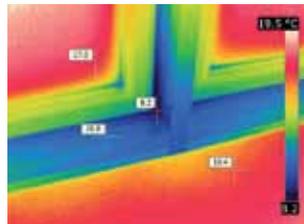
Germany has established a voucher scheme using a modular approach. The first step for an SME to acquire a voucher is participation in a specialised seminar designed to raise awareness of sustainability trends and the German voucher scheme.

There are three steps in the scheme: SMEs are first approached with general information sessions on sustainable construction. Later, more targeted seminars relevant to specific trades and areas, for example insulation or air-conditioning, are provided. To submit an application for a voucher, companies are asked to prove that they have taken part in one of the training sessions.

The call for German vouchers offering innovation support to service SMEs in the construction sector was launched in February 2011, and is open continuously until end of June 2012. Vouchers are available up to the value of 20,000 Euros, with the SME contributing at least the same amount. Applications are submitted to Projektträger Jülich (PtJ), who checks that they comply with the formal eligibility criteria, and to expert partners who ensure that proposals are suitable in terms of innovative content. The SME is then put in touch with a relevant consultant with experience in sustainable construction who would accompany them throughout the innovation process.

Projects must be completed within six months of the approval of a voucher. As well as providing the outline of the project, part of the application process includes setting out regular milestones that can be monitored throughout.

Finally, a report is submitted by the SME detailing how any of the suggested improvements might be implemented. Providing that they could also give a good account of the financial outlay of the project, the voucher is paid out quickly.



COMBINED COOLING, HEATING AND POWER PLANT

A German SME develops compact adsorption cooling systems that run off solar heat or waste, and at the same time is active in the market for spiral heat transmitters and membrane contactors for clean transport. Combining its core competences and knowhow the company was able for the first time to construct a compact and cheap combined heat-power-cooling system using porous membranes. Energy saving to the amount of 1/3 compared to standard systems is possible with the new system.

During the voucher project economic viability will be demonstrated and a test system will be set up in a private household. The consultant will help the company look into a service business model.

The voucher enables the team to become qualified in the field of project conception and also in the conditions for market entry with ecologically sustainable products. Special skills are needed to enter a market environment that is covered by competitors, and these will be delivered during the project.

An interview with Karen Böhme from Projektträger Jülich

Why did you decide to pilot test voucher schemes?

Vouchers are well adapted to our target group of SMEs, since they meet their needs directly by being fast, non-bureaucratic and flexible. The flexibility of the vouchers allows SMEs to introduce innovative processes in their activities as they see fit.

Why focus on services in construction?

Firstly, the construction sector has great potential for improvement in sustainability performance. Secondly, since economic growth has shifted from production to service, it is quite natural to support services in such an important field. Innovative solutions, new business models and life-cycle approaches are all points where new services appear and give much added value to a highly traditional sector.

What are your experiences of the scheme so far?

So far our experience has been a very positive one. In Germany, we are combining the innovation vouchers with broader information dissemination activities and sessions. These encourage SMEs to start thinking about their own innovation projects, and they are then invited to apply for vouchers. The combined offer of consultancy and technical support is a great way to support innovation and is fully appreciated by SMEs.

Have you found any innovative approaches to implementing voucher schemes?

We have found the general and targeted information sessions to be a great way to approach SMEs. The core of the scheme is then the delivery

of innovation training and consulting services to a particular company, including the means to implement a new business idea, change a business model, or change a production processes. The training is delivered by an experienced consultant active in the sector.

What is the future of voucher schemes in your country?

We closely monitor the first voucher projects running in GreenConServe and work with its European partners to exchange ideas and knowledge. This allows us to act positively on feedback and adapt the scheme to better meet its goals. So far, it has been well-suited to the needs of SMEs, and its focus on the construction sector, where there is much room for improvement, means that it will remain in the spotlight in the coming years.

What were the most interesting unique aspects of your voucher scheme?

Alongside our delivery mechanism of general and specialised information sessions, which has allowed us to reach a variety of stakeholders and sectors, we have used the voucher scheme to leverage a considerable amount of private money on top of the public funding available. When applying for the voucher, the SME has to fund part of the costs itself, demonstrating its commitment to a project. Thanks to GreenConServe, this approach of public and private financing ensures the long term sustainability of these activities within the framework of the climate protection programme and beyond.

Are you interested in finding out more about the German GreenConServe Vouchers?

Don't hesitate to contact: i.A. Dr. Karen Böhme at Projektträger Jülich
Email: k.boehme@fz-juelich.de



Financing green innovation vouchers

Green innovation vouchers can be financed directly by regional or national innovation programmes, through separate national funds with a specific focus such as the German Climate Fund, and through the European Structural and Cohesion Funds. With the Structural and Cohesion Funds, the European Union supports the social and economic development of its less prosperous Member States, regions and social groups. They comprise over a third of the EU's budget.

The Structural and Cohesion Funds are a formidable financing instrument for development and job creation and could play a major role in driving sustainable growth in areas such as renewable energy and sustainable construction. However, despite the availability of 344 billion Euros of regional funding for activities in the area of sustainable growth, investments in energy and environmental programmes have so far been insufficient. In its recent Communication "Regional policy contributing to sustainable growth in Europe 2020" (January 2011), the European Commission therefore urged regional stakeholders to take action and to "invest more in sustainable growth". It calls for a specific focus on buildings, energy efficiency and renewable energy. Moreover, regional funds can now be used in the residential sector in all Member States and no longer just in public and commercial buildings.

We were able to combine service innovation with technological innovation in a single scheme, ensuring that both are tackled and brought to market through concrete innovation projects.

Jacques Gautray
OSEO

Accelerating sustainable investments

Managing authorities of Structural and Cohesion Funds could use green innovation voucher programmes to kick-start a better absorption of regional funds in the area of sustainable growth. Clearly, green innovation vouchers are an extremely valuable policy instrument in accelerating investment in energy and environmental programmes as they can effectively reach a large number of local companies and building owners in a short amount of time. Managing authorities can use different models, for example a two stage voucher process. In the building sector, the first voucher would for example provide for an energy audit of an existing building, while the second would subsequently be used to implement the recommended energy efficiency and renewable energy measures. The audit voucher could be financed 100% and the implementation voucher could require co-financing, thus triggering additional private investments.

1 Voucher specifications

Definition of objectives, sector and target groups

Establishment of voucher size and eventually co-financing rules

2 Application procedures

Short eligibility check or complete quality assessment?

Automated web-based application system or evaluation team?

3 Reporting payments and control

Reports from voucher beneficiary or the external knowledge provider?

Payment to voucher beneficiary or the external knowledge provider?

Stringent control system required to avoid fraud?

Getting it right

Innovation voucher schemes can be fast, non-bureaucratic and simple policy instruments. In order to implement a successful voucher programme and to achieve the desired results, the responsible managing authority needs to take its time in designing and setting-up the voucher programme. It is also recommended that contact is made with public authorities that can share their green voucher experience. As a starting point, some of the main questions and choices to take into account when designing a voucher scheme are listed in the graphic below.

Vouchers financed through Structural and Cohesion funds

Throughout Europe, managing authorities already have experience in implementing innovation voucher schemes through the Structural and Cohesion Funds. To better understand the constraints that managing authorities might face in setting up and running these voucher schemes, GreenConServe has undertaken a study in six selected countries.

The study confirmed that several countries have already or are in the process of testing voucher systems, even though financing innovation vouchers from the Structural and Cohesion Funds is not yet very common. Most existing voucher systems focus on the collaboration of SMEs with technical knowledge providers, and none focus on a green sector such as sustainable construction.

The voucher systems are managed in very different ways, involving several different types of institution, both inside and outside the managing authorities.



In Poland, the region Kujawsko-Pomorskie, for example, has made voucher implementation a key project and contracted the management of the voucher scheme to an external body.

Bulgaria plans to make use of the Structural Funds for an ambitious energy efficiency programme in the building sector and considers a voucher programme to be part of its implementation. The Bulgarian authorities were particularly interested in means to accelerate the disbursement of the Structural Funds to a large number of SMEs and beneficiaries. For the Bulgarian Energy Efficiency Agency, GreenConServe held a green innovation voucher workshop with representatives of relevant ministries and government agencies which allowed an in-depth discussion on different voucher models.

In Romania, the authorities are thinking along the same lines. At a Transfer-Forum in Bucharest, GreenConServe presented the green innovation vouchers procedures and experiences and provided insights in the use of specific innovation and life-cycle assessment tools.

4 Finding the right implementing body/organisation

Checking flexibility of internal procedures for voucher scheme

Choosing implementing body with least administrative constraints

5 Choosing and guaranteeing quality of the external expertise

Definition of appropriate knowledge providers for technical and innovation knowhow

Use of public and private knowledge providers?

Limitation of knowledge providers to my region / country?

Free choice of knowledge provider or established pool of experts?

Limited or continuous call for knowledge providers?

Synergetic use of vouchers

Green vouchers alone are not a panacea for the greening of the construction sector. Vouchers are versatile additional support instruments that can easily be used as add-ons to existing initiatives to help build critical mass. In fact, vouchers work best when embedded in a larger set of innovation support measures ranging from broad outreach activities to individual coaching.

In GreenConServe, each partner used his own networks to identify synergies where green vouchers could tie in with complementary initiatives, thus further leveraging their impact, while ensuring that vouchers have a relevant platform where they can be proposed and distributed. The two examples below illustrate some of the synergies used.

The Bottrop event: Combining voucher schemes with existing local initiatives

The GreenConServe project has teamed up with the Innovation City Bottrop, Germany, to promote innovation in the city's construction sector. Bottrop has set itself an ambitious goal – a 50% reduction in CO₂ emissions by 2020 within an area of the city inhabited by 70,000 people. The construction sector is crucial in achieving this target, and to reduce the challenges facing SMEs and help them adapt to evolving requirements and market demands, GreenConServe has become a strategic partner to the Innovation City. The creation of an Innovation City partner-network is planned, with the goal of labelling certain SMEs as Innovation City partners. To qualify, they must meet certain criteria, including attendance at training classes aimed at improving their innovation capabilities. GreenConServe will contribute strongly here, providing this valuable knowhow through training sessions and the German voucher scheme.

A special evening event was organised on 7 July 2011 to kick off the GreenConServe – Innovation City Bottrop partnership, where sustainability was promoted to construction SMEs. It attracted more



than 200 participants (craftsmen, architects, planners and construction service and products providers) and led to very valuable discussions and outcomes.

Berlin BIM Forum: Combining voucher schemes and existing industry initiatives

The successful German BuildingSMART Forum on 14 September 2011 in Berlin was organised by Rasso Steinmann of iabi, a member of the GreenConServe project consortium. For the first time, the topics of BIM and sustainability were discussed at an official conference, and there was strong interest in this new combination. Another achievement, thanks to the GreenConServe project, was bringing together the Ministry of Environment (BMU) and the Ministry of Transport, Construction, Urban and Spatial Development (BMVBS) around the topic of greener construction services.

Extensive effort was put into raising awareness for BIM and sustainability issues in the frame of the BIM Council set up last year, and the same vehicle was used to promote GreenConServe and its innovation support offer for SMEs. Of GreenConServe's support package, the short training sessions have proved very popular in Germany given the time flexibility they allow SMEs.

Creating markets for green services

Not everybody is equal in the construction value chain. While companies with less than 10 employees make up 95% of the sector, there are a few very large players that have the power to influence the innovation behaviour of construction SMEs. These are either large companies with a myriad of SMEs clustered around them, or big clients that order a lot of large buildings, such as hospitals, schools, defence buildings, etc., who also influence companies along an entire supply chain.

When looking for the real agents of change in the sector, we find them in its financial flows. 70% of all non-public buildings, apart from those which are family-owned, are financed by big funds. The other 30% belong to private companies. The funds use valuation criteria to guide their investment decisions. If these valuation criteria take into account sustainability requirements, the building owners will request them in their tenders. Only then will large developers build sustainable buildings, thus forcing the SMEs in their supply chain to offer them eco-innovative services. For public building, the power to set sustainability targets is with public procurers.

NORWAY: PUBLIC PROCUREMENT AND INNOVATION

NDEA, which is the largest public procurer of building works in Norway, has published an invitation to tender for the construction and equipment of a modern gas-mixing building complex in Bergen. The tender specifications are so demanding that according to Knud Mohn, who is on the staff of NDEA's CEO, "nobody in Norway can do it". NDEA has requested the use of digital building information models and a high degree of efficiency during the construction process and over the life-cycle of the building. It is expected that the successful bidder will use an innovation voucher from IN to acquire the missing skills needed to complete the job and to develop further business opportunities.

The LIONS Group

GreenConServe built up its own group of ten influential players, the so-called LIONS Group, where public procurers sit side-by-side with executives of large companies to discuss eco-innovation trends and how best to create markets for early adopter SMEs. Three entry points to first markets were analysed:

- Public contracts, where both cost improvement through innovation or increased value at a constant service cost can be encouraged via special experimental measures;
- Private contracts, where the large contractors in the LIONS group should catalyse innovative practices that reduce the costs of existing services or bring value that was untapped before;
- Public Private Partnerships (PPPs), where large contractors are more and more involved in contractual commitments on costs of ownership (which includes the cost of construction and the cost of operations). Such large contractors should naturally be pushed to support innovative services provided they give them a competitive advantage over the whole duration of a PPP.

In this context, the Norwegian LIONS stood out by their shared and ambitious vision, demonstrating by their own actions how powerful and transformative big players can be in the market.



GreenConServe consortium and LIONS in Oslo

Conclusions: Overcoming a triple challenge

The performance of the sector-specific service innovation vouchers piloted in the GreenConServe programme cannot be evaluated without examining three features:

- The qualitative innovation voucher scheme for technical and business support
- Service innovation
- The construction sector

Technical and business support

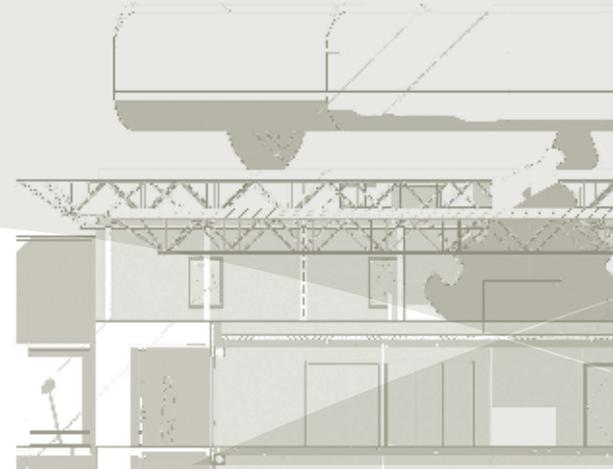
Innovation vouchers have gained a reputation as SME-friendly mini-grants with streamlined application and handling procedures. Funding agencies across Europe have shown lots of interest, and have themselves started experimenting with voucher schemes.

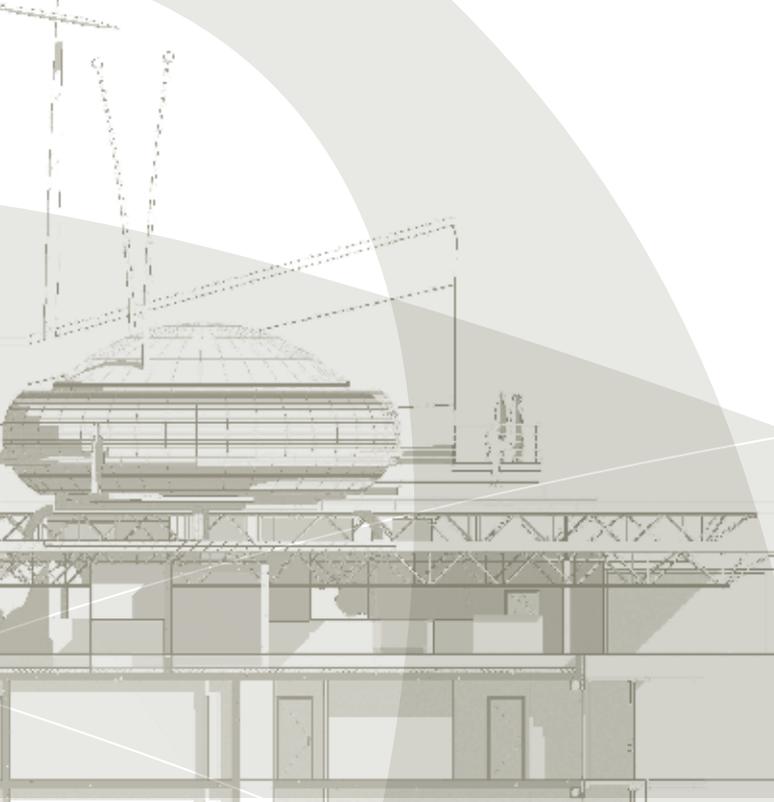
Most voucher schemes fund access to technical expertise upon a purely formal eligibility check. GreenConServe set out to fund access to both technical *and* business expertise. It has been observed that it is easier to convey to owners of small companies the need to source technical expertise externally than the understanding that they might benefit from an external check of the business aspects of their projects. GreenConServe vouchers were also only given to SMEs whose green innovation project was really innovative and really green. Such selectiveness reduces the success rate for applicants and makes it more difficult to receive a voucher.

Qualitative vouchers for technical and business support are therefore less appealing to SMEs and more difficult to obtain than 'access to research' vouchers that do not assess proposal quality.

Service innovation

Innovation agencies are now paying increasing attention to service innovation. They have realised the importance of services in value creation and are looking into service-specific support schemes. However, public support focusing on services is almost absent from the current innovation funding landscape, which is dominated by technology focused programmes both at EU level and among the Member States. While the theoretical distinction between technology and services is clear, many services are de facto technology-based, and the GreenConServe consortium has found that SME owners frequently have difficulties in understanding if they sell a service or not. Indeed, many felt that "service innovation vouchers" were none of their concern, and found the meaning of service innovation difficult to grasp.





The construction sector

Finally, we should reconsider some aspects of the construction sector: 95% of its companies are SMEs, the overwhelming majority being micro-companies with less than ten employees. The construction business is very local; few companies have business connections across regions or countries. A few large players dominate the sector. For the last ten years, construction has been booming, and even non-innovators have not found it difficult to stay in business. Given the low innovation pressure and the dominance of micro-companies, the large majority of the construction sector remains very traditional.

There are, however, some clearly visible trends that point towards a revolutionary “industrialisation” of the sector. Digital prototyping and virtual collaboration are appearing as highly knowledge-intensive and cost-saving alternatives to traditional practice. This IT-induced innovation process is only set to expand, resulting in the transformation of the entire building value chain. It will also ultimately enable the greening of the sector by radically reducing the costs of life-cycle analysis and energy modelling.

Success factors

Introducing service innovation vouchers to the construction sector was not easy. However, even though it was faced with this triple challenge, the GreenConServe project performed well. While it is too early to provide the final impact indicators (the action is still ongoing), the authors can outline some success factors:

- Combining complementary and relevant expertise in a consortium made up of public agencies, technical centres, experts in building information modelling, life-cycle-assessments and labelling, and business consultants, where each partner had its own active networks;
- Completing the purely public measure of launching a new support scheme for construction service eco-innovators with a number of publicly financed private sector support measures;
- Extensive cooperation with sector multipliers, such as construction sector associations, chambers of commerce and dedicated networks in outreach activities;
- Joining forces with existing initiatives to avoid duplication, confusion and waste of resources;
- Building medium-term innovation coaching relationships with potential eco-innovators in a modular approach, where initial awareness raising was followed by in-depth training in eco-innovation trends and the possibility of how to implement individual eco-innovation projects with a voucher;
- Closing the innovation cycle by associating a group of influential players, such as public procurers, large private building owners and large companies, to the action to represent demand for eco-innovative construction services;
- Understanding the factors that hamper or foster eco-innovation in the construction sector: it is not enough to design support packages for SMEs if they are not motivated to innovate. This will only happen if the final customer (the building owner) puts a value on eco-innovation.

Without this large-scale mobilisation of eco-innovation support actors, GreenConServe would not have been able to reach its ambitious goals.

Looking to the future

For future support measures aimed at eco-innovative construction SMEs, the authors recommend differentiating between cutting-edge innovators and the traditional majority of SMEs. While measures like GreenConServe are well suited to the early adopters of innovation knowhow with a high capacity to absorb knowledge, it would be better to address other SMEs with less demanding and sophisticated eco-innovation support schemes. Such “light” schemes should not differentiate between technology and service innovation, and should mainly fund skill development and create local markets for eco-innovation in construction.

Structural funds were particularly suitable funding instruments for such “light” schemes. Using voucher schemes as innovation support delivery mechanisms, they can support two types of actions that are likely to have a high impact both in terms of the construction sector’s CO₂ footprint and innovativeness:

- Skill development vouchers: SMEs can acquire elementary eco-innovation skills, e.g. the ability to perform a life-cycle assessment or to select suitable building materials. These vouchers prepare small companies for the rising demand for eco-innovative services.
- Audit vouchers: building owners can have an energy efficiency audit pointing out the areas for the most cost effective intervention. These vouchers raise awareness among building owners, provide them independent advice on where to invest their money, and create a market for local energy auditors.

The GreenConServe partners are committed to the future development of green vouchers, and we welcome the creative and innovative ideas of all interested parties.

www.europe-innova.eu/greenconserve

www.greenovate-europe.eu/innovation_vouchers



