LAHTI, FINLAND

BACKGROUND INFORMATION	
PROJECT TITLE	Sustainable Living and Working Environments, K-Easy (*Kestävä asuminen ja ympäristö, K-Easy*) Case study title: Turing the heat down in Finland
Beneficiary	The formal beneficiary is the Lahti Science and Business Park, which coordinates the project and manages the funds. The project consists of five sub-projects and partners, each of which has received part of the ERDF funding. These are Innopark Ltd, Culminatum Innovation Ltd., Lahti Science and Business Park Ltd., STOK Ltd-Electrical Building Services Centre and Lappeenranta Technical University.
Duration of project	1.11.2010 – 31.10.2013, 36 months
Member State	Finland, Region of Southern Finland, cities of Helsinki, Vantaa, Lahti, Hämeenlinna and Porvoo
Geographic size	K-Easy is a cross-regional thematic project of the ERDF Operational Programme of Southern Finland. There are altogether 5 regions participating in the project. The biggest region population-wise (one million inhabitants) is the capital city area, represented by the capital Helsinki, and the city of Vantaa. Other cities are Lahti (100 000), Hämeenlinna (67 000) and Porvoo (48 000). K-Easy is a consortium of five partners from the different regions, whose five projects each have a particular sub-theme
Funding	Total budget of K-Easy (as grants) is €2 276 121 of which: ERDF funding €1 593 285 (70%) Local Authorities (cities, municipalities) €342 299 (15 %) Other public funding (like Universities) €93 645 (4 %) Private €246 892 (11%)
Operational Programme	ERDF Southern Finland. CCI 2007 FI 16 2 PO 004
Managing Authority	Ministry of Employment and the Economy http://www.tem.fi/index.phtml?l=en (via Regional Council of Päijät-Häme) http://www.paijat-hame.fi/en/regional__council/eu_programmes)
Cohesion Policy Objective	Regional Competitiveness and Employment
Main reason for Highlighting this case	Sustainable development, energy efficiency and reducing the carbon footprint are high on Europe's agenda. One key area to reach new levels in this is housing, and related to that a whole range of interconnected issues and activities: city planning, sustainable building and renovation, ecologically smart technologies in homes, efficient waste management and reuse of waste as products and energy. Lots of activities, technologies and models are addressing these issues, but the attempts are often fragmented, do not consider the entire life-cycle of buildings, and are not using the potential of new interfaces between different smart housing technologies and actors. This is where K-Easy is interesting. It brings together innovation and good practices linked to five different topics in five sub-projects: Low carbon city planning, energy efficient housing and smart technologies, comprehensive planning of building renovation, making use of building waste and upgrading waste management and recycling. It is an attempt to take a comprehensive and synergic look

	at sustainable housing, and to make new innovations at the interfaces.
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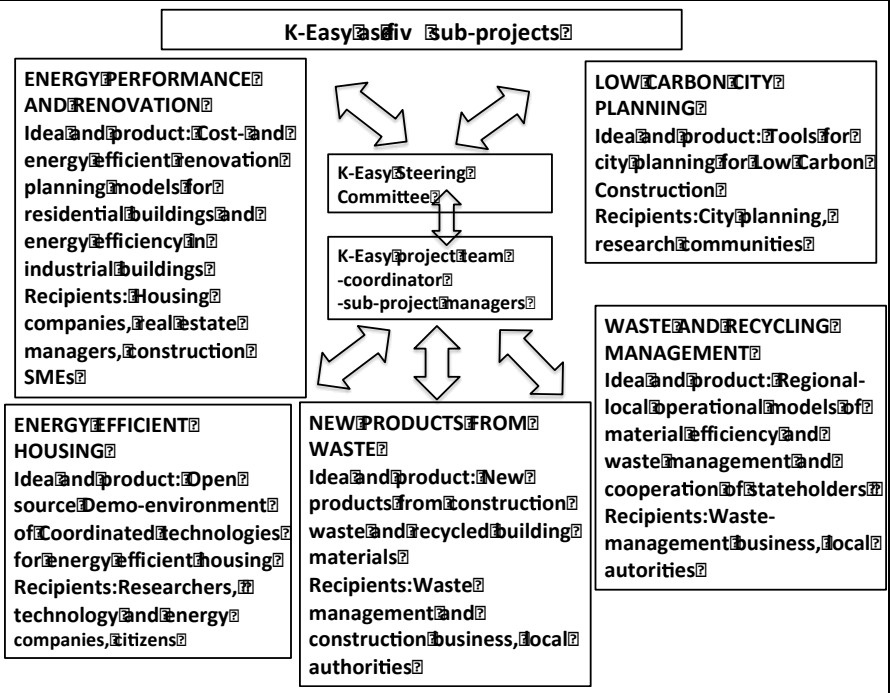
Keywords/Tags	Energy efficiency, New business process, Environmental technologies, Waste disposal and recycling

1. PROJECT DESCRIPTION	
Overall objective / goals	The 'Sustainable Living and Working Environments' project, K-EASY, is a multi-centred consortium and 'umbrella' project, which consists of five sub-projects, each with distinct goals contributing to that of the project as a whole: to foster sustainable housing, construction and waste management. The thread running through the whole project is energy efficient housing and construction, waste management and recycling. Overall the project aims to reduce carbon footprints through improving the energy and eco-efficiency of the building stock and urban design. This is explored and developed from different complementary angles in the sub-projects: low carbon city planning, energy efficient and smart building technologies, real estate renovation planning and building, life-cycle optimisation and waste management and use. The goal is to provide models and tools for different stakeholders in energy efficiency: housing companies, real estate managers, small and medium-sized companies in construction and waste management, city planners, local authorities, research communities and residents and citizens.
Description of activities	The project consists of five sub-projects, which all have their distinct activities, plus the overall coordination of the project. Each project contributes to the overall objective of energy efficient housing and building. • **Energy performance of Residential and Industrial Buildings sub-project (ASTE)** investigates the energy consumption and energy saving potential of residential buildings and industrial halls and develops planning models for renovation. • **The Predictive Building Technologies subproject** focuses on investigating alternative energy generation systems for residential environments and produces a demo-environment for this purpose. • **The Tools for Low Carbon Construction sub-project (LOCO)** supports urban development by creating strategic tools for efficient carbon management in city planning. • **New Products from Construction Waste and Recycled Building Materials subproject (JÄTEKIMARA)** promotes the use of construction waste and recycled construction materials as raw material for new product applications • **Material Efficiency and Waste Management subproject** creates models for preventing waste generation and promotes waste recovery and cooperation of the city and SMEs in the waste business.
Recipients	Each sub-project has its own set of recipients: **Energy performance of Residential and Industrial Buildings:** Housing companies, real estate managers, SMEs in construction **Predictive Building Technologies**: Researchers, technology and energy companies, citizens **Tools for Low Carbon Construction**: City planners, research

	communities **New Products from Construction Waste and Recycled Building Materials**: Waste and recycling business and construction business, SMEs, local authorities **Material Efficiency and Waste Management**: Waste and recycling business and construction business, SMEs, local authorities
	
Mainstreaming of gender equality and non discrimination	The project is gender neutral
Intended outputs and results	Each sub-project has its distinctive outputs and results: **Energy Performance of Residential and Industrial Buildings:** Cost- and energy efficient renovation planning models for residential and industrial buildings **Predictive Building Technologies**: Demo environment of coordinated technologies for energy-efficient housing, using open source (peer production where software, blueprints, source material, documentation and end-product are available at no cost to the public) **The Tools for Low Carbon Construction**: Tools for city planning for low carbon construction **New Products from Construction Waste and Recycled Building Materials**: New products from construction waste and recycled building materials **Material Efficiency and Waste Management:** Regional-local operational models of material efficiency and cooperation of stakeholders
s2. POLITICAL AND STRATEGIC CONTEXT	
National and regional framework for implementing ERDF funded urban development projects	Finland has a tough climate, with cold winters. This means tough requirements for building and infrastructure, and high use and costs of energy. This is why being smart in energy, construction and renovation is vital. Buildings and construction account for about 40 per cent of all energy use and emissions in Finland, and the proportion is even higher if transport emissions are .included.

	The oil crisis 30 years ago served as a serious wake-up call on energy for Finland, and since then many initiatives have been made, on both national and regional levels, to promote energy efficiency and citizen awareness. Also, a lot of housing, especially in apartments built in the 1970s and 1980s in Finland, is in need of renovation. **Long-term climate and energy strategy (Parliament and National Government)** Approved in 2008, this strategy, which is based on the climate and energy package of the European Council and Commission, outlines the Finnish measures for reducing greenhouse emissions and improving efficiency in energy and renewable energy. This forms the basis for all policy planning related to energy use and production. **Energy-Smart Built Environment 2017, ERA-17 (Ministry of Environment)** In January 2010, the Finnish Minister of Housing gathered a broad-based group of experts to map out the best ways to take us further in energy-smartness. The *ERA17* action plan for an Energy-Smart Built Environment 2017 is the fruit of this collaboration. An energy-smart built environment refers to an energy-efficient, low-emission, high-quality built environment that employs all necessary means to mitigate climate change. There are many factors that contribute to energy-smartness: land use, construction and renovation, ownership and use of real estate, as well as use of renewable energy. The *ERA17* action plan for an Energy-Smart Built Environment 2017 encourages Finland to regain its position as the leader in energy-efficient built environments. The plan's ambitious goal is to reach the efficiency requirements set for 2020 three years early, in 2017, in Finland's centennial year. The ultimate goal of the plan is that in 2050, 'Finland will be able to offer the world's best living and operating environment for people and businesses'. **The Centre of Expertise Programme (Ministry of Employment and the Economy)** The Centre of Expertise Programme is a fixed-term special national programme coordinated by the Ministry of Employment and the Economy (which is also the Managing Authority of the ERDF in Finland), in compliance with the Act on Regional Development. The Programme targets local, regional and national resources and the use of top-level expertise. The programme supports regional strengths, the specialisation of regions and cooperation between Centres of Expertise. It transforms top-level expertise into new business and jobs, and lays the groundwork for diverse innovation activities in which high-level research is combined with technological, design and business competence. It is a tool for regional innovation, which contains ready-made operating models and networks for the national and international markets. The programme offers networks and services for companies, universities, universities of applied sciences and research institutions. It has been agreed that 80% of Finland's ERDF funding should go to support the Centre of Expertise Programme. In the South Finland ERDF Programme, Priority 5 is 'Energy Efficiency, co-production and energy management', and this provides the most relevant strategy and policy background for the K-Easy project. The Centre of Expertise Programme is realised via 13 **National Expertise Clusters**, each of which has 4 – 7 Regional Centres of Expertise. The most relevant cluster here are the **Cleantech Expertise Cluster** (environmental

	cluster) and the **Housing Expertise Cluster** (energy and material efficiency in building and housing), but also for instance the **Ubiquitous Computing Cluster** (embedded ICT in applications and business in various industries). The partners in the K-Easy project, Innopark Ltd, Culminatum Innovation Ltd., Lahti Science and Business Park Ltd., STOK Ltd-Electrical Building Services Centre and Lappeenranta Technical University are Centres of Expertise. Centres of Expertise have the purpose of facilitating the use of inter-nationally recognised first-rate knowledge and competence as a resource in business operations, job creation and regional development. To achieve this objective, they: • use and distribute top-level expertise in the competence cluster and region • create a long-term innovation strategy based on the needs and opportunities of the region • increase cooperation between business, research, education and other public bodies • prepare business-driven public-private partnerships in collaboration with diverse parties • promote the generation of creative innovation environments • activate company growth and internationalisation The K-Easy coordinator, Lahti Science and Business Park, is a Centre of Expertise in the **Cleantech Expertise Cluster**,[1] which is an Environment Technology Cluster, and a part of the Government Centre of Expertise Programme. Culminatum Innovation Ltd., one of the partners in K-Easy is a Centre of expertise in the **Housing Expertise Cluster**. All regions and local authorities in Finland have strategies and development plans for sustainable development, construction, housing and energy efficiency. K-Easy is a multi-centred urban area/regional project, which was launched via a negotiated selection process with ERDF, local authority (city) and private funding. The project is addressing various aspects of the main objective – sustainable housing and construction – encompassing the capital city area and cities in the South-eastern part of Finland.
The planning context	K-easy provides practical tools to realise some of the key goals of these sustainable regional and local strategies and plans in terms of renovation models, energy efficiency technologies in housing, new products from waste, waste management and low carbon city planning. The key actors here are the Centres of Expertise.
3. IMPLEMENTATION	
3.1. PROJECT DESIGN AND PLANNING	The national strategies described above form the top-down framework for K-Easy. The practical bottom-up beginnings of the project come from the experience and initiative of the Lahti Science and Business Park, the coordinator of K-Easy. The beginning of K-Easy was a successful energy-saving project carried out by the Lahti Science Park in the Lahti region. Lahti Science Park collaborated in a development project with an industrial company in

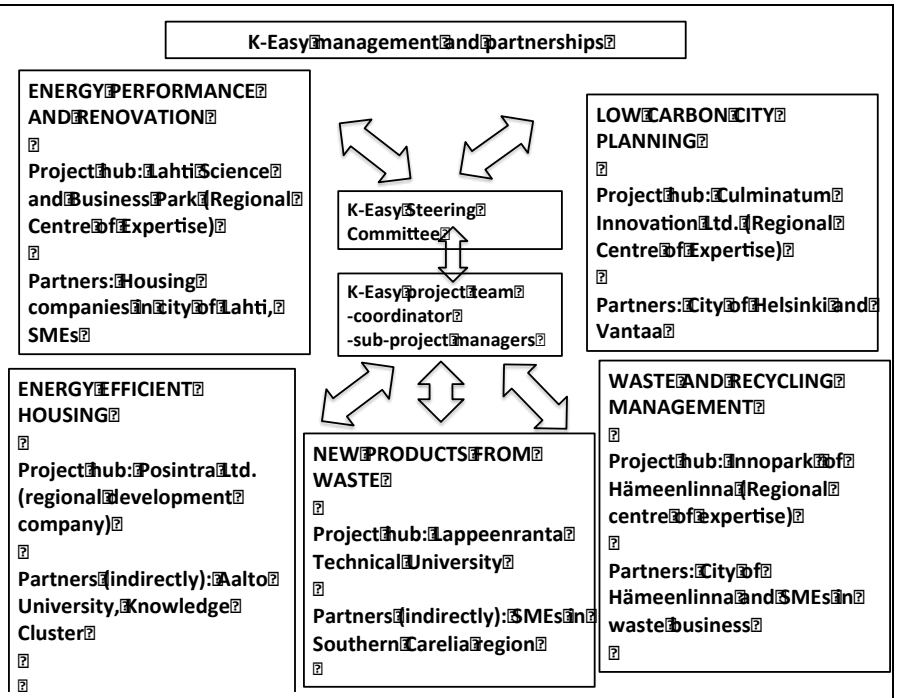
[1] http://www.cleantechcluster.fi/en/main_page/?id=7

	changing from oil to earth-heating and energy efficient use of exhaust-air, and as a result heating costs fell considerably, and the investment was paid off in only 4.5 years. Lahti Science Park thought this kind of model should be disseminated via pilot projects to widen its use. Another background for K-Easy was the need for energy-efficiency in the renovation of apartment buildings in the city of Lahti. Lahti Science Park has collaborated with the national Association of Housing Companies, the city of Lahti and private housing and industrial companies in the Lahti area on energy efficiency development. K-Easy started with an initiative taken by Lahti, when the ERDF funds became available for application. Lahti acted as the coordinator of partners from participants in the Centre of Expertise Programme, inquiring if they would be interested in joining a project around the theme of sustainable housing. Also the Technical University of Lappeenranta was approached to join. A proposal was made in the idea-phase by Lahti on the basis of ideas and initiatives coming from the partners and regions. All the partners had earlier development initiatives, which were brought under the framework of K-easy, to foster their development and dissemination. The process from the idea-phase to execution took one year. Negotiations with companies and other stakeholders were made as a K-Easy consortium, and also by individual partners. **Energy performance of Residential and Industrial Buildings** has its background in the growing need for renovation construction in Finland, and is connected to the Cleantech Expertise Cluster via Lahti Research and Business Park Ltd. **Predictive Building Technologies**: Posintra Ltd., a regional development company ran a former ERDF project, which has established an integrated platform of building technology,[2] which was published as open source code. The K-Easy sub-project is realising its further potential by using (for instance) monitoring signals from weather forecasts and energy price information. **The Tools for Low Carbon Construction**: The background of the sub-project is the need of the cities of Helsinki and Vantaa to direct city planning to respond to tightening CO_2 emission standards and is connected to the Housing Expertise Cluster via Culminatum Innovation Ltd. **New Products from Construction Waste and Recycled Building Materials**: The background of the project is in the EU goals of making Europe into a recycling society, where making waste is avoided and waste is used as a resource. **Material Efficiency and Waste Management:** The background of the project is in developing cooperation and business in waste management and recycling on the local and regional level and is connected to the Cleantech cluster via Innopark Ltd. **Needs assessment and analysis** The starting point was an analysis of energy efficiency in industrial facilities in the Päijät-Häme region, where considerable savings were achieved. This provided inspiration to bring in actors and partners to look into further possibilities in energy efficiency. Each partner had their own points of departure, as described above. In designing the project, knowledge needs in sustainable and energy efficient construction and housing and waste management were identified. Research and implementation partners were identified accordingly from Southern Finland.

[2] http://www.stok.fi/eng/WEB-KERUU%20page.html

	Selection by Managing Authority The project proposal was assessed against Finnish ERDF and Managing Authority selection criteria, scored by mutually independent experts in the Regional Council of Päijät-Häme, and presented to the South Finland ERDF steering committee. The main headlines in the selection criteria (and scoring) were Innovation and Competitiveness, Promotion of enterprise and employment, Long-term value added, Collaboration, and Environmental Effects. Project selection for ERDF projects had two phases: a) idea application phase (voluntary for applicants) and b) proper application period. Before the idea application phase, the EU Unit arranged information sessions on the application process around Southern Finland. After the idea application round was closed, theme-specific networking sessions were held for the participants. The objective of the networking sessions was to make the ideas known to all applicants, to allow operators and ideas to network and to achieve better and broader interregional project entities for the proper application round. After this the applicants submitted their official application. They were processed by regional management Committees in the Southern Finland ERDF programme Coordination Committee. This two-phase process, although beneficial to the quality of projects, and adding value in a situation where the actors do not already know each other well, was also deemed rather heavy and slow. **Risk assessment** Risk assessment and management was done via project inspectors of the Päijät-Häme Regional Council, the Managing Authority of ERDF on the regional level, first in the selection phase, and then via site visits to the sub-projects. All the sub-projects have solid prior experience in the topics of K-Easy, so as standalone projects the risks were not high, although the nature of the risks varies according to the projects. These range from mainly research projects (low carbon and energy efficient housing) to very practical projects like the building renovation model. There is an element of risk related to the extent to which the project is able to realise its potential beyond success in separate sub-projects. **Sustainability and transferability** The thread running through the entire project is sustainability, and sustainability of the efforts is secured by a broad and practical partnership in all the sub-projects, and promoting transferability and dissemination via piloting with end-users. The technological and material product innovations, as such, are probably quite easily transferable to any environment, but need to be adjusted to the cooperation structures and actors. **EU added value** ERDF funding made it possible to bring together otherwise separate initiatives and projects on sustainable housing and energy efficiency. It also made it possible to strengthen connections among the Centres of Expertise, and, in cooperation with the Regional Council (the regional managing authority of the ERDF), to organise events and workshops on sustainable housing, and to gain wider publicity. **Involvement of other EU funds** No other EU funds are involved.
3.2. MANAGEMENT, MONITORING AND EVALUATION SYSTEM	The management of K-Easy consists of a Steering Committee, project team, coordinator and sub-project coordinators and teams. Lahti Science and Business Park is the 'coordination hub' of the project, and also runs one of the sub-projects (building renovation model). A multi-stakeholder Steering Committee, altogether 25 people, consists of Real Estate Management Federation (the chair), ERDF Regional Authority

	representative, partner Regional Councils and cities, a construction development organisation and the Housing Finance and Development Centre of Finland. The steering body meets 3 times a year. The practical management of the project is executed by the project team, which consists of 6 people, headed by the project coordinator and coordinators of the sub-projects. The project team and coordinators report to the Steering Committee and hold project meetings as needed (about 3 times a year) and report to each other monthly on sub-project developments and monitoring results. Each sub-project runs quite autonomously, and reports also to its responsible organisations. The project is monitored by the Regional Council of Päijät-Häme, which is the regional authority responsible for the ERDF (the overall responsibility is with the Ministry of Employment and the Economy). Evaluation has not so far been used, but the sub-projects have plans to carry out an evaluation towards the end of the project cycle. There is an on-going independent evaluation of ERDF Priority 5 of South of Finland.
3.3 GOVERNANCE: PARTNERSHIP, PARTICIPATION AND EMPOWERMENT	K-Easy is a 'partnership consortium', where each sub-project has its own distinctive partnership, fit for purpose. The interest to participate ranges from innovation partnership emphasis in the research-oriented sub-projects to very practical interests in the sustainable housing, smart technologies, waste management and reuse ones, where the interest is in cost-efficiency, sustainability and potential business development. Political support and role, role of city administration and involvement of the wider public also varies according to the sub-projects. Political support is provided by the direct link to city and regional strategies, Cluster Programmes, and involvement of key stakeholders in the Steering Committee. The city administration is most directly involved in the city planning and waste management projects, SMEs in product development and waste management and citizens and the wider public in the use of renovation models. **Energy performance of Residential and Industrial Buildings**: Partners directly linked to K-Easy: housing companies, SME construction companies, and construction planning offices, as co-funders and end-user recipients and pilot testers. Indirectly: cities, consulting business for SMEs as 'second wave' users. The interest in participating is linked to the practical benefit in sustainable housing and potential business opportunities. **Predictive Building Technologies:** Partnership with the Ubiquitous Computing Cluster Programme (a part of the National Centre of Expertise Programme, which promotes use of expertise in regions) and Aalto University. The interest is in innovation development. **The Tools for Low Carbon Construction**: Direct partners, Helsinki and Vantaa cities as end-user recipients and pilot-testers, and indirectly universities as creative contributors. The interest in participating is the practical benefit to be achieved in sustainable housing and city planning. **New Products from Construction Waste and Recycled Building Materials**: Lappeenranta University of Technology develops the products as a public research project, where small and medium-size companies are investment partners with about a 10% share of total funding, end-user recipients and pilot-testers. The interest in participating is in the practical benefit in sustainable construction and potential business opportunities. **Material Efficiency and Waste Management:** Hämeenlinna local authority and SMEs as end-user recipients and pilot-testers. The interest in participating is the practical benefit in better waste management and recycling potential business.



4. INNOVATIVE ELEMENTS AND NOVEL APPROACHES

4.1 INNOVATION

4.2. KEY IMPLEMENTATION CHALLENGES AND PROBLEM-SOLVING PRACTICES

Management practices different from common practices

K-Easy brings together innovation and good practices from five different topics in five sub-projects: Low carbon city planning, energy efficient housing and smart technologies, comprehensive planning of building renovation, making use of building waste and upgrading waste management and recycling. It is an attempt to take a comprehensive and synergic look at sustainable housing, and to make innovations at the interfaces.

Because this is a multi-centred 'umbrella' project, the initiatives for new approaches come from each sub-project, and their interfaces. Bringing different actors and aspects of sustainable housing together as a development consortium is, if not completely new, still rather rare, and in any case innovative.

The common practice to tackle sustainable development is still rather fragmented, so bringing complementary themes and actors together is innovative. The project addresses issues from a very broad perspective, ranging from low-carbon city planning to better waste and recycling together with SME business development all the way down to smart technologies and renovation planning in housing, where companies, housing associations and even individual citizens can use the results.

New approaches in communication, dissemination and exploiting and transferring results

There is nothing extraordinary about the management and communication of the project. The project uses normal methods of communication – meetings, reports, and events – and disseminates and transfers results via end-user collaboration, piloting and testing. The project is not yet at the stage of broadly disseminating results, but it has good channels to do so when the time comes.

Communication, dissemination and exploiting and transferring results is in-built in the sub-projects in different ways, and the needs and opportunities for dissemination and transfer range from demos (energy-efficient housing) to piloting and practical user-testing (renovation model, low carbon city planning, waste management).

	Energy Performance of Residential and Industrial Buildings: Cost- and energy-efficient renovation planning models for residential and industrial buildings are user-tested in pilot projects, and this model is easily transferable to other actors in housing and real-estate management. The main dissemination and publication channels here are the Finnish Real Estate Federation and Finnish Real Estate Management Federation. **Predictive Building Technologies**: Open source demo environment of coordinated technologies for energy-efficient housing. The main dissemination and publication channels here are the scientific community connections of Lappeenranta Technical University and the Ubiquitous Computing Cluster Programme of Finland. **The Tools for Low Carbon Construction**: Tools for city planning for low-carbon construction are being developed in close cooperation with city planning officials, and are thus easily transferable to other cities. Also the model can be used and further developed by scientific communities. The main dissemination and publication channels here are via the open events for local authorities of Culminatum Innovation (the development company running the project, which is owned by the Uusimaa Regional Council, Helsinki, Espoo and Vantaa, and scientific institutes of the Helsinki region), and via the scientific community connections and publications of Aalto University Department of Surveying Real Estate Research Group. **New Products from Construction Waste and Recycled Building Materials**: New products from construction waste and recycled building materials are being tested during the project, with the participation of construction companies, and the results have the potential to become widespread business practices. The main dissemination and publication channels here involve informing different business sectors and scientific publications. **Material Efficiency and Waste Management:** Regional-local operational models of material efficiency and cooperation of stakeholders are being tested and piloted with SMEs and are potentially usable and transferable to other local-regional contexts.
	The sub-projects do not report any major obstacles beyond some delays in launching the project, and are also satisfied with the overall coordination of the project.
4.3. THEMATIC FOCUS	Europe 2020 sustainable growth The thread running through the whole project is energy efficient housing and construction, waste management and recycling. Overall the project aims to achieve carbon footprint reductions through improved energy- and eco-efficiency of the building stock and urban design. This is explored and developed from different complementary angles in the sub-projects: low carbon city planning, energy efficient and smart building technologies, real estate renovation planning and building life-cycle optimisation and waste management and use. The goal is to provide models and tools for different stakeholders in energy efficiency: housing companies, real estate managers, small and medium-size companies in construction and waste management, city planners, local authorities, research communities and residents and citizens.
5. FUNDING	
	Total budget of K-Easy is €2 276 121 (as grants), of which: ERDF funding €1 593 285 (70%) Local Authorities (cities, municipalities) €342 299 (15.4%) Other public funding (e.g. universities) €93 645 (4.11%) Private €246 892 (10.85%)

	Yearly: 2010: €104 515 2011: €791 969 2012: €804 444 2013: €575 193 **By sub-project** **Energy performance of Residential and Industrial Buildings sub-project (ASTE)** €500 000 **Predictive Building Technologies subproject** €380 000 **Tools for Low Carbon Construction sub-project (LOCO)** €293 971 **New Products from Construction Waste and Recycled Building Materials subproject (JÄTEKIMARA)** €502 150 **Material Efficiency and Waste Management subproject** €600 000 The breakdown of ERDF vs. other funding in the sub-projects is roughly 70/30 % A rough estimate of project leverage in terms of mobilising other resources than those directly financed is about 50/50%.
6. PROJECT ASSESSMENT	
6.1. FINANCIAL SUSTAINABILITY	The project runs until the end of 2013, so it is barely half way, so beyond clear agreements concerning the projects, ownership etc. there is no separate exit plan at this stage.
6.1. FINANCIAL SUSTAINABILITY 6.2. TRANSFERABILITY	The project as a consortium is a new project, but the sub-projects are a continuation of former projects in their respective areas, or are tied in with long-term research efforts. The partners in the project have prior experience of collaboration.
	Mainstreaming: The project did not start as a pilot action or action plan (e.g. URBAN, EQUAL, URBACT) before being picked up by a mainstream ERDF (or ESF) programme
	The approach(es) of the project have not yet been widely transferred, but piloting and user collaboration has been used. The elements and the whole project have a clear potential of being transferable to other urban areas and regions. The technical and model aspects ('technical innovations') are easily transferable, but the collaboration structures and actor constellations ('social innovations') would need adjustment, reinvention and a learning process in different environments. This would differ according to the level and range of the sub-project: the model of renovation for a real estate intervention would be easily transferable both technically and as a social model, but low-carbon city planning would call for more adjustment to collaboration practices and networks.
6.3 ISSUES AND PROBLEMS	Overall coordination of the project has run smoothly, and the sub-projects are on the track to deliver. Delays in launching some of the sub-projects have been experienced, One problem has been the change of staff in the projects, which has caused some concern regarding continuity. All these issues have been handled without any major problems in the normal running of the project.
6.4 PROJECT OUTPUTS & RESULTS	It is still early to assess any end results, but the project is well on track to deliver results. It runs to the end of 2013, so is at its halfway stage and still has a year and a half to go (as at March 2012). As the project consists of five sub-projects, which all have their distinct activities, the unfolding of intermediary results differs. One can distinguish three levels of results coming out of K-Easy:

	Level 1: results of the individual sub-projects, independent of each other, according to their division of labour. These results are already being tested and piloted, and are well on track. Level 2: results of combinations and synergies of the sub-projects of K-Easy, i.e. combining for instance waste management and making new products out of waste, or using results of smart energy technologies in housing in city planning. Some examples of level 2 results have emerged. Level 3: result could be a model of cooperation emerging from the whole division of labour, partnerships and cooperation of K-easy, as a 'good practice' model in developing sustainable housing, building and waste management. So far there is evidence of clear Level 1 results, and some Level 2 results, while a Level 3 result is still a matter of the future. **Energy Performance of Residential and Industrial Buildings** investigates the energy consumption and energy saving potential of residential buildings and industrial halls. It has developed and piloted renovation-planning models for residential buildings. In industrial buildings, the focus is on electrical and thermal energy saving models and enhancing user know-how. Energy-efficient renovation plans have been made for four different kinds of apartment buildings for energy efficient renovation, and a new system for recovery of heat from ventilation developed in one apartment building. Alternative calculation models have been developed for transferring energy to water and heating. A communication plan has been developed about the sequence of different stages of renovation for comprehensive renovation situations. A comparative analysis has been done of renovation of sewerage and plumbing of apartment buildings **The Predictive Building Technologies subproject** focuses on investigating alternative energy generation systems for residential environments. Via demo environments, which have been started, it builds pilot systems capable of storing solar and wind generated electricity and automatically drawing on these local reserves during grid electricity price peaks. **The Tools for Low Carbon Construction (LOCO)** supports urban development by creating strategic tools for efficient carbon management. The tools are designed to assist local and municipal authorities in steering regional development towards low-carbon society objectives and have been produced in close collaboration with the city planners. Multi-stakeholder workshops have been held with Helsinki and Vantaa experts from different city sectors. **New Products from Construction Waste and Recycled Building Materials** subproject promotes the use of construction waste and recycled construction materials as a raw material for new product applications, and to assess the use potential of these materials. It has piloted and tested these with companies. **Material Efficiency and Waste Management** subproject has created models for preventing waste generation and identified opportunities for waste recovery, for the production of raw materials and energy, and has promoted cooperation between local authorities and enterprises within the sector. A new type of heating system for detached housing has been developed, energy planning services have been 'packaged' into service products, energy efficiency and renewable energy analysis have been made for housing companies and a waste-management plan has been made for a recreational housing site.
7. CONCLUSIONS: KEY SUCCESS FACTORS AND LESSONS LEARNED	
	Combining solid experience, professionalism and high-class know-how of the partners in K-Easy. All the partners of the sub-projects are experienced and state-of-the-art performers in their respective fields.

	Prior experience of collaboration. Most of the partners knew each other from prior experience, so there was already continuity and social capital to fall back on A clear division of labour within a common Expertise Cluster framework and setting of goals addressing energy-efficient housing and construction, low-carbon planning, waste management and recycling Practical piloting and testing during the project, all the way to end-users, for instance with housing companies, city planners and SMEs. Well-managed coordination and 'infrastructure' of the project
8. FURTHER INFORMATION	
Bibliography	**Structural Funds Finland** http://www.rakennerahastot.fi/rakennerahastot/en/index.jsp ERDF Southern Finland (in Finnish) http://www.etela-suomeneakr.fi/ **Managing Authority** Ministry of Employment and the Economy http://www.tem.fi/index.phtml?l=en (via Regional Council of Päijät-Häme) http://www.paijat-hame.fi/en/regional__council/eu_programmes **Project coordinator:** K-Easy webpage http://www.kestavaasuminen.fi/en **Strategies, clusters and policies** Finland's Strategy for Sustainable Development http://www.ymparisto.fi/default.asp?node=9732&lan=en Finland's Centre of Expertise programme http://www.oske.net/ Ubiquitous Computing Cluster http://www.oske.net/en/competence_clusters/ubiquitous_computing/ **Project partners** Lahti Science and Business Park Ltd http://www.lahtisbp.fi/en Posintra Ltd http://www.posintra.fi/ STOK http://www.stok.fi/eng/index.html Culminatum Innovation http://www.culminatum.fi/en/sivu.php?id=3 Innopark http://www.innopark.fi/portal/innopark/ (in Finnish) ERDF Programme of South Finland (in Finnish) http://www.etela-suomeneakr.fi/
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