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D0.1d cRRescendo P1 summary

CONCERTO INITIATIVE
cRRescendo

Combined Rational and Renewable Energy Strategies in Cities, for Existing and New Dwellings and Optimal quality of life

Instrument: Integrated Project
Thematic Priority: Integrating and Strengthening the European Research Area (2002-2006), Sustainable Energy Systems

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1 Publishable executive summary

cRRescendo P1: 2005-2006

1.1 Vision and global objective of cRRescendo

By the end of 2009, over 15,000 people will live in modern, comfortable, healthy and energy-efficient homes due to the well-orchestrated sustainable developments of the metropolitan areas of Almere, Milton Keynes, Viladecans and Ajaccio, the historic capital of the isle of Corsica. cRRescendo aims to integrate a major share of sustainability into more than 6,000 new and existing homes and their energy infrastructure in order to demonstrate the possibility, feasibility and most importantly to meet the citizens' wish to live in a comfortable energy efficient home in a healthy and clean environment.
In its first year, cRRescendo has taken off with the realisation of the project organisation, planning of work and intensive re-planning actions in the four cities. One of the reasons was that because of a delay in the start of the project, the community plans had to be revised. This has caused the construction activities in all four cities to start later than anticipated. Consequently, the intensity of construction activities in cRRescendo in the remaining four years needs to increase and although this will imply some extra risks, the targets of cRRescendo are still within reach.

1.2 Demonstration actions

Almere (NL)	reduction in conventional energy consumption: 48%

Almere, a fast growing new town with 180,000 inhabitants east of Amsterdam, is since long committed to sustainable development. The two major new communities in cRRescendo will comprise 2,000 Eco-homes and a number of commercial and public buildings and affect 5,000 people. The measures will save 48% on conventional energy in a well-balanced mix of:

- *Renewable energy supply* by means of a Solar Island of 1.5 hectares of solar collectors, biomass plant and 99 kW PV systems;
- *Energy efficiency in buildings* in the form of 1,100 certified 'Solar Houses', 900 other eco-houses and increasing energy awareness of occupants;
- *Poly-generation* by connecting all buildings to district heating fed by an existing CHP, a new biomass CHP and the Solar Island.

Integration of RES and RUE is realised by combining the reduction of heat-demand and sustainable supply and measures on buildings and infrastructure were integrated from the first city planners' sketches as part of the total development.
Objectives first year, work performed and results achieved
The main objectives were to start up the local project, close local agreements, arrange permits and start design. Presently, groundwork has started in Columbuskwartier and Noorderplassen-West. The cRRescendo organisation now has a clear place in the organisation of the building process.
Instead of a single consortium agreement, bilateral contracts with the municipality of Almere and Nuon, Almere and MFF and Almere and Ecofys have been signed. Nuon is almost under contract; FP1 is not under contract yet. For the biomass CHP plant, an alternative plan is now under discussion: a pipeline to use waste heat from an existing power plant about 15 km from the location.
For the developers in Columbuskwartier a foundation is foreseen to be founded early 2007. The developers agreed on this through the Building Plan Agreement.

Milton Keynes (UK) reduction in conventional energy consumption: 38%

The long reputation for innovation in energy of Milton Keynes, a new town in the London area with 215,000 inhabitants, is connected to the vision to create a sustainable community with true integration of environment and socio-economic factors. In cRRescendo 1,800 homes in the new Sustainable Residential Quarter will benefit from a balanced combination of RUE and RES, saving 38% on conventional energy use. The measures to be implemented are:

- *Renewable energy supply* through a biofuel CHP plant (75 kWe/150 kWth) and PV systems on 20% of the roof space (375 kW);
- *Energy efficiency in buildings*: 1790 apartments plus tertiary buildings with improved insulation, air-tightness and ventilation with heat recovery, water-conserving fittings, thermal system heat recovery system from cooling of ground floor commercial spaces to provide pre-heat for space heating or hot water and ground source heat pumps for inter-seasonal storage;
- *Poly-generation* through a biomass boiler (1080 kW) and small scale gas-fired CHP (1413kWe/1505kWth) with Intelligent Energy Management System.

Integration of RES and RUE is achieved by the design and construction of environmentally responsive buildings with integrated RES and RUE measures.

Objectives first year, work performed and results achieved

The objectives for the first year were to develop a Site Wide Energy network, and to undertake detailed design activities. In the first year, Milton Keynes has done an intensive re-planning of its cRRescendo community because of the delayed project start. Presently, the contract has been completed with Thameswey Central Milton Keynes Ltd. (the Site Wide Energy Partner) to lead the design and construction of site-wide energy systems. The detailed design has been completed for the gas fired energy station and initial distribution systems and it is now under construction.

The first residential phases, office building and food store are now under construction. The performance standards for the next phases have been defined for developers to achieve through their own design and construction teams; design/tender proposals will be returned in December 2006.

Ajaccio (FR) reduction in conventional energy consumption: 20%

Ajaccio, the ancient capital of Corsica with 56,000 inhabitants, is facing the challenges of renewing urban developments dating from the 1960's as well as renovating historic buildings in the centre. In cRRescendo, 250 apartments will be refurbished in an energy-conscious way, of which 50 are part of the protected historic centre; moreover 565 apartments will be the subject of energy efficiency and renewable energy. Furthermore a new office building and a new apartment building will be erected. To save 20% on energy consumption, the following measures will be applied:

- *Renewable energy supply (RES)* through solar water heating in all apartments and 70 Solar ventilation systems (the locally developed CASA system);
- *Energy efficiency in buildings (RUE)* by construction of two new High Environmental Quality (HQE certification) buildings, implementation of double-glazing with thermo-coating in all 250 apartments and improvement of the insulation of walls, roofs and ground floors;
- *Poly-generation* through a heat pump for heating and cooling (75 kWth).

Integration of RES and RUE will be established by research into innovative methods to integrate solar water systems in the buildings of the historic centre.

Objectives first year, work performed and results achieved

The objectives included the definition of a detailed strategy and to prepare the building activities. On may 23rd, 2006, at the annual meeting of the cRRescendo partners, the 'OPAH' contract for the Programme of Housing Improvement has been signed between various partners, among them the Agence Nationale pour l'Amélioration de l'Habitat

(ANAH), the State, the local authorities and the municipality of Ajaccio. This agreement is signed for a 5-years duration and will lead to the rehabilitation of 1,200 housings in the city-centre. This program includes a large part of the cRRescendo actions for Ajaccio. The project is now part of the global programme that the municipality is working on with the Agence Nationale de Rénovation Urbaine (ANRU) for a total works' amount of 102 M€, that includes public building and housings renovation. Also for other parts the planning is in progress. The project organisation and partnership was changed where necessary. High local subsidies for solar water heaters may lead to additionality problems, this issue is presently being investigated.

Viladecans (ES)	reduction in conventional energy consumption: 56%

Viladecans with 61,000 inhabitants is part of the complex regional web that is the metropolitan area of Barcelona. The cRRescendo project targets to develop 2100 apartments in 50 buildings and 7 non-residential buildings in a sustainable way, affecting about 6400 inhabitants. The following measures will be implemented to save 56% on conventional energy consumption:

- *Renewable energy supply* through solar water heaters for each new dwelling and 7 non-residential buildings, in total 4500 m^2, PV-system on each building (342 kW) and passive solar design;
- *Energy efficiency in buildings* by extra insulation and better air tightness, passive cooling and high efficiency air-conditioners with energy savings of 20%;
- *Poly-generation* by CHP (1500 kWe + 1875 kWth) for 3000 dwellings. A total of 25% renewable energy renewable energy (biomass and/or wind and/or solar) will be used.

Integration of RES and RUE is implemented through design and construction of buildings with integrated RES and RUE measures in new development area Llevant with extensive public dissemination.

Objectives first year, work performed and results achieved

Main objectives were to adapt the legal framework, to design the power supply and to start dissemination activities. The urban development plan for the Llevant area has been drafted including all relevant measures from the cRRescendo project and is now provisionally approved by the Viladecans Council. Final approval is expected in February 2007. For three public buildings the technical specification documents are drafted and are now in the process of approval. On the basis of the urban development plan a feasibility study was commissioned for the energy concept of Llevant, final results are expected in January 2007.

1.3 Research actions

Standardized methods are being developed by Ecofys (coordinating technical research) and the University of Oxford (coordinating non-technical research) to monitor the technical and non-technical issues of the project, in order to be able to improve future replications of the cRRescendo concept.

Technical parameters to be investigated concern the efficient collection and monitoring of the main energy flows in the buildings and the electricity supply from each renewable energy system.

The non-technical research activities aim to obtain a clear understanding of the socio-economic aspects connected to the sustainability measures in the cRRescendo communities and to deliver basic input for the transition to a sustainable future. Research items will include influences on occupant behaviour, local policy, local economy, marketability and cost reduction.

Objectives first year, work performed and results achieved

The objective for the first year, to set up technical research guidelines, was delayed somewhat because of the start of the CONCERTO+ initiative. Both a technical and non-

technical research guidelines have been developed and are now being implemented in each of the four cities.

1.4 Dissemination actions

Both internal and external (to associate communities and broad European level) dissemination will be organised. The four cities will work together with suitable umbrella organisations to ensure broad dissemination to peer cities and other stakeholders. The main external activities include a website, biannual newsletters, visits of peer community representatives, an expert seminar, a final conference and dissemination to citizens.
Objectives first year, work performed and results achieved
Several presentations at external events were given and input was given to the Concerto+ actions. The Ofícina de Renovación Urbana was taken into operation.

1.5 Training

Training activities within the project will take place at two levels:

- *The EU level*: to associated and peer communities, to actors in the building planning process and to installers and constructors.
- *The community level*: within the four demonstration sites, various types of activities are aiming at training of *parties involved in the implementation* of the demonstration work to master quality aspects and special technological aspects.

Objectives first year, work performed and results achieved
The anticipated start of the external dissemination was delayed because of the re-planning in the cities and the start of the CONCERTO+ initiative. The associated communities are being contracted and the first trainings are being planned.

1.6 Project coordinator

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