ANNEX 2
Best practice Identified and transferred

Section	Indication of content
1 **Title of the best practice**	**ACER Reggio Emilia participated retrofitting experience**
2 **Precise theme/issue tackled by the practice**	This experimentation tackles the problem related to lack of public financing for energetic refurbishment, dedicated to social housing. Address the problem of rent rigidity in social housing sector, the, energy strategic asset management, and wants to be an example on how return on investment by means of energy saving and tenants involvement in refurbishment procedure.
3 **Objectives of the best practice**	To promote the energy refurbishment of buildings and to diffuse the scheme of agreement with tenants To reduce energy consumption and energetic bills, to improve the energy efficiency in the building
4 **Location**	- Italy - Municipality of S.Ilario d'Enza
	Number of buildings: 2 Year of construction: 1952 Year of refurbishment: 2007 Number of dwelling: 44
	Climatic zone: E, Degree day:2560

5 **Detailed description of the best practice**	Preliminary studies in order to choose the better proposal according to cost/benefit balance and reduction costs/payback period following the energetic diagnosis analysis and considering a system-building integrated approach: **A - Energetic diagnosis** consist in the energetic optimization of the system building-facilities, to reach management cost saving, to achieve better comfort and wellness for the occupant. **Tools** energy diagnosis 1. to assess criticity, for buildings and its facilities 2. monitoring energy consume (gas/ electricity) 3. data elaboration with definition of primary energy index and outputs **Therapy** 1. simulation of saving energy techniques application with definition of primary energy index and outputs 2. definition of a financial plan based on obtained results **B - System-building integrated approach:** consist in an integrated planning procedure of Mechanic plant , electric plant and building structure (Walls-ceilings-windows) **C- Interview with tenants:** in this case, in order to understand the main perceived problems, our technician conducted an interview with tenants. Main problems emerged were problem with hot sanitary water and with high heating cost. The full agreement of tenants to share the cost of refurbishment with Local authority was a mandatory condition to overcome legislative barrier. 1. <u>During:</u> ➔ main steps of the process

Energetic diagnosis

- survey of the building and the lodgings and interview with tenants
- survey of the systems
- survey power consumptions (gas and electricity)
- elaboration of the data with elaboration of consume and the primary energy index
- simulation of the of energetic saving after the refurbishment evaluation of consume and the primary energy index
- definition of a financial plan on the base of the results

Agreement with tenants, local authority and Acer Reggio Emilia

Tenants and local authority, after the diagnosis, agreed to change:

- Existing gas boiler with a condesed boiler
- energy meter and thermoregulation
- roof insulation

Moreover the part agreed to share the cost: Acer was the third part financing initially the whole refurbishment (will return the investment in 7-8 years), the City hall contributed for 2/3 of investment partially recovering it's expenses for a 15% with energy savings, the tenants agreed to share 1/3 of the cost by renouncing to part of the energy savings. The tenants' energy bills now a days are lower than before.

6 Evaluation

Management

Acer is now in charge of maintenance and management of heating systems. The change in management is motivated by the fact that the previous manager was extra charging the tenants and confusing the two buildings' consume (tab 1.1).

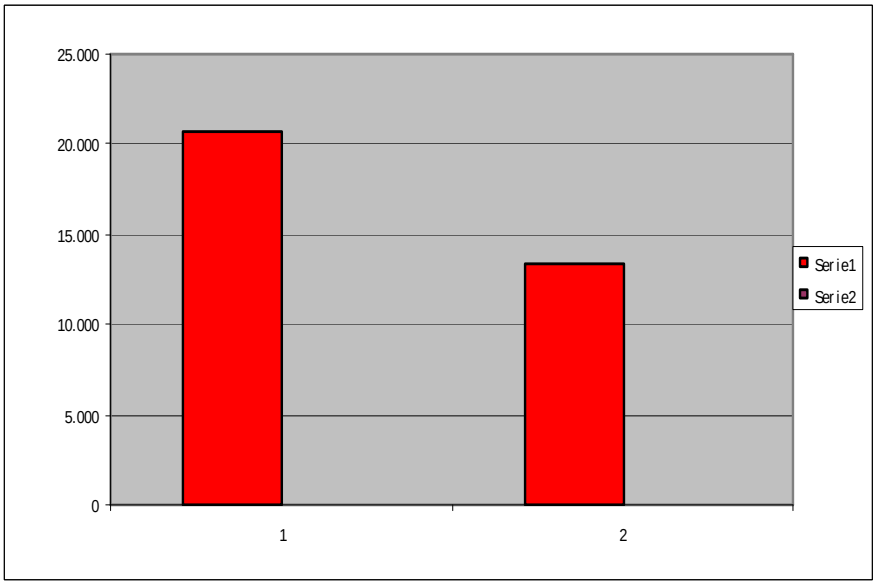
Tab. 1.1 Consume relief in relation with energy service cost (2005-2006)

	Consume (m3)	Estimated cost €	Cost €	Difference €
Building A	20.716	14.169	19.428	5.258
Building B*	18.057	12.350	17.105	4.755

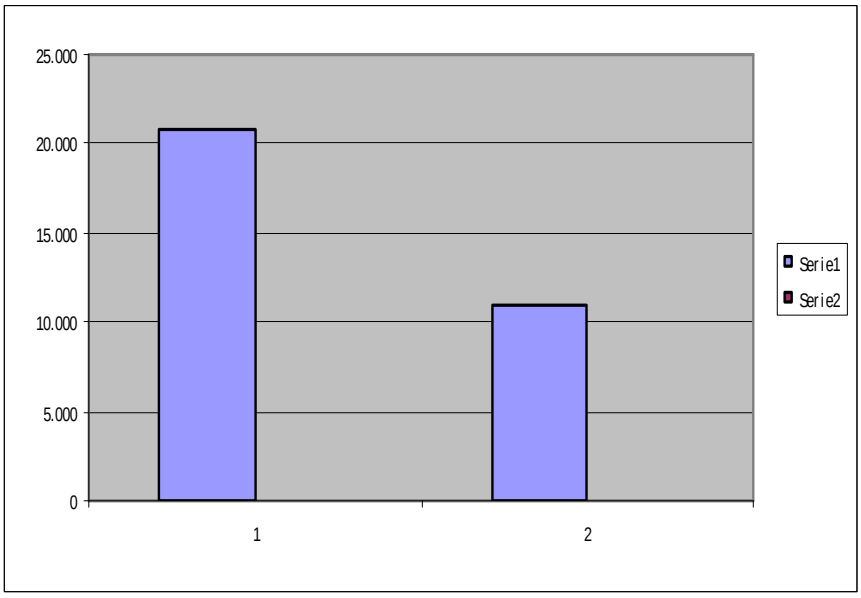
*Actually three apartments are free and thermoregulation is not functioning

Tab 1.2 Monitoring of the refurbishment after one year

	Consume (m3) before	Cost before €	Consume (m3) After	Cost after €	Gas savings	Economic savings €
Building A	20.716	20.836	13.411	11.000	7.305 (35%)	9.836 (47%)
Building B*	18.057	22.269	12.234	10.050	5.823 (32.2%)	12.219 (55%)



Building A



Building B

➔ type of cooperation developed with tenants

A medium level of cooperation was build up with tenants and their association in order to approve the refurbishment planning. Now a days ACER Reggio Emilia is monitoring and directly responding to tenants for the heating management.

> Results

➔ main learns and targeted solution (technical indicators of action: kwh/m^2/year reduction of CO^2 emissions , investment saved per kWh)

- Use of an innovative financing model
- This plan will be implemented thanks to a particular synergy of financing
- Control and monitoring is necessary both in diagnosis phase than in evaluation phase
- tenants active involvement is a fundamental factor of success, both in the diagnosis phase than during the project development
- even refurbishment of small scale can achieve great savings results
- dwellers comfort is increased, because before some of the dwellers did not warm up their flat in order to contain consume and expenses

building n. 1

Energy indicators	Initial situation	After refurbishment	Reduction
Energy performance	180 kWh/m²a	129 kWh/m²a	
Energy consumption	20.716 m³/a	13.411 m³/a	35%
Heating system	Gas boiler	Condensed boiler	
Financial indicators	**Initial situation**	**After refurbishment**	**Reduction**
Energy costs	20.836 €/a	11.000 €/a	47%

building n. 2

Energy indicators	Initial situation	After refurbishment	Reduction
Energy performance	180 kWh/m²a	129 kWh/m²a	
Energy consumption	18.057 m³/a	12.234 m³/a	32,2%
Heating system	Gas boiler	cogeneration system	
Financial indicators	**Initial situation**	**After refurbishment**	**Reduction**
Energy costs	22.269 €/a	10.050 €/a	55%

➔ limits

The main limit is represented by the rigidity of tenants contracts and by the lack of financing systems.

➔ satisfaction of the inhabitants / actions

Very Good level of satisfaction

7 **Lessons learnt from the best practice**	This is an example on how a community bind together can overcome legal and financial barriers and pursue sustainable objectives.

8 **Contact information**	**ACER Reggio Emilia** Energy office Ing. Alessandro Viglioli e-mail: alessandro.viglioli@acer.re.it website: www.acer.re.it
9 **Other possible interesting information**	
10. **Best practice transferred**	n. 77 tenants involved 1 municipality involved 1 national union of tenants involved Transfered in 3 national meetings, about 350 participants