Proposal/Contract no.: FP6-503186

DEMOHOUSE

Design and Management Options for improving the energy performance of Housing

SPECIFIC TARGETED RESEARCH OR INNOVATION PROJECT

Thematic Priority 6

Deliverable 1C

Barriers of sustainable and energy conscious renovation related to the pilot projects

Due date of deliverable:

Actual submission date: December 15th, 2007

Start date of project: October 18th, 2004 Duration: 4 years

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Executive summary

The EU- Demohouse project is a specific targeted research and innovation project supported by the EU – 6th Framework programme. It started in October 2004 and is ongoing for 4 years until October 2008. Demohouse is here an acronym for Design and Management Options for Improving the Energy Performance of Housing. ECN from Holland is coordinator and there are realised demonstration projects in 5 countries – Denmark, Austria, Hungary, Spain and Greece, with main focus on housing renovation.

The EU supported project DEMOHOUSE aims at demonstrating the potential of energy efficient renovation of residential buildings. In order to achieve this goal, a number of pilot buildings in different European countries (Denmark, Austria, Greece, Spain and Hungary) are being renovated under sustainable criteria.

As many as 92 barriers to energy efficient renovation were identified in the DEMOHOUSE renovation projects. In these projects, the main technical barriers were related to the appearance of the building, limited information about the original structure, limited space for new installations and the high demand for manual work. These could be overcome by careful design and application of innovative materials, technologies and high level of prefabrication.

The greatest barrier of energy efficient retrofit in every country was the shortage of financial resources. Besides state subsidies, Energy Services Companies – ESCOs and Third Party Financing are a feasible option to overcome this barrier.

Regarding legal-organisational barriers, some partners encountered resistance or low motivation on the part of the decision makers. Organising workshops and showing best practice examples could help a better acceptance of similar projects.

Below a Table is shown with barriers to sustainable and energy conscious renovation in the DEMOHOUSE renovation projects.

APPENDIX: Table of barriers of sustainable and energy conscious renovation related to the pilot projects

1.	TECHNICAL BARRIERS								
		Countries	**A**	**DK**	**E**	**GR ***	**H**	**Strategies overcome barriers**	**Action specific**
1.1	Architec-tural barriers	to retain the architectural characteristics, the original look and style of the building	+	+	+	+	+	Attention on similar appearance	
		installations changing the appearance and aesthetical quality of the building	+	+	+	+			
		Protected facades, to keep the historic authenticity of the restoration of historical buildings	+	+	++	++	+		No changes on windows appearence
		Renovation should follow urban rehabilitation and the surrounding buildings in morphology			+	+			
		problem of techniques, building physics and organization related to inside thermal insulation	+	+	++		++	Higher attention on other elements	
		requirement of the zoning plan for different utilisations for special areas	+						
		external insulation on facades are not possible for the brick masonry buildings					+	Outside insulation	Removal of the stonee facade
		limited possibilities of changes in blocks with internal courtyards			+				
		limited available space for the new installation systems (e.g. ducts / fans for heat recovery ventilation, etc.)	+	+	++	++	+	Careful design	
1.2	Construc-tional barriers	limited loading capacity of the frame			++			Upgraded of the frame	New steel structure and reinforcement (ES)
		high demand of manual labour	++	+	+	+	++	Higher level of prefabricated and dry works	Timber prefab (DK) Steel attic structure (H)
		high extra cost (diagnostics, temporary equipments)	++	+	+	+	+		
		wrong estimation of costs / unpredictable minor details may change the cost calculation	+	+	+	++	++	Better design methods	
		lack of plans or unproper plans of industrialized buildings constrain interventions							

		district heating systems designed for larger capacities							
		avoiding noise, dust, heightened security measures causes complex, time consuming, expensive construction management, especially if occupants are living in the building during renovation period.	+	+		+	+	Choosing proper technics	Preference of use of dry technic
		the builder-owner often concentrates only on the primary reason for renovation (e.g. damages) and wants to get it done as quickly as possible.	+	+		++		Raise the awereness of the owners for longer term benefits	Intensive communication, best practice examples
		high cost, technical problems and lack of space for installing required new elevators	+		+	+	+	Seeking state/regional support for accessibility	Recontruct the staicase (H) tender for elevator construction
		selection of the best technique (risk of damage of other parts of the building or adjacent buildings)	+	+	++	+	+	High attention on design	
		high costs of the diagnosis and renovation planning due to lack of knowledge about the foundations			++	+			
2.	SOCIO-ECONOMIC BARRIERS								
		Countries	**A**	**DK**	**E**	**GR**	**H**	**Strategies overcome barriers**	**Action specific**
2.1	Eligibility of the subsidies and finance	lack or limited eligibility of subsidy systems	++			++	++	Finding outer systems	Esco's involvement, PPP
		high investment cost of sustainable measures	++	+		++	++	Third party financies, ESCO's involvement	Workshop with the owners
		strong conditions / limited availability of bank credits			+		++	Searching other "taylor made" alternatives	Negotiation with financing instutions
		large gap between housing / construction prices and household incomes, no financial sources of inhabitants for investing or for paying back credits	++				++	Seeking special support from the Local governments	Negotiation with financing instutions and local governments
		people are still looking at the state for subsidy and avoiding financing of investment from loans					++	Local support for vulnerable people	Discussion with local goernment and proposal setting
		opportunities of co-financing measures by the state budget are very limited	++	+			++	Lobbying	
		the boards of housing cooperatives and flat owners associations are generally not widely skilled in how to renovate buildings					+	More information about best practice	Intensive discussions and workshops with the stakeholders
		lack of support of thermorenovation measures		+			++	Lobbying, regional actions	Discussion with Local governments

		lack of sufficient support for demonstration projects	+	+		++	++	Lobbbying, higher involvment of supplier	Focused discussion with potential supplier
2.2	Afforda-bility of rent or housing prize after renovation	heavy increase of rents and housing prices in projects with comprehensive renovation activities	++	+	+			Special attention on vulnerable tenants	Helping tenants for induvidual support
		the increased housing price and rent may prevent the owners of applying new technologies in renovation	++			++		Information on the benefits	Workshops with the tenant, raise the level of the tenant democracy
		more expensive local amenities, higher building taxes and higher services charges	+		++				
2.3	Mobility in relation to the renovation	low level of mobility and people (especially old generation and lower income strata) not willing to move out during the reconstruction					++	Attract people to move	Special attention and program of the local government
		low level of mobility to move to other dwellings					++	Attract people to move	Special attention and program of the local government
		satisfying changing social demands					+	Flexible –open planning of the dwelling	Opportunity for later merging of the flats/rooms
		changing age-structure of the inhabitants					+	Forecast setting	Focused surveys and studies
		problems of social integration		+			+	Higher attentions for involving the teanant in the decision process	Local information office, Workshops
		“gentrification” and immigration in old parts of the town cause social conflicts			++			Action from local government	Discussion with local government
2.4	Tenants behaviour	low level of cooperation of tenants	+	+	+	+	+	Attracting the tenants	Set a strategy for commnication
		to secure existing usage rights	+	+	+	+		Clear rules	Communication of rules
		lack of awareness of the new systems’ function related to energy efficient measures	+	+	+	++		Raising the awereness	Information on Internet, flyers, face to face
		anti-social behaviour of certain groups, specific ethnic groups or immigrant groups	+		++			Active social policy	Communication on mather language, special events
		lack of care and pride in property by the tenants		+	+			Raising the conscious	Communication of best practice examples
2.5	Tenants’	Lack of sufficient knowledge or other fears inhibit the decision process of renovations	++		+	+	+	Higher involvement of the stakeholders	Workshops, Internet

	opinion about the benefit of the renovation	Ecological arguments suppressed by other criteria	+	+	+	+	+	Transparences of the criterias and priorities	Workshop with stakeholders
		lack of participation of the tenants in decision-making			+			Attract tenants for higher participation	Special events, promotion
		Nuisance of construction site	+	+	+	+	+	High care of working circumstances	Put on the priority list on contractor tenders
		tenants feel that energy saving measures are implemented at the expense of indoor space	+						
		doubts about new technologies	+	+		+	+	More and proper information	Set comminication strategy
		Perception of uncertainty caused by the new situation	+		+			Clear explanation	
		Fear of complicated handling of innovative facilities	+				+	Training	Set information material
		low willingness for investments	+	+		+	+	Seeking third party finances	Workshop of possible ESCO's involvement
		Pessimistic estimation of the regional development	+						
		fear of unsound renovation	+				+	Transparent Quality Assurance	Survilience
		fear of conflicts with tenants/co-owners/ administration	+					Finding new way of cooperation	Workshop, tenant represenative
		time pressure	+	+	+	++	+	Proper design, dry and fast technology	
2.6	Vulnerable tenants' group	vulnerable people (aged, disabled, unemployed, low-income, etc.) do not want to bother with renovation	+	+	+	+		Special attention and program	
		lack of information for vulnerable people					+	Special attention and program	
		low expectations of comfort derived from previous culture and experience	+	+	+	+	+	More information about success stories	Communication of Best Practice examples
		resistance to change of certain groups	+	+	+	++		Clear decision rules	Workshops
		lack of special participation of vulnerable people in decision making					+	Find way for better involvement	Finding relevant representatives
2.7	Environ-ment	lack of safety / high crime rates,	+		+	+		Special attention on rasing of safety feelings	CCTV system in use,
		low valuation of housing after its renovation due to its location	+		+	+	+	Insisting to a wider revitalisation program	Tenant –local government forum

		Lack of complex urban renewal programs					+	Insisting to a wider revitalisation program	Tenant –local government forum
3.	LEGAL AND ORGANISATIONAL BARRIERS								
		Countries	**A**	**DK**	**E**	**GR**	**H**	**Strategies overcome barriers**	**Action specific**
3.1	Demand of high agreement level	the opposition of single persons can interfere with the renovation process	++	+					
		the lack of information is a barrier of agreements	+	+		+		Better comminication	Local office
		groups with very different interests and socio-economic position	+		++	+	+	Better knowledge and understanding the phenome	Socio-economic suvey Proactive tenants meetings
3.2	Lack of personal engagement of the decision makers	decision makers have no personal engagement	+				++	Higher publicity	Intensive discussions with the decision makers
		housing corporations / local authorities have doubts about new technologies	+			+	+	Better technical knowledge	Informational days, Best practice examples
		housing corporations / local authorities are afraid to carry out complicated renovations	+			+	++	More detailed information	Workshops
		low encouragement in renovation activities	+				+	Raising awareness	"success stories" workshops
3.3	Bureaucra-tic administra-tion for getting subsidies	bureaucratic administration for getting subsidies can affrey owners or decision makers and inhibit renovation				+		Logistical help	
		bureaucratic administration of the ownership status of organizations				++		Logistical help	
		bureaucratic procedure can be difficult to some social groups			+			Special attention on this group	Worhop with the stakeholders
4.	OTHER BARRIERS								
		Countries	**A**	**DK**	**E**	**GR**	**H**	**Strategies overcome barriers**	**Action specific**
4.1	Barriers related to innovative solutions	lack of users' interest inhibit innovative solutions	+	+			++	Better information chain	Training for tenants
		Information deficits of planers / dwellers / landlords inhibit innovative solutions	+				++	Better information chain	Training for stakeholders
		builders prefer traditional solutions in order to minimize risk and maximize profit	+	+		+	+	Underlying the benefits and reduce the risk	Best Practice examples
		strong financial barriers of R&D and innovation				+	++	Seeking for tenders	

		lack of performance based regulation		+	+		+	Information on design phase	Communicate the PB regulation
		Innovative solutions conflicts with preserving architectonic heritage			+			Finding acceptable compromise	Workshop with all thwe stzakeholders and authorities
4.2	The image of renovation	Renovation has worse image than new building	+	+	+		+	Attract stakeholders	Best Practice workshop
		building owners have strong need of security	+	+					
		architects prefer designing new buildings	+	+		+	+	Showing the benefit of proper renovation	Best Practice workshop for architects
		building owners lack confidence in new, still unknown services	+	+	+		+	Offering follow up system	Measurements of relevant datas
		lack of best-practice examples		+	+	++	++	International cooperation	More information on running/finished projects
		false image based on bed experience with renovation					+	Offering follow up system	Measurements of relevant datas
		The idea of "new is better"			+	+		Showing the benefit of proper renovation	Best Practice workshop for the stakeholders
4.3	Counter interest groups	short time speculative interests of manufacturers / developers / builders / owners inhibit sustainable and energy efficient renovations	++				++	Clarify the hidden interest	Workshop with the stakeholders
		aversion of tenants because of rents increasing		+				Fair rent system	
4.4	"Bad practice examples"	"bad practice examples" threaten new candidates of renovation (e.g. incorrect application of energy-saving measures)					+	Offering follow up system	Measurements of relevant datas
		lack of information about new technologies, education and demonstration about BAT		+		+	++	Communicate more information	Workshops, internet
		lack of personalized attention or social support of the dwellers					+	Better knowledge and understanding the phenome	Socio-economic suvey Proactive tenants meetings

* In Greece, the barriers refer to existing buildings in general, as the pilot project is a new construction.