

MountEE: Energy efficient and sustainable building
in European municipalities in mountain regions
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Work Package 2: Capitalize existing knowledge and experiences

REPORT

BARRIERS AND KNOWLEDGE GAPS CONCERNING SUSTAINABLE BUILDING AND RENOVATION

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Introduction

European mountains are one of the areas that will undergo significant change in the coming decades, and thus deserve special attention with regard to ecological, economic and social issues. European mountains are also an area where significant progress for reducing emissions of greenhouse gases can be made.

Worldwide about half of the energy is being used for constructing, using and refurbishing houses. In Europe, the main part of energy used in this sector is spent for heating rooms, followed by providing domestic hot water. Domestic fuel and domestic gas are the most frequent energy sources. Constructing and refurbishing provides thus large potentials to reduce energy consumption.

According to the recast of the European Energy Performance of Building Directive (EPBD), by January 1st 2021, all new buildings including existing buildings undergoing major renovation will have to meet 'very high energy performance' standards. According to this new directive, public authorities have an exemplary role to play by ensuring that all new buildings they own or occupy meet the nearly zero energy standards. In a broader sense, public authorities have a strong responsibility in developing sustainable building. Here, European mountain regions can contribute to a sustainable building future.

However, for many municipalities the transition to a new sustainable and energy efficient way of building is a major challenge. Most of them lack of know-how, experience and funding. Mountain municipalities are facing additional challenges: extreme climate, low accessibility, small entities, a lack of critical mass, low population density, brain drain and lack of innovation.

The project «MountEE – Energy efficient and sustainable building in municipalities in European mountain regions » supports communities in Sweden, the Alps and the Pyrenees in order to help them achieve their objectives and transform them into front runners. In six regions MountEE will contribute to make 25 to 30 public buildings construction or renovation projects more sustainably and energy efficiently. The project involves relevant players in the regional actions: politicians, technical and administrative staff at local and regional level, decision makers in funding institutions and key actors in the building chain. MountEE is using existing knowledge to develop regional strategies, financial tools and to support building projects.

Project partners are International Commission for the Protection of the Alps CIPRA (LI), Nenet Norrbottens Energy Agency (SE), RAEE Rhônalpénergie-Environnement (FR), Lansstyrelsen Dalarna (SE), PnR, Parc naturel régional des Pyrénées catalanes (FR), AidA Municipality network "Alliance in the Alps" (D), ARES, Agenzia Regionale per l'edilizia sostenibile (IT).

In a first step, the project partners carried out a more in depth regional investigation of the knowledge gaps and needs in the area of sustainable buildings. NENET, Norrbotten Energy Agency, provided a template for these investigations and summarised the results from all partner regions in this short report.

Summary strengths and barriers per partner according to questionnaire

ARES

ARES strengths:

- A framework for the assessment of buildings based on the international standard "SB Tool" was introduced, and this might be a first step towards a strategy for sustainability in construction.
- The potential for use of renewable energy sources in the region is very high, especially with regard to the water and the sun.
- The cost of electricity is very high and this may be a further incentive to use renewable energy sources.

ARES barriers:

Technics and material:

- Energy certification of buildings is seen more as a bureaucratic exercise than as the evaluation of the performance of buildings, specifically as you just get only a calculated value;
- Craftsmen lack technical knowledge related to energy efficiency – they are building as they have always done;
- The sustainable construction industry is not well developed in the region and most of the certified materials comes from outside the region;
- District heating networks are not very widespread.

Finances:

- The main financial barrier is linked to the general economic crisis combined with a limited access to finance in general;
- The municipal budgets are very low and often public buildings are more expensive than private ones.

Legal and organisational issues,

- The public procurement process is long and complicated, and does not include criteria related to sustainability or buying green;
- The tenants have little interest in investing in improving public residential buildings;
- The mountainous part of the region consists primarily of small towns that have little budget and even a few technical knowledge. Small municipalities have little technical knowledge;
- Lack of long-term vision on all levels, also in the political class;
- Lack of communication between the different actors;
- In general lack of knowledge at all levels with respect to energy efficiency, climate change etc.

Rhône-Alpes region

Rhône-Alpes region strengths:

The Rhône-Alpes region has many assets to develop sustainable construction with proactive policies and multiple and committed actors. Some examples for this are:

- Local proactive policies and tools, including environmentally-oriented social housing;
- A dense and well-established network of actors;
- Innovative financing mechanisms existing like CDDRA (contracts between local authorities and the Regional Council);
- High potential of renewable sources of energy combined with local supply chains for eco-material and eco-labels in the process of structuring;
- An encouraging institutional framework regarding public buildings.

Rhône-Alpes region barriers:

Technics and material:

- While there are no specific technical barriers for the generalization of sustainable buildings, implementation, maintenance and sizing of systems are often problematic, not at least in the areas of air quality and emissions;
- As there are no guarantee of results, start-up and operating performance is often insufficient;
- Risk for lack of professionals and thereby lack of anticipation of new technologies;
- The local material chains are not very well organized and offer is limited;

Finances:

- Overall lifecycle costs are rarely taken into account nor positive impacts on regional development;
- Local budgets are very tight, anyhow, public buildings are often more expensive than private ones, e.g. through obligations on disabled accessibility;
- Ambitious level limited as prices for innovative processes and material offered by companies are often comparatively high, while electricity prices are low compared to other European countries;
- Conflicting interests when it comes to low-energy-buildings in district heating areas.

Legal and organisational issues,

- Collaboration and general organisation of building projects needs to be changed, even to reduce administrative incoherence between different levels.
- Specifically smaller municipalities do not have know-how and capacity and have difficulties to integrate sustainability criteria in public procurement;
- Lack of long-term management of municipal buildings.
- Lack of mobilisation of politicians to make sustainability and energy efficiency to a priority, partly due to a lack of awareness.

Natural regional park of Pyrenees Catalanes

Natural regional park of Pyrenees Catalanes strengths:

- Regional strategy on sustainable building;
- Network of sustainable building stakeholders (including all actors of building eg. political and technical partners, energy agency, association of professionals, etc.), at county level working together on tools (tools about information, training, awareness, guideline, etc.), website and call for projects;
- High renewable energy potential in the region (including research and development on solar energy) combined with increasing energy prices and municipalities start to think their building management on long term.

Natural regional park of Pyrenees Catalanes weaknesses:

Technics and material:

- Local network of eco-material supply is not developed;
- Deficit of technical information and low technical skills of municipal staff;
- Deficit of skills of professionals despite possibilities to training (because of a low participation in training)

Finances:

- Overall lifecycle costs are rarely taken into account;
- Low financial capacities of the small and rural municipalities;
- Lack of funding schemes and difficulties to access loans;
- Competition from Spanish companies offering at low costs and not taking into account sustainability;
- Public buildings are more expensive than private ones.

Legal and organisational issues, awareness:

- Lack of political decisions due to lack of awareness, know-how and financial resources, and lack of long-term strategy due to short election period;
- Lack of communication and collaboration of different actors;
- Lack of know-how regarding Green Procurement;
- Some laws counteract installation of renewable energy;
- Low participation in trainings, both municipal staff and professionals like architects.

Dalarna region

Dalarna region strengths:

- Well-developed district heating system;
- Market dominated by the public sector creating good opportunities for change;
- Production of low-energy buildings has increased dramatically in recent years;
- Active networks for the building sector established in the region;
- Database for selection of eco-materials and products in use.

Dalarna region barriers:

Technics and material:

- Due to harsh climate, lower levels than 50 kWh/m² are very difficult to reach, in order to achieve near zero energy standards, buildings have to produce own energy;
- In terms of reducing the overall energy demand, too little attention paid so far to the electricity use of household appliances;
- Many buildings are connected to district heating, efficiency potentials needs to be explored and tapped;

Finances:

- Overall lifecycle costs are not taken into account sufficiently;
- Lack of financial resources in housing companies, specifically in smaller municipalities;
- Starting with low-hanging fruits when investing in energy efficiency make more ambitious projects later on often unprofitable;
- Tenants (private or commercial) have little incentive for saving energy, and often, individual measurement systems are lacking.

Legal and organisational issues, awareness:

- Calculations of energy balances are often not corresponding to the actual energy demand;
- Housing companies often lacking systems to monitor energy use;
- Some actors just “dare to take the lead” and to take risks without strong support;
- Municipalities are not allowed to define demands on energy use of energy efficiency standards when making real estate plans;
- Required energy standards in Swedish legislation are far from ambitious. Therefore, municipalities and developers set sometimes own requirements what is counteracting standardisation.
- Swedish building standards are beneficial for heat pumps thereby undermining the use of district heating systems;
- Property owner lack a long-term strategy on sustainable buildings;
- Manager and operating engineers have a lack of know-how on energy efficiency.

Northern Sweden - Norrbotten and Västerbotten

Northern Sweden - Norrbotten and Västerbotten strengths:

- High competence in timber construction, incl. existing networks.
- High renewable energy potentials, specifically bioenergy, wind and water, and even regional competence to explore potentials.
- High interest and market potential regarding energy efficient buildings in e.g. Kiruna and Gällivare which have to move parts of their cities due to a growing mining area.

Northern Sweden - Norrbotten and Västerbotten barriers:

Technics and material:

- Passive houses are not proven technology in the region;

- Low access to truly sustainable building materials;
- Low energy demand of houses leads to difficulties if in a district heating area.

Finances:

- Building costs in Sweden are high compared to most European countries;
- Short-term planning horizon of building owners and builders;
- Innovative building projects are seen as a risk by smaller companies, not as a chance to compete
- No public financial direct subsidy for highly efficient buildings;
- Credit policy of banks is very conservative;
- Relatively low energy prices.

Legal and organisational issues, awareness:

- Real energy costs for house owners depend also on use of appliances. House builders do not dare to promise low energy costs towards house buyers;
- Overall lifecycle costs are not taken into account nor positive impacts on regional development;
- Municipalities have a lack of competence and knowledge in green public procurement. There is a lack of coordination and lack of standards, too;
- The Swedish National Board of Housing, Building and Planning is not ambitious towards NZEB, but considers today's standards in Sweden as sufficient for implementing EU regulation;
- Building companies present no low energy or passive houses in their standard catalogues and no objects that can be visited in the region;
- Lack of knowledge about sustainable building, about own energy costs, and about methods and materials for sustainable buildings in the public sector.
- Politicians lack knowledge on how the building sector is organised.
- Attitudes like: "we build our houses as we always did" or "energy savings are not economic" or "passive houses not possible in cold climate".

Vorarlberg region

Vorarlberg region strengths:

- Long tradition in optimising buildings;
- Stakeholders take sustainability as an important criteria;
- Networks, tools and services are accepted and in use.

Vorarlberg region barriers:

Technics and material:

- No technical barriers;

Finances:

- The chamber of economics tries to give the impression that construction becomes too expensive for normal inhabitants if additional environmental demands are added.

Legal and organisational issues, awareness:

- Facility managers, user, visitors and other staff (for example cleaning staff) are often not aware of the effective management of the building. Even more if there is a turn-over of the staff.

European Survey (CIPRA)

Strengths European level:

- Sustainability and energy efficiency in the building sector is a high political priority on all levels;
- The public is aware of sustainable development, environment and climate protection, what makes that local authority know that they are benefitting in terms of communication and visibility when implementing high energy standards.

Barriers European level:

Technics and material:

- Lack of international standards and a clear definition of “sustainable building”;
- Geographically fragmentation in terms of markets and access of technical solutions;
- Availability of materials, products and technology on the local level not structured, nor are offer and demand matching;
- Gap between design and reality, lack of controlling in operating phase;
- Specific geographic and climate conditions in mountain regions;
- Craftsmen often lack know-how and experience in sustainable building;

Finances:

- Overall lifecycle costs are rarely taken into account nor positive impacts on regional development, true even for municipalities and housing companies;
- Costs of energy still relatively low;
- Lack of stable investment climate and a regulatory framework for private investors;
- Lack of grants and other incentives, both for public and private investors;
- Structural effects of the crisis which less priority to sustainable buildings;

Legal and organisational issues, awareness:

- Fiscal accounting makes it difficult for local authorities to account energy cost savings linked to investments;
- Complex procurement and tendering procedures in the building sector, specifically in how to include sustainability and energy efficiency in procurement process;
- Local legislation and urbanism barriers;
- Procedural mechanism would be entailed by the adoption of new methods;
- Lack of capacities in municipalities, and even lack of supporting energy agencies;
- Delays in certification because of insufficient quality control and miscommunication;
- In some regions: corruption and/or lobby of big companies in the building chain;
- No long-term vision in politics due to short elected mandate;

- Fear of taking risks and unforeseen costs in unproven technologies;
- Lack of knowledge of stakeholders, as well as lack of experience and examples in some regions.

Overall analysis of joint barriers in partner regions

While Vorarlberg is confirming its role as leading region when it comes to sustainable and energy efficient buildings, all other partners are dealing with a variety of barriers. Anyhow, even if some barriers are specific, also strong similarities can be found:

Mountain regions dominated by smaller municipalities

Not unexpected, and being one of the criteria for building the partnership, are all regions sharing a definition of being mountain regions. Low accessibility and remoteness as well as harsh climate make sustainable buildings more expensive and complicated. At the same time, smaller municipalities are dominating in the regions, which are confronted with a significant lack of capacities in terms of staff, skills, know-how and financial means.

Lifecycle costs and regional benefits not taken into account

Often, lifecycle costs / overall total costs are not taken into account when it comes to decision-making on buildings (renovation or new development). In the public sector, this can also be a consequence of financial accounting rules that do not allow for offsetting investment costs versus reduced operating costs in the long run. It is also rare that calculated global costs include benefits for the local economy, employment of the environment. In this context, it can also be problematic, if building owners starts projects by picking low-hanging fruits first, as this is counteracting a more ambitious overall project, in which cheaper investments otherwise could balance more expensive ones.

Financing, funding policies and funding schemes

Still, ambitious sustainable building projects are not in all cases economic on a business level, or higher costs for initial financing can be a problem. For European mountain regions and their specific conditions as described above, this problem is more obvious and is a bigger challenge to overcome than for other regions. In spite of this common experience, concrete circumstances vary across the partnership: in Norrbotten are almost no passive houses built so far, and due to the harsh climate, passive houses are unproven technology for Norrbotten. This includes high development costs for ambitious projects, while at the same time no broad general funding scheme for sustainable buildings exist. In other regions, like the Pyrenees, Rhone-Alpes region or Vorarlberg, general funding instruments exists and are supporting project development. Anyhow, all partners agree that a further development of funding schemes is necessary both to match mountain regions demand in a better way and to speed up tapping the enormous potentials of energy savings and use of renewable energy sources in European mountain regions.

Lack of knowledge, specifically Green Procurement

In general, awareness on energy, climate and the environment has increased over the last year on all levels. Nevertheless, there is still a considerable lack of know-how regarding sus-

tainable buildings, both for craftsmen, municipal staff and politicians. This is particularly a problem for smaller municipalities and remote regions.

A significant barrier mentioned by RAEE, PNR, Dalarna, CIPRA and Nenet is the lack of knowledge on how to include sustainability criteria in procurement processes and on how to get best quality and low total costs (incl. operating costs) instead of a mere low-price offer.

Deficits in the supply with eco-materials

The supply of eco-materials, in best cases produced in the region, is often not well-structured. Not using eco-materials is often conflicting with the ambition of projects and building owners. Regional supply chains are also important for gaining a (political) momentum for sustainable building policies on a local and regional level.

High building costs versus low energy costs

Ambitious sustainable energy efficient building projects are often not economic on a business level, and this can be linked to still relatively low energy costs, as mentioned in RAEE and Nenet`s questionnaire. This can be compared to the fact, that building costs in general are considered to be relatively high, specifically in Vorarlberg, but also in Sweden. This makes it difficult (politically) to put further burden on house builders.

Another issue is the fact, that public buildings are often more expensive than private ones, due to the fact that public authorities have to fulfill also other obligations, e.g. accessibility for disabled persons. This can be a severe barrier also in case of renovation, as several obligations are adding up to each other, leaving very little space for ambitious voluntary targets.

Energy calculation versus real energy demand

Calculation of energy demand is mostly done on a theoretically basis, and is often not matching with real energy demand. This can be linked to the fact, that there is rarely a guarantee of result and that start-up and operating performance is often insufficient. Beyond, electricity demand of electronic equipment is often underestimated, leading to higher energy costs than expected. In some regions, e.g. Sweden, there is also a lack of incentives for tenants to engage in energy savings.

Further barriers (not common to all partners)

Beyond the above mentioned barriers which are mainly shared across the partnership, some more are common for some of the partners:

- In district heating areas, policies on low-energy houses and an increased use of heat-pumps can lead to both economic and technical problems;
- Politicians lack often a long-term strategy due to short election periods;
- Key actors, like politicians and house builders, do not dare to take risks, e.g. unexpected high costs due to unproven technology;
- In some regions, like in the Pyrenees and Northern Sweden, proven technologies, best practice models and experience is missing;
- Conflicting competences between various levels and various departments or conflicting legislation can be a problem, e.g. according to RAEE and PNR;
- A change of attitude and the way of managing and collaborating of actors within the building chain is necessary in some region, e.g. Rhone-Alpes region;
- A deficit in training and vocational learning is considered as a problem e.g. according to PNR.

Summary on partners answers: How to overcome barriers?

Technical

There are still technical challenges regarding sustainable buildings. But lack of R&D or in general unproven technology is not considered as the main deficit for working with sustainable buildings today. Even if partners see still a technical potential to explore, so are technical questions not the main focus of MountEE project. Exchange, communication and training on technical knowledge are more needed.

Standards, definitions and calculation of energy demand

Standards of what a truly sustainable building, what a passive- or a low-energy building is vary a lot across Europe. There is neither an international standard on how to calculate energy demand. Besides that, calculation and real energy demand can differ a lot. Creating international standards and definitions plus creating better ways how to calculate energy demand in advance and on how to prove in the operating phase would push the sector.

Organisation of building process

Building processes are complex and involve a broad range of player. Therefore, a regional network and meeting place for private and public sustainable building stakeholders including funding institutions and research would support the development of successful projects. A joint regional approach and strategy how to overcome barriers in the concrete region should be developed. More concrete, team working of all players from the beginning in actual building projects are necessary.

Quality control and maintenance

To increase trust in sustainable building projects, and to avoid unexpected economic losses, improving quality control and maintenance is of utmost importance.

Training and education

Lack of know-how is one main barrier for accomplishing sustainable building projects: from general awareness raising to sustainable building and current legislation on Green Procurement both for awarding authority and for business to answer call for tenders. All stakeholders need trainings, from public authorities and public housing association to technicians, building companies, consultants, architects, craftsmen and developers to users.

Consultancy, advice and support

For European mountain regions with their often small municipalities, consultancy, advice and support is decisive for overcoming barriers. In some less advance regions, the high number of barriers can discourage public authorities and companies to implement any more ambitious projects. Advice is needed both on technical, legislative and organisational questions.

Finances, adapting financial tools and funding schemes

In some countries, it is necessary to adapt and to apply existing schemes, while in other countries additional ones needs to be created to overcome barriers. This could and should be done in a dialogue with funding institutions, not at least on the regional level. Applying LCC analysis and/or pooling short-term and long-term economic measures would help to overcome economic barriers in many cases. Even benefit sharing models between tenants and building owners should be considered as one financing issue.

Summary on partners answers: How can MountEE contribute?

Experience exchange (WP2, 3, 4, 5)

MountEE partner are representing exemplary European mountain regions and are covering a broad range of competence, too. Vorarlberg region as one of the most advanced regions in Europe when it comes to sustainable building will support all other partners with its vast and rich reservoir of knowledge and experience (service package sustainable building).

Organisation of building process and building chain (WP3 and 4)

Deficient communication between players in the building chain and shortcomings in collaboration to implementation of demanding sustainable building projects are considered as one mayor challenge. Therefore, MountEE project will bring together important stakeholders and players of the building chain and in politics.

- Building Regional Committees will create a meeting place to define regional strategies and to improve collaboration on regional level, e.g. criteria for environmental quality of buildings will be established that are shared by communities in the regions.
- On selected pilot projects, a new coordination between players in the building chain will be tested, not at least by involving designers, operators and users.
- An ambitious regional strategy and the RCC as meeting place will open up market also for new and innovative SMEs.

Training and education, capacity building (WP5, 6)

The partner research confirmed a lack of know-how in almost all parts of the building chain. Tailor-made capacity building activities for the various target groups will therefore be one of the main pillars of MountEE. The partners will carry out capacity building activities in their region, neighbouring regions and other interested mountain regions. The activities are workshops, trainings, excursions and coaching. Trainings on Green Public Procurement for public authorities should be considered as one of the more urgent issues.

Improving facility management (WP3 and 4)

Within the MountEE project, a new facility management tool will be elaborated by the partners in Vorarlberg and included into the existing service package. This is to fill the gaps between design and reality in energy consumption.

Creating good examples and thereby demand (WP4)

Pilot projects within MountEE provide a unique chance to transfer good examples across the partnership, and to test and adapt tools. Vice versa, experiences made during the project will be shared with all partners and beyond. By pushing pilot projects, showing local stakeholders that sustainable building is possible and thereby increasing demand, even the supply of eco-material will be promoted and improved.

Improving funding instruments (WP3)

Funding instruments will be improved in the regions and this experience shared among the partnership. Including the consideration of total costs / LCC models, and based on cooperation with funding institutions is of high importance.

Annex I: Questionnaire form

Region / local area considered:	Submitted by
<p>1) Summary of barriers (200-400 characters)</p> <p>Give a short summary about the key barriers in considered region</p>	
<p>2) Summary of strengths (200-400 characters)</p> <p>Besides the above barriers, which are the key strengths with regards to sustainable building and renovation in considered region?</p>	
<p>3) Describe barriers/hindrances/gaps more in detail (800-1200 characters)</p> <p>Technical barriers Technical barriers may include: not proven technology in the considered region, no distributor of technology, no system of quality insurance etc. Pls. consider in addition even geographical aspects like the specific situation of mountain regions - extreme climate, low accessibility, small entities.</p> <p>Financial barriers Financial barriers may include: lack of investors, not sufficient public funding, lack of incentives for builders (conflict builder/user)</p> <p>Legal, organizational or procedural barriers Legal, organizational or procedural barriers may include: brain drain, conflicting and/or less ambitious legislation, slow decision making processes, unclear responsibilities etc.</p> <p>General knowledge and awareness gaps on energy, climate and sustainable building General knowledge and awareness gaps on energy, climate and sustainable building may include: lack of knowledge about sustainable building as such, about the importance of climate protection, about own energy costs, or about methods and materials for sustainable buildings.</p>	
<p>4) Background and analysis of barriers (1000-1400 characters)</p> <p>Guiding questions:</p> <p>Give background information about the building market in the considered region: how much is been built, how much is renovated? Which players are active in the field (public, private) etc?</p> <p>What are the most important barriers? Rank if possible and give references for your assessment if any.</p> <p>Describe factors (e.g. historical, geographical, infrastructural, financial and political) leading to the described barriers.</p>	

<p>5) Describe the consequences and negative impacts of these barriers in your region (800-1200 characters)</p>
<p>6) 1-3 concrete example(s) how the described barriers are affecting projects/building standards etc (1000-1400 characters)</p>
<p>7) Which would be the first steps to overcome the main barriers (800-1200 characters)</p>
<p>8) Proposal(s) how MountEE can contribute to overcome barriers (800-1200 characters)</p>
<p>9) Conclusions and proposals for next steps within Mount EE (600-800 characters)</p>
<p>10) Contact to other experts within the considered region for further interviews. If more than one, add further lines to the questionnaire.</p> <p>Organization: Name contact person:: Address: Phone: Email: Web site:</p>
<p>11) References, sources</p> <p>Please mention sources for statistics, analysis, studies, project contacts that are mentioned in the questionnaire and those, which can be of interest for MountEE?</p> <p>Add them as annexes and/or put them to MountEE project place.</p>

Annex II: List of Partners

Partner name	Abbr.	Country	Profile of the organisation
International Commission for the Protection of the Alps CIPRA	CIPRA	LI	NGO, non-profit umbrella organisation with ca. 100 member organisations committed to the protection and sustainable development of the Alps. Well experienced in the management of trans-national projects
Nenet Norrbottens Energy Agency	Nenet	SE	Regional Energy Agency, non-profit company. Active in Northern Euro-pean countries and especially in Sweden.
Rhônealpennergie-Environnement	RAEE	FR	Energy Agency, practitioner and multiplier at regional level in the French Alps
Lansstyrelsen Dalarna	Dalarna	SE	Public authority, responsible for development and communication of regional energy policies and SEAPS, coordinating regional energy and building projects.
Parc naturel régional des Pyrénées catalanes	PnR	FR	Public organization for local and regional planning. Support of municipalities in the regional parc and in the Pays Terres Romanes in order to develop innovative actions and to develop energy policies
Municipality network "Alliance in the Alps"	AidA	DE	Network of appr. 300 municipalities in the Alps (AT, CH, DE, FR, IT, SL). Focus on sustainable development, energy efficiency and climate change
Agenzia Regionale per l'edilizia sostenibile	ARES	IT	Society owned by Regione Friuli Venezia Giulia. Promotes sustainable and environmentally-friendly construction, and improvement in construction quality

Annex 3: Comparison of regions

Region	Average Temp. (C)	Price for electricity (Eurocent)	Price for oil (Eurocent)	Price for district heating (Eurocent)
Kiruna	-1	10	13	5-9
Norrbottn and Västerbotten	3			
Dalarna	4,2	10	13	7-9
Vorarlberg	8	16	10	7-9
Friuli	About 8	17-18 plus fix expenses for contract		
Rhone-Alpes	7-9	11	10	8-9
Pyrenees	7-11	11	10	6-9