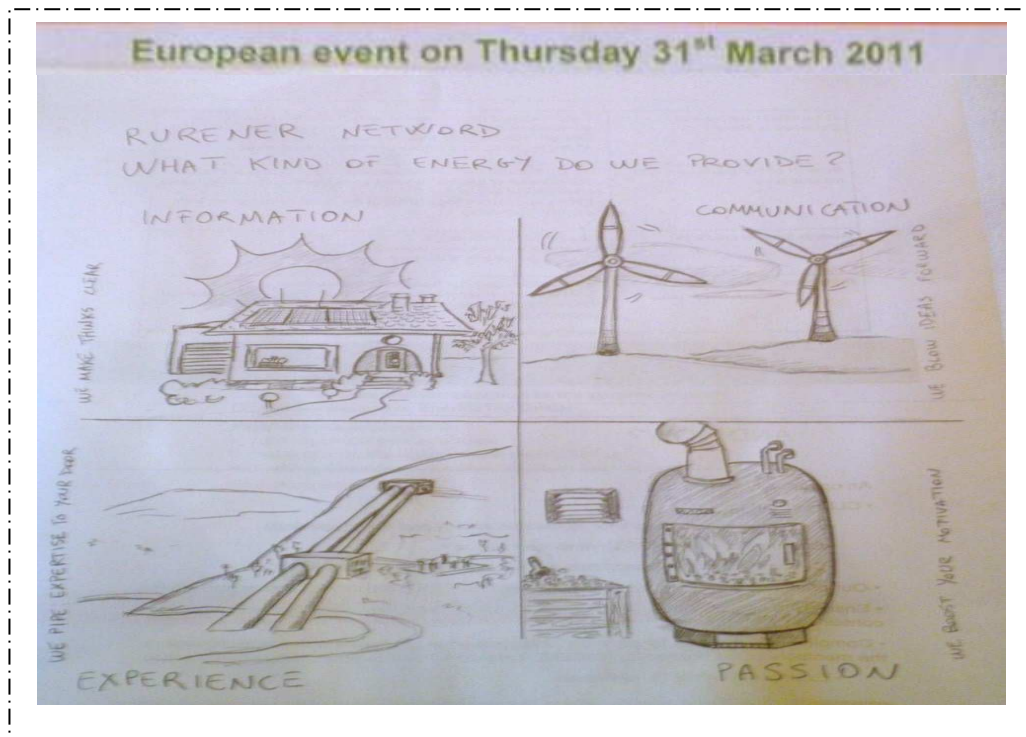




RURENER LOCAL ACTION PLAN : REPORT ON GLOBAL IMPACTS

Evaluation Report



Supported by



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1. Introduction, background and goal of the Report on global impacts

The RURENER Project, network of rural communities for energetic neutrality, is promoted and co-financed by the Intelligent Energy - Europe programme on behalf of the European Commission and lasts for three years (2009-2011). Its main objectives are to

- involve rural communities in the design of energy policies in order to achieve energy neutrality and
- promote an innovative development that encourage public and private investment in renewable energy sources and rational use of energy in rural areas.

The project gives methodological and technical support and sets-up a network that facilitates the exchange of experiences, resources and tools.

To determine the effectiveness of local energy policy, it is necessary to assess its impact on energy savings, energy-neutrality and sustainable development of each community. This report shows the results of application of the AHP (Analytic Hierarchy Process) method as a tool for assessing the impacts caused by the Local Action Plans of the communities participating in the RURENER project in order to prioritize these actions according to their efficiency.

During the 3rd coordination meeting carried out in Tirano (Italy) on March 2010, the consortium partners agreed about the RES and RUE sustainability in rural projects (figure 1) and about the 6 main criteria divided in 15 elements on which we would base the scope, strategies and goals of the RLAP (table 2).

Figure 1. Issues for evaluation framework sustainability and their impacts



2. Project context & project objectives

The project objectives are:

- To improve on the road towards energetic-neutrality at small rural communities level
- To support technically villages and small cities in rural areas to achieve energetic neutrality
- To facilitate the exchange of experiences, resources and tools by means of an active network
- To stimulate public and private investments on renewable energy sources (RES) and rational use of energy (RUE) in rural areas
- To stimulate use of local resources (biomass, wind energy, solar energy, hydroelectric power)
- To promote energetic neutral communities and innovative local development in Europe.

Fourteen rural communities belonging to seven countries from the European Union (see table 1) participate in RURENER project since its beginning. Beside these pilots, four communities joined the project in November 2010, as you can see in figure 2.

Figure 2: Rural communities participating in RURENER project (Source: www.rurener.eu)



Table 1: Rurener pilot communities 03/2011

Pos.		Community	Country	Partner
1	Pilot	Adzeneta del Maestrat	Spain	INTERCOOP
2	Pilot	Calimanesti Caciulata	Romania	UBC
3	Twin	Capu Campului	Romania	UBC
4	Pilot	Cevennes et Montagne Ardechoise	France	ADIMAC
5	Twin	Hangu	Romania	UBC
6	Pilot	Keratea	Greece	CRES
7	Pilot	Nagypali	Hungary	BZAKA
8	Pilot	Nikiforos Dramas	Greece	TEI KAVALAS
9	Twin	Pancesti	Romania	UBC
10	Pilot	Perkupa	Hungary	BZAKA
11	Pilot	Peyrelevade	France	ADIMAC
12	Pilot	Schladen	Germany	EMT
13	Pilot	Schöningen	Germany	EMT
14	Twin	St. Bonnet le froid	France	ADIMAC
15	Pilot	St. Etienne de Lugdares	France	ADIMAC
16	Twin	St. Germain Le Herm	France	ADIMAC
17	Twin	Slanic Moldova	Romania	UBC
18	Pilot	Tasca	Romania	UBC
19	Pilot	Tirano	Italy	IREALP
20	Pilot	Wesendorf	Germany	EMT

Each one of these rural communities have started a number of short, medium and long term projects that have being called RURENER Local Action Plan (RLAP). These actions have been classified into four groups according to their main objectives:

- Renewable energies
- Energy savings
- Communication awareness
- Monitoring

To determine the effectiveness of these actions and, therefore, the effectiveness of energetic policies, it is necessary assess their impact on energy savings, energetic neutrality and sustainable development of each community. This assessment, especially that one regarding to sustainable local development, is a complex process that requires a great quantity of information from different actors and tools to assess environmental, social, economic and institutional impacts.

Moreover, it is intended to extrapolate results to other rural communities interested in RURENER Project, applying actions similar to that ones developed by pilot communities but adapted to their own features. For this reason, a supporting tool based on the Analytic Hierarchy Process for decision-making is going to be developed. This tool will help to determine which kind of projects could be adapted to obtain a better result, from the perspective of the new participant community.

3. Multiple criteria decision analysis in European Projects

Multiple criteria decision-making (MCDM) approaches are major parts of decision theory and analysis. They seek to take explicit account of more than one criterion in supporting the decision process. The aim of MCDM methods is to help decision-makers learn about the problems they face, to learn about their own and other parties' personal value systems, to learn about organizational values and objectives, and through exploring these in the context of the problem to guide them in identifying a preferred course of action (Kamal, 2001).

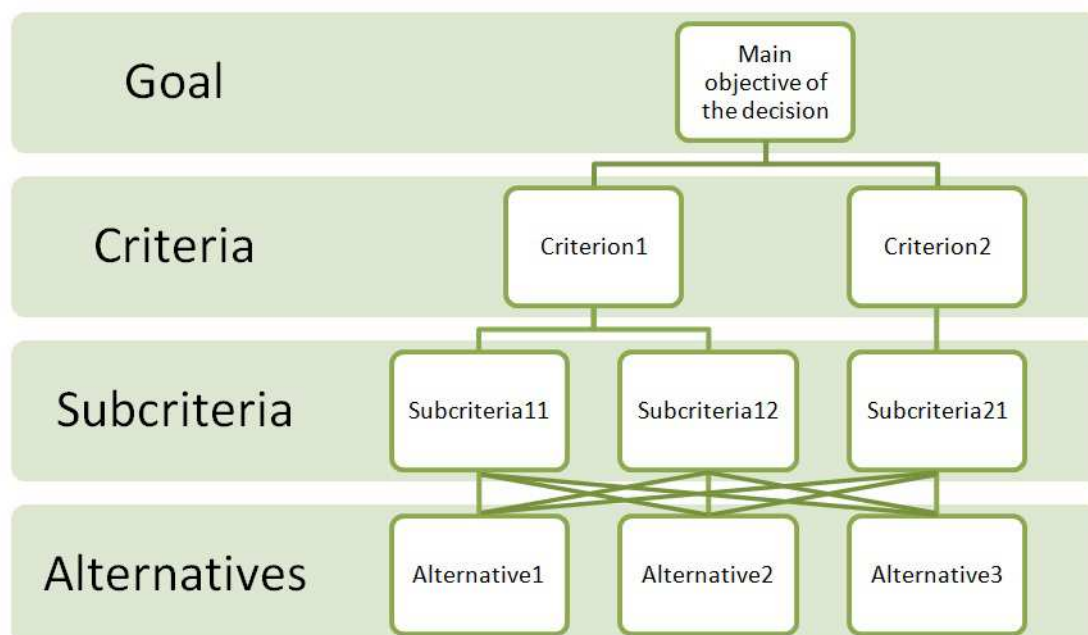
Multiple criteria decision analysis have been used in some European projects found in literature. For example, the paper titled "Multi-criteria Assessment of Ecosystems and Biodiversity: New Dimensions and Stakeholders in the South of France" (Shmelev, 2011), summarizes research undertaken to develop a methodology for multi-criteria assessment of biodiversity which takes into account a multitude of criteria and stakeholder perspectives. It presents the results of analytical work undertaken on the basis of interviews carried out in the Provence-Alpes-Côte d'Azur region of France, focusing on biodiversity in the Réserve Naturelle Coussouls de Crau. This paper addresses three main issues: selection of the multi-criteria assessment method, selection of the assessment criteria, and a comparison of stakeholder interests in the context of biodiversity analysis.

4. Methodology description: the Analytic Hierarchy Process (AHP)

MCDA “is a term that includes a set of concepts, methods and techniques that seek to help individuals or groups to make decisions, which involve several points of view in conflict and multiple stakeholders”. There are several models that can be used in a decision-making process and there is no best model. In this work, the use of two well-known MCDA techniques is proposed, that is, Analytic Hierarchy Process and Analytic Network Process. Combining them allows us to use the one that offers most advantages in each step of the model.

The Analytic Hierarchy Process developed by Thomas Saaty (Saaty, 1980, 1996, 2001) is a multicriteria decision-making technique which decomposes a complex problem into a hierarchy, in which each level is composed of specific elements. The main objective of the decision lies at the top of the hierarchy, and the criteria, subcriteria and the decision alternatives are at the descending levels of this hierarchy.

Figure 3: Hierarchical model structure



Once the hierarchical model has been structured for the problem, the participating decision makers provide pair wise comparisons for each level of the hierarchy, in order to obtain the weight factor of each element at that level with respect to one element in the next level. This weight factor provides a measure of the relative importance of this element for the decision maker.

The procedure for using the AHP (Saaty, 2008) can be summarized as:

1. Model the problem as a hierarchy containing the decision goal, the alternatives for reaching it, and the criteria for evaluating the alternatives.
2. Establish priorities among the elements of the hierarchy by making a series of judgments based on pair-wise comparisons of the elements.
3. Synthesize these judgments to yield a set of overall priorities for the hierarchy.
4. Check the consistency of the judgments.
5. Come to a final decision based on the results of this process.

If the number of alternatives is higher than 7 ± 2 , it is recommended to use the ratings model, consisting of constructing a categorical scale to each criterion on which different alternatives should be compared. The prototype of the category must be specified trying to avoid ambiguities, as different interpretations should be produced by different assessors and they could be used without distinction to grade two alternatives with different preferential value.

5. Methodology application of AHP as method to the RURENER Project

5.1. Problem structure

The objective of the RURENER evaluation process as D15 is to determine the most efficient activities in terms of impacts on rural development. So, the goal can be defined as *“energy activities references according to their impacts on rural development”*.

Criteria used to assess the impact of each alternative are fifteen energetic, economic, social and environmental indicators. Table 2 shows these indicators grouped by criteria and sub-criteria.

Table 2: Criteria and sub-criteria used to realize the prioritization

Criteria	Subcriteria
01 Energy neutrality (RES)	C11 Energy neutrality
02 Energy saving (RUE)	C21 Energy saving
03 Economic impacts	C31 Cost efficiency
	C32 Profitability
	C33 Investments
	C34 Capacity building
04 Institutional impacts	C41 Institutional impacts
05 Social impacts	C51 Employment
	C52 Social involvement
	C53 Avoidance of nuisance to neighbours
06 Environmental impacts	C61 Use of renewable energies
	C62 Minimization of energy, water and material consumption and land utilization
	C63 Minimization of green house gas emissions, land and water pollution
	C64 Maximization of resource re-use and or recycling
	C65 Maintenance and restoration of ecological diversity

Some observations to table 2 are the following ones:

- Criteria have been defined to maximize.
- The RLAP main object is achieved energetic neutrality in each rural community, so energetic criteria (01 and 02) which were supposed the most important ones, are two different criteria and they are not in the same global criterion.

- 01 and 02 are quantitative criteria, and they are measurable by means of the energetic balance included in a tool provided by the RURENER consortium to the communities. The other criteria are qualitative and they depend on the perception of people doing the assessment in each community.

Referring to the last level of the hierarchy, the alternatives to prioritize according to their impacts are the different RLAP. So there are fourteen different alternatives, one for each participating community (table 3).

Table 3: Alternatives to analyze

RURENER Local Action Plan	
A Atzeneta del Maestrat	H Perkupa
B Calimanesti-Caciulata	I Peyrelevade
C Slanic-Moldova	J Cévennes et Montagne Ardéchoise
D Tasca	K Schladen
E Keratea	L Schöningen
F Nikiforos-Dramas	M Wesendorf
G Nagypali	N Tirano

5.2. Selection of the panel

Representatives from the pilot communities answered a questionnaire to assess the impacts of their own RLAP, because they were better informed about the performance and efficiency obtained in each community. They assigned "marks" according to their own feeling and vision to each of the qualitative criteria (from C31 to C65). Completed questionnaires were sent to the experts who were going to do the analysis of the project efficiency and the subsequent global evaluation. This panel, acting by consensus, assigned criteria weights and analyzed the final results obtained.

The questionnaire consists of fifteen questions, one for each indicator, and every question must be answered with a mark from 1 to 9, corresponding 1 to the lowest positive impact and 9 to the highest. These marks aim at demonstrating to the communities the higher or lower positive impact of the actions developed by them.

Figure 4 shows a part of the questionnaire proposed to the representatives of each participant community, and figure 5 shows an example of results from the questionnaire presented to these representatives as direct information.

Figure 4: Partial sample of the questionnaire proposed

RURENER Local Action Plan (RLAP) Evaluation Score Sheet

1. If your RLAP has achieved over the period under evaluation energy neutrality of:

	Points
Greater than 0 but equal to or less than 25% award 1 point	3
Greater than 25% but equal to or less than 50% award 3 points	
Greater than 50% but equal to or less than 75% award 5 points	
Greater than 75% but equal to or less than 100% award 7 points	
Greater than 100% award 9 points	
<i>Determine the energy neutrality increases with the RURENER energy balance tool against the baseline evaluation period</i>	

2. If your RLAP over the period under evaluation has achieved energy savings of:

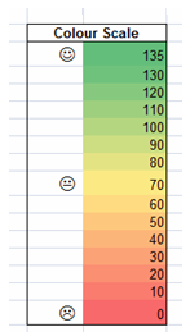
	Points
Greater than 0 but equal to or less than 5% award 1 point	1
Greater than 5% but equal to or less than 10% award 3 points	
Greater than 10% but equal to or less than 15% award 5 points	
Greater than 15% but equal to or less than 20% award 7 points	
Greater than 20% award 9 points	
<i>Determine the energy savings with the RURENER energy balance tool against the baseline evaluation period</i>	

3. If your RLAP over the period under evaluation was towards achieving energy neutrality and energy saving:

	Points
Very little cost efficient, award 1 point	5
Little cost efficient, award 3 points	
Satisfactorily cost efficient, award 5 points	
Highly cost efficient, award 7 points	
Very highly cost efficient, award 9 points	
<i>Cost efficient: benefits worth the cost, good practice standards, significant levels of benefits, benefits growing at reasonable cost, against the baseline evaluation period</i>	

Figure 5: Example of RLAP evaluation questionnaire results

1	Community member name	Energy Neutrality- RES	Energy Savings- RUE	Economic Impacts of LAP			Assesses Institutional Impacts	Social Impacts			Environmental Impacts						
2	Country name	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	Total
3	RLAP Score	3	1	5	1	1	1	1	1	1	1	1	1	1	1	1	21
4		3	1	2			1	1			1						
5																	



5.3. Decision-making process

The process followed to evaluate the impacts produced by the RLAP utilizes the AHP method using the “ratings” model to analyze the alternatives. Steps of this process are:

1. Identification of alternatives
2. Identification and grouping of criteria
3. Rating of alternatives
4. Weighted of criteria
5. Application of the model to prioritize the alternatives
6. Analysis of the results

Identification of alternatives and identification and grouping of criteria were explained in *a. Problem structure*.

5.4. Rating of alternatives

As noted above, given the large number of alternatives, the “ratings” model is recommended versus the pair wise comparison. First and second criteria, energetic neutrality and energy savings, are quantitative and it is taken as selected value the average value of the selected range, so values are as shown in tables 4 and 5.

Table 4: Energetic neutrality ratings

Category	Assigned value	Standard scale	Ideal
0%-25%	0,125	0,0417	0,124998
25%-50%	0,375	0,1250	0,375006
50%-75%	0,625	0,2083	0,625000
75%-100%	0,875	0,2917	0,874999
>100%	1,000	0,3333	1,000000

If the category selected is 10%-15%, the assigned value is the middle value for the category, i.e. 12,5% = 0,125.

The standard scale represents the proportion of preference of this option with respect to the sum, and the ideal value represents the proportion of preference of this option with respect to the maximum value.

Table 5: Energy saving ratings

Category	Assigned value	Standard scale	Ideal
0%-5%	0,025	0,0417	0,124998
5%-10%	0,075	0,1250	0,375006
10%-15%	0,125	0,2083	0,625000
15%-20%	0,175	0,2917	0,874999
>20%	0,200	0,3333	1,000000

On the other hand, for the remaining criteria (qualitative criteria), it has been used the same scale based on the categories used in the questionnaire (very little, little, satisfactorily, highly, very highly). Data shown in table 6 are obtained as result of making a pair wise comparison of these categories.

Table 6: Qualitative criteria ratings

Category	Very little	Little	Satisfactorily	Highly	Very highly	Standard scale	Ideal
Very little	1	1/2	1/3	1/4	1/5	0,0666	0,192978
Little	2	1	1	1/2	1/3	0,1393	0,406432
Satisfactorily	3	1	1	1	1/2	0,1882	0,555551
Highly	4	2	1	1	1	0,2631	0,771917
Very highly	5	3	2	1	1	0,3427	1,000000

5.5. Weight of criteria

The perception of the importance of the indicators used for the evaluation of impacts produced by each RLAP is different from one community to the other. The panel has decided to assign the global weights shown in table 7, by means of an average from several expert opinions. For this, each expert completed a form (see table 8) to realize paired comparisons of different criteria.

Table 7: Global weights assigned by the RURENER project panel

Criteria	Subcriteria	Weight
01 Energetic neutrality (RES)	C11	0,4655
02 Energy savings (RUE)	C21	0,2995
03 Economic impacts	C31	0,0174
	C32	0,0073
	C33	0,0283
	C34	0,0205
04 Institutional impacts	C41	0,0194
05 Social impacts	C51	0,0480
	C52	0,0252
	C53	0,0132
06 Environmental impacts	C61	0,0228
	C62	0,0090
	C63	0,0090
	C64	0,0124
	C65	0,0026

5.6. Application of the model to analyze the alternatives

With the aim to obtain the most accurate results for actions, these are going to be analyzed separately according to their main objective group:

- Renewable energies
- Energy savings
- Communication awareness
- Monitoring

In this case, a model will be constructed considering the influence of each action (grouped into four categories) into the indicators, but paired comparisons are going to be substituted by values derived from questionnaires (ratings for RLAP).

Annex I shows all the actions developed by the pilot communities during the evaluation period. They are classified into the four abovementioned groups. To make a more accurate assessment in an easy way, 4 models (*networks*) will be constructed, one per group. If there is any action (at least one) in a community that influences a criterion, then the category where this action is clustered, influences the same criterion.

Annex II presents a matrix that shows the influence of each action over each indicator. “1” means that the action influences the correspondent criterion. These influences have been determined from description of each action, although a more accurate result would be obtained if these influences had been determined directly by representatives of pilot communities.

Figure 6: Example about the process to assign values to the issues

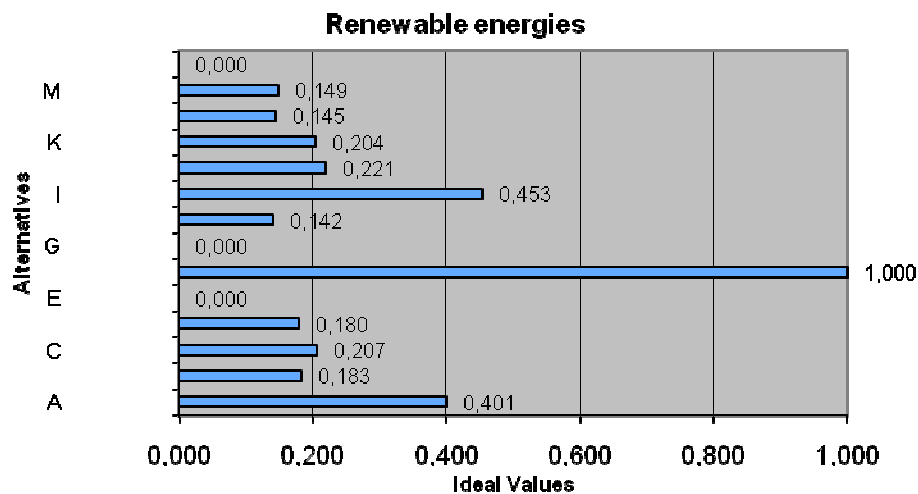


Figure 6 shows an example of the process to assign values to the issues, specifically for Slanic-Moldova (Romania) and the criterion C41, Institutional impacts.

5.7. Results Analysis

The following figures show the ideal values obtained for alternatives in each category. Besides, the three better local actions in each category are described.

Figure 7: Results for alternatives. Category Renewable Energies (Ideal values)



According to figure 7, the best results for category Renewable Energies are obtained by the following local actions:

Renewable energies

4118 Project description: - Objective: Valorisation des végétaux en biogaz - Peyrelevade (France)

4118 Project description: - Objective: Sécurisation de l'approvisionnement local en bois pour chaufferie bois -Peyrelevade (France)

4118 Project description: - Objective: Production d'énergie photovoltaïque - Peyrelevade (France)

4118 Project description: - Objective: Extension du parc éolien -Peyrelevade (France)

4118 Project description: - Objective: Connaitre le potentiel de production - Peyrelevade (France)

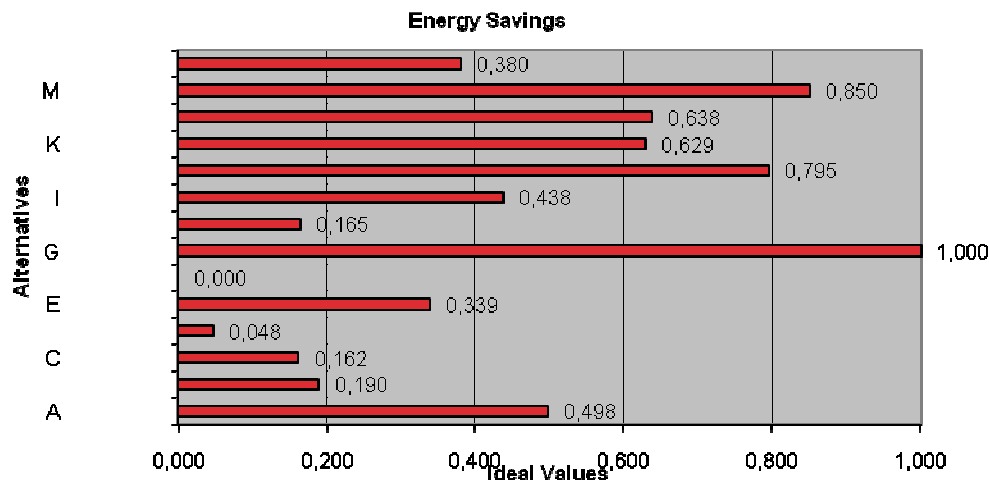
4115 Project description: Wind farm in the municipality land Objective: Installation and function of a wind farm in the municipality land -Nikiforos-Dramas (Greece)

4115 Project description: Energetic neutrality Objective: Becoming 100% energetic neutral -Nikiforos-Dramas (Greece)

4115 Project description: Capability Analysis for local biomass energy use Objective: Identifying and mapping opportunities for using agriculture and forest biomass for energy purposes -Nikiforos-Dramas (Greece)

4110 Project description: Investiments of local solar ESF with private partners Objective: 3 plants -Atzaneta del Maestrat (Spain)

4110 Project description: Installing pv-solar generator on public roofs Objective: solar power on public roofs -Atzaneta del Maestrat (Spain)

Figure 8: Results for alternatives. Category Energy Saving (Ideal values)

According to figure 8, the best results for category Energy Savings are obtained by the following local actions:

Energy Saving

4222 Project description: modernizing buildings Objective: energetic modernisation of public and private buildings -Wesendorf (Germany)

4222 Project description: LED streetlighting Objective: changing the old streetlighting into modern dazzle-free LED streetlighting -Wesendorf (Germany)

4219 Project description: réhabilitation des bâtiments publics : changement des fenêtres de l'école, amélioration de l'éclairage public, réhabilitation d'un atelier pour un artisan, ... Objective: amélioration de la performance énergétique des bâtiments publics et des consommations de la comcom -Cévennes et Montagne Ardéchoise (France)

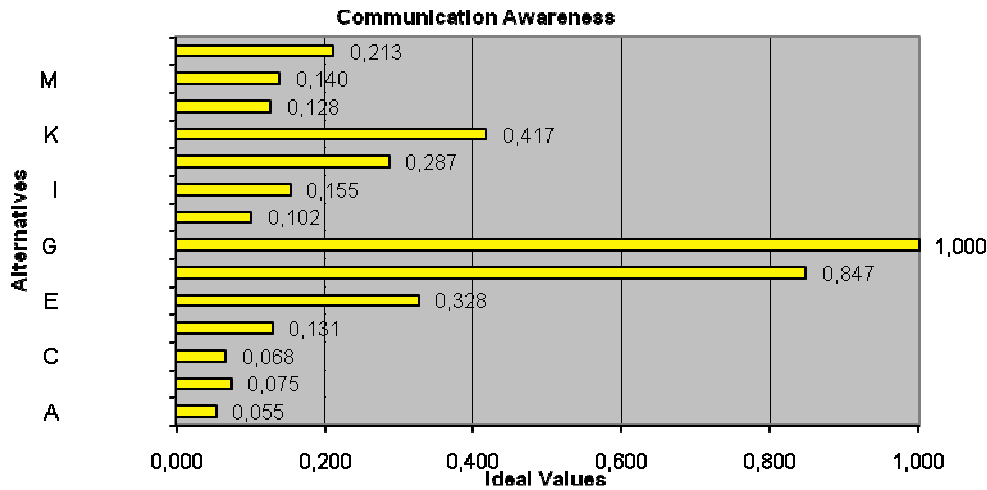
4219 Project description: réhabilitation des bâtiments privés, notamment sur la performance énergétique Objective: PIG (programme d'intérêt général) - Cévennes et Montagne Ardéchoise (France)

4219 Project description: intégrer dans les appels d'offre des conditions pour amener à l'utilisation des matériaux locaux et la performance énergétique Objective: Acculturation des décideurs publics -Cévennes et Montagne Ardéchoise (France)

4219 Project description: Assurer un soutien au maintien de la ligne ferroviaire du Cévenol et de la gare de la Bastide Objective: Transport : soutien à la ligne ferroviaire -Cévennes et Montagne Ardéchoise (France)

4216 Project description: energetic modernisation of public an private buildings Objective: modernizing buildings -Nagypali (Hungary)

Figure 9: Results for alternatives. Category Communication Awareness (Ideal values)



According to figure 9, the best results for category Communication Awareness are obtained by the following local actions:

Communication - Awareness

- 4320 Project description: sunroof cataloge Objective: identifying possible roofs in the commun solar systems -Schladen (Germany)

- 4320 Project description: School/Kindergarden learn unit Objective: A learning unit about e saving and rational use of energy etc. shall rise the awareness of children and their parents -Sch (Germany)

- 4320 Project description: local Rurener website Objective: local Rurener website -Sch (Germany)

- 4320 Project description: local energy day, Rurener Roadshow Objective: public event in the hall, with information events, lectures, local craftsmen, etc. -Schladen (Germany)

- 4320 Project description: Bizep Objective: Informationcenter on local renewable energies in Beu Schladen (Germany)

- 4316 Project description: to take a part on the Hungarian Renexpo in the field of renewable e Objective: renewable energy conference Renexpo -Nagypali (Hungary)

- 4316 Project description: newspaper issues about Nagypáli projects Objective: local newsp Nagypali (Hungary)

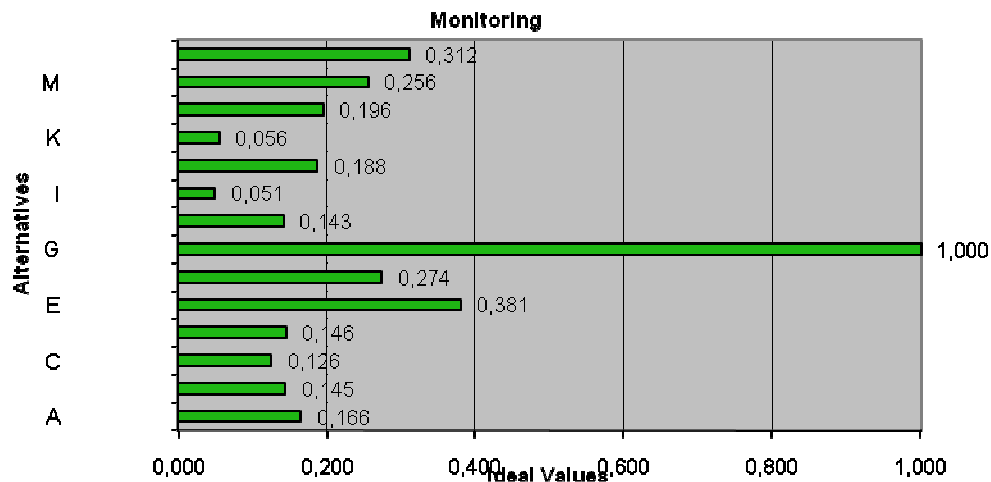
- 4316 Project description: Informations on Nagypali and RURENER, the local action plan and e saving Objective: local website -Nagypali (Hungary)

- 4316 Project description: All actions and projects are published in nagypali.eu Objective: publ the Nagypáli website -Nagypali (Hungary)

- 4315 Project description: Raising awareness of elementary/ high school pupils Objective: S projects in collaboration with teachers of local schools to raise awareness of children on RES/ Nikiforos-Dramas (Greece)

- 4315 Project description: Local RURENER website Objective: School classes or groups to fill information about local RUE/RES actions the Nikiforos.rurener.gr -Nikiforos-Dramas (Greece)

Figure 10: Results for alternatives. Category Monitoring (Ideal values)

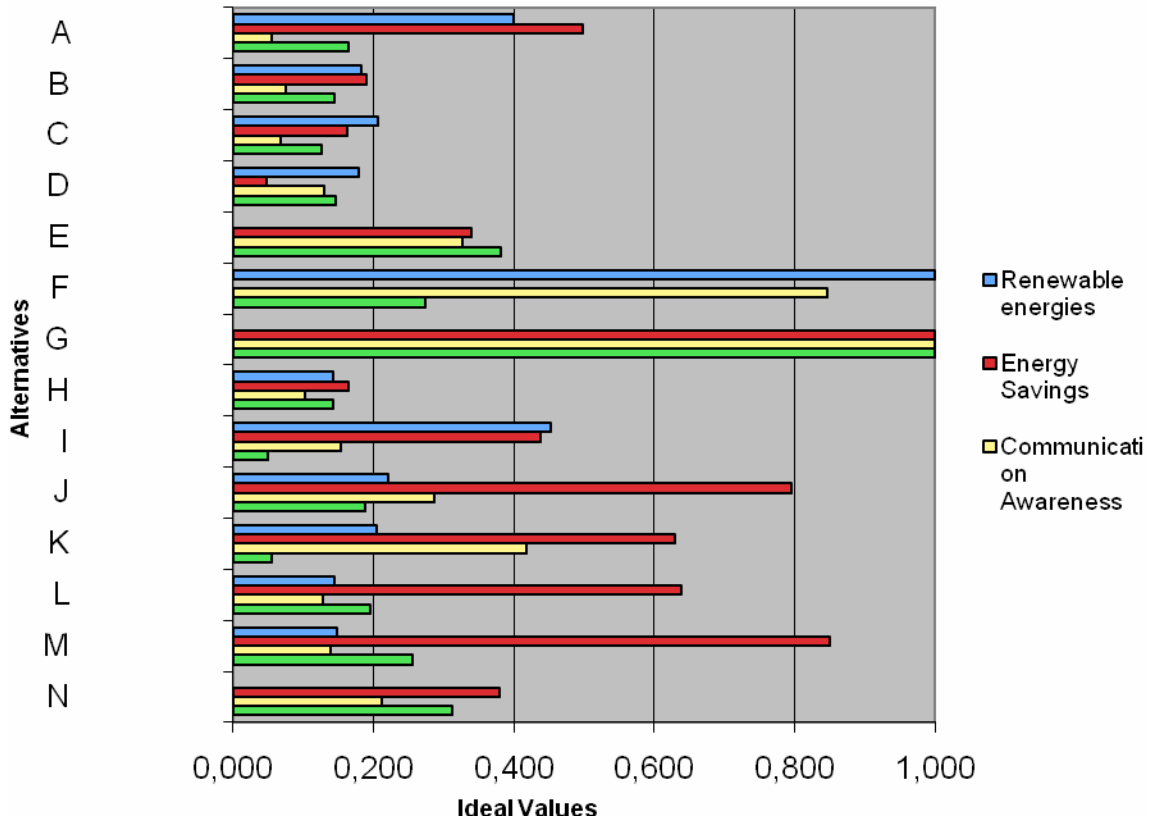


According to figure 10, the best results for category Monitoring are obtained by the following local actions:

Monitoring	
4414	Project description: Evaluation, S9, M14, L5 Objective: monitoring of the achievements. Use of RURENER tools and audits -Keratea (Greece)
4416	Project description: monitoring by Rurener tools about the annual energetic balance Objective: Evaluation -Nagypali (Hungary)
4423	Project description: Individuation of energy-consumptive sectors Objective: To provide an estimation of consumption for heating and cooling systems, production, transport, lighting... -Tirano (Italy)
4423	Project description: Evaluation Objective: Monitoring by means of Rurener tools the annual energetic balance -Tirano (Italy)

Figure 11: Results for alternatives. All categories (Ideal values)

Results for alternatives



It is important to remember at this point, that these results depend on perception of representatives from communities and, moreover, values will change if criteria weights are modified.

6. Application of the model obtained to extrapolate the results for new participants in the RURENER Network

The main interest of developing this model of prioritization of actions is to provide a supporting tool to extrapolate the obtained results for other communities that want to be integrated into RURENER Network and to achieve energy neutrality. Considering that each community has its own characteristics and necessities, and therefore a different perspective about the importance of energetic, economic, social and environmental impacts, it is required for representatives of these communities to consider their perception regarding the various factors when selecting a project type or another.

To obtain this information, the new communities are invited to realize, by means of filling a form (table 8 shows results for first and second level criteria), the weighting of criteria and sub criteria defined above. This new assignment of weights to the criteria will be made in the conventional way, i.e., paired comparisons of different criteria.

Table 8: Form results from the new community about first and second level criteria importance with respect to RLAP impacts

Indicator A			Indicator B
O1 Energy neutrality (RES)		2	O2 Energy savings (RUE)
O1 Energy neutrality (RES)		3	O3 Economic impacts
O1 Energy neutrality (RES)		5	O4 Institutional impacts
O1 Energy neutrality (RES)		3	O5 Social impacts
O1 Energy neutrality (RES)		3	O6 Environmental impacts
O2 Energy savings (RUE)		3	O3 Economic impacts
O2 Energy savings (RUE)		5	O4 Institutional impacts
O2 Energy savings (RUE)		3	O5 Social impacts
O2 Energy savings (RUE)		3	O6 Environmental impacts
O3 Economic impacts		3	O4 Institutional impacts
O3 Economic impacts	1	1	O5 Social impacts
O3 Economic impacts	1	1	O6 Environmental impacts
O4 Institutional impacts	1	1	O5 Social impacts
O4 Institutional impacts	1	1	O6 Environmental impacts
O5 Social impacts	1	1	O6 Environmental impacts

Referring to economic impacts:

Indicator A			Indicator B
C31 Cost efficiency	5		C32 Profitability
C31 Cost efficiency	3		C33 Investments
C31 Cost efficiency	5		C34 Capacity building
C32 Profitability		3	C33 Investments
C32 Profitability	1	1	C34 Capacity building
C33 Investments	1	1	C34 Capacity building

Referring to social impacts:

Indicator A			Indicator B
C51 Employment		2	C52 Social involvement
C51 Employment		2	C53 Avoidance of nuisance to neighbours
C52 Social involvement	1	1	C53 Avoidance of nuisance to neighbours

Referring to environmental impacts:

Indicator A			Indicator B
C61 Use of renewable energies	2		C62 Minimization of energy, water and material consumption and land utilization
C61 Use of renewable energies	2		C63 Minimization of green house gas emissions, land and water pollution
C61 Use of renewable energies	1	1	C64 Maximization of resource re-use and or recycling
C61 Use of renewable energies		3	C65 Maintenance and restoration of ecological diversity
C62 Minimization of energy, water and material consumption and land utilization	1	1	C63 Minimization of green house gas emissions, land and water pollution
C62 Minimization of energy, water and material consumption and land utilization	1	1	C64 Maximization of resource re-use and or recycling
C62 Minimization of energy, water and material consumption and land utilization		4	C65 Maintenance and restoration of ecological diversity
C63 Minimization of green house gas emissions, land and water pollution		3	C64 Maximization of resource re-use and or recycling
C63 Minimization of green house gas emissions, land and water pollution		3	C65 Maintenance and restoration of ecological diversity
C64 Maximization of resource re-use and or recycling	1	1	C65 Maintenance and restoration of ecological diversity

This form uses a Fundamental Scale of absolute numbers to make pairwise comparisons between pairs of criteria. It assigns numbers in response to the question about how many times a member of a pair dominates the other with respect to RLAP impacts (1 = equal, 3 = moderately dominant, 5 = strongly dominant, 7 = very strongly dominant and 9 = extremely dominant. 2, 4, 6 and 8 are intermediate values).

Figure 12: Comparison Matrix for the first and second level criteria as perceived by those responsible for the new community

	A	B	C	D	E	F	G
First level criteria							
	C1	C2	C3	C4	C5	C6	
C1	1	1/2	1/3	1/5	1/3	1/3	
C2	2	1	1/3	1/5	1/3	1/3	
C3	3	3	1	1/3	1	1	
C4	5	5	3	1	1	1	
C5	3	3	1	1	1	1	
C6	3	3	1	1	1	1	1
Second level criteria							
C3	C31	C32	C33	C34			
C31	1	5	3	5			
C32	1/5	1	1/3	1			
C33	1/3	3	1	1			
C34	1/5	1	1	1			
C5	C51	C52	C53				
C51	1	1/2	1/2				
C52	2	1	1				
C53	2	1	1				
C6	C61	C62	C63	C64	C65		
C61	1	2	2	1	1/3		
C62	1/2	1	1	1	1/4		
C63	1/2	1	1	1/3	1/3		
C64	1	1	3	1	1		
C65	3	4	3	1	1		

Figure 14: Global weights assigned by those responsible for the new community involved in the project

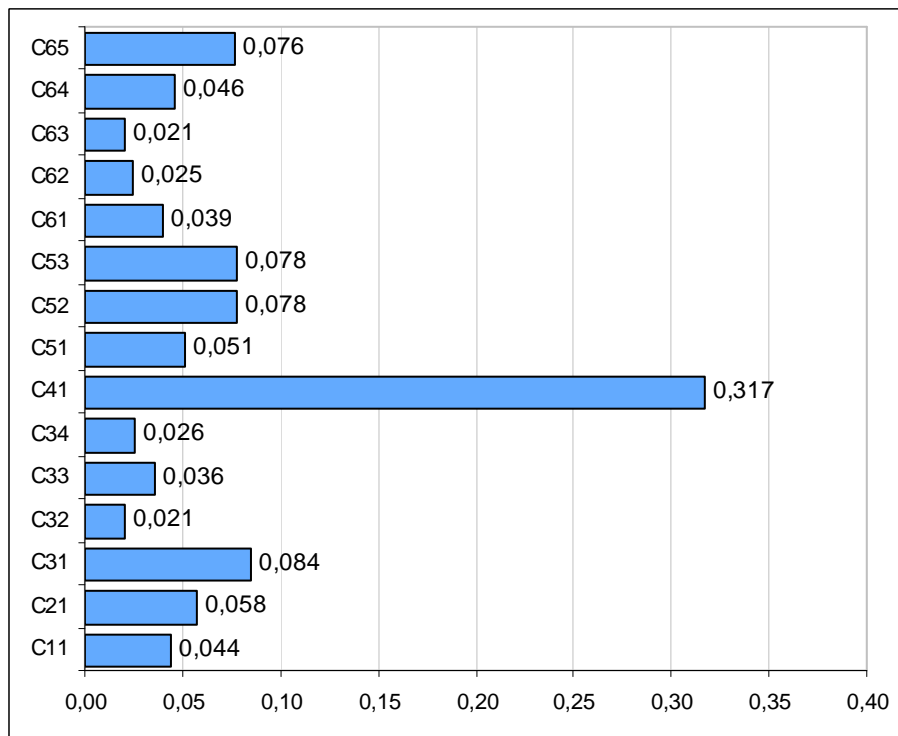
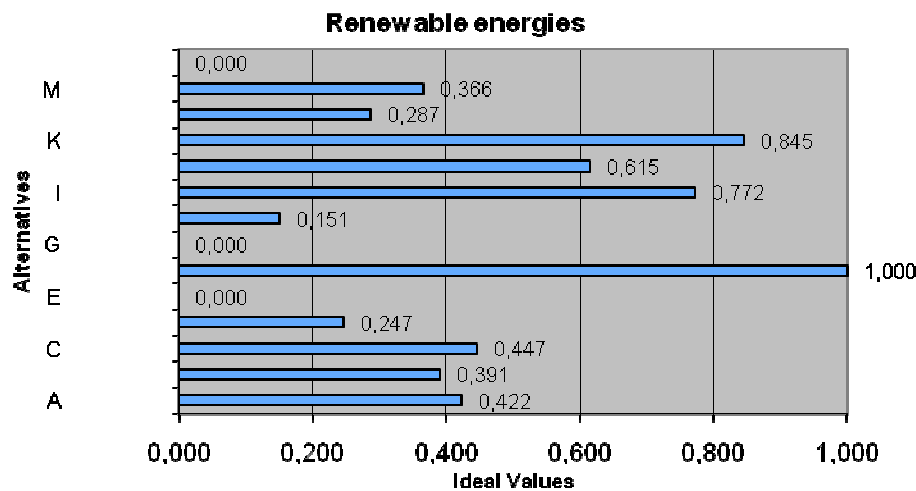


Figure 15: Results for alternatives according to the criteria of those responsible for the new community. Category Renewable Energies (Ideal values)



According to figure 15, the best results for category Renewable Energies are obtained by the following local actions:

4120 Project description: solar power on public roofs Objective: installing pv-solar generator on public roofs -Schladen (Germany)

4120 Project description: short-rotation plantation Objective: growing local biomass for the woodchip boiler with R&D -Schladen (Germany)

4120 Project description: energetic neutrality Objective: becoming 100% energetic neutral -Schladen (Germany)

4120 Project description: Biogasplant Beuchte Objective: enhancing the woodchipboiler and the local heating grid -Schladen (Germany)

4118 Project description: - Objective: Valorisation des végétaux en biogaz - Peyrelevade (France)

4118 Project description: - Objective: Sécurisation de l'approvisionnement local en bois pour chaufferie bois -Peyrelevade (France)

4118 Project description: - Objective: Production d'énergie photovoltaïque - Peyrelevade (France)

4118 Project description: - Objective: Extension du parc éolien -Peyrelevade (France)

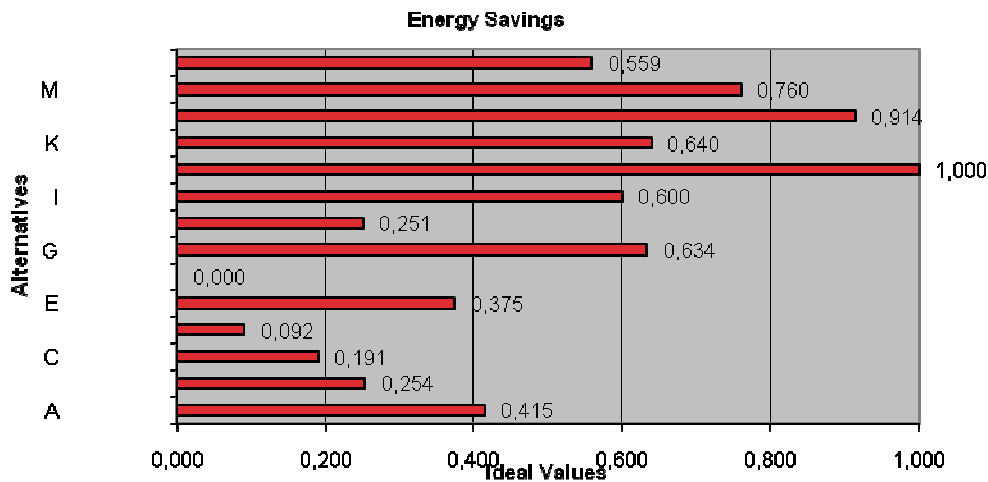
4118 Project description: - Objective: Connaitre le potentiel de production - Peyrelevade (France)

4115 Project description: Wind farm in the municipality land Objective: Installation and function of a wind farm in the municipality land -Nikiforos-Dramas (Greece)

4115 Project description: Energetic neutrality Objective: Becoming 100% energetic neutral -Nikiforos-Dramas (Greece)

4115 Project description: Capability Analysis for local biomass energy use Objective: Identifying and mapping opportunities for using agriculture and forest biomass for energy purposes -Nikiforos-Dramas (Greece)

Figure 16: Results for alternatives according to the criteria of those responsible for the new community. Category Energy Savings (Ideal values)



According to figure 16, the best results for category Energy Savings are obtained by the following local actions:

4222 Project description: modernizing buildings Objective: energetic modernisation of public and private buildings -Wesendorf (Germany)

4222 Project description: LED streetlighting Objective: changing the old streetlighting into modern dazzle-free LED streetlighting -Wesendorf (Germany)

4221 Project description: modernised model building Objective: example of energetic modernisation of an public building, e.g. House of Clubs or Schoeninger Tafeln -Schöningen (Germany)

4221 Project description: modernisation of houses Objective: energetic modernisation of housing space -Schöningen (Germany)

4221 Project description: LED streetlighting Objective: changing the old streetlighting into modern dazzle-free LED streetlighting -Schöningen (Germany)

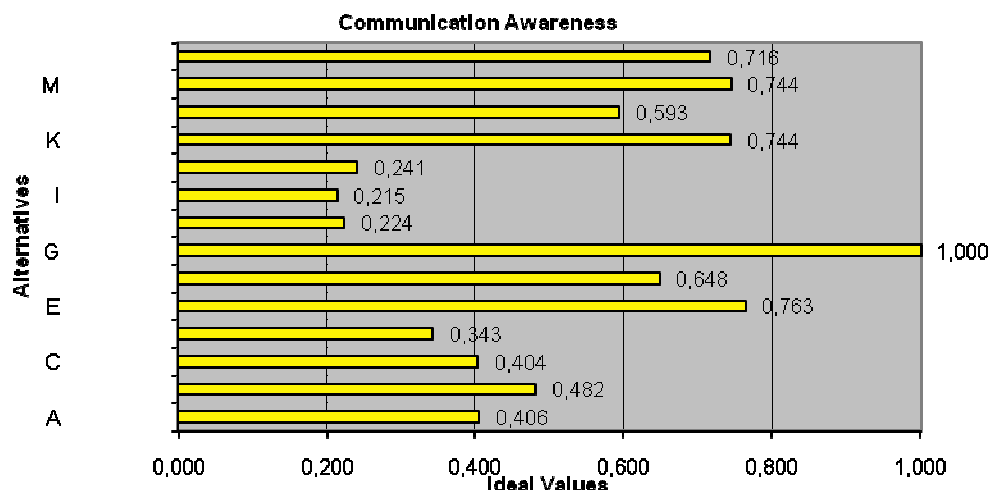
4219 Project description: réhabilitation des bâtiments publics : changement des fenêtres de l'école, amélioration de l'éclairage public, réhabilitation d'un atelier pour un artisan, ... Objective: amélioration de la performance énergétique des bâtiments publics et des consommations de la comcom -Cévennes et Montagne Ardéchoise (France)

4219 Project description: réhabilitation des bâtiments privés, notamment sur la performance énergétique Objective: PIG (programme d'intérêt général) - Cévennes et Montagne Ardéchoise (France)

4219 Project description: intégrer dans les appels d'offre des conditions pour amener à l'utilisation des matériaux locaux et la performance énergétique Objective: Acculturation des décideurs publics -Cévennes et Montagne Ardéchoise (France)

4219 Project description: Assurer un soutien au maintien de la ligne ferroviaire du Cévenol et de la gare de la Bastide Objective: Transport : soutien à la ligne ferroviaire -Cévennes et Montagne Ardéchoise (France)

Figure 17: Results for alternatives according to the criteria of those responsible for the new community. Category Communication-Awareness (Ideal values)



According to figure 17, the best results for category Communication-Awareness are obtained by the following local actions:

4322 Project description: sunroof cataloge Objective: identifying possible roofs in the community for solar systems -Wesendorf (Germany)

4322 Project description: School/Kindergarden learn unit Objective: A learning unit about energy saving and rational use of energy etc. shall rise the awareness of children and their parents -Wesendorf (Germany)

4322 Project description: local Rurener website Objective: one schoolclass or group get's wesendorf.rurener.de, to be filled with informations about RUE and the Wesendorf local action plan. -Wesendorf (Germany)

4322 Project description: local energy day, Rurener Roadshow Objective: public event in the public hall, with information events, lectures, local craftsmen, etc. -Wesendorf (Germany)

4316 Project description: take part to renewable energy conference Renexpo Objective: renewable energy conference Renexpo -Nagypali (Hungary)

4316 Project description: newspaper issues about Nagypáli projects Objective: local newspaper -Nagypali (Hungary)

4316 Project description: Informations on Nagypali and RURENER, the local action plan and energy saving Objective: local website -Nagypali (Hungary)

4316 Project description: All actions and projects are published in nagypali.eu Objective: publicity in the Nagypáli website -Nagypali (Hungary)

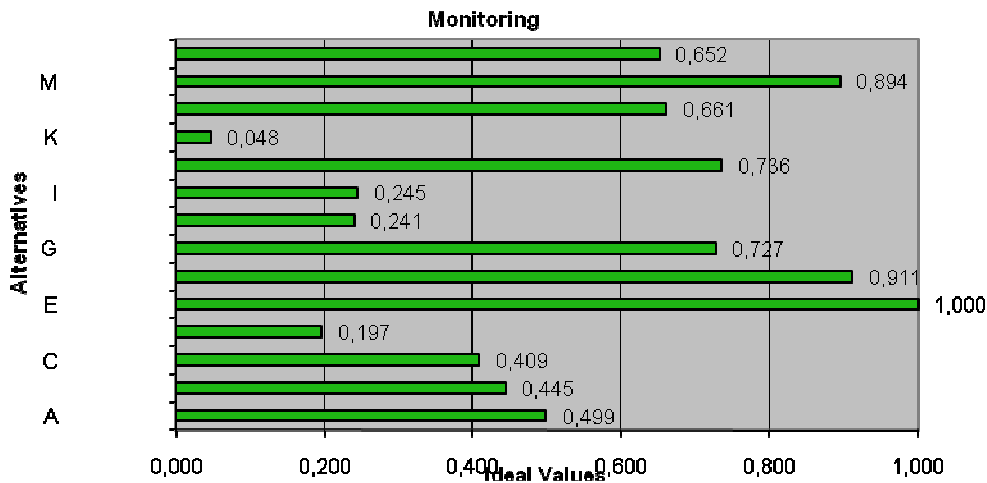
4314 Project description: Public Awareness, S7 Objective: Public Awareness via the municipal website and energy events -Keratea (Greece)

4314 Project description: Material Distribution, S8 Objective: Handouts, placed in public areas like town hall -Keratea (Greece)

4314 Project description: Local Energy Day, S5 Objective: Public Event in the Public Hall -Keratea (Greece)

4314 Project description: Environmental Education, S6 Objective: Lectures concerning energy saving RES and rational use of energy in the schools. Study tours (CRES Park of Energy Awareness in Keratea) -Keratea (Greece)

Figure 18: Results for alternatives according to the criteria of those responsible for the new community. Category Monitoring (Ideal values)



According to figure 18, the best results for category Monitoring are obtained by the following local actions:

4422 Project description: Evaluation Objective: monitoring by Rurener tools about the annual energetic balance -Wesendorf (Germany)

4415 Project description: Evaluation Objective: Monitoring by RURENER tools about the annual energetic balance and impact on local sustainable development -Nikiforos-Dramas (Greece)

4414 Project description: Evaluation, S9, M14, L5 Objective: monitoring of the achievements. Use of RURENER tools and audits -Keratea (Greece)

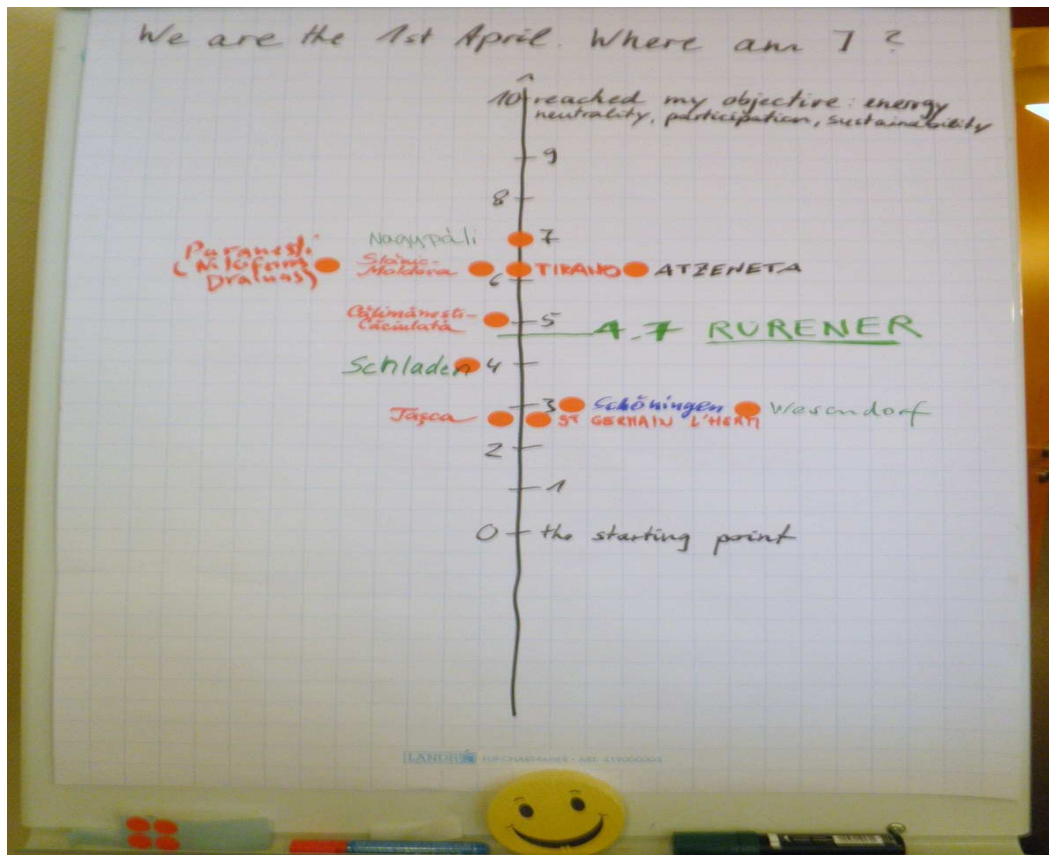
The panel of RURENER Project will propose to the new community to explore the possibility of launching similar actions to those carried out in these communities, since they are the most likely to be adapted to the necessities of the community and get better results.

7. Reflexions and suggestions

Multiple criteria decision-making (MCDM) approaches are major parts of decision theory and analysis. They seek to take explicit account of more than one criterion in supporting the decision process. The aim of MCDM methods is to help decision-makers learn about the problems they face, to learn about their own and other parties' personal value systems, to learn about organizational values and objectives, and through exploring these in the context of the problem to guide them in identifying a preferred course of action.

Seizing the opportunity during our 4th coordination meeting with partners and majors held in Wesendorf (Germany), in the session of conclusions on April the 1st, 2011, the participants realized a self assessment of their respective RLAP's and evolution, the results of this appear in the following figure and serve to compare and to value the results reflected in the present report applying the indicated tools.

Figure 19. Self assessments of RLAP's evolution at April 1st 2011



The analysis undertaken within this task has shown that it is possible to develop a holistic methodology which would integrate economic, social, and environmental information within a multi-criteria decision-aid framework to

reflect the different values of particular RLAP's for the purposes of the whole Rurener Project impacts in rural development. The crucial elements of this approach are the following:

- I. Identification of a minimal coherent set of criteria to be taken into account (extensive stakeholder consultations are required to reach consensus on which criteria should be included, and the total number of criteria);
- II. Identification of alternatives to be compared not for competition just for bench and comparison;
- III. Selection of the multi-criteria aggregation procedure: method or its analogues, because it is capable to assign a range of objectives depending of the specific context/country;

Once a decision on the criteria, alternatives, and aggregation procedure has been made, a multi-criteria evaluation can be undertaken, with due attention to the sensitivity of the parameters used in the procedure.

Such an evaluation approach could be part of a wider system of adaptive governance which is being created around the "Rurener Way of Working". Following Ostrom (2008) and Shmelev (2011), such a system should comply with the following five principles from six selected criteria for Rurener (6 principals with 15 subcriteria), which have been identified on the basis of interdisciplinary studies of failed and successful common-pool resource-governance systems:

- 1) *Achieving accurate and relevant information*, and a Rurener common tool,
- 2) *Dealing with conflict*,
- 3) *Enhancing rule compliance*,
- 4) *Providing partners infrastructure experiences*,
- 5) *Encourage adaptation and change* (RLAP's stakeholders should be open to negotiations be ready to adapt, and be ready to legitimize change which emerges out of friendly collaboration by twinning or other specific cooperatives actions).

One would hope that, using the principles outlined above, it should be possible to develop an effective governance system that will be capable of dealing with contradictions highlighted in this report in order to manage better the impacts on rural development under RLAP's .

8. References

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9. Annexes

Annex I. RURENER Actions Evaluated

A	Atzaneta del Maestrat	Spain	
A01	Installing pv-solar generator on public roofs	solar power on public roofs	Renewable Energies
A02	Investments of local solar ESF with private partners	3 plants	Renewable Energies
A03	energetic modernisation water darinage and water hell water supply (total 7 plots)	modernizing buildings	Energy Savings
A04	Schoolclass Group get's Provincial Center for Renewable Energies in Castellon to be filled with informations about RUE Plans and RURENER Project	local Rurener website	Communication Awareness
A05	Nbr.4 Public event in the public hall, with information events, lectures, local craftsmen, partnerships and Intercoop's network	National Egetica valencia Fair, Local energy day, Rurener Roadshow , RuralE.Evolution Roadshow, Energy Cluster AVAESEN	Communication Awareness
A06	Audits Tech's founded by AVEN for identifying possible roofs in the community for solar systems (ACV)	Mapping Sunroof cataloge for ACV (Public School)	Communication Awareness
A07	Monitoring by Rurener tools about the annual energetic balance	Evaluation	Monitoring
B	Calimanesti-Caciulata	Romania	
B01	Geothermal energy	Extending the local helting system based on geothermal energy: reopening the well number 1010, continuing the drilling operations in order to increase the water temperature (from about 70 to 95 degrees) and the flow	Renewable Energies
B02	Geothermal and solar energy	Project design to complement conventional heating systems with systems based on geothermal and solar energy	Renewable Energies
B03	Increasing the energetic performance of the buildings	The owners' associations together with the Town hall officials drew out the necessary documentation. Project achievement, getting the approval for the technical-economical indicators. Handing in the demand for financing	Energy Savings
B04	The community web page within the RURENER project	Making a blog for the information exchange and for presenting the activities concerning the renewable energy sources and the rational use of energy	Communication Awareness
B05	Official launching of the local action plan	Public presentation of the project in front of the officials and the people interested.	Communication Awareness
B06	Information activities concerning the main concepts of the project	Distributing flyers, posters in public places, disseminating information concerning the methods of saving energy and exploiting the renewable energy sources, the efficient exploitation systems	Communication Awareness

B07	Evaluation of the project implementation stage	Emphasize of the results of project activities: number of participants at the activities within the project, number of entrances on the blogs, etc.	Monitoring
C	Slanic-Moldova	Romania	
C01	Evaluation of the town's energy requirements	Community analysis: demographic evolution, industrial development prospects	Renewable Energies
C02	Rehabilitation and modernization of the public illumination system	Designing a public illumination system using photovoltaic solar cells; handing in the financing demand. Drawing up the project until the end of 2010	Renewable Energies
C03	Increasing the energetic efficiency of the buildings	Making up an Owners' Association in order to access the funds	Energy Savings
C04	Officially launched of the local action plan	Public presentation of the project in front of the officials and interested public	Communication Awareness
C05	Energy day	Events dedicated to the green energy day and to energy saving: workshop with the participation of international, national and local representatives in the field of energy, mass-media, distribution of promoting materials, organizing school contests, exhibition of posters, etc.	Communication Awareness
C06	Green Energy	Presentations and distribution of informative materials in schools, awarded contests	Communication Awareness
C07	Evaluating the project implementation steps.	Underlining the results of the project activities: number of participants to the public events included into the project, number of people accessing the blog, etc	Monitoring
D	Tasca	Romania	
D01	Evaluation of energy requirements of the village	Community analysis: demographic evolution, industrial development prospects	Renewable Energies
D02	Energy from waste	Evaluation of potential raw material	Renewable Energies
D03	Improvement of energy efficiency of the administrative building	The necessary documentation to achieve the thermal isolation of school and kindergarten buildings	Energy Savings
D04	Officially launched of the local action plan	Public presentation of the project in front of the officials and interested public	Communication Awareness
D05	Information activities concerning the main concepts of the project	Distribution of flyers and posters containing information	Communication Awareness
D06	Energy day	Actions dedicated to green energy day and to energy savings: distribution of specific informative materials, organization of scholar contests, poster exhibitions on renewable energy sources, etc.	Communication Awareness
D07	Green Energy	Presentations and distribution of informative materials in schools, awarded contests	Communication Awareness
D08	Evaluation of the project implementation stage	Emphasize of the results of project activities: number of participants at the activities within the project, number of entrances on the blogs, etc.	Monitoring
E	Keratea	Greece	
E01	Municipal transportation, S1	link the settlements with the municipality	Energy Savings
E02	Street lighting, S2	Lights replacement (change the old street lighting into modern ones)	Energy Savings

E03	Local Energy Day, S5	Public Event in the Public Hall	Communication Awareness
E04	Local Energy Day, M10	Public Event in the Public Hall	Communication Awareness
E05	Environmental Education, S6	Lectures concerning energy saving RES and rational use of energy in the schools. Study tours (CRES Park of Energy Awareness in Keratea)	Communication Awareness
E06	Public Awareness, S7	Public Awareness via the municipal website and energy events	Communication Awareness
E07	Material Distribution, S8	Handouts, placed in public areas like town hall	Communication Awareness
E08	Evaluation, S9, M14, L5	monitoring of the achievements. Use of RURENER tools and audits	Monitoring
F	Nikiforos-Dramas	Greece	
F01	Wind farm in the municipality land	Installation and function of a wind farm in the municipality land	Renewable Energies
F02	Capability Analysis for local biomass energy use	Identifying and mapping opportunities for using agriculture and forest biomass for energy purposes	Renewable Energies
F03	Energetic neutrality	Becoming 100% energetic neutral	Renewable Energies
F04	Raising awareness of elementary/ high school pupils	School projects in collaboration with teachers of local schools to raise awareness of children on RES/RUE	Communication Awareness
F05	Local RURENER website	School classes or groups to fill in with information about local RUE/RES actions the Nikiforos.rurener.gr	Communication Awareness
F06	Evaluation	Monitoring by RURENER tools about the annual energetic balance and impact on local sustainable development	Monitoring
G	Nagypali	Hungary	
G01	energetic modernisation of public an private buildings	modernizing buildings	Energy Savings
G02	newspaper issues about Nagypáli projects	local newspaper	Communication Awareness
G03	to take a part on the Hungarian Renexpo in the field of renewable enegies	renewable energy conference Renexpo	Communication Awareness
G04	All actions and projects are published in nagypali.eu	publicity in the Nagypáli website	Communication Awareness
G05	Informations on Nagypali and RURENER, the local action plan and energy saving	local website	Communication Awareness
G06	monitoring by Rurener tools about the annual energetic balance	Evaluation	Monitoring
H	Perkupa	Hungary	
H01	installation of a solar collector on the roof of the kindergarten which is in governmental ownership	solar power on public roofs	Renewable Energies
H02	Modernization of public buildings, insulation in terms of rational using of the energy	modernization public buildings	Energy Savings
H03	Modernization of existing heating system (gas) into biomass system	Heating system modernization of public building (kindergarten)	Energy Savings
H04	A learning unit about energy saving and rational use of energy etc. shall rise the awareness of children and their parents	School/Kindergarten learn unit	Communication Awareness
H05	publication of local actions towards energetic neutrality	Local website	Communication Awareness

H06	monitoring by Rurener tools about the annual energetic balance	Evaluation	Monitoring
I	Peyrelevalde	France	
I01	Valorisation des végétaux en biogaz		Renewable Energies
I02	Production d'énergie photovoltaïque		Renewable Energies
I03	Connaitre le potentiel de production		Renewable Energies
I04	Extension du parc éolien		Renewable Energies
I05	Sécurisation de l'approvisionnement local en bois pour chaufferie bois		Renewable Energies
I06	Facilitation du co-voiturage		Energy Savings
I07	Maitrise de l'éclairage public		Energy Savings
I08	Nouvelle maison de retraite BBC		Energy Savings
I09	Blog, page internet interactive		Communication Awareness
I10	Réaménagement du Moulin de la Prade : réhabilitation énergétique d'un bâtiment public		Communication Awareness
I11	Festival EHO LIENS		Communication Awareness
I12	Collecte des données sur l'énergie consommée sur la commune		Monitoring
J	Cévennes et Montagne Ardéchoise	France	
J01	réseau de chaleur bois couvert, foyer de vie, école, micro-crèche, habitations communales. EHPAD (réinsertion sociale) produit localement les plaquettes forestières; ressource locale	réseau de chaleur bois	Renewable Energies
J02	Diagnostic sur la ressource renouvelable sur le territoire de la commune de communes	Etude du potentiel de la production d'énergies renouvelables sur le territoire de la communauté de communes	Renewable Energies
J03	Etude sur l'optimisation de la chaleur produite par les eaux thermales de Saint Laurent : répondre au double enjeu des coûts de chauffage élevés et des déperditions de chaleur	Participation à un travail/ sur le potentiel d'optimisation de l'utilisation des eaux thermales pour le chauffage	Renewable Energies
J04	36 éoliennes ajoutées aux 14 éoliennes existantes, et installation d'un transformateur,	Nouveau projet éolien	Renewable Energies
J05	réhabilitation des bâtiments privés, notamment sur la performance énergétique	PIG (programme d'intérêt général)	Energy Savings
J06	Assurer un soutien au maintien de la ligne ferroviaire du Cévenol et de la gare de la Bastide	Transport : soutien à la ligne ferroviaire	Energy Savings
J07	intégrer dans les appels d'offre des conditions pour amener à l'utilisation des matériaux locaux et la performance énergétique	Acculturation des décideurs publics	Energy Savings
J08	réhabilitation des bâtiments publics : changement des fenêtres de l'école, amélioration de l'éclairage public, réhabilitation d'un atelier pour un artisan, ...	amélioration de la performance énergétique des bâtiments publics et des consommations de la comcom	Energy Savings
J09	organiser un concours de photo pour les jeunes 10-16 ans sur le thème	Concours de photo pour enfants	Communication Awareness

J10	Animer un blog internet sur la politique énergétique de la Communauté de communes CMA	blog	Communication Awareness
J11	conférences et démonstration des bonnes pratiques, opération de sensibilisation aux nouvelles façons de construire : fête de l'énergie, moulin de l'énergie, recrutement d'un stagiaire pour organisation	sensibilisation des maitres d'ouvrage privés et publiques, artisans et prescripteurs	Communication Awareness
J12	- accueil des écoles au moulin des énergies - projet pédagogique au sein de l'école de Saint Etienne	Programme pédagogique dans les écoles	Communication Awareness
J13	Etude des consommations d'électricité et de chaleur dans les bâtiments publics de la communauté de communes, par le syndicat d'énergie de l'ardèche (2010)	Etude de la consommation d'énergie des bâtiments publics	Monitoring
J14	Sollicitation des approvisionneurs d'électricité (EDF) et de fioul/gaz à l'échelle de l'intercommunalité (par codes postaux)	Recueil des informations de la consommation globale du territoire (privé et public)	Monitoring
J15	tableau de bord de la consommation de la communauté de commune. Suivi de la progression vers la neutralité énergétique	Mettre en place un suivi tous les 2 ans des consommations des bâtiments publics et de la consommation globale à l'échelle du territoire	Monitoring
K	Schladen	Germany	
K01	solar power on public roofs	installing pv-solar generator on public roofs	Renewable Energies
K02	energetic neutrality	becoming 100% energetic neutral	Renewable Energies
K03	Biogasplant Beuchte	enhancing the woodchipboiler and the local heating grid	Renewable Energies
K04	short-rotation plantation	growing local biomass for the woodchip boiler with R&D	Renewable Energies
K05	LED streetlighting	changing the old streetlighting into modern dazzle-free LED streetlighting	Energy Savings
K06	modernizing buildings	energetic modernisation of public an private buildings	Energy Savings
K07	School/Kindergarden learn unit	A learning unit about energy saving and rational use of energy etc. shall rise the awareness of children and their parents	Communication Awareness
K08	local Rurener website	local Rurener website	Communication Awareness
K09	local energy day, Rurener Roadshow	public event in the public hall, with information events, lectures, local craftsmen, etc.	Communication Awareness
K10	sunroof cataloge	identifying possible roofs in the community for solar systems	Communication Awareness
K11	Bizep	Informationcenter on local renewable energies in Beuchte	Communication Awareness
K12	Evaluation	monitoring by Rurener tools about the annual energetic balance	Monitoring
L	Schöningen	Germany	
L01	solar power on public roofs	installing a pv-solar generators on further public buildings of Schoeningen	Renewable Energies
L02	energetic neutrality	becoming 100% energetic neutral	Renewable Energies
L03	LED streetlighting	changing the old streetlighting into modern dazzle-free LED streetlighting	Energy Savings

L04	modernised model building	example of energetic modernisation of an public building, e.g. House of Clubs or Schoeninger Tafeln	Energy Savings
L05	modernisation of houses	energetic modernisation of housing space	Energy Savings
L06	sunroof cataloge	identifying possible roofs in the community for solar systems	Communication Awareness
L07	event learning location	The event learning location shall provide an exciting experiance to learn about the "Schoeninger Speere" and about climate history.	Communication Awareness
L08	local Rurener website	one schoolclass or group get's schoeningen.rurener.de, to be filled with informations about RUE and the Schoeningen local action plan.	Communication Awareness
L09	Energy-consulting by expert	free weekly consultation times for residents	Communication Awareness
L10	Evaluation	monitoring by Rurener tools about the annual energetic balance	Monitoring
M	Wesendorf	Germany	
M01	solar power on public roofs	installing a pv-solar generator on the roof of the gunmen-association's house	Renewable Energies
M02	energetic neutrality	becoming 100% energetic neutral	Renewable Energies
M03	LED streetlighting	changing the old streetlighting into modern dazzle-free LED streetlighting	Energy Savings
M04	modernizing buildings	energetic modernisation of public and private buildings	Energy Savings
M05	School/Kindergarden learn unit	A learning unit about energy saving and rational use of energy etc. shall rise the awareness of children and their parents	Communication Awareness
M06	local Rurener website	one schoolclass or group get's wesendorf.rurener.de, to be filled with informations about RUE and the Wesendorf local action plan.	Communication Awareness
M07	local energy day, Rurener Roadshow	public event in the public hall, with information events, lectures, local craftsmen, etc.	Communication Awareness
M08	sunroof cataloge	identifying possible roofs in the community for solar systems	Communication Awareness
M09	Evaluation	monitoring by Rurener tools about the annual energetic balance	Monitoring
N	Tirano	Italy	
N01	Energy Audit on public buildings	To provide energetic diagnoses for public buildidngs	Energy Savings
N02	Municipality Lighting Planning	Provide a document to be integrated in urban planning tool in order to rule the planning and management of public lightings	Energy Savings
N03	Incentive implementation in urbanistic tool PGT	To provide facilities for private owners which build their building with energy saving criteria	Energy Savings
N04	Estimate of private consumption and behaviour in households	Collecting information about private consumption	Energy Savings
N05	Participation to a CARIPLO Tender for Energy Sustainability for Small and Medium Municipalities	Promotion of a path finalized to subscribe the Covenant of Mayors, make an inventory of CO2 emissions, produce a Local Plan for Sustainable Energy and monitor its results	Energy Savings

N06	Information to citizens	Raising awareness of energy saving and renewable resources	Communication Awareness
N07	Exchange of best practices	Meeting with AlpHouse partnership	Communication Awareness
N08	Forest-Wood project	Meeting with forest owners in order to stimulate the co-operation with Forestry Consortium	Communication Awareness
N09	Local rurener weblog	Creation and animation of a local weblog	Communication Awareness
N10	Media relations	Continuos spreading of info to local media	Communication Awareness
N11	Information on Tirano web-site home-page	Publication of RURENER banner with direct link to RURENER italian page on the new Tirano Community official web-site	Communication Awareness
N12	Tirano Membership in CITTA' SLOW	Publication of CITTA'SLOW banner with direct link to CITTA'SLOW italian page on the new Tirano Community official web-site	Communication Awareness
N13	Individuation of energy-consumptive sectors	To provide an estimation of consumption for heating and cooling systems, production, transport, lighting...	Monitoring
N14	Evaluation	Monitoring by means of Rurener tools the annual energetic balance	Monitoring

Annex II. Influence of actions with respect to indicators

RE/ES/CA/M		O1	O2	O3				O4	O5			O6				
		C11	C21	C31	C32	C33	C34	C41	C51	C52	C53	C61	C62	C63	C64	C65
A																
RE	A01	1	0	0	0	0	1	1	1	0	0	1	1	1	1	1
RE	A02	1	0	0	0	1	1	1	0	0	0	1	1	1	1	1
ES	A03	0	1	1	0	0	1	1	1	0	1	0	1	1	1	1
CA	A04	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
CA	A05	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
CA	A06	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
M	A07	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0
B																
RE	B01	1	0	0	0	0	1	1	1	0	0	1	1	1	0	0
RE	B02	1	0	0	0	0	0	1	0	0	0	1	1	1	0	0
ES	B03	0	1	1	0	0	1	1	0	0	0	0	1	1	0	0
CA	B04	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	B05	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	B06	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
M	B07	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
C																
RE	C01	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
RE	C02	1	0	1	1	0	1	1	0	0	0	1	1	1	0	0
ES	C03	0	1	0	0	0	0	1	0	0	0	0	1	1	0	0
CA	C04	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	C05	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	C06	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
M	C07	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
D																
RE	D01	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
RE	D02	1	0	0	0	0	0	1	1	0	1	1	1	1	1	0
ES	D03	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0
CA	D04	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	D05	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	D06	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	D07	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
M	D08	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
E																
ES	E01	0	1	1	0	0	0	0	0	0	1	0	1	1	0	0
ES	E02	0	1	1	0	0	1	0	0	0	1	0	1	1	0	0
CA	E03	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	E04	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	E05	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	E06	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	E07	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
M	E08	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
F																
RE	F01	1	0	0	0	0	1	1	1	0	0	1	1	1	0	0
RE	F02	1	0	0	0	0	0	1	0	0	0	1	1	1	1	1
RE	F03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CA	F04	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	F05	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
M	F06	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
G																
ES	G01	0	1	1	0	0	1	1	0	0	0	0	1	1	0	0

CA	G02	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	G03	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	G04	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	G05	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
M	G06	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	
H																	
RE	H01	1	0	0	0	0	1	1	0	0	1	1	1	1	0	0	
ES	H02	0	1	1	0	0	0	1	0	1	0	0	1	1	0	0	
ES	H03	0	1	1	0	0	1	1	0	0	0	0	1	1	1	0	
CA	H04	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	H05	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
M	H06	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	
I																	
RE	I01	1	0	0	0	0	1	1	0	0	0	1	1	1	1	1	
RE	I02	1	0	0	0	0	1	1	0	0	0	1	1	1	1	0	
RE	I03	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	
RE	I04	1	0	0	0	1	1	1	1	0	0	1	1	1	0	0	
RE	I05	1	0	0	0	0	0	1	0	0	1	0	1	1	0	1	
ES	I06	0	1	1	0	0	0	1	0	1	0	0	1	1	0	0	
ES	I07	0	1	1	0	0	0	1	0	1	1	0	1	1	0	0	
ES	I08	0	1	0	0	0	1	1	1	0	0	0	0	1	1	0	
CA	I09	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	I10	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	
CA	I11	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
M	I12	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	
J																	
RE	J01	1	0	0	0	0	0	1	1	1	0	1	1	1	1	1	
RE	J02	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	
RE	J03	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	
RE	J04	1	0	0	0	0	1	1	0	0	0	1	1	1	0	0	
ES	J05	0	1	1	0	1	1	1	1	1	0	0	1	1	0	0	
ES	J06	0	1	1	0	1	1	1	0	0	1	0	0	1	0	0	
ES	J07	0	1	0	0	0	0	0	0	1	0	1	1	1	1	0	
ES	J08	0	1	1	0	0	1	1	0	0	0	0	1	1	0	0	
CA	J09	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	J10	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	J11	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	J12	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	
M	J13	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	
M	J14	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	
M	J15	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	
K																	
RE	K01	1	0	0	0	0	0	1	1	0	0	0	1	1	1	0	0
RE	K02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RE	K03	1	0	0	0	0	0	1	0	0	0	1	1	1	1	1	
RE	K04	1	0	0	0	0	0	1	0	0	0	1	1	1	0	1	
ES	K05	0	1	1	0	1	1	0	0	0	0	0	1	1	0	0	
ES	K06	0	1	1	0	0	1	1	0	1	0	0	1	1	0	0	
CA	K07	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	K08	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	K09	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
CA	K10	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
CA	K11	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
M	K12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
L																	
RE	L01	1	0	0	0	0	1	1	0	0	0	1	1	1	0	0	
RE	L02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ES	L03	0	1	1	0	1	1	0	0	0	0	0	1	1	0	0	
ES	L04	0	1	1	0	0	1	1	0	0	0	0	1	1	0	0	

ES	L05	0	1	1	0	0	1	1	0	0	0	0	1	1	0	0
CA	L06	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
CA	L07	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	L08	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	L09	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
M	L10	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
	M															
RE	M01	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0
RE	M02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ES	M03	0	1	1	0	1	1	0	0	0	0	0	1	1	0	0
ES	M04	0	1	1	0	0	1	1	0	0	0	0	1	1	0	0
CA	M05	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	M06	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	M07	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	M08	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
M	M09	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
	N															
ES	N01	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
ES	N02	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0
ES	N03	0	1	0	0	1	1	1	0	0	0	0	1	1	0	0
ES	N04	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
ES	N05	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
CA	N06	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	N07	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	N08	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
CA	N09	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	N10	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	N11	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
CA	N12	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
M	N13	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
M	N14	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0

Report closed
 Jesus Martinez-Almela
 PMO Intercoop Group
 D15 Rurener Project
 V.1 May 2011