

KNOWLEDGE BASED DEVELOPMENT OF SMALL COMMUNITIES – A CASE STUDY

Cristian, THEODORESCU¹ and Lucian, CONSTANTIN²
¹S.C. CERTINDECO SRL Bucuresti, christit@gmail.com
²INCD-ECOIND Bucuresti

ABSTRACT: The concept of a knowledge-based European Society, with all its shortcomings and weaknesses, creates nevertheless a mainframe that could accommodate, for the time being, projects limited to a specific geographic area, projects trying to put in practice such a generous idea. The work details experience of implementing the knowledge – based development paradigm in a number of communes located in the Suceava County, Romania. Options for KBD are presented, classified using a Pareto-type analysis and results are detailed in 2 major areas for interest for local communities: energy and environment. In addition, efforts were made to present to local specialists new and performing methods for management, namely, the Sustainable Balanced Scorecard.

KEYWORDS: sustainable communities, e-learning, knowledge-based Society.c

1. INTRODUCTION

The following actions were carried out in the last phase of a Project directed to implement the Knowledge-based development in the following communes around the Suceava City, Romania: Scheia, Balaceana, Ciprian Porumbescu, Veresti, Ilisesti, Stroiesti (the work is a nucleus project financed by the Romanian Ministry of Industry and Trade).

1. Revising the actions portfolio for sustainable, knowledge-based development, portfolio devised in the first phase of the project.
2. The list of options was classified in the Pareto sense, putting in the first place those options believed to have the largest impact but requiring important knowledge driven actions and little financial effort to be implemented. A shortlist of such actions follows:
 - a. Devising the Sustainable Development Strategy of the commune;
 - b. Valuing local resources in the benefit of as much inhabitants as possible – namely, promoting the use of renewable energy source in the domestic and public sector.
 - c. Building awareness for preserving the landscape and environment
 - d. Building momentum among the local business community to use local work force, local expertise, local facilities and to encourage people with disabilities to join such efforts.

Options c and d above have been inserted in the Agenda of local Administration representatives (mayors, local Councils). During many visits of ECOIND facilitators in the area, forging communities among all actors that could help knowledge-based development (business men, administration, teachers, priests, retired persons known for their expertise, etc.).

2. DEVISING A SUSTAINABLE STRATEGY FOR DEVELOPMENT

Implementing option a, above was carried out by training local specialists and representatives of the administration to use a

modified Balanced Scorecard strategic management system (BSC, 2011), that includes all the components of sustainability (economic, environment, social).

The following Strategic Map illustrates the concept. Structured in this way, the strategic objectives of the local community include the economic factors but also the importance of having good relations with all stakeholders, keeping pace with internal processes and striving to learn, innovate, create.

Such a Strategic Map has a public character and constitutes a powerful vector for conveying the generous intentions of local administration representatives. Beyond such maps, lie all the details that substantiate the strategic objectives and allow their fulfilment (clear cut policies, resource inventory, gathering experts, allocating funds and responsibility, monitoring and tuning the strategy, etc.).

The most sensitive part of such a strategy is in the devising of a proper system of key performance indicators that could assess progress made along each objective and signal all inadvertencies that should be corrected as soon as they appear.

For every Strategic Objective, specific Action Plans have been devised, including:

1. details of the content of the objective;
2. directions of actions for its fulfilment;
3. associated key performance indicators;
4. timetable for actions (GANTT Charts);
5. appointed responsible;
6. resources allocated;
7. reporting, monitoring and updating procedures.

In order for the local communities to devise their own Action Plans and carry out the work without guidance from ECOIND facilitators, special training sessions have been programmed with local experts and administration.

Table 2. Strategic Map.

<i>VISION – MISSION, Strategic Target</i>				
Strategic Perspectives	<i>Budget</i>	Valuing local resources Accessing EU and similar funds	Valuing traditions, touristic areas, historical aspects	Waste to resources
	<i>Stakeholders</i>	Attract foreign investors	Align targets with the local Business community for social progress	Increase the role of the School + Church
	<i>Internal Processes</i>	Building on local expertise	Reduce scholar abandon, infractionality	Decoupling development form resource consumption
	<i>Learning & Growth</i>	Continual Training. Intensive use of IT by all community	Support for older person, people with disabilities, families with members gone to work abroad	Awareness Responsibility
		<i>Economic</i>	<i>Social</i>	<i>Enviro</i>
Pillars of Sustainable Development				

3. RENEWABLE ENERGY FOR SMALL COMMUNITIES

Option b, in the above portfolio (valuing local resources) was implemented via 2 major actions:

1. using biomass waste for domestic and public heating;
2. recycling of waste, with favourable outcomes for the local communities.

Funds form the INNOVATION NORWAY Programme helping the Romanian entities to reduce their environmental

impact and make profit from environmental protection were accessed and special equipment were acquired by local SME (forest greifer, waste baler, waste sorting station). Local experts was used to repair, refurbish and maintain the acquired equipment.

Large quantities of biomass (saw-dust, lumber with no economic value) were collected from around the Suceava County. The economic, environmental and social impact of the action are summarized in the following Table.

Table 3. Renewable energy for small communities

Item	Value	U.M
Biomass Volume	5659	m3
Biomass weight	4527.2	Tons
<i>Main characteristics</i>		
Upper Calorific Value	4443	kcal/kg
	18598	MJ/kg
Relative humidity	6.1	%
VOC content	80.3	g/kg
Sulfur	0.02	g/kg
Ash	0.43	g/kg
Density	1030	kb/m3
Geometry: cylinders 80mm diameter		
Fossil fuel replaced by the collected biomasa:		
Methane	750000	m3, STP
	536	Tons
Coal (lignite 1.5%S; 25% Ash))	1184	Tons
Fuel oil	688	Tons
GHG avoided by using biomass		
<i>The “benign” CO₂ emitted by burning 1kg biomass replaces the CO₂ emitted from):</i>		
Methane	0.3367	kg
	0.47	m3, STP
Coal	0.7405	kg

Fuel Oil	0.43	kg
<i>Total CO₂ from fossil fuels avoided</i>		
From methane	1524.31	Tons
	2127.78	Thou m3 STP
From coal	3352.39	Tons
From fuel oil	1946.7	Tons
SO _x		
SO _x produced by biomass burning	0.064	Tons
<i>SO_x from equivalent fossil fuels replaced</i>		
SO _x from coal (1.5% S; 40% ash)	35.52	Tons
SO _x from Fuel oil (0.5% S)	6.88	Tons
Ash		
From biomass	40	Tons
<i>Ash form equivalent fossil fuels replaced</i>		
Ash from coal	296	Tons
Ash from fuel oil (2% ash)	13.76	Tons
Social impact		
New jobs	26	
Costs		
Cost per 1 Gcal from biomass	225	RON/Gcal
Cost per 1 Gcal from municipal centralized heating system	250 - 600	RON/Gcal

4. BENEFITS FROM MUNICIPAL WASTE.

Romania recycles only some 1% of the municipal waste collected (compare to 23-28%.level in EU).

By inserting new equipment and expertise in the focal area, a local SME have taken over the work of collecting, sorting and

despatching sorted waste to recyclers. This was also possible by mobilizing all factors that could propagate the message that waste must become a valuable resource for local communities. Using the INNOVATION NORWAY Grant scheme, a waste baler and a waste sorting station were acquired by local SME. A new business field started in this way, with huge benefits for local people, as shown below. Recycling rate achieved: 35%.

Table 4. Strategic Map.

Focal zone: 6 communes	Waste produced 2000 m3/month. @ 150kg/m3 = 300 ton/month, 3600 tons/yr
A minimum of 15% waste is sorted locally	Sorted:45 t/month, 300 m3/month, 540 t/yr, 3600 m3/yr
If 15 % not sorted, communities must pay landfilling taxes 40 Lei/m3	Taxes paid = 12000 lei/mth = 144000Lei/yr = cca 36000 Euro/yr.
If 15% sorted locally, communities make double profit:	Landfilling taxes (144000 Lei/yr) must not be paid anymore Sorted waste is sold at 400 lei/ton (216000 Lei/yr, 54000 Euro/yr) TOTAL= 360000Lei/an (87600EURO/an)
Local SME use balers and compact sorted waste.	Compacted waste is sold @ 1200 lei/t. Net gain for local SME: 540 t/yr x (1200Lei/t – 400Lei/t) = 432000Lei/yr (104000 EURO/yr)
Environmental Benefits	540 tons waste reinserted in the economic circuit, diverted from landfill
Social Benefits	11 new jobs

5. CONCLUSIONS

The Knowledge-Based development initiative proved successfully in the focal area of the Suceava County. Local ideas, local initiatives, local experts took part to generating development options and to their implementation. With acknowledged help from the Norwegian Government, local business men and administration managed to speed up the process of identifying and implementing new businesses, very

profitable for the entire community, for the environment as well.

Replication of such a project on larger geographic area could be complementary to centralized governmental initiatives to put Romania on the road to sustainable economic and social progress, in harmony with the environment.

REFERENCES

1. BSC (2011), <http://www.balancedscorecard.org/>, accesat la 20 Iulie 2011