

Table 9. Review of credit liabilities

Amount in EUR				
Source of assets			BANK	
Credit amount			2.470.795	
Repayment period in years without grace period			9	
Grace period - years			1	
Amount of annual instalment			274.533	
Interest			8,00%	
Periods	Credit	Instalment	Interest	Annuity
1	2.470.795	-	197.664	197.664
2	2.470.795	274.533	197.664	472.196
3	2.196.262	274.533	175.701	450.234
4	1.921.729	274.533	153.738	428.271
5	1.647.197	274.533	131.776	406.309
6	1.372.664	274.533	109.813	384.346
7	1.098.131	274.533	87.850	362.383
8	823.598	274.533	65.888	340.421
9	549.066	274.533	43.925	318.458
10	274.533	274.533	21.963	296.495
Total		2.470.795	790.654	2.986.917

Table 10. Calculation of Depreciation

Nr.	Fixed assets	Value	%	Depreciation
1	Building - old	-	0%	-
2	Building - new	300.000,00	4,0%	12.000,00
3	Equipment - old		0%	-
4	Equipment - new	4.350.000,00	10%	435.000,00
5	Subsidiary equipment -old		0,00%	-
6	Subsidiary equipment -new	0,0		-
7	Vehicles - old		0%	-
8	Vehicles - new	0,0		-
9	Other - old	-	0%	-
10	Other - new	283.650,00	20,0%	56.730,00
11	TOTAL - OLD			-
12	TOTAL - NEW			503.730,00
13	ALL TOTAL			503.730,00

ANALYZING THE SENSIBILITY OF THE FINANCIAL RATE OF PROFITABILITY

TESTING THE SENSIBILITY		Domestic incomes		Foreign incomes		Price of raw materials on domestic market		Proce of raw materials on foreign market		Investment costs		-5%	
		Changes in % on 5 variables with the following presumptions:		0%		0%		0%		0%		0%	
in EUR		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
<u>Project costs (Investment):</u>													
Total project costs		-4.941.590,9	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
<u>Increased income</u>													
Domestic income		0,0	372.324,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0
Foreign income		0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total increased income		0,0	372.324,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0	624.473,0
<u>Increased operational costs</u>													
Costs for domestic market		0,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0
Costs from foreign market		0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total increased operational costs		0,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0	23.250,0
Increased gross working profit		0,0	349.074,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0
INCREASED NET PROFIT		-4.941.590,9	349.074,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0	601.223,0
FINANCIAL RATE OF RETURN													
					3%								
NET PRESENT VALUE													
					1.863.871,1								
	(discount rate)				15%								

Table 11. Sensibility of Rate of Profitability

SIMPLIFICATED BALANCE SHEET

EUR	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ASSETS:										
<i>Current assets</i>										
Surplus of cash	97.772	148.013	148.013	148.013	148.013	148.013	148.013	148.013	148.013	148.013
Cash from working	3.919	6.573	6.573	6.573	6.573	6.573	6.573	6.573	6.573	6.573
Receivables for buyers	32.213	54.028	54.028	54.028	54.028	54.028	54.028	54.028	54.028	54.028
Inventories	32.213	54.028	54.028	54.028	54.028	54.028	54.028	54.028	54.028	54.028
Other	0	0	0	0	0	0	0	0	0	0
Total current assets	187.932	262.642	262.642	262.642	262.642	262.642	262.642	262.642	262.642	208.614
<i>Net fixed assets</i>	4.933.650	4.892.248	4.850.845	4.809.443	4.768.040	4.726.638	4.685.235	4.643.833	4.602.430	4.561.028
Total fixed assets	4.933.650	9.833.838	9.792.436	9.751.034	9.709.631	9.668.229	9.668.229	9.668.229	9.668.229	9.668.229
TOTAL ASSETS	10.021.770	10.055.078	10.013.676	9.972.273	10.145.430	10.145.430	10.145.430	10.145.430	10.145.430	423.173
LIABILITIES AND SHAREHOLDING CAPITAL (NEW)										
<i>Liabilities</i>										
Deficit of cash	89.611	250.611	250.611	250.611	250.611	250.611	250.611	250.611	250.611	250.611
Short liabilities toward suppliers	1.911	1.911	1.911	1.911	1.911	1.911	1.911	1.911	1.911	1.911
Other	66.433	112.718	112.718	112.718	112.718	112.718	112.718	112.718	112.718	112.718
Debts	161.000	-113.533	-388.066	-662.598	-937.131	-937.131	-937.131	-937.131	-937.131	-937.131
Other long term liabilities and reservations	0	0	0	0	0	0	0	0	0	0
TOTAL LIABILITIES	318.955	251.708	-22.825	-297.358	-571.891	-571.891	-571.891	-571.891	-571.891	-571.891
<i>Shareholding capital</i>										
Capital	33.494	33.494	33.494	33.494	33.494	33.494	33.494	33.494	33.494	33.494
Retained annual profit	106.056	341.710	359.720	377.729	377.729	395.738	413.748	431.757	449.766	485.785
Retained profits	0	106.056	447.767	807.486	1.185.215	1.562.944	1.958.682	2.372.430	2.804.187	3.253.953
TOTAL SHAREHOLDING CAPITAL	139.550	481.261	840.980	1.218.709	1.596.438	1.992.176	2.405.924	2.837.681	3.287.447	3.773.232
TOTAL LIABILITIES AND SHAREHOLDING CAPITAL	458.506	732.968	818.155	921.351	1.024.547	1.420.285	1.834.033	2.265.790	2.715.556	3.201.341

Table 12. Simplificated balance sheet

INCOME STATEMENT

in EUR

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Sales and other incomes:										
in country	391.920	657.340	657.340	657.340	657.340	657.340	657.340	657.340	657.340	657.340
abroad	-	-	-	-	-	-	-	-	-	-
Total sale	391.920	657.340	657.340	657.340	657.340	657.340	657.340	657.340	657.340	657.340
Costs and expenditures										
Raw materials	-	-	-	-	-	-	-	-	-	-
Gross salaries	-	-	-	-	-	-	-	-	-	-
Other costs	23.517	23.517	23.517	23.517	23.517	23.517	23.517	23.517	23.517	23.517
Total costs	23.517	23.517	23.517	23.517	23.517	23.517	23.517	23.517	23.517	23.517
Depreciation:										
Total depreciation	41.402	41.402	41.402	41.402	41.402	41.402	41.402	41.402	41.402	41.402
Interest costs										
Total interest costs	197.664	175.701	175.701	153.738	131.776	131.776	109.813	87.850	65.888	43.925
TOTAL OPERATIONAL INCOMES AND EXPENDITURES	262.583	240.620	218.658	196.695	196.695	174.732	152.770	130.807	108.845	64.919
Extra items:										
Total extra items	-	-	-	-	-	-	-	-	-	-
NET PROFIT BEFORE TAXATION	129.337	416.720	438.682	460.645	460.645	482.608	504.570	526.533	548.495	592.421
Income tax	(23.281)	(75.010)	(78.963)	(82.916)	(82.916)	(86.869)	(90.823)	(94.776)	(98.729)	(106.636)
(% from the income before taxation)	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
NET PROFIT	106.056	341.710	359.720	377.729	377.729	395.738	413.748	431.757	449.766	485.785

Table 13. Income statement

REVIEW OF CASH FLOW

(SOURCES OF ASSETS AND NEED FOR INVESTMENT)

	61,7	61,7	61,7	61,7	61,7	61,7	61,7	61,7	61,7	61,7	61,7
JR	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
CES											
ces											
ined profit	106.056	341.710	359.720	377.729	377.729	395.738	413.748	431.757	449.766	485.785	
preciation	41.402	41.402	41.402	41.402	41.402	41.402	41.402	41.402	41.402	41.402	
low from regular working	147.459	383.113	401.122	419.131	419.131	437.141	455.150	473.159	491.169	527.187	527.187
□□□□□□											
Credits	197.664	-	-	-	-	-	-	-	-	-	-
Financial activities	197.664	-	-	-	-	-	-	-	-	-	-
of sources											
from owners	2.470.795	-	-	-	-	-	-	-	-	-	-
capital from joint ventures	-	-	-	-	-	-	-	-	-	-	-
SOURCES	2.815.918	383.113	401.122	419.131	419.131	437.141	455.150	473.159	491.169	527.187	
entis	4.941.591	-	-	-	-	-	-	-	-	-	-
ilities											
	-	274.533	274.533	274.533	274.533	274.533	274.533	274.533	274.533	274.533	
il activities		274.533	274.533	274.533	274.533	274.533	274.533	274.533	274.533	274.533	
LIAND	4.941.591	274.533	274.533	274.533	274.533	274.533	274.533	274.533	274.533	274.533	
EFICIT OF	(2.125.673)	108.580	126.569	144.599	144.599	162.608	180.617	198.627	216.636	252.655	252.655
EFICIT	(2.125.673)	(2.017.093)	(1.890.504)	(1.745.905)	(1.601.307)	(1.438.699)	(1.258.081)	(1.059.455)	(842.819)	(590.164)	(3.174.888)

Table 14. Review of Cash Flow

FINANCIAL RATIOS

in EUR	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Liquidity										
Current ratio										
Current assets (I)	90.160	114.629	114.629	114.629	114.629	114.629	114.629	114.629	114.629	60.601
Short term liabilities (B)	68.344	114.629	114.629	114.629	114.629	114.629	114.629	114.629	114.629	114.629
I/B	1,32	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	0,53
Quick ratio										
Current assets (I)	90.160	114.629	114.629	114.629	114.629	114.629	114.629	114.629	114.629	60.601
Inventories (B)	32.213	54.028	54.028	54.028	54.028	54.028	54.028	54.028	54.028	54.028
Short term liabilities (C)	68.344	114.629	114.629	114.629	114.629	114.629	114.629	114.629	114.629	114.629
(I-B)/C	0,53	0,53	0,53	0,53	0,53	0,53	0,53	0,53	0,53	0,53
The share of debt in total capital										
Debt in total assets										
Debt (I)	161.000	-113.533	-388.066	-662.598	-937.131	-1.211.664	1.486.197	1.760.729	-2.035.262	-2.309.795
Total assets (B)	9.874.347	10.055.078	10.013.676	9.972.273	10.145.430	10.104.027	10.062.625	10.021.222	9.979.820	423.173
I/B	2%	-1%	-4%	-7%	-9%	-12%	-15%	-18%	-20%	-546%
Debt/Shareholding capital										
Debt (I)	161.000	-113.533	-388.066	-662.598	-937.131	-1.211.664	1.486.197	1.760.729	-2.035.262	-2.309.795
Shareholding capital (B)	2.576.851	2.918.562	3.278.281	3.656.010	4.033.739	4.429.477	4.843.225	5.274.982	5.724.748	6.210.533
I/B	6%	-4%	-12%	-18%	-23%	-27%	-31%	-33%	-36%	-37%
Debt spreading over										
Net income (I)	106.056	341.710	359.720	377.729	377.729	395.738	413.748	431.757	449.766	485.785
Depreciation (B)	41.402	41.402	41.402	41.402	41.402	41.402	41.402	41.402	41.402	41.402
Interest (C)	197.664	175.701	153.738	131.776	131.776	131.776	109.813	87.850	65.888	43.925
Mature instalment (D)	0	274.533	274.533	274.533	274.533	274.533	274.533	274.533	274.533	274.533
(I+B+C)/D	1,7	1,2	1,3	1,4	1,4	1,4	1,5	1,6	1,7	1,9
Profitability										
Net profit rate										
Net profit (I)	106.056	341.710	359.720	377.729	377.729	395.738	413.748	431.757	449.766	485.785
Income (B)	391.920	657.340	657.340	657.340	657.340	657.340	657.340	657.340	657.340	657.340
I/B	27%	52%	55%	57%	57%	60%	63%	66%	68%	74%
Return of total assets										
Net profit (I)	106.056	341.710	359.720	377.729	377.729	395.738	413.748	431.757	449.766	485.785

Table 15. Financial Ratios

RES Integration Project

WP 4

Project Partner: ITALY

TITLE OF THE PROJECT (Business investment): Distributed PV Enterprise

LOCATION: Mountain Community of Limina

HEAD OF CONCRETE PROJECT: TBD

SHORT DESCRIPTION OF THE PROJECT (Summary of the idea):

An enterprise could be created that would own/operate 2000 kW of distributed PV power plants across the Lumina community. This economic evaluation details the costs required to make such a PV investment in the hopes of attracting an investor to take this idea on. This could be in the form of several 50 to 200kW scale plants on larger roofs on municipal/commercial buildings, followed by many smaller systems on homes, for example, on the order of 2.99 kW small-scale systems on individual family dwellings, or between 3 and 20 kW systems on larger residential/commercial buildings.

The way such an enterprise could operate may be similar to the US company, "CitizenRe", for which homeowners and businesses allow PV on their roofs, but do not pay for the investment costs. Rather the costs remain with the company, and the homeowners are paid rent and some type of premium.

The company itself could be publicly, privately, or in the most likely scenario, a public-private partnership, with the communes themselves having a stake in the PV projects (being perhaps on state-owned land).

2. PREPARATION ACTIVITIES:

INVESTIGATIONS (Short description of necessary investigations):

During the previous visit to the region, some public buildings (e.g. schools) were pointed out that had potential to place PV on. A more extensive survey of the community must be carried out to ascertain which buildings in particular could be possible. Important to note is the difference in feed-in tariff between sizes of systems. Systems under 3kWp have a 0.44 EUR/kWh tariff, and systems between 3 and 20kW have a 0.42 EUR/kWh tariff. Thus, limiting the size to 3kWp would represent a potential economic incentive in planning the network of systems.

Our estimate for PV is actually conservative in terms of total roof-space available, and thus there may be a chance for even more installations to be possible. The limiting factor is the ability to attract the necessary investment for the business venture. In any case, the generous Italian feed-in tariff would make the investments profitable, if the money were to be secured.

Furthermore, more precise insolation measurements would be required to begin.

ADMINISTRATIVE PROCEDURE (Short description of necessary activities):

- According to the Italian PV feed-in law, the following permits are required to begin work on a small-to-medium scale PV plant:
 - 1) Request to the GSE (Gestore della Rete di Trasmissione Nazionale – "National Transmission Grid Operator), or the local grid operator, to connect the plant to the grid.

- 2) Installation permit from the commune.
- 3) Environmental permit – ONLY if the plant is in a region with environmental constraints (e.g. historical site or protected view point).
- 4) Request the PV feed-in tariff to the GSE

INITIAL ORGANIZATION ACTIVITIES (Getting concession rights?
A public utility establishment?, etc.):

- 1) Establishment of the “distributed PV enterprise” that would be in charge of the activity.
- 2) Detailed survey of constructions across the community.
- 3) Meetings with local homeowners association to assess local participation.
- 4) Establishing PV and equipment supply.

ORGANIZATION OF COVERING THE INVESTMENT FINANCE CONSTRUCTION
(Planned composition of own resources, national and international funds, banks, etc.):
Financing available from banking institutions. If the company were to be partly owned by the communes, then public funds could be available.

DEFINITION OF TERMS OF REFERENCE:

To be achieved:

To create a distributed PV-power infrastructure that will provide a sizeable portion of the electricity demand by clean energy.

Stakeholders

- 1) The created enterprise to build and manage the plants.
- 2) The communes of Limina (Canolo, Gerace, Gioiosa Ionica, Grotteria, Mammola, Martone, San Giovanni di Gerace), with a potential financial/administrative role.
- 3) The building owners (of the roofs)
- 4) Financing institutions

Financial Resources:

- 1) Private investment
- 2) Banking Loans
- 3) Commune participation

Work Breakdown:

- 1) An enterprise will be created to undertake the project. (6 months).
- 2) Funding acquisition and supply contracts (6 months).
- 3) Site profiling, community organizing for support (6 months, concurrent with phase 2).
- 4) Equipment acquisition (1 year, concurrent).
- 5) Realization of system (1 to 1.5 years).
- 6) Operation and Maintenance (continuing thereafter).
- 7) Possible extensions, new installations (continuing thereafter).

DETERMINATION OF NECESSARY TIME AND FUNDS FOR REALIZATION OF
PREPARATORY ACTIVITIES (TIME, NECESSARY FUNDS)

Approximately 1 to 2 years for planning, with one year for realization. The initial investment required would be approximately 11 million Euro.

COST BENEFIT ANALYSIS

According to the financial model that shows the projections of the project for 2000 kW of distributed PV power plants across the Limina community (on roofs), production in Italy, we can comment on the following:

7. PROJECT FOR Distributed PV PLANT 2000 kW Distributed PV on Roofs –Liminia, ITALY (repayment period 10 years)

- **Financial rate of return**

in according with the planned investment resources and production capacity (kWh) per year, the financial rate of return is about 3% (repayment period 10 years, Table 8.), its very low whit the discount rate (15%). Also, sensibility rate of profitability is low (about 3% with little random influences factors), showed on Table 11.. Those economic factors show that the project will realize more costs than incomes for short period, i.e. the investment is profitable only for long period, its means more than 25 years.

- **Net profit**

During the whole repayment period of 10 years, the project shows net profit with tendency of growth from year to year but with little and insufficient amount in according with investment (Table 13).

- **Cash flow**

The cash flow shows the positive tendency but with little growing factor in according with investment, during the whole repayment period of 10 years (Table 14). This could be positively estimated but only for long period of repayment of investment

- **Profitability ratio**

This ratio shows tendency of growth form year to year that could be positively estimated.

Table 1. Total capital costs

PROJECT FOR Distributed PV PLANT

2000 kW Distributed PV on Roofs –Liminia, ITALY (1o years)

DEN/EUR		in denars 61,7	in EUR
Preparing activities		0,0	0,0
Building construction		51.828.000	840.000
- building and crafty activities		51.828.000	840.000
- machine installations			0
- electro-installations and telephony			0
- drain and drainage			0
- other activities			0
EQUIPMENT - Wood briquette production plant		563.629.500	9.135.000
- invoice value with assemblage and transport		563.629.500	9.135.000
- custom	0%	0	0
- tax	0%	0	0
ADDITIONAL EQUIPMENT		0	0
- invoice value with assemblage and transport		0	0
- custom	0%	0	0
- tax	18%	0	0
VECHICLES		0	0
- invoice value with assemblage and transport			0
- custom		0	0
- tax	18%	0	0
OTHER		60.068.652	973.560
- licence rights and patent		60.068.652	973.560
- engineering and managing the project		0	0
- training		0	0
- shape of projects		0	0
- interest		0	0
- other costs		0	0
Other capital costs		0	0
TOTAL PLANNED COSTS FOR FIXED ASSETS		615.457.500	10.948.560
Funds planned for working capital			99.630
TOTAL REQUIRED FUNDS		615.457.500	11.048.190
		0,0	0,0

Table 2. Total financial sources

		RESOURCES in denars	countervalue in EUR	Structure of funds resources
DEN/EUR	61,7			
BANKING CREDITS		340.836.661,5	5.524.095,0	50,00%
- Bank		340.836.661,5	5.524.095,0	50,00%
- Commercial Banks		0,0	0,0	0,00%
- World Bank		0,0	0,0	0,00%
- European Bank		0,0	0,0	0,00%
- Other resources		0,0	0,0	0,00%
OWN SOURCES		340.836.661,5	5.524.095,0	50,00%
- preparatory investments		340.836.661,5	5.524.095,0	50,00%
- additional investments		0,0	0,0	0,00%
- SEAF		0,0	0,0	0,00%
-from accumulation		0,0	0,0	0,00%
- from depreciation		0,0	0,0	0,00%
OTHER SOURCES		0,0	0,0	0,00%
		0,0	0,0	0,00%
		0,0	0,0	0,00%
TOTAL FINANCIAL SOURCES		681.673.323,0	11.048.190,0	100,00%

Table 3. Structure of utilisation

		in denars	in EUR	Structure of utilization
DEN/EUR	61,7			
MACHINES, EQUIPMENT AND TECHNOLOGY		204.501.996,90	3.314.457	60,00%
BUILDING CONSTRUCTION		68.167.332,30	1.104.819	20,00%
WORKING CAPITAL		68.167.332,30	1.104.819	20,00%
TOTAL BANK CREDIT		340.836.661,5	5.524.095,0	100,00%