

Economic added value of renewables in Italy

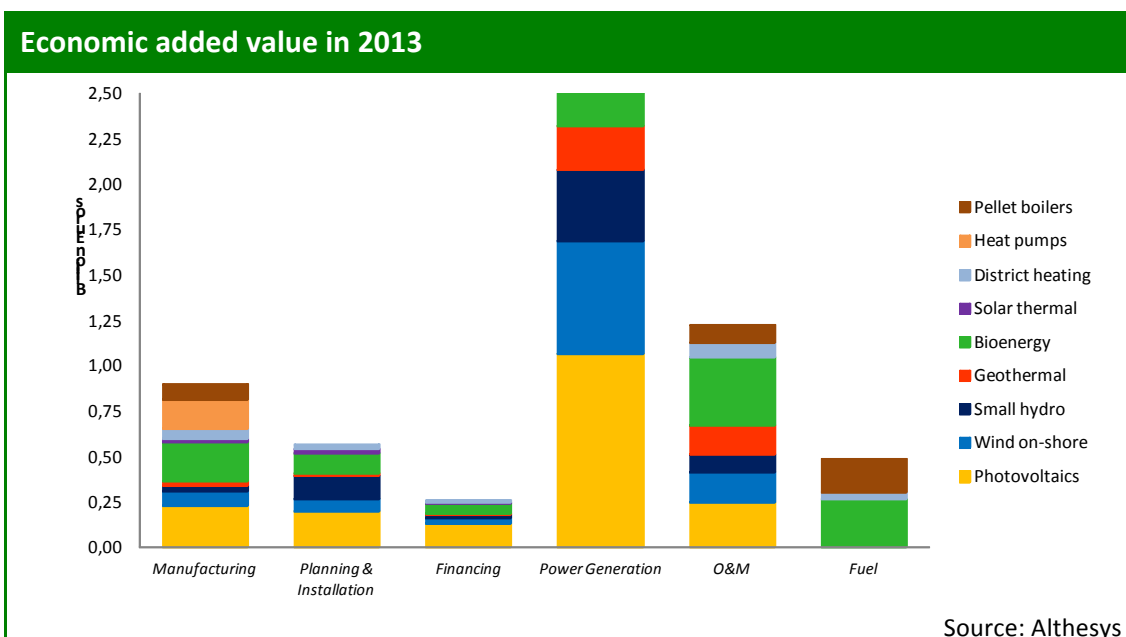
Executive Summary

The objective of this study, carried out by Althesys on behalf of Greenpeace, is to estimate the overall economic impacts created by the investments in renewable energy (RE) in Italy. This evaluation considers two time horizons: the years 2013 and the period 2014-2030, on the basis of two road maps designed by Greenpeace in its 2013 Energy [r]evolution Report: the “Reference” scenario, similar to the National Energy Strategy stated by the Italian government and the “[r]evolution” one, assuming more challenging targets for 2030.

The evaluation of the economic outcome of renewables considers three different items: the direct added value of all the players involved in the value chain, the indirect consumption (the expenditure of the employees’ wages and salaries) and the indirect added value. i.e. the wealth created by the RE satellite businesses. This assessment takes into consideration the various stages of the entire RE value chain: technologies and components manufacturing, planning and installation of the plants, power generation, O&M, financing and fuel procurement (in the biomass case). The study concerns ten different technologies, six in power generation and four in heating. The electric ones are: photovoltaic, wind on shore and off shore, small hydro, geothermal and biomass (wood, biogas, biofuel and waste); heating embraces: solar thermal, district heating, pellet boilers, heat pumps, district heating, heat pumps, pellet boilers.

The economic added value in 2013

The 2013 overall economic impacts of RE are estimated to be around **6 billion** Euros: the economic added value adds up to 4.3 billion Euros, indirect consumption to 983 million Euros and satellite activities’ added value to 660 million Euros.



Energy Generation produces the greatest added value (2.5 billion Euros, 43% of total value), followed by O&M (1.2 billion Euros, 20%) and Manufacturing (around 900 million Euros, 15%). Planning & Installation amounts to 570 million Euros, whereas Bio-mass Supply amounts to 491 million. Lastly, Financing is around 264 million Euros.

Among all the examined technologies, Photovoltaic (PV) produces the greatest overall economic impacts (around 1.8 billion Euros), followed by bio-energy (1.2 billion Euros). Wind Energy reaches 960 million Euros, whereas Geothermal and Small Hydro Energy amount respectively to 440 and 660 million Euros. Renewable Heating technologies, on the other hand, add up to 841 million Euros.

RE growth entails a great tax revenue for Italy. In 2013 taxes and social security contributions amounted to around **1.2 billion** Euros, equivalent to 20% of the overall economic impacts. Estimated Corporate Tax and Payroll Tax are respectively 554 and 556 million Euros, whereas VAT is about 128 million Euros.

In 2013 workers employed in the RE sector reached a total amount of around **64,000 people**: 50,200 direct employees and 13,800 indirect ones.

RE development in 2013 entailed a **38 million** tons reduction of CO₂ emissions, that, evaluated at the average ETS (Emission Trading System) certificates prices, equals to 169 million Euros. Of course the present ETS system underestimates the environmental benefits brought by RE, as well as their contribution to supply security.

Economic added value in 2013							(€/000)
Technology	Manufacturing	Planning & installation	Financing	Power generation	O&M	Fuel	
Photovoltaics	228.960	201.033	134.041	1.065.310	250.263	-	
Wind on-shore	81.133	66.649	28.593	623.916	162.560	-	
Small hydro	30.306	128.338	18.882	390.194	100.485	-	
Geothermal	27.410	13.944	4.471	240.361	160.788	-	
Bioenergy	212.230	107.654	56.753	196.944	372.840	267.866	
Solar thermal	17.756	24.382	7.239	-	-	-	
District heating	56.298	28.306	13.963	39.390	78.960	34.466	
Heat pumps	161.905	-	-	-	-	-	
Pellet boilers	86.283	-	-	-	103.275	189.206	
TOTAL	902.281	570.306	263.941	2.556.116	1.229.171	491.538	

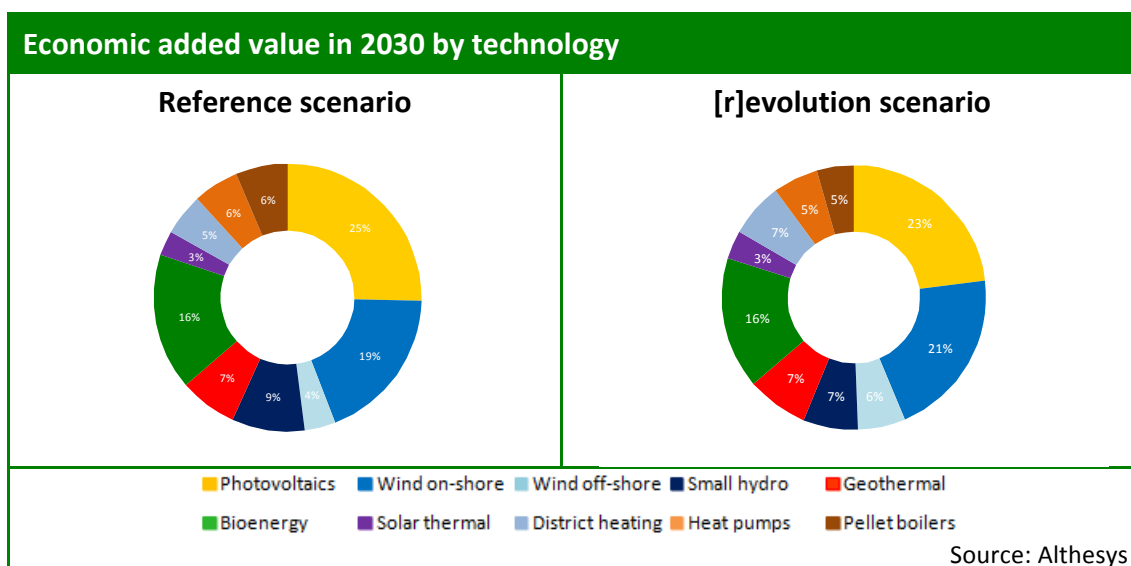
Source Althesys

The outcomes in 2030 scenarios

The economic impacts estimated up to 2030 are around **135 billion** Euros (Reference scenario) and **174 billion** Euros ([r]evolution). Depending on the scenario, direct added value amounts between 99 and 126 billion Euros, indirect consumption is in the range 21-28 billion Euros and satellite businesses' added value adds up to 14 billion Euros and 19 billion Euros.

Wind Energy (both on-shore and off-shore) impacts range between 35 and 46 billion Euros, PV estimated value is between 34 and 40 billion Euros, whereas Biomass Energy is between 22 and 28 billion Euros. Small Hydro and Geothermal Energy amount to,

respectively, 21 and 24 billion Euros. Renewable Heating economic impacts, instead, range between 26 billion Euros and 35 billion Euros.



By 2030, direct and indirect employment is estimated to be between **75,100** (Reference scenario) and **102,360 workers** ([r]evolution).

Overall fiscal revenues by 2030 are estimated ranging from **28 billion** Euros (Reference) to **36 billion** Euros ([r]evolution), Corporate Taxes from 13 to 15 billion Euros, Payroll Taxes from 11 to 16 billion Euros and VAT from 3.3 to 4.5 billion Euros.

In the 2030 scenarios, CO₂ emissions decrease between **1 billion tons** (Reference case) and **1.2 billion tons** ([r]evolution). The 200 million tons difference equals to an additional 1 billion Euros evaluated at the ETS certificates price.

Economic added value in 2030 €/000

Technology	Economic added value (Reference)	Economic added value ([r]evolution)
Photovoltaics	€ 34.485.195	€ 40.044.942
Wind on-shore	€ 25.589.158	€ 36.315.727
Wind off-shore	€ 5.055.331	€ 10.153.997
Small hydro	€ 12.001.457	€ 11.694.052
Geothermal	€ 9.451.558	€ 13.113.763
Bioenergy	€ 22.387.259	€ 28.060.861
Solar thermal	€ 4.083.553	€ 6.044.690
District heating	€ 6.875.929	€ 11.671.888
Heat pumps	€ 7.521.728	€ 9.591.985
Pellet boilers	€ 8.462.460	€ 7.990.722
Total	€ 135.913.629	€ 174.682.628

Source: Althesys