

Sustainable Project Development and Execution

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Enel oggi¹

Operatore globale diversificato



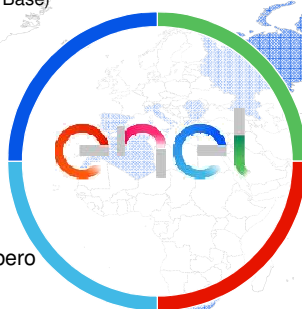
~40 Mld€ di RAB (Regulatory Asset Base)
~62 mln di clienti connessi

#1 in Italia, Spagna, Cile, Perù
#2 in Argentina, Colombia



~18,3 mln di clienti sul mercato libero

#1 in Italia e Spagna



~38 GW di capacità rinnovabile²

Leadership mondiale nelle rinnovabili



~47 GW di capacità termoelettrica

Parco di generazione flessibile ed efficiente

■ Paesi di presenza Enel³

1. Dati al 31/12/2016; 2. Capacità consolidata (35,9 GW) e gestita (1,9 GW) che include 24,9 GW di grande idroelettrico; 3. Presenza con asset operativi.

Sustainability in Enel

A new approach to business



SUSTAINABILITY:



**Strategic part of business management
Integration into day to day activities**

CSV (creating shared value)

Shared Value

«Finding business opportunities in social problems»

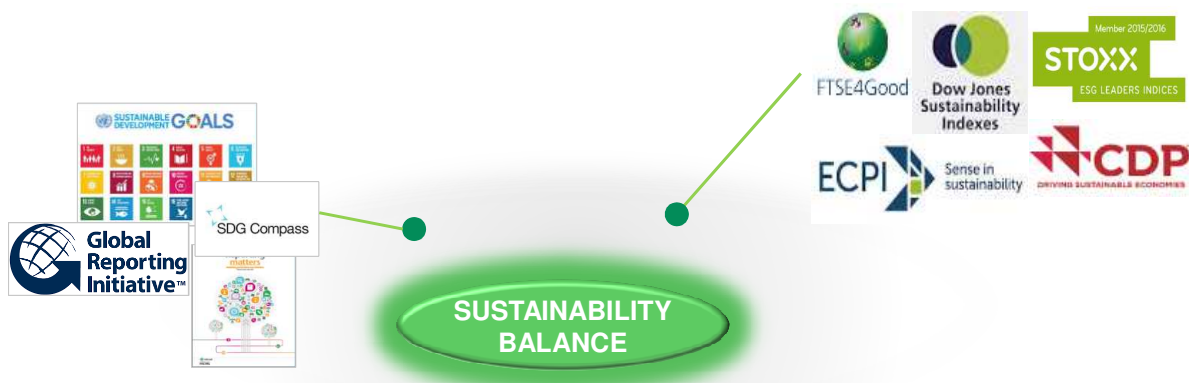
Meeting social needs can be a source of **profit** and **competitive advantage**



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Sustainability in Enel

Sustainability Balance: The main recognised source for non financial information



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Sustainable Project development and execution

A shared Model



Unique model at Group level

Improvement and continuous practices sharing
Uniformity in the data collection and analysis

1 DESIGN



Design of **sustainable** and **circular** solutions

2 SUPPLY CHAIN



Sustainable solutions in contractual documentation

3 CONSTRUCTION & DECOMMISSIONING



Field Implementation of sustainable initiatives

4 MONITORING and IMPROVING



Collection of data and set of **KPIs** to measure environmental and Social/safety performances

Sustainable Project development and execution



DRIVERS

- BUSINESS COMPETITIVENESS
- MUTUALLY BENEFICIAL RELATION WITH STAKEHOLDERS
- INNOVATION
- REDUCTION ENVIRONMENTAL IMPACTS
- CIRCULAR ECONOMY APPROACH

FOIX – Demolition & Remediation Project

Background



Thermal Power Plant consisting of 1x520 MW unit, burning Fuel Oil and/or Natural Gas, located in Cubelles (Barcelona)

2015 closure - 4 years to demolish.

Three phases:

- I. dismantling and demolishing inland installations and buildings and Fuel Oil Storage area
- II. soil remediation
- III. coastal and offshore works

Critical aspects:

- Waste management
- 175 m Chimney demolition



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FOIX: Practical implementation



Circular Economy



Environment



CSV for community



Economic

CONSTRUCTION INITIATIVES

- ✓ Selective demolition
- ✓ Recovery /reuse of construction and demolition waste
- ✓ Solar energy and LED lamps
- ✓ Use of sustainable materials
- ✓ Use of low emissions vehicles and machinery
- ✓ Rainwater collection
- ✓ Second hand equipment selling
- ✓ Reutilization of existing facilities

COMMUNITY INITIATIVES

- ✓ Public roads lighting
- ✓ Transfer to local communities of equipment and machinery
- ✓ Local job creation
- ✓ Saving of historical objects
- ✓ Maintenance and reconditioning of green areas

ADVANTAGES

- ✓ Less volume of waste
- ✓ Less use of filling material
- ✓ Energy savings
- ✓ Positive image

FOIX – Demolition & Remediation Project

Sustainable and Circular Economy initiatives



Site Panel installed for an early community involvement



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Data analysis - KPIs



TGx/E&C Model consists of **21 KPIs** combined in 3 major KPIs groups

Environment (14 KPIs)

- Environment impacts
- Emissions
- Energy Efficiency
- Water Efficiency
- Reused Material
- Waste Management
- Excavated Soil Management

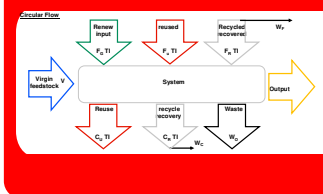


Social/Safety (6 KPIs)

- Innovation
- Employment
- Site accessibility
- Health and Safety
- Transparency and perception



Circular Economy (1 KPI)



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Data analysis - KPIs



Sheet for data collection

Enel Sustainability / Sustainability data				Enel data collection year (2017)			
Metric				Target	Actual	Score	Notes
Energy production and consumption	1	Renewable energy production (MWh)	Renewable energy production (MWh)	100%	100%	100%	
	2	Renewable energy consumption (MWh)	Renewable energy consumption (MWh)	100%	100%	100%	
	3	Renewable energy production (MWh)	Renewable energy production (MWh)	100%	100%	100%	
	4	Renewable energy consumption (MWh)	Renewable energy consumption (MWh)	100%	100%	100%	
	5	Renewable energy production (MWh)	Renewable energy production (MWh)	100%	100%	100%	
	6	Renewable energy consumption (MWh)	Renewable energy consumption (MWh)	100%	100%	100%	
	7	Renewable energy production (MWh)	Renewable energy production (MWh)	100%	100%	100%	
	8	Renewable energy consumption (MWh)	Renewable energy consumption (MWh)	100%	100%	100%	
Water consumption and management	9	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
	10	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
	11	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
	12	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
	13	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
	14	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
	15	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
	16	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
	17	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
	18	Water consumption (MWh)	Water consumption (MWh)	100%	100%	100%	
Social/Safety + Circular KPIs	19	Local workers employed on site	Local workers employed on site	100%	100%	100%	
	20	Local workers employed on site	Local workers employed on site	100%	100%	100%	
	21	Local workers employed on site	Local workers employed on site	100%	100%	100%	
	22	Local workers employed on site	Local workers employed on site	100%	100%	100%	
	23	Local workers employed on site	Local workers employed on site	100%	100%	100%	
	24	Local workers employed on site	Local workers employed on site	100%	100%	100%	
	25	Local workers employed on site	Local workers employed on site	100%	100%	100%	
	26	Local workers employed on site	Local workers employed on site	100%	100%	100%	
	27	Local workers employed on site	Local workers employed on site	100%	100%	100%	
	28	Local workers employed on site	Local workers employed on site	100%	100%	100%	
Environment KPIs	29	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	
	30	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	
	31	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	
	32	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	
	33	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	
	34	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	
	35	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	
	36	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	
	37	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	
	38	CO2 emissions (tCO2e)	CO2 emissions (tCO2e)	100%	100%	100%	

Social/Safety + Circular KPIs

Environment KPIs

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Data analysis – KPIs FOIX



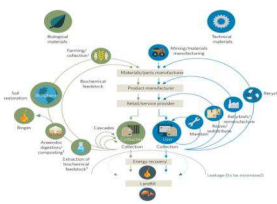
Environment KPIs

$$\frac{\Sigma \text{ Reused water}}{\Sigma \text{ Total water consumption}} = 46\% \quad \frac{\Sigma \text{ Energy consumption from renewable sources}}{\Sigma \text{ Total electric energy consumption}} = 43\%$$

$$\frac{\Sigma \text{ Reuse of excavated rocks and soil}}{\Sigma \text{ Total excavated soil}} = 47\% \quad \frac{\Sigma \text{ Recovered waste}}{\Sigma \text{ Total waste produced}} = 74\%$$

Social/Safety

$$\% \text{ of local workers employed on site} = \frac{\Sigma \text{ Hours local workers}}{\Sigma \text{ Total worked hours}} = 20\%$$



Circular KPI

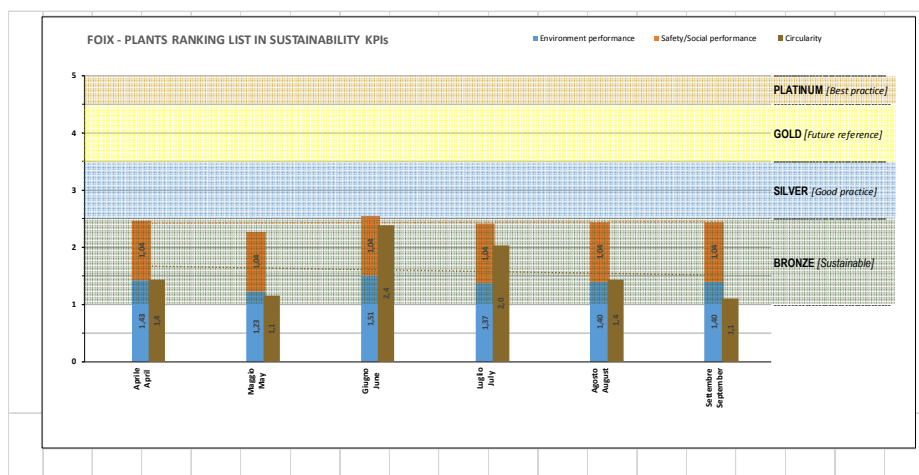
Measuring the circularity (%) of the project in terms of material and energy flows and assets' use

$$= Cf + \frac{(1-Cf) \times (Cu-1)}{2 \times Cu} = 36\%$$

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Sustainable Project development and execution

Monitoring and improving



Sustainable Project development and execution

Monitoring and improving



Circl-E Project

- ❑ Project aimed to assess the application of a **Circular Economy approach** to regeneration projects (ENEL, ARUP, Intesa San Paolo, IE Business School Madrid and Polytechnic of Milan)
- ❑ Based on **Futur-E** and **Circular Economy** initiatives
- ❑ Advantage for ENEL: verify and **consolidate its approach** through a comparison with a world leader



Business Europe Circular Economy Industry Platform

<http://www.circular.eu/project/enel-foix/>