

Objective

The objective of the ECONET project is to introduce novel green network-specific paradigms and concepts enabling **the reduction of energy requirements of wired network equipment by 50%** in the short to mid-term (and by 80% in the long run) with respect to the business-as-usual scenario.

The impact analysis has been based on the expected development of the Telecom Italia network by 2015-2020, when the ECONET project targets that the first "green-enabled" devices will be ready on the market.

Network segment type	Power consumption per device [W]	Number of devices [n]	Overall consumption BAU ECONET [GWh/year]		Gain [%]
Home	10	17,500,000	1,533	473	70
Access	1,280	27,344	307	94	70
Metro/Transport	6,000	1,750	92	43	54
Core	10,000	175	15	6	58
		Total	1,947	616	68

The Consortium

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Econet at a glance

ECONET (low Energy Consumption NETWORKs) project is a 3-year IP (Integrated Project), running from October 2010 to September 2013, co-funded by the European Commission under the Seventh Framework Programme (FP7), addressing the Strategic Objective ICT-2009.1.1 "The Network of the Future".

Duration: October 2010 – September 2013
Funding scheme: Collaborative Project
Total Cost: € 10.1 m
EC Contribution: € 6.1 m
Contract Number: INFOS-ICT-258454

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ECONET
low Energy Consumption NETWORKs

The ECONET project is devoted at re-thinking and re-designing wired network equipment and infrastructures towards more energy-sustainable and eco-friendly technologies and perspectives.

ECO net

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Project Motivation

As the Future Internet is taking shape, it is recognised that energy efficiency should pervade the network infrastructure as a whole.

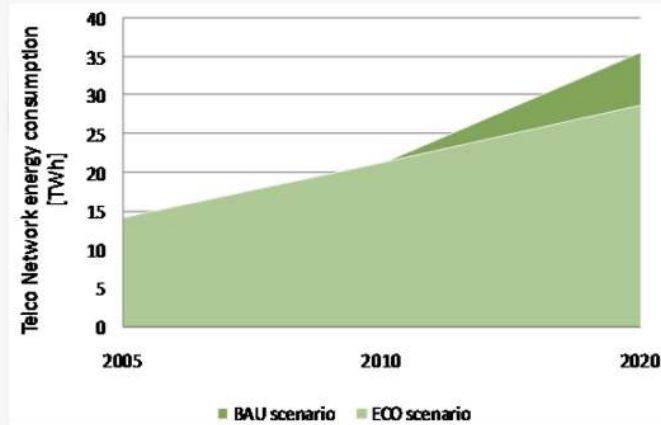
There are two main **motivations** that drive the quest for “green” networking: (i) the **environmental** one, related to the reduction of wastes and impact on CO₂ emissions, and (ii) the **economic** one, stemming from the need of operators to reduce the cost of keeping the network up and running at the desired service level, while counterbalancing the ever-increasing cost of energy.

Thus, the reduction of energy requirements in the wired network becomes a fundamental key factor for:

- the ICT companies: as it opens important business opportunities;
- the European Community: as it is a step towards the goal of the sustainability and the reduction of CO₂ emissions;
- the citizens: as it impacts on economy and life-style by sensibly cutting the end-user costs for networking related services and by triggering a culture change towards a sustainable green economy.

Although Information and Communication Technologies (ICT) represents a key objective to reduce and monitor “third-party” energy wastes, until recently, ICT has **not applied** the same **efficiency concepts** to itself, not even in fast growing sectors like telecommunications and Internet.

The European Commission DG INFOS report estimated that European telecoms and operators had an overall network energy requirement equal to 14.2 TWh in 2005 and 21.4 TWh in 2010, which will rise to 35.8 TWh in 2020 if no “green network technologies” will be adopted.



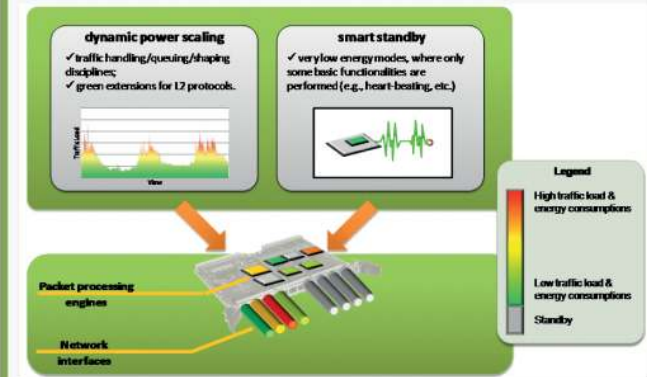
Energy consumption for European telecoms' network infrastructures in the Business As Usual (BAU) and the ECO-sustainable scenarios.

The project

The ECONET project aims at studying and exploiting dynamic adaptive technologies (based on standby and performance scaling capabilities) for wired network devices that allow saving energy when a device (or part of it) is not used.

In order to continuously offer the maximum performance and reliability levels, in today's networks the overall power consumption **remains more or less constant** with respect to different traffic loads.

Nowadays, it is widely recognized that the sole introduction of low consumption silicon elements **may not be sufficient** to effectively curb tomorrow's network energy requirements.



Based on this assumption, the ECONET project will investigate, develop and test new capabilities for the Future Internet devices that can **enable the efficient management of power consumption** so to strongly reduce the current network energy waste.

The ECONET project will introduce, explore and develop two main kinds of network-specific energy-saving capabilities:

- **Dynamic Power Scaling:** allows network devices to dynamically tune the trade-off between energy profile and processing capacity, while meeting the actual traffic load and QoS constraints;
- **Smart Standby:** allows putting currently unused parts of a network device into very low energy consumption modes, where only some basic functionality is performed.