

# Economia e politiche collegate alla sostenibilità ambientale e all'economia circolare

*Massimiliano Mazzanti*



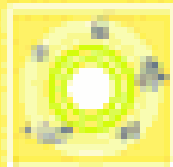
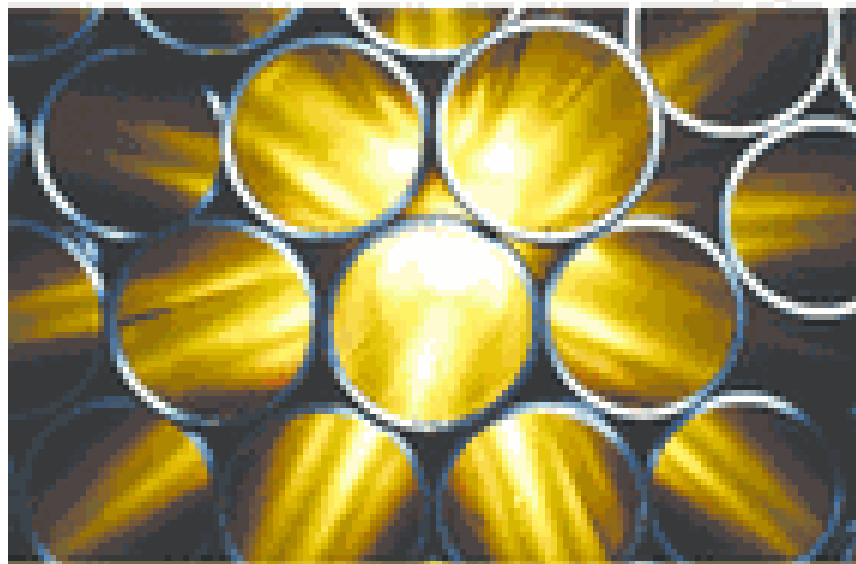
UNIVERSITÀ  
DEGLI STUDI  
DI FERRARA  
- EX LABORE FRUCTUS -



First focus: 1. Introduction

## Circular economy in Europe

Developing the knowledge base



European Environment Agency



European Environment Agency

ETC/WMGE

Waste and Materials in a Green Economy



## Eco-innovation in Italy

## EIO Country Profile 2014-2015

[www.eco-innovation.eu](http://www.eco-innovation.eu)

[ec.europa.eu/environment/ecoap](http://ec.europa.eu/environment/ecoap)



<http://www.minambiente.it/>

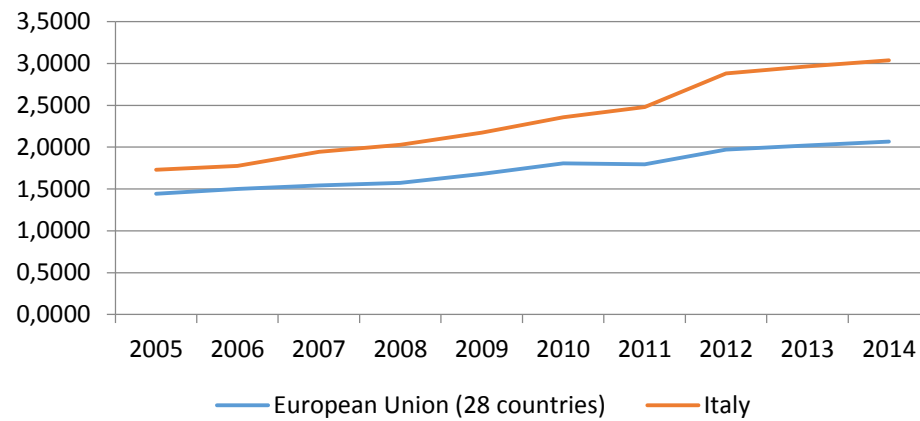


Figure 1.1- - Resource productivity in Italy and EU28.

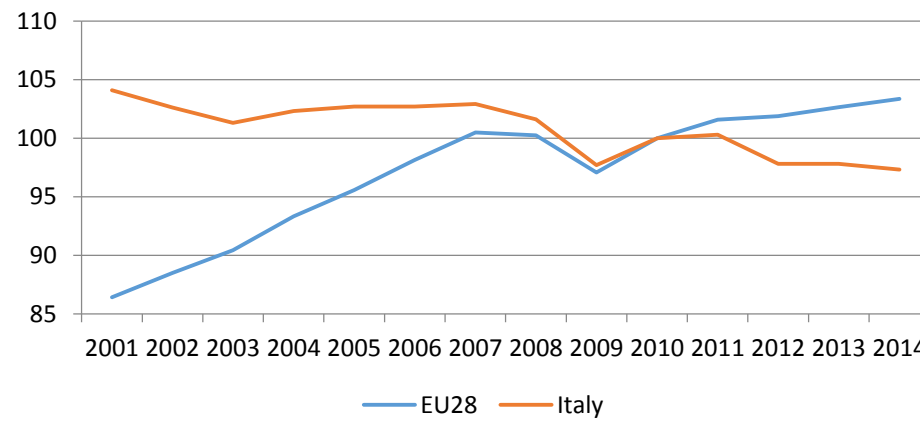


Figure 1.2 - Labour Productivity in Italy and EU28.

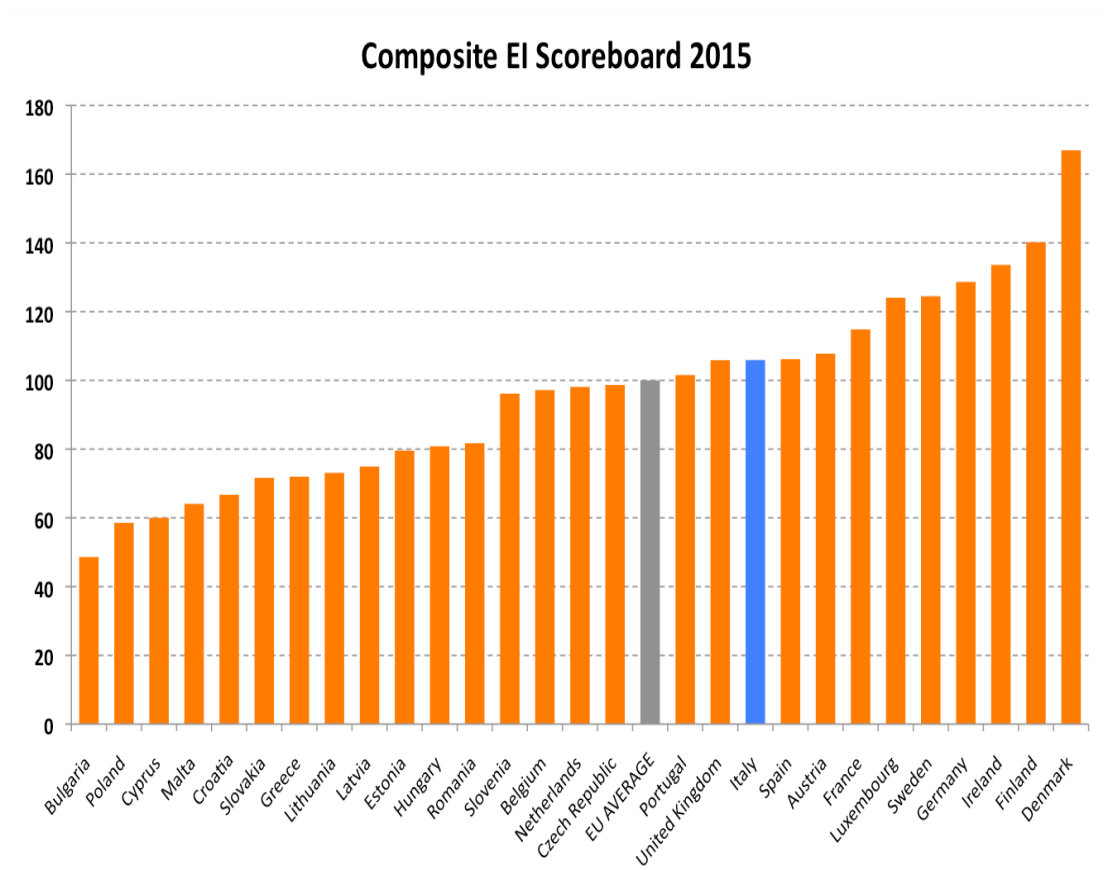


Figure 2.1 EU27 Eco-innovation scoreboard 2015, composite index

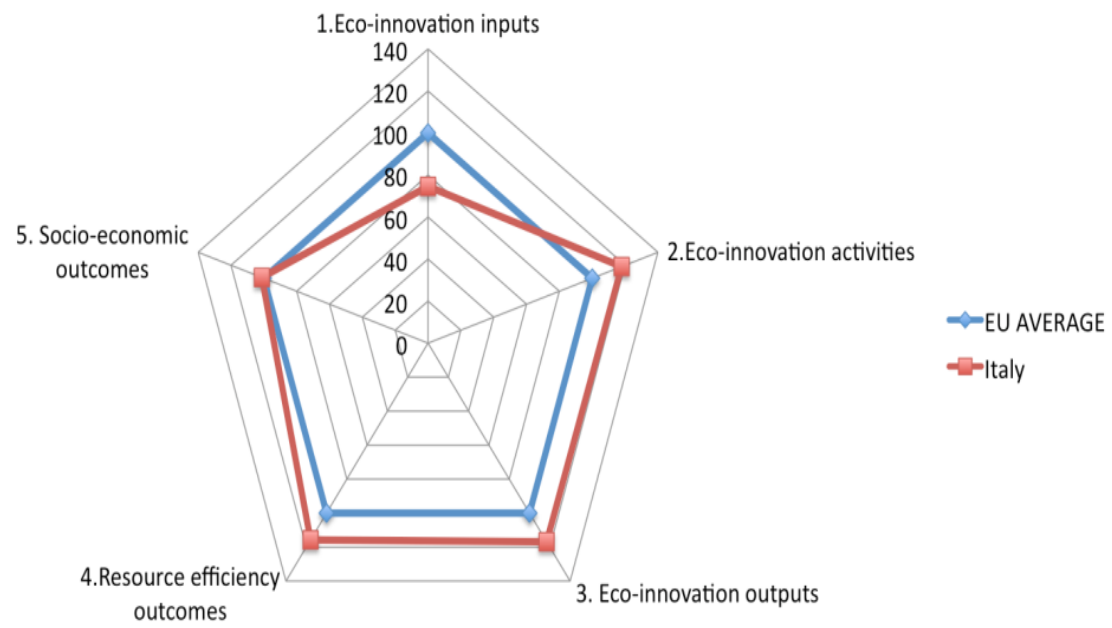


Figure 2.2 Components of the eco-innovation composite index for Italy 2015

#### ACEA PINEROLESE INDUSTRIAL SPA (Turin)

The company deals with, inter alia, the production of biogas via anaerobic digestion (AD), in which heat is supplied by district heating network in the town of Pinerolo (near Turin).

The AD takes place with sole power of MSW (organic fraction of municipal solid waste) from the collection in Turin and the surrounding cities.

From 2014 part of the biogas is converted into biomethane, which can power both motor vehicles which go to civil use.



Source and Further information:  
[www.aceapinerolese.it/](http://www.aceapinerolese.it/)

Keywords: bioenergy; recycling

#### REMADE IN ITALY

Remade in Italy is a non- profit organization founded in 2009 by Lombardy Region, CONAI, Chamber of Commerce of Milan and CONAI for the promotion at national and international level, of the products "made in Italy" arising from recycling.

In 2014 Remade in Italy was recognized by ACCREDIA, becoming the first certification scheme accredited in Italy for the verification of recycled content in a product. The certification Remade in Italy certifies traceability of production within the same production chain, starting from the verification of origin of incoming raw materials, to the output of the certified products, making it a tool specifically recognized in the green public procurement as a model for the verification of the quality and sustainability of recycling.

The Remade products Italy® are identified by a label that contains the information about the sustainability characteristics of the product, in terms of raw material savings, reduction of energy consumption and reduce CO2 emissions.

#### GREEN DIESEL – Porto Marghera (Venice)

The project Green Refinery is the first example in the world of conversion of a conventional oil refinery in biorefinery.

The new renewable component produced by Eni at its biorefinery in Venice is called "Green Diesel" and it is produced through the hydrogenation of vegetable oils using the Ecofining™ technology which is able to completely eliminate the oxygen contained in the raw material, thus obtaining a totally hydrocarbon product that is perfectly compatible with the fossil fuel to which it is added.

Source and Further information: [www.eni.com](http://www.eni.com)

Keywords: bioenergy, eco-innovation

## Recovery of critical raw materials from WEEE and hydrometallurgical pilot plant “ROMEO”

ENEA ([www.enea.it](http://www.enea.it)), the Italian National Agency for New technologies, Energy and Economic sustainable development, active in the field of eco innovation, develops and implements technologies, methodologies and integrated approaches for the efficient use of resources and the closure of loops at micro, meso and macro level, with particular focus on recycling technologies up to pre-industrial pilot scale technologies. With regard to the specific sector of critical raw materials recovery from electric and electronic equipments waste (WEEE), an innovative hydrometallurgical process for the recovery of added value raw materials such as gold, tin, silver and copper from printed circuit boards (PCBs) has been developed, tested and patented.

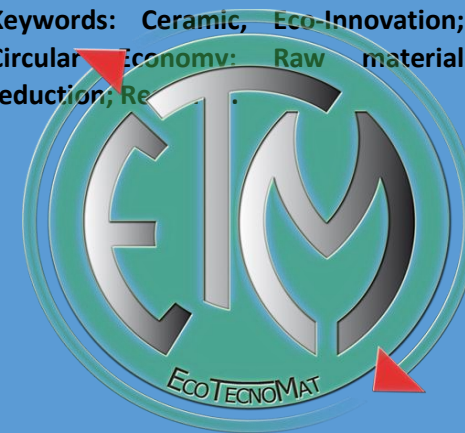
The action has been completed with the realization of a modular, and flexible pilot plant at pre-industrial scale named “ROMEO” (Recovery Of MEtals by hydrOMetallurgy) located at ENEA Casaccia Research Centre (Rome). The pilot plant allows testing hydrometallurgical processes to recover valuable materials from complex end of life products, urban waste and industrial scraps, including their technical and economic efficiency, risks-benefit analysis, industrialisation scale-up feasibility and business plan definition.

## EcoTecnoMat

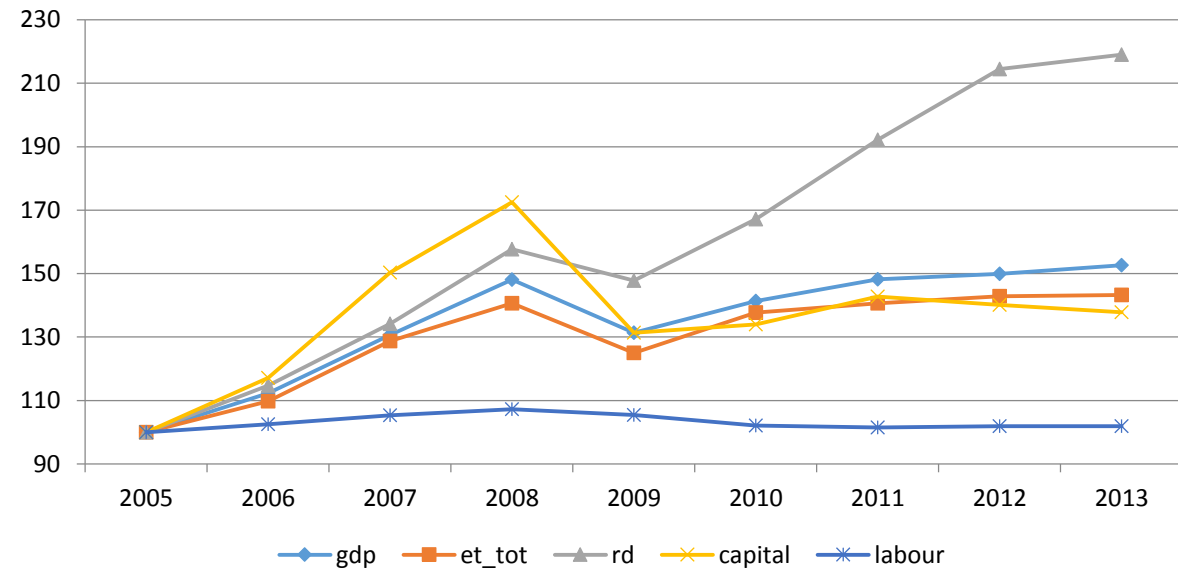
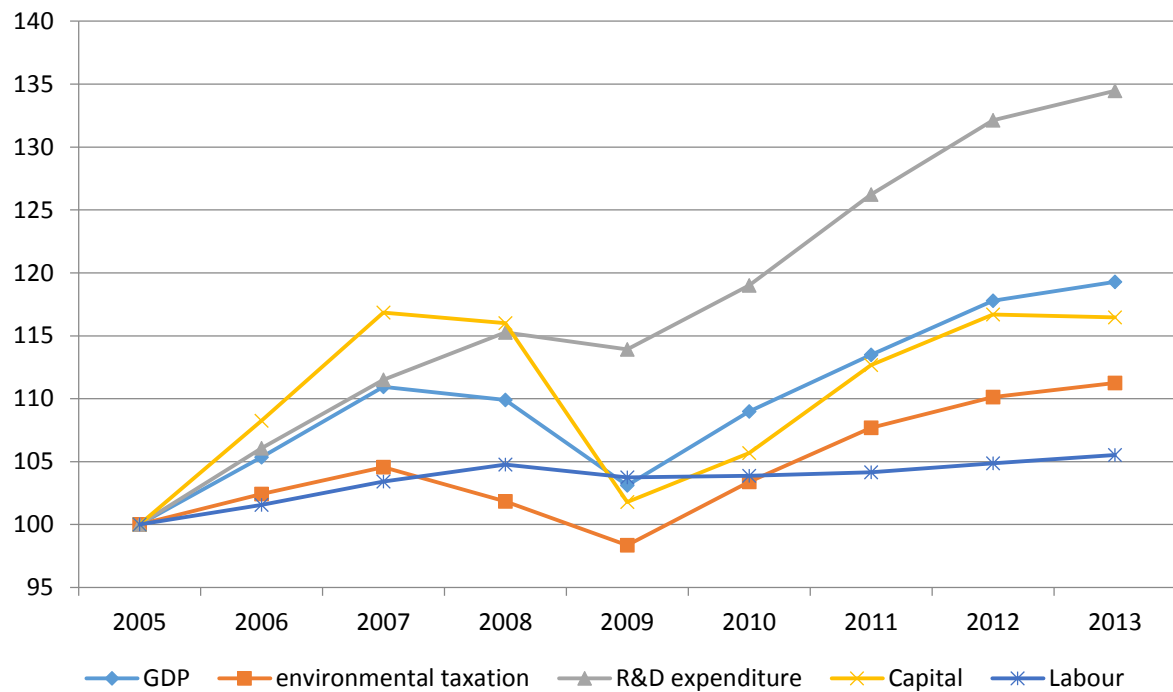
EcoTecnoMat S.r.l. is a spin-off of the University of Modena and Reggio Emilia (UNIMORE) aimed at fostering product and process technological innovation. It is dedicated to research. It invents and develops materials with reduced environmental impact mainly (but not only) in the two sectors of ceramics and construction which combine innovation and circularity. From the recycling and reuse of waste and the use of secondary raw materials, through innovation, the spinoff invents and commercialized new products and processes. Environmental benefits are those of reducing waste generation, fostering re-use and circularity of materials in sectors with relevant environmental pressure (ceramics and construction) and promoting eco-innovation.

Source and Further information:  
<http://www.ecotecnomat.eu/>

Keywords: Ceramic, Eco-Innovation;  
Circular Economy; Raw material  
reduction; Re

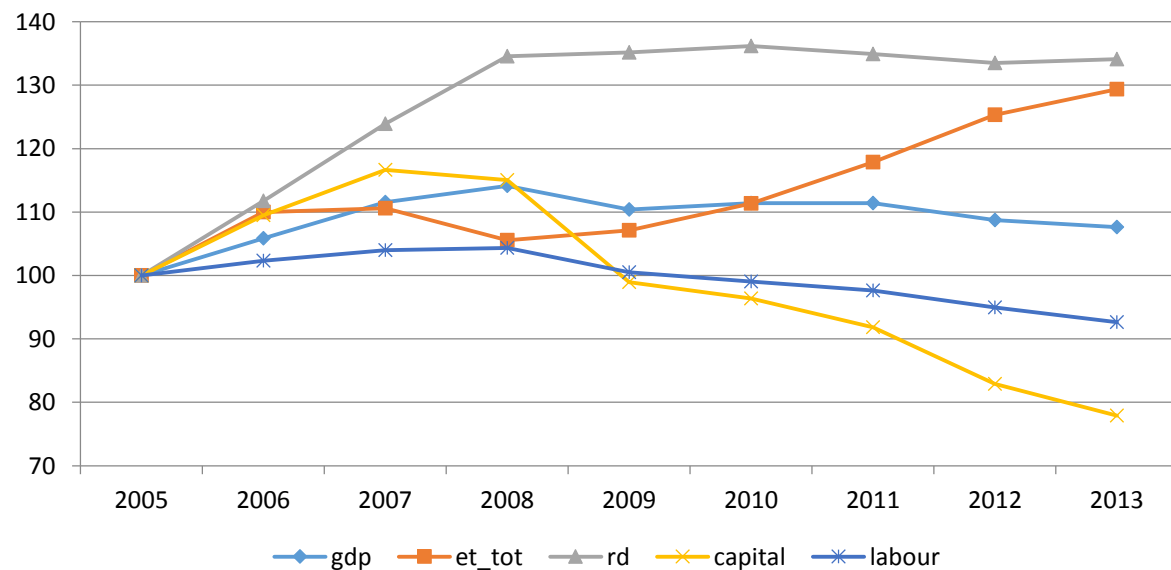




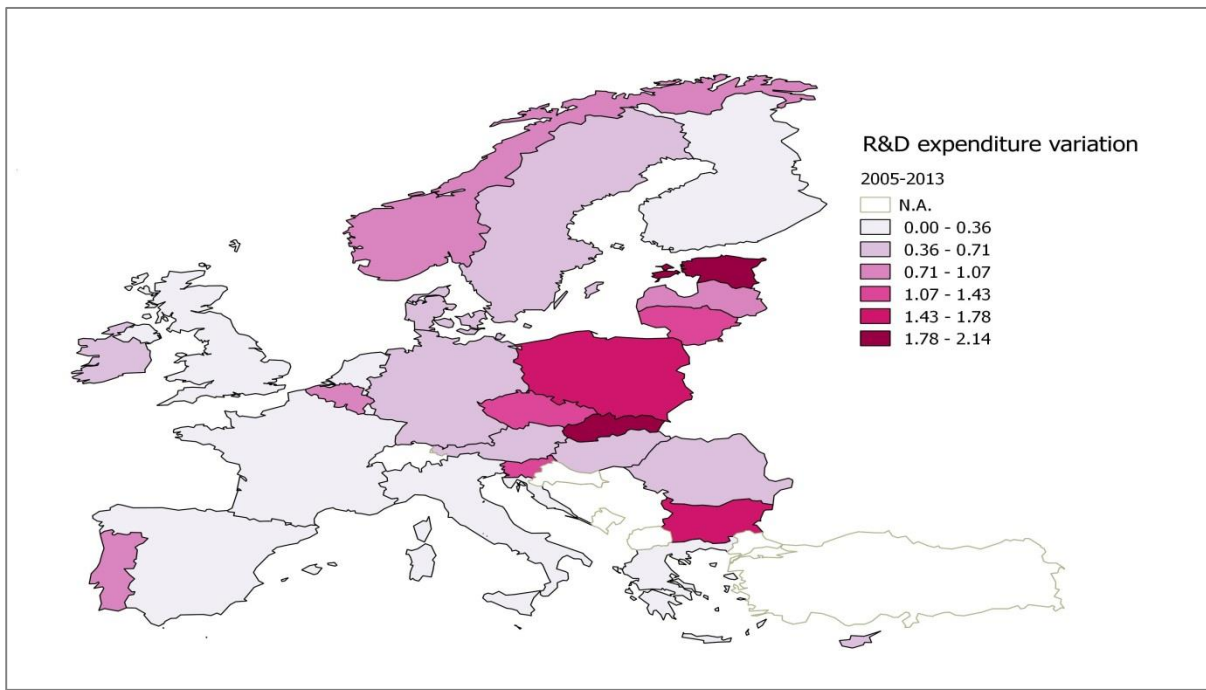


North EU

East EU



South EU



**Figure 8 - Total R&D expenditure variation in Europe (2005 - 2013)**

Figure 6 – Total environmental taxes variation in Europe (2005 – 2013)

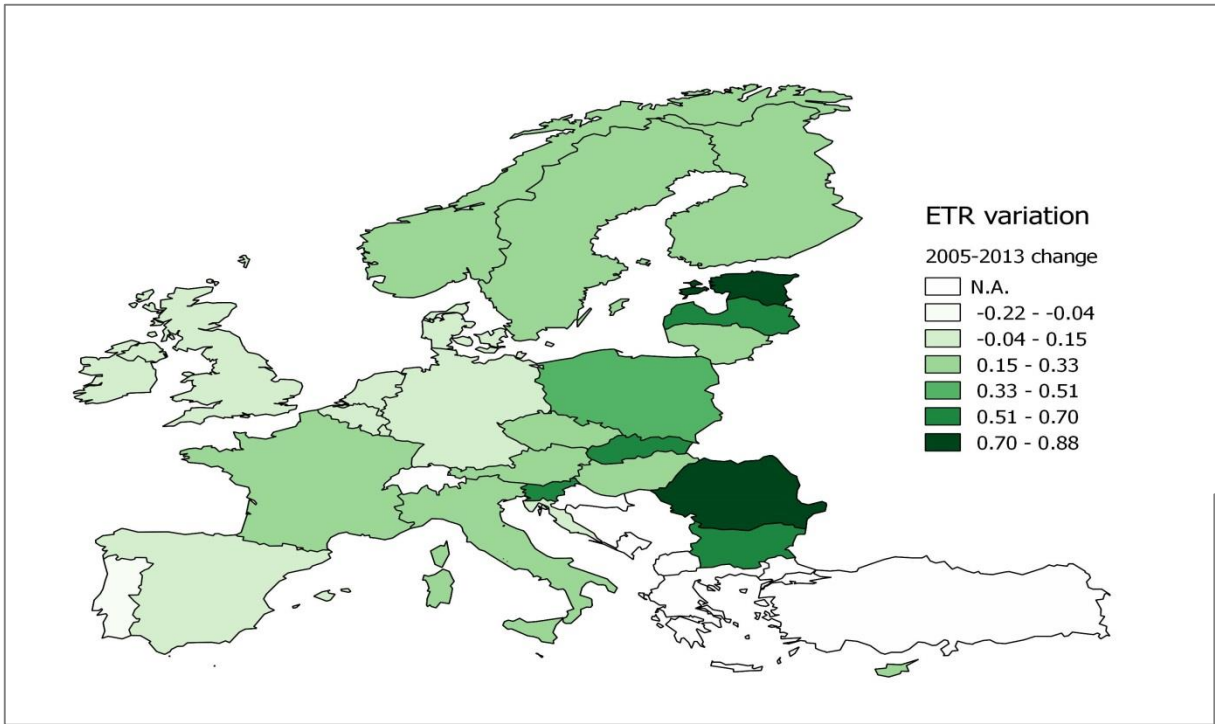
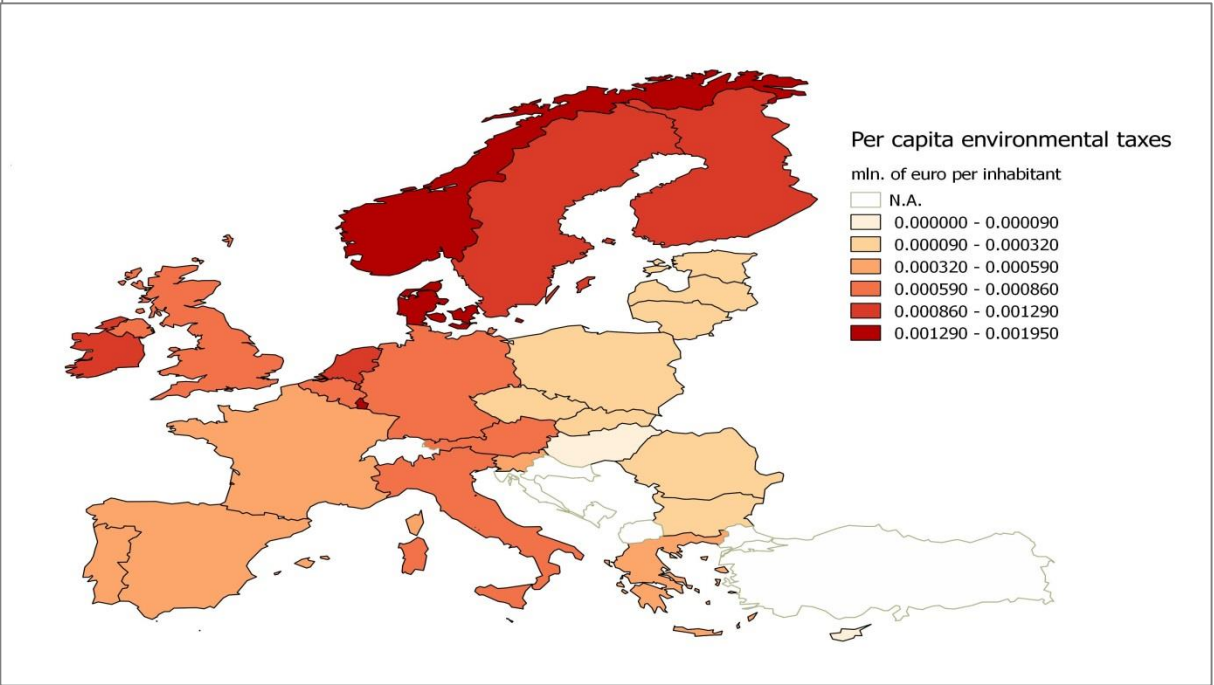


Figure 5 - Per capita environmental taxes pressure variation in Europe (2005-2013)



# Politica ambientale

- The main reference is the bill 'Collegato ambientale', which entered into force on February 4th 2016 (Bill 28 December 2015 - 221), that contains a national plan on sustainable consumption and production and many new policies and funding schemes for waste, resources and circular economy targets. Removal of environmental fiscal subsidies
- 'delega fiscale' (Fiscal bill) that was approved on 24 February 2014 ("Delegation to the government for defining a fairer, more transparent and growth-oriented fiscal system"). Art. 15 for the first time mentioned environmental fiscal issues, that could be implemented along various lines.
- We recall that EEA estimated in 2011 the environmental tax revenue potential being about 30 Billions€ (compared to current 1Billion).

# Politiche

- **Energy efficiency in buildings**
- **Support to eco innovation and Organizational innovations**
- **Assessment and communication of the ecological footprint.**
- **Consumption of reused and recycled products.**
- **Measures to increase separated collection and recycling**
- **Removal of environmentally harmful subsidies**
- **Efficiency, energy and private/public transport**
- **Renewable energy.**
- **Kyoto fund.**
- **Payment for Ecosystem Services**

## **Adoption of waste-reducing technology in manufacturing: Regional factors and policy issues**

Resource and Energy Economics, Volume 39, February 2015,  
Pages 53-67

Giulio Cainelli, Alessio D'Amato, Massimiliano Mazzanti



We specifically address the role of local policy environments and regional features.

Our evidence, based on Italian data, supports the role of regional factors related to waste management and policy.

Firms located in regions featuring better separated waste collection and stricter waste policy are more likely to adopt eco innovations

## **Resource Efficiency, Environmental Policy and Eco-Innovation.**

**Evidence from EU firms  
2016, EU data**

Giulio Cainelli, Alessio D'Amato, Massimiliano Mazzanti

Existing environmental policy is the only significant factor behind the adoption of innovations that reduce the use of waste and material.

More than market demand

The result is an important piece of knowledge for the setting of a sound and economics-based strategy towards the circular economy.