

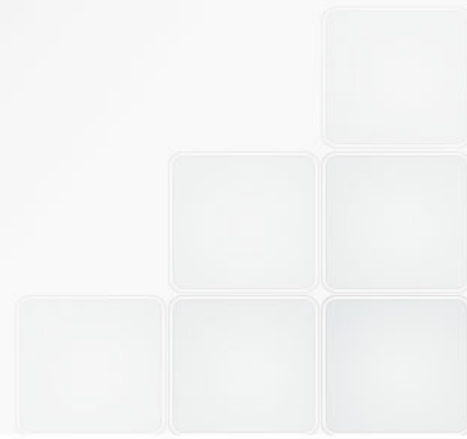


# The development of renewable energy sources in Italy

20° IPHE Steering Committee Meeting

Italy update

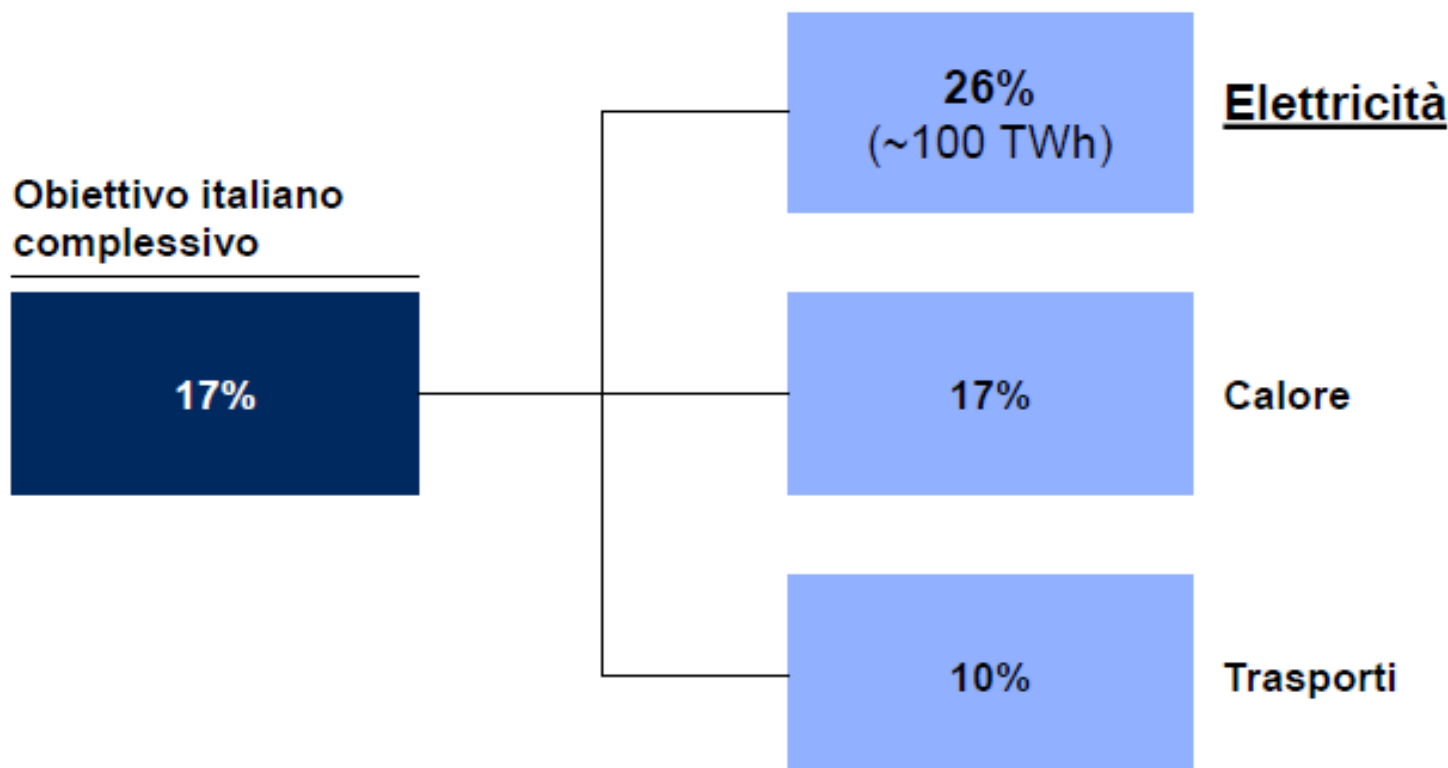
Fukuoka, November 20, 2013



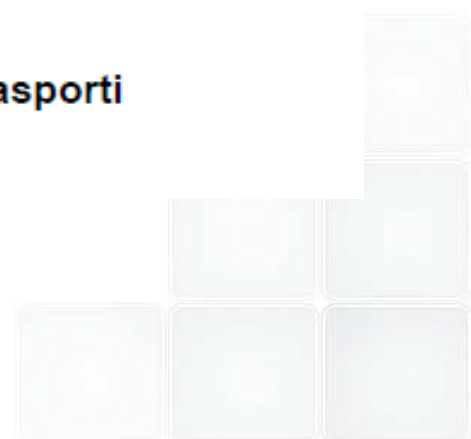
# The Italian NREAP targets by 2020



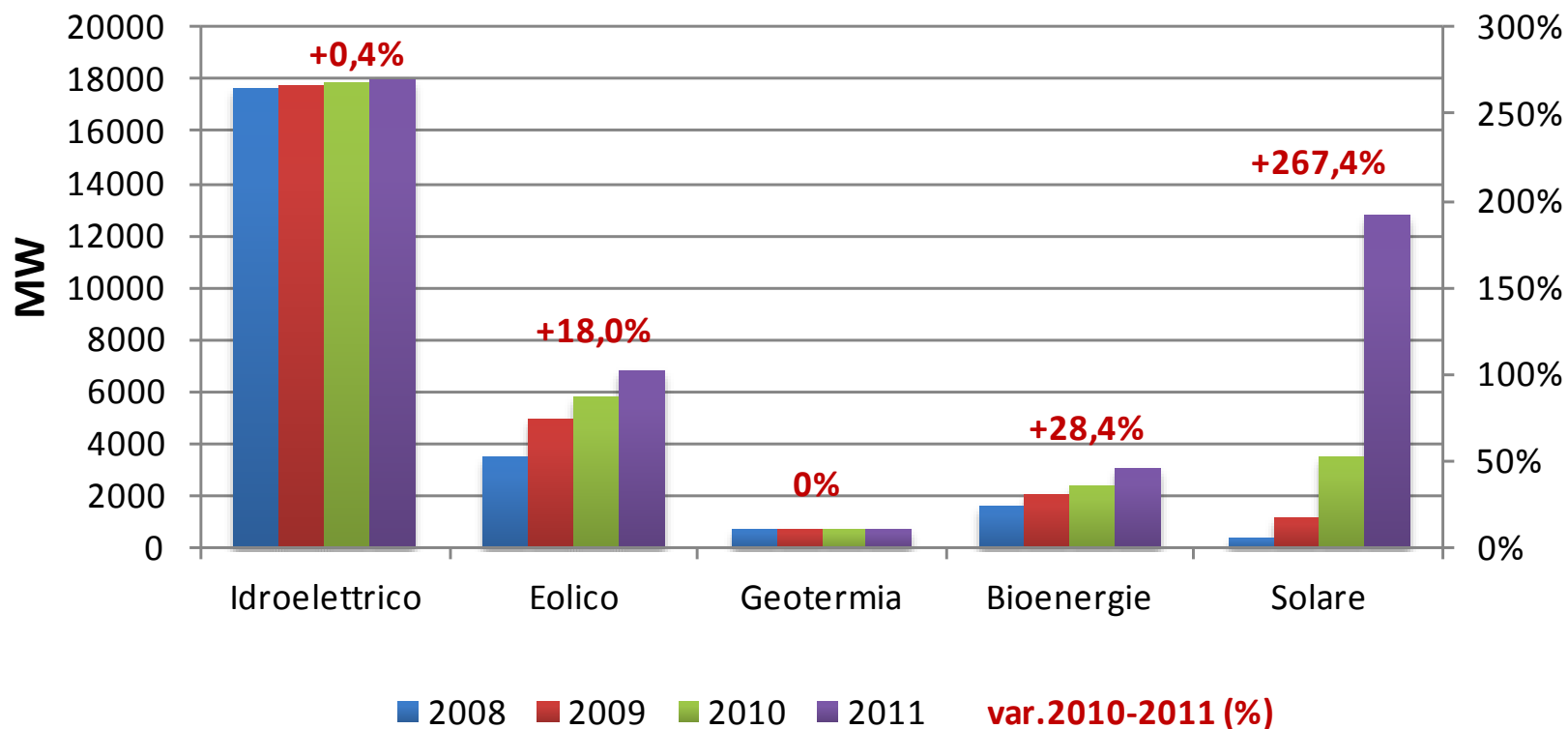
## Obiettivi per settore (Piano d'Azione Nazionale - PAN)



Source: Italian Ministry of Economic Development



# Renewables sources growth during 2011



Source: GSE

## Electricity production

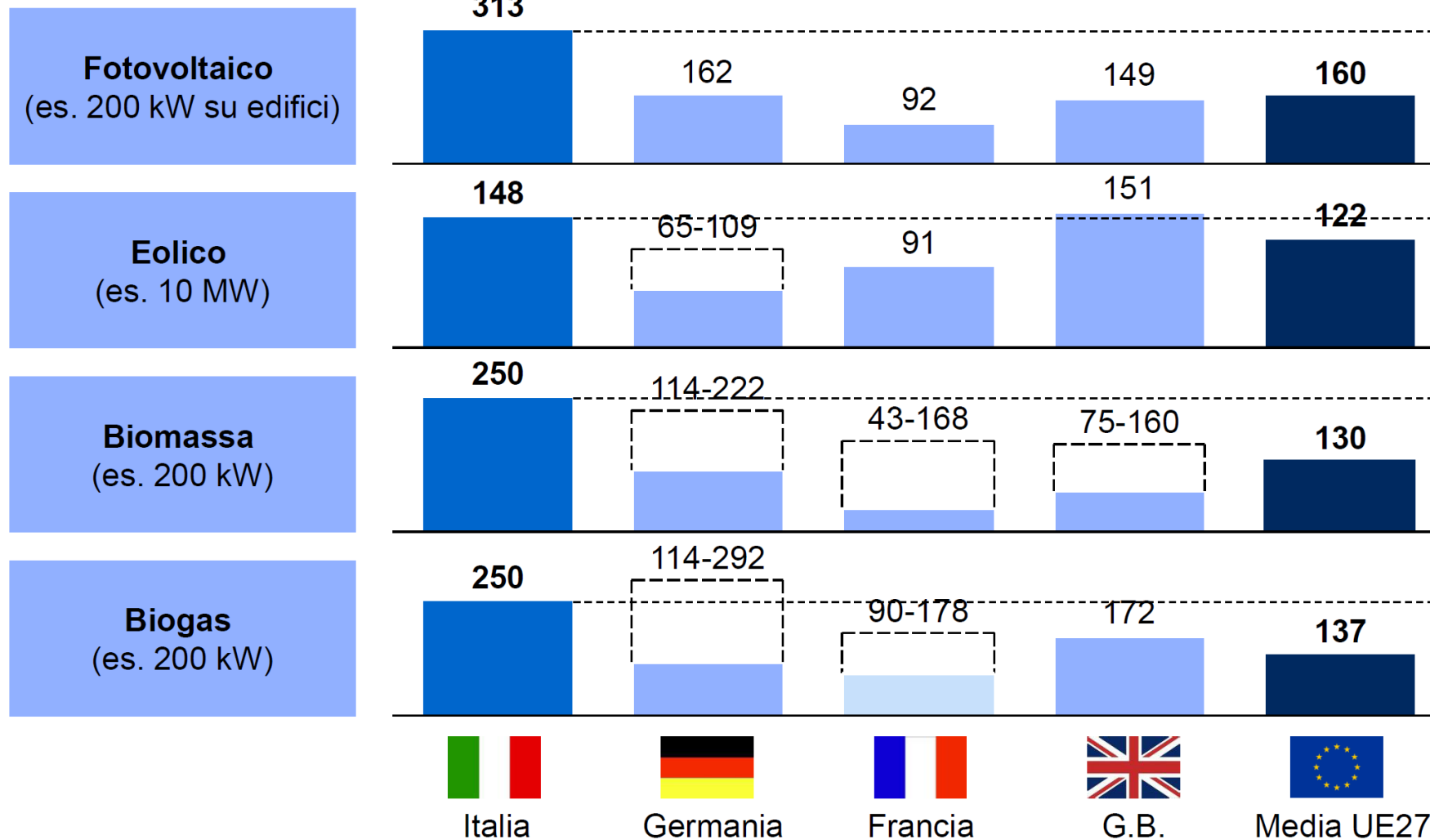
- Conto energia (feed-in premium tariff only for photovoltaic and CSP)
- Green Certificates (quota system for all plants except PV)
- Tariffa Onnicomprensiva (feed-in tariff for all plants up to 1 MW and up to 200 kW for onshore wind)

## Heat production

- 55% tax credit (for solar thermal, biomass, heat pumps)
- White certificates (different sources)

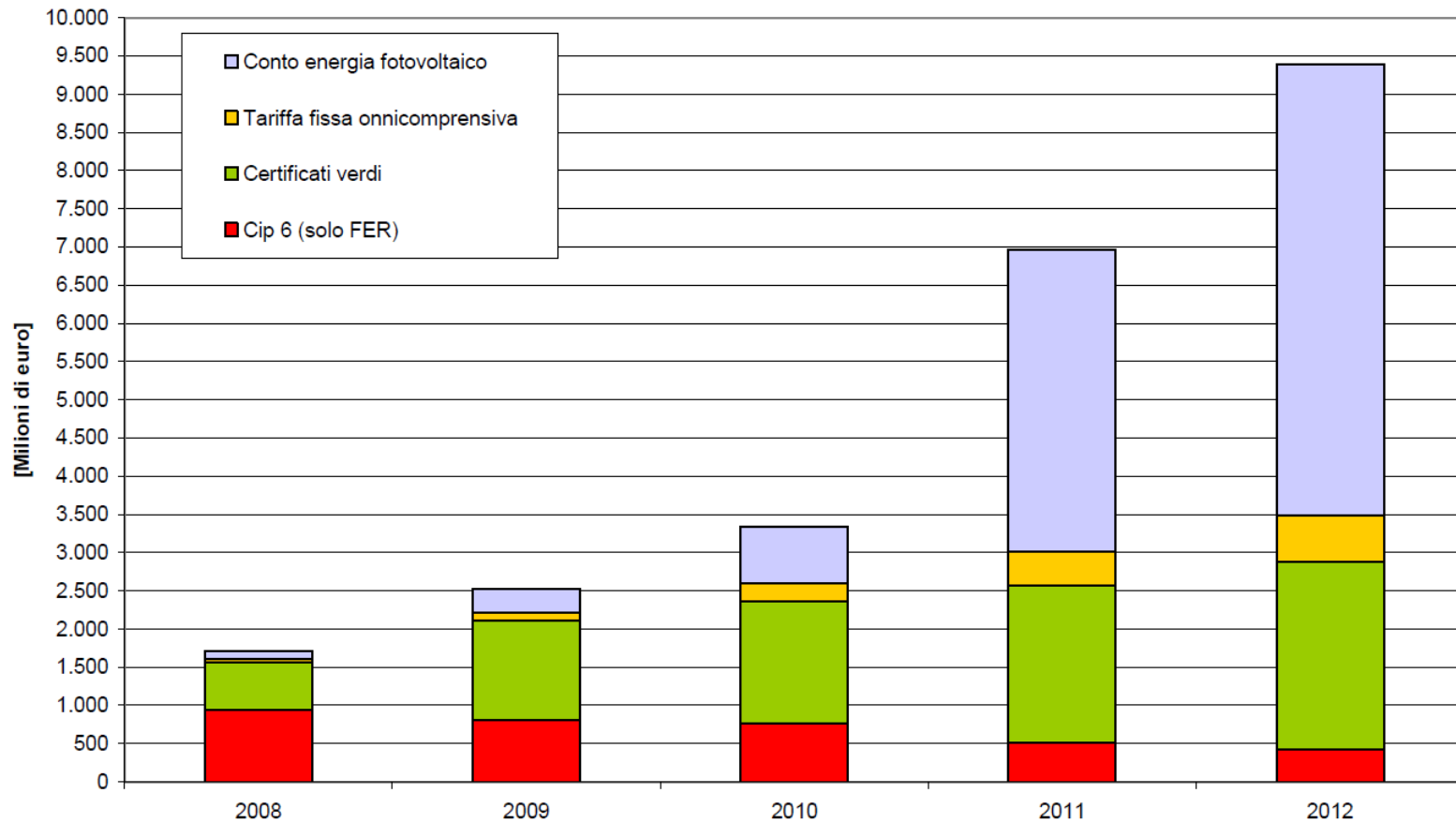
***New decrees are about to come in the next months for both RES-E ad RES-H***

# RES incentives in EU countries (€/MWh)



1 Valori normalizzati a 20 anni e alle ore di producibilità italiane (aggiornati a gennaio 2012). Le forchette sugli incentivi sono dovute alla possibilità di aggiungere premi in base a tecnologia e natura e provenienza della fonte | 21

# The cost of incentives for RES in the Italian power sector



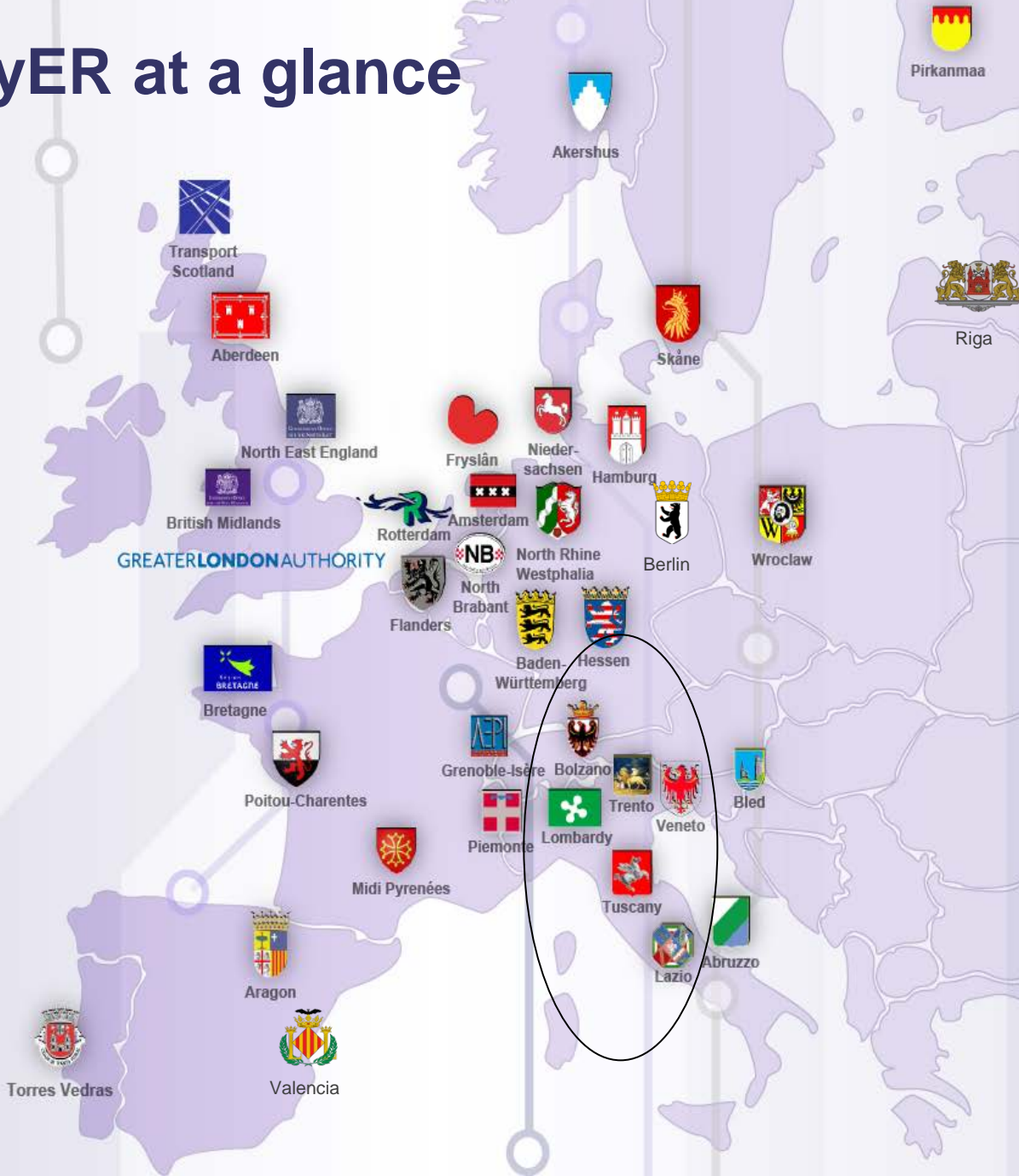
Source: AEEG

# HyER at a glance

**Membership increase:**  
2008 (9) < 2013 (40)

**Population:** 115 mln

**GDP:** 363 bln



# CHIC Project FCH JU Phase 1

Five European regions will deploy a minimum of 26 new Fuel Cell Hydrogen buses in their public transport fleets and implement new hydrogen infrastructure.



**London**



**8 buses**



**Bolzano**



**5 buses**



**Milan**



**3 buses**



**Aargau**



**5 buses**








**Oslo**



**5 buses**



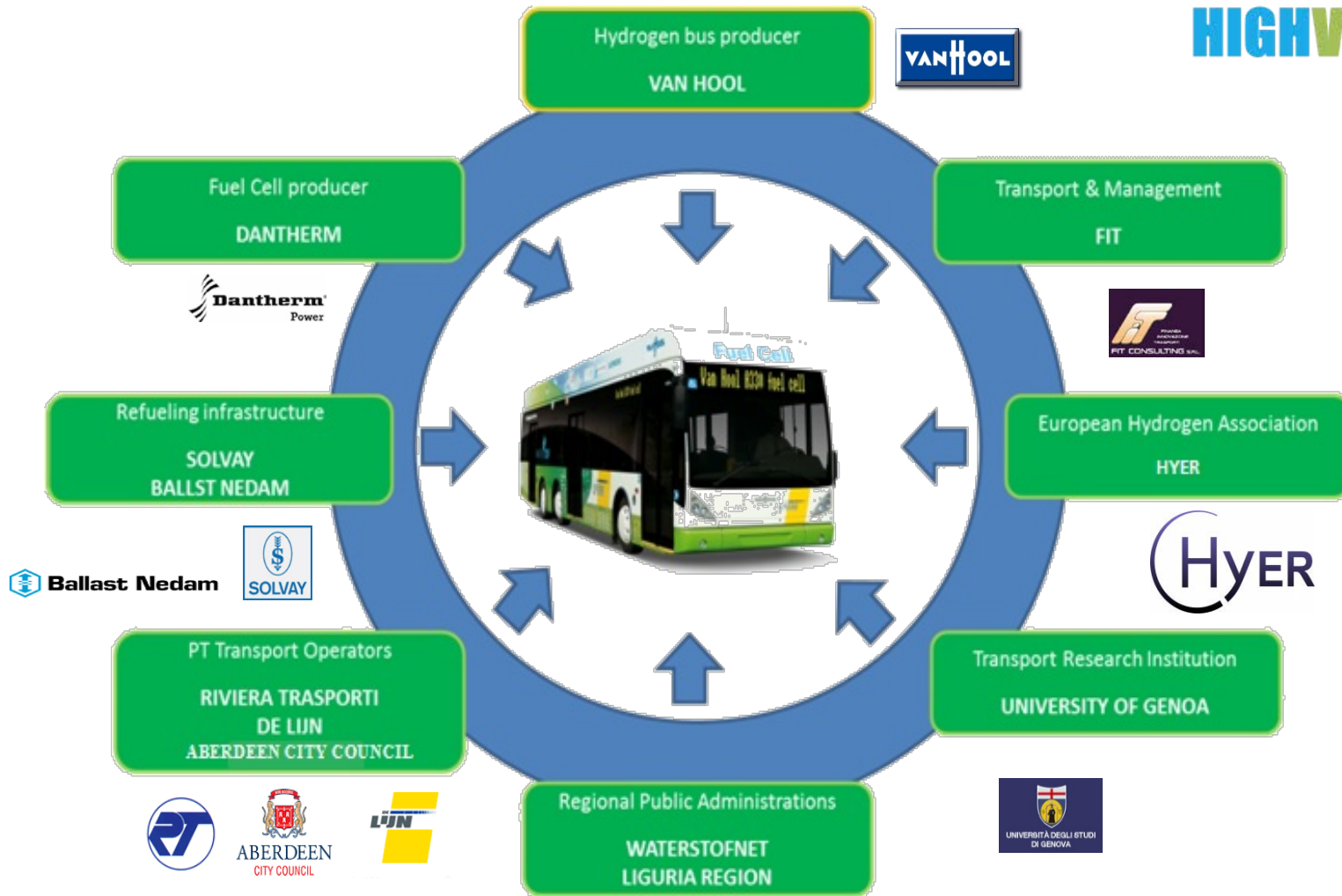
# City status (end August 2013)

Phase 1 City	Type of RFS	Manufacturer	Start of operation	Image	Number of fillings	Kg H <sub>2</sub> refuelled
Aargau	Onsite electrolyser + trailer delivery	Carbagas (Air Liquide)	April 2012		1,954	30,518
Bolzano	Onsite electrolyser	Linde	Summer 2014		N/A	N/A
London	Delivered liquid –on vehicle compression	Air Products	December 2010		2,033	32,037
Milan	Onsite electrolyser	Linde	Summer 2013		9	128
Oslo	Onsite electrolyser	Air Liquide	March 2012		612	12,938

# High V.LO City consortium



**HIGHVLOCITY**



# 5 FC Buses in San Remo



**HIGHVLOCITY**

Riviera Transport SpA is the local PT operator in the province of Imperia with the addition of Arroscia, in the Liguria Region.

Riviera Transport operates 186 diesel buses; 19 of trolleybuses

7,500,000 km in public transport, over 1,500,000 in hire service; 12 mil passengers

Riviera Trasporti T purchased five 3<sup>rd</sup> generation A330 fuel cell (hybrid fuel cell-electric) by Van Hool SA.

The A330 is 13,15 meter 3 axle bus and shows fuel consumption less than 9 kg/100 km (iso 23 kg/100 km), the hybrid drive allowed the operating range to increase well over 350 km enough to complete a daily 18 hours city duty cycle thanks to the hybrid drive.

The Hydrogen is stored into 8 tanks, each containing 40 kg of H<sub>2</sub> at 350 bar

The Fuel cells produce 150 kW with variable tension 300-700 V.



# Two FC Minibuses produced and operated in Trento



Minibus in Piazza a Moena

# INGRID FP 7 Energy Storage Project



High-capacity hydrogen-based green-energy storage solutions for grid balancing

## Consortium

Engineering Ingegneria Informatica (coordinator)



Italy

McPhy Energy S.A.



France

Hydrogenics



Belgium

Tecnalia



Spain

RSE



Italy

Enel Distribuzione



Italy

Arti



Italy

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Project Web Site: <http://www.ingridproject.eu>



Work partially supported by European Community under the ENERGY programme of the 7th FP for RTD - project INGRID, contract 296012. The Author is solely responsible for the content of this paper. It does not represent the opinion of the European Community, and the European Community is not responsible for any use that might be made of data appearing therein.



High-capacity hydrogen-based green-energy storage solutions for grid balancing



Energy storage is becoming a critical issue to balance and integrate larger shares of fluctuating renewable energy and improve power grid reliability and efficiency. Hydrogen energy storage represents a viable option to increase carbon-neutral energy supply due to its high energy density and reversibility, however its widespread adoption is yet to come until the actual concerns on safety and transformation costs will be solved.



# Stati Generali dell'idrogeno e celle a combustibile



## Save the date: Hydrogen and Fuel Cells: what opportunities for Italy ?

Next Post

When: 13 December, 2013

The National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), the Federation of Scientific and Technical Associations (FAST), the Italian Association of Hydrogen and Fuel Cells (H2It) and the University of Perugia organized on December 13th 2013, in Rome the seminar **"Hydrogen and Fuel Cells: what opportunities for Italy ?"** in the context of the fifth edition of the "European Fuel Cell Technology & Applications – Piero Lunghi Conference (EFC13)".

The aim of the seminar is on the one hand to illustrate the state of the art, the energy scenario and the future commitment of the Italian society about hydrogen and fuel cells technologies and the other to give a voice to the Italian industry and research institutions for animating the exchange of views that highlight the needs of academic and business communities with regard to the energy and environmental goals set by the Italian system.

The event is free.

The agenda is being finalized and will be published as soon as possible on the internet site [www.h2it.org](http://www.h2it.org) or [www.fast.mi.it](http://www.fast.mi.it)



SAVE THE DATE

**Stati Generali Idrogeno e Celle a Combustibile:  
Quali opportunità per il sistema Italia?**

Centro Congressi Fontana di Trevi, Roma  
13 Dicembre 2013