Instrument Mixes in European Climate Policies

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17th Global Conference on Environmental Taxation
Groningen, 23 September 2016

European University Institute
ROBERT SCHUMAN CENTRE FOR ADVANCED STUDIES
FLORENCE SCHOOL OF REGULATION CLIMATE
Universidade Vigo

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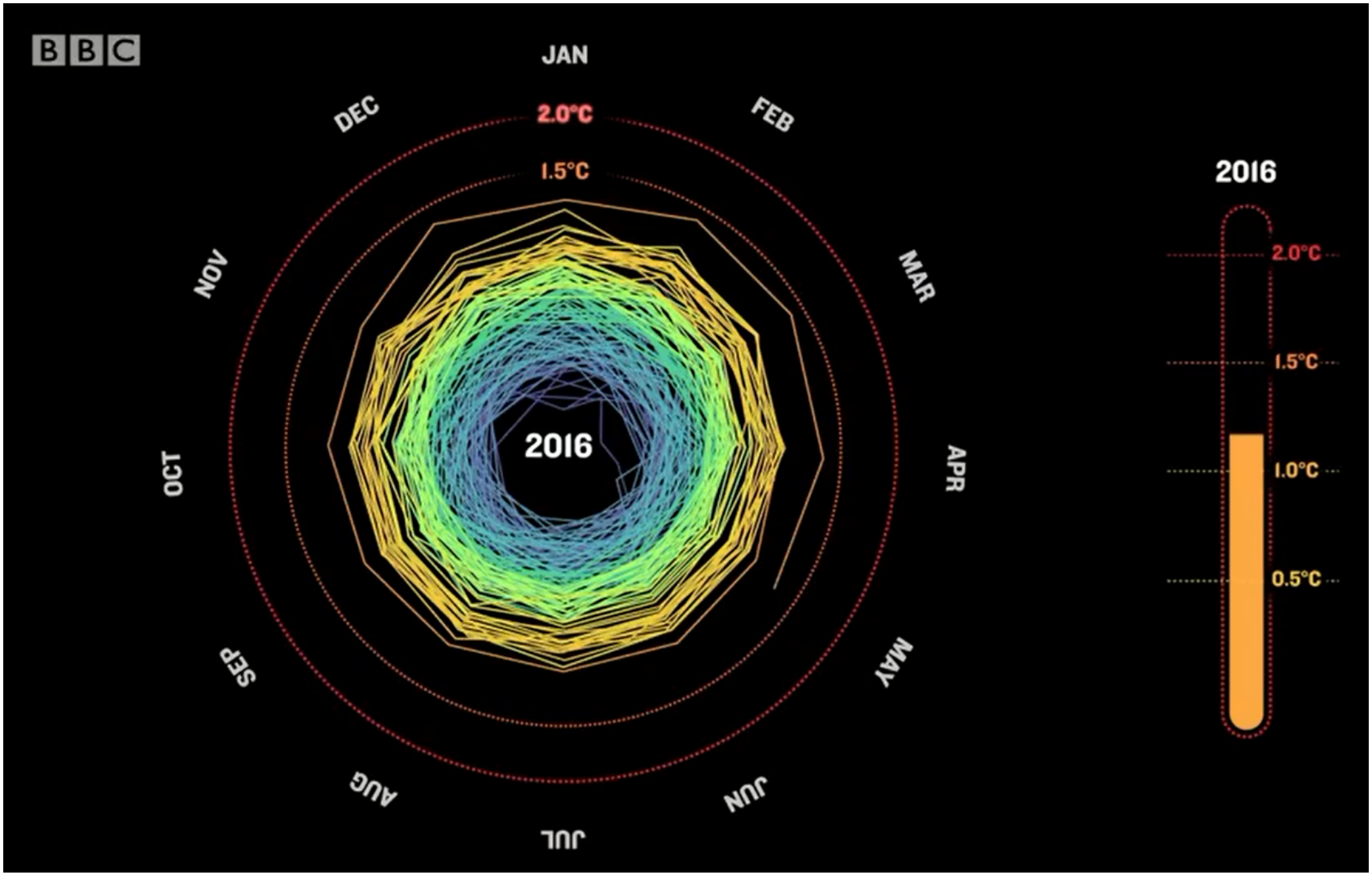
1. Why this topic?



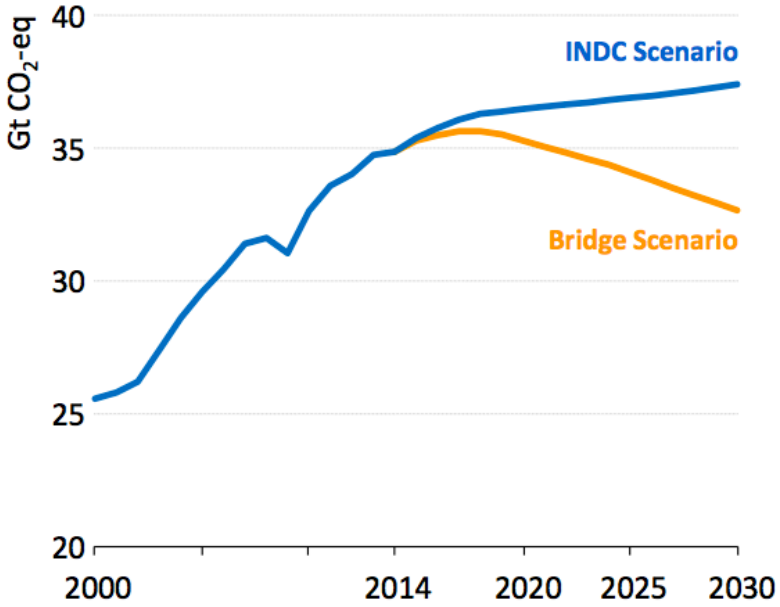
Dealing with climate change

- A ‘perfect’ negative externality
  - Global public bad (with varying responsibilities and impacts)
  - Intergenerational issues and non-reversibilities
  - Uncertainty and extreme events
- The Paris Agreement
  - Inappropriate to deal with the global externality
  - The best possible solution?
  - How to fill the gap? NDC and public policies

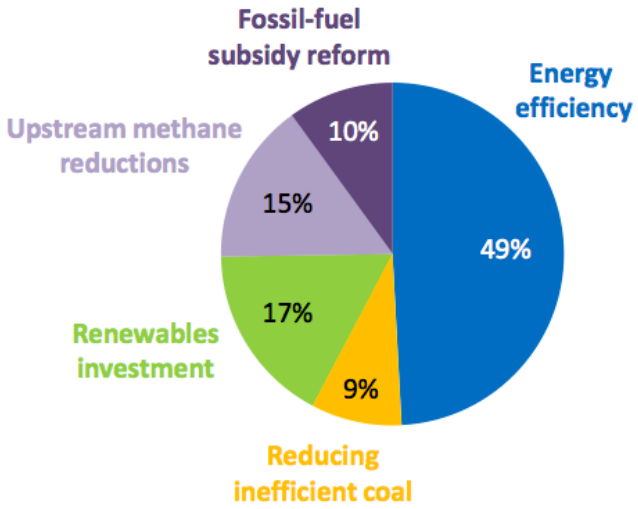
1. Peak in emissions:
IEA strategy to raise climate ambition

WEO Special Report on Energy & Climate Change

Global energy-related GHG emissions



Savings by measure, 2030



Five measures – shown in a "Bridge Scenario" – achieve a peak in emissions around 2020, using only proven technologies & without harming economic growth

Why European climate policy matters?

- A very relevant experience (the *'Grand New Policy Experiment'*)
  - In comparative terms
  - Sophisticated (role of Economics) and complex approximation
  - Increasing academic literature
  - In a moment of intense policy change/debate
- Relevance for post-Paris?
  - A prototype?
  - Learning by doing for the world? NDCs
- Research needs and challenges

2. Instrument mixes in climate policies

- *Mitigation and adaptation*
- First-best policy: GHG pricing of external damages
- Second best departures
  - Exogenous objectives
  - Other market failures
  - Distributional issues
  - Leakage
  - Public revenues
  - Other objectives and policies in place

➔

- Sub-optimal prices
- Price coverage
- Interactions and synergies with other policy instruments
- Policy ‘packages’
- International linkages

3. What is European Climate Policy?

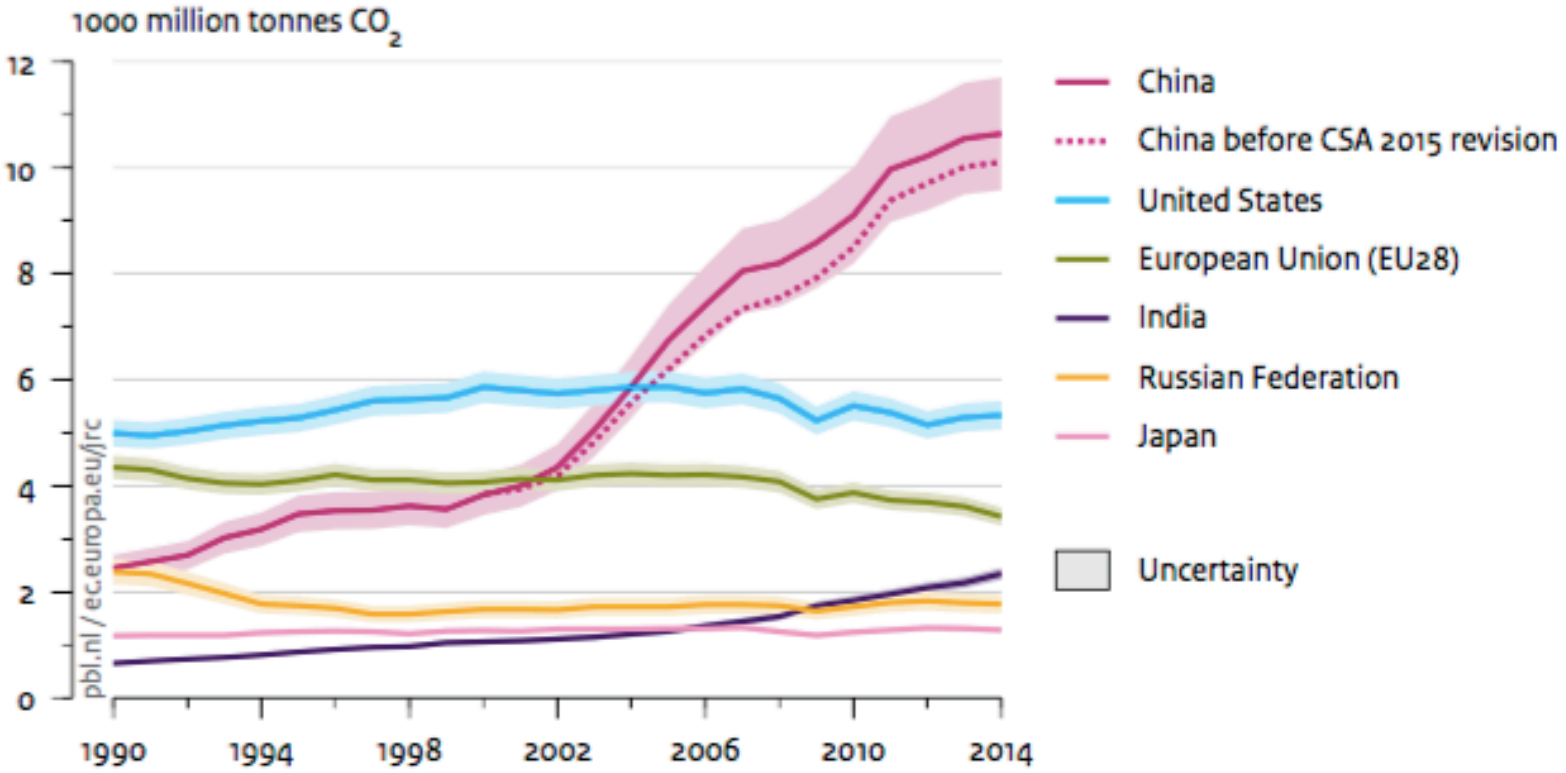
- Explicit (eg EU ETS) and implicit instruments (eg RES promotion)
- EU, national and subnational strategies
  - Linked/related or not

How to assess it?

- Complying with its GHG mitigation objectives
- Cost-effectiveness
- Contribution to international agreements (Böhringer, 2014)
- Distributional issues

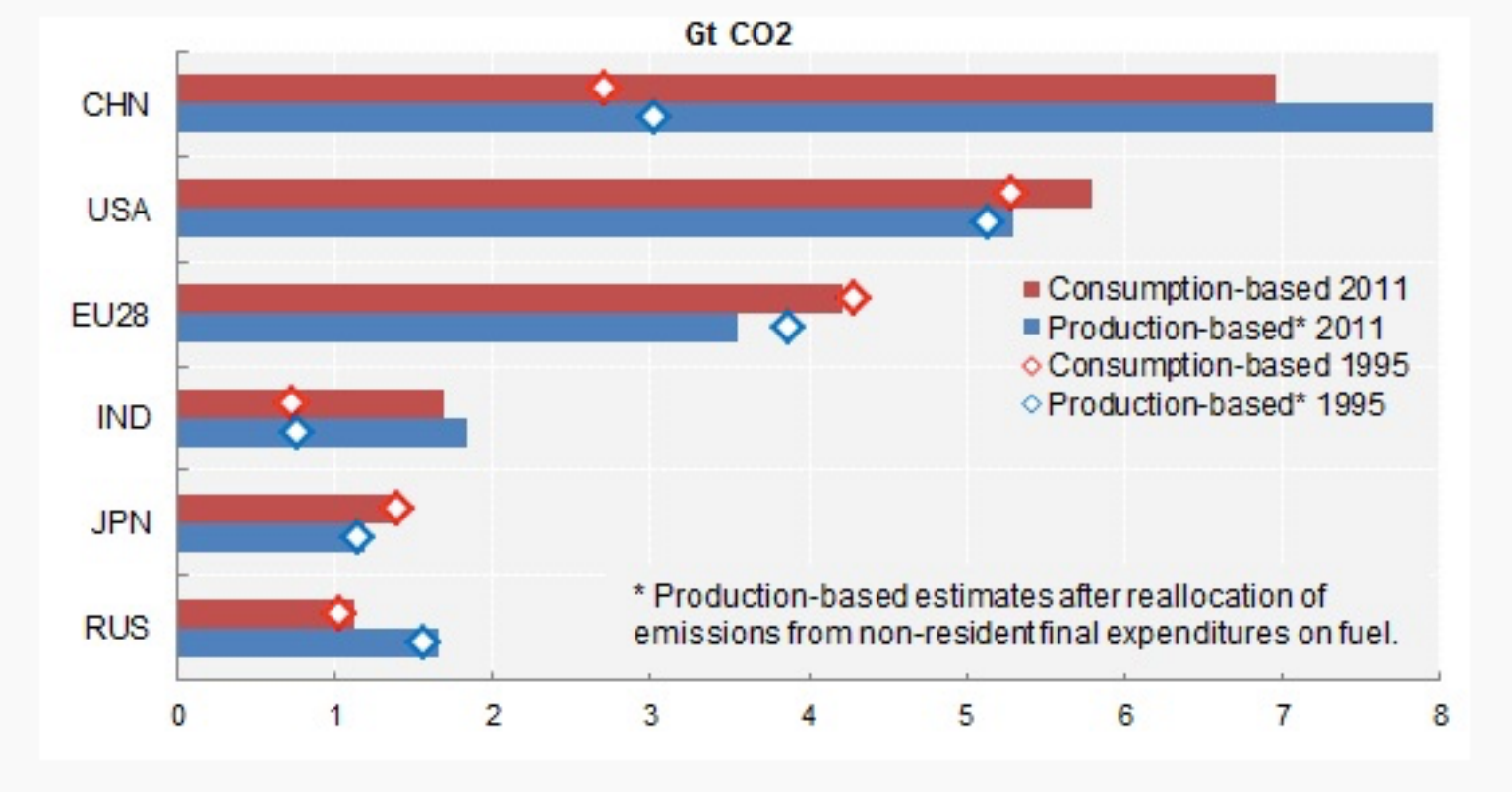
EU GHG emissions at two glances

CO_2 emissions from fossil-fuel use and cement production in the top 5 emitting countries and the EU



Source: EDGAR 4.3 (JRC/PBL, 2015) (1970-2012; notably IEA 2014 and NBS 2015); EDGAR 4.3FT2014 (2013-2014): BP 2015; GGFR 2015; USGS 2015; WSA 2015

Production and consumption-based emissions, EU-28



Source: OECD

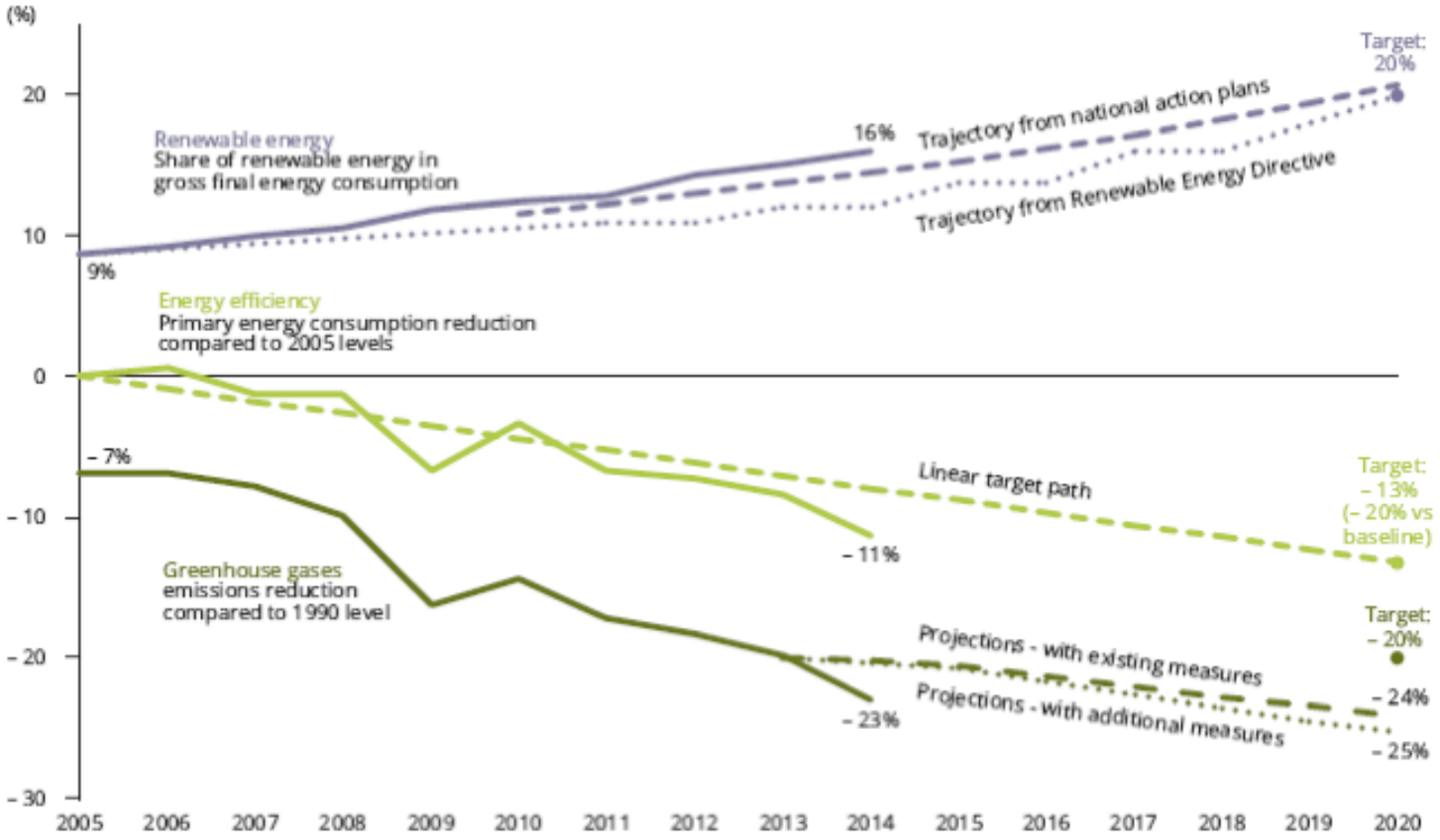
EU climate policy: Objectives

- The roadmap to 2050 (Skaerseth et al., 2016)
- From the origins of EU climate policy to 20-20-20
- 2030 framework for energy and climate
  - -40% GHG
  - 27% RE consumption
  - 27% BAU energy savings
  - 15% energy interconnection
  - *ESD for non-EU ETS*

Instruments in EU climate policy

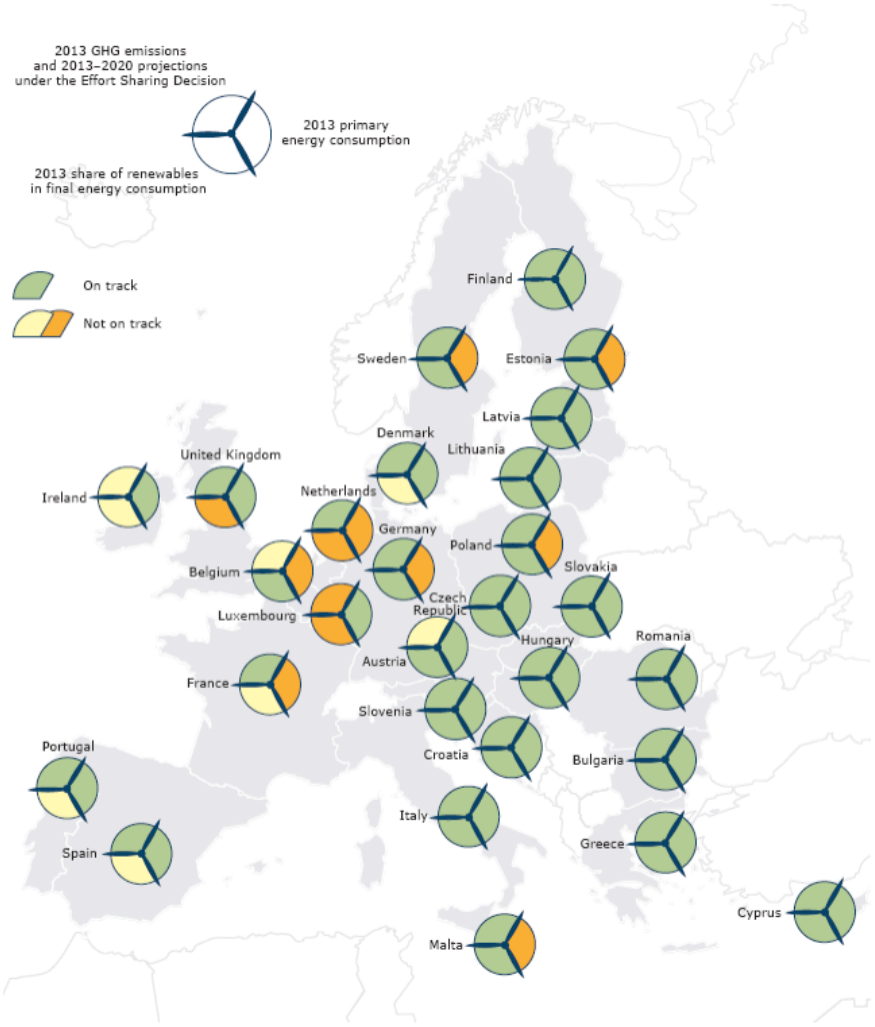
- Four traditional components of EU climate policies:
  - EU ETS
  - Renewable support schemes
  - Energy efficiency policies
  - Energy/carbon taxation
  - (Transport)
- Many instruments in place
- Links to other major policies (e.g. Energy Union)
- Links to Member States
- International dimensions

Figure 2.1 EU progress towards 2020 climate and energy targets



Note: The energy efficiency target for 2020 is defined as an absolute target, set 20% below the level in primary energy consumption projected for 2020 in the 2007 Energy Baseline Scenario of the European Commission. In this figure, this target is expressed as a relative change compared to 2005 levels of EU primary energy consumption, in order to show the required reduction in primary energy consumption over time. The year 2005 was chosen because it is used as a base year for GHG (in the EU ETS and under the ESD) and for renewable energy targets. It also corresponds to a peak in energy consumption in the EU.

Figure ES.2 Progress of Member States towards 2020 climate and energy targets



Note: The Effort Sharing Decision sets individual binding annual targets for GHG emissions not covered by the EU ETS for all Member States for the period from 2013 to 2020. The Renewable Energy Directive sets individual binding targets for the 2020 share of renewable energy sources in gross final energy consumption, as well as indicative trajectories up until 2020. Under the Energy Efficiency Directive, Member States set their own target on energy consumption for 2020.

(3.1) EU ETS

- A market-based approach, after the failure of the tax
- A continuously-reformed 2003 Directive (Learning by Doing)
- A brief history: phases I and II (Ellerman et al., 2015)
- The current phase III: EU cap, benchmarking and supply
- A reformed EU ETS after 2020:
  - Declining cap
  - Free allocation and benchmarking
  - Distributional matters

An economic appraisal of the EU ETS

- Environmental effects
  - Aggregate emissions (Ellerman and Buchner, 2008; di Maria, 2011)
  - Firm-level data (Wagner et al, 2013)
  - Power sector (Delarue et al., 2008)
- Competitiveness and leakage
  - Firm-level data (Abrell et al., 2011)
  - Surveys (Martin et al., 2014)
  - Pass-through (Fabra and Reguant, 2014)
- Innovation (Calel and Dechezlepretre, 2015)
- Investment (Borghesi et al, 2012)

The EUA price ‘debate’

- Reasons
- Backloading and MSR
- Unilateral price supplements
- The ‘soft collar’ proposal

Distributional issues

- Allocation
- Pass-through
- Compensations among countries

10th Anniversary EU ETS, Florence

fsr.eui.eu/event/looking-back-at-ten-years-of-the-eu-ets-lessons-learnt-and-future-perspecti

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Home › Looking Back at Ten Years of the EU ETS: Lessons Learnt and Future Perspectives

This event has passed.

Details

Date:
21st May 2015

Event Categories:
Climate, Energy

Venue

Teatro, Badia Fiesolana

Via dei Roccettini, 9
San Domenico di Fiesole, FL 50014
Italy

Looking Back at Ten Years of the EU ETS: Lessons Learnt and Future Perspectives

21st May 2015

This conference aimed to take stock of the challenges, lessons and achievements of the EU ETS in Europe and in the rest of the world and to discuss future perspectives. The event was organised in collaboration with **DG Climate Action**, European Commission.

Interviews

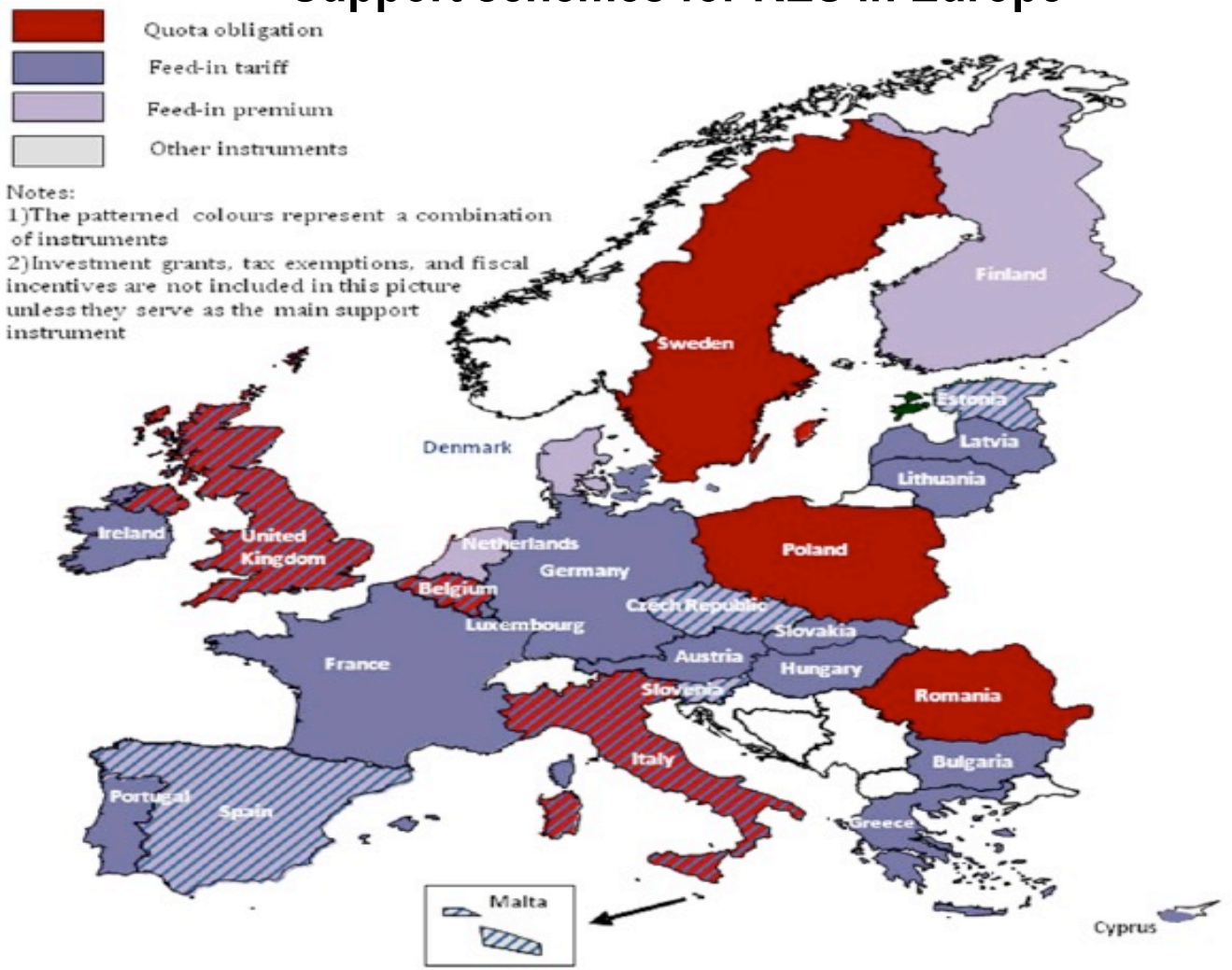
Jorge Moreira da Silva | Minister for Environment, Spatial Planning and Energy, Portugal

LIFE *SIDE* at FSR Climate: 2016-2018

(3.2) Renewable Energy

- Directive 2009/28/EC
  - Mandatory national targets
    - Overall share of energy from renewable sources in gross final energy consumption
    - Share of renewable energy in transport
  - In order to reach the targets, Member States may apply
    - Support schemes (investment aid, tax exemptions or reductions, tax refunds, renewable energy obligation support schemes, direct price support). New Guidelines
    - Measures of cooperation between different Member States and with third countries
- Guidelines for renewable policies (2014/C 200/01)

Support schemes for RES in Europe

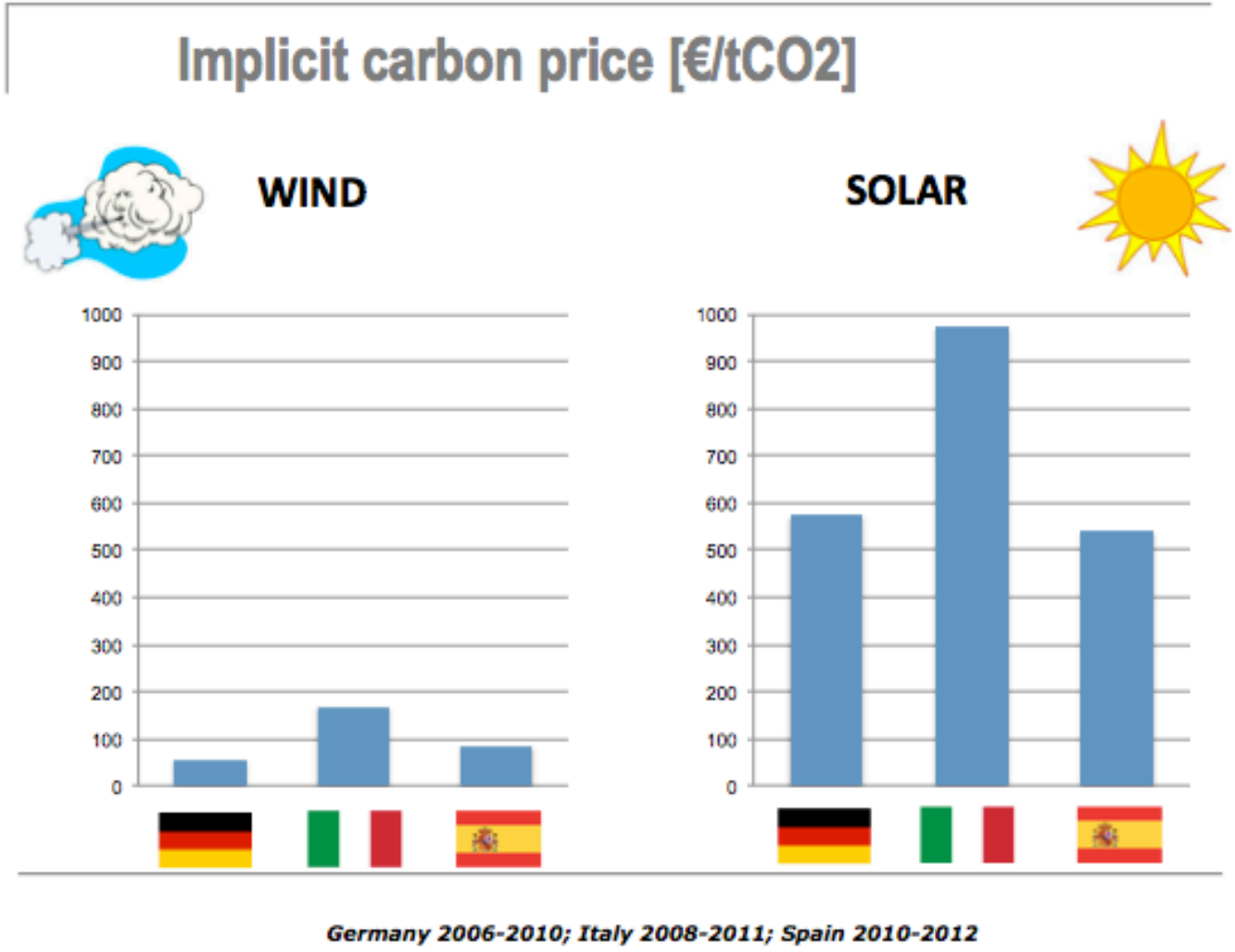


Source: Steinhilber et al (2011)

Evaluating experiences

- EC (2015). Progress in renewable energy development. However, economic crisis, administrative and infrastructure barriers and policy and support schemes disruption are slowing this progress
- EEA (2016) Heterogeneous situation of EU countries: almost 50% need to increase renewable penetration to comply with 2020 objective
- Steinhilber et al (2011). Member States renewables policy in 2003-2010. Performance is rather heterogeneous depending on the final energy sector, the renewable energy technology and the individual Member State.

Renewables as Climate Policies



Germany 2006-2010; Italy 2008-2011; Spain 2010-2012

(3.3) Issues for Energy Efficiency

- Not an end in itself (emissions, energy imports, etc.)
- Complex issue: multiple barriers and conditions
  - Energy efficiency gap (buildings and transport)
  - Sectoral and country variations (NEEAPs)
- Packages vs collection of single instruments
- New policy approaches: information; nudging
- Energy efficiency and income distribution

The legal framework

Directive 2012/27/UE

- Efficiency in energy use (Filippini et al, 2014; Ó Broin et al, 2015)
  - Building renovation
  - Energy efficiency obligation schemes
  - Energy audits and energy management systems
  - Metering and billing information (Ramos et al, 2015)
  - Consumer information and empowering programme
- Efficiency in energy supply (Bertoldi et al, 2010)
  - Promotion of efficiency in heating and cooling
  - Energy transformation, transmission and distribution
- Horizontal provisions
  - Availability of qualification, accreditation and certification schemes
  - Information and training
  - Energy services

Policy developments reported in some 2014 NEEAPs

- France
  - Doubling of the ambition level of the EE obligation scheme
  - Fund fo building refurbishment
  - Taxation in the transport sector could bring additional savings
- Germany
  - Primary energy consumption will be almost 10% lower than target
  - Existing measures will be strengthened, including building efficiency requirements, taxation, advice/awareness-rising and support for investment.
  - An important element will be the development of the ESCO
- Italy
  - Strengthen the minimum standards for the construction of new buildings and the renovation of existing
  - Consolidate tax deductions for the refurbishment of buildings and strengthen incentives for buildings owned by public bodies
  - Stregthen the system of EE certificates (white certificates)

Scoping meeting Energy Efficiency

European University Institute
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Energy Efficiency and Climate Policies: A Scoping Meeting for the FSR Climate

Organiser: **Xavier Labandeira** | Director, FSR Climate/EUI

Sala del Capitolo, Badia Fiesolana
Via dei Roccettini, 9 – San Domenico di Fiesole

7 November 2014

PROGRAMME

08.45-10.45	Session 1: General framework
08.45	Introduction and presentation of participants, **Xavier Labandeira**
09.00	Energy efficiency and climate policy: the big picture, **Tyler Bryant**
09.20	Energy efficiency policy instruments: issues for application, **Lisa Ryan**
09.40	EU energy efficiency policies, **Serena Pontoglio**
10.00	Energy efficiency and interactions with other climate policy instruments, **Oskar Lecuyer**
10.20	Debate
10.45-11.15	COFFEE
11.15-13.15	Session 2: Research needs and gaps
11.15	Issues for future energy efficiency policies in the EU residential sector, **Paolo Bertoldi**
11.35	Energy efficiency policies: the vision of an international power company, **Gonzalo Sáenz**
12.55	Funding energy efficiency, **Juan Alario/Manuel Dueñas**
12.15	Unlocking energy efficiency in transport, **Andreas Schäfer**
12.40	Debate
13.15-14.30	LUNCH
14.30-16.40	Session 3: Ex-post analysis
14.30	Energy efficiency policy: issues, methods and data, **Matthew Kotchen**
15.00	An overall assessment of energy efficiency instruments, **Magnus Söderberg**
15.20	Nudging energy efficiency, **Giovanna D'Adda**
15.40	Policy packages, distribution and empirical results for Spain, **Xavier Labandeira/Ana Ramos**
16.00	Some empirical results for France, **Louis-Gaëtan Giraudet**
16.20	Some empirical results for Germany, **Kathrine Von Graevenitz**
16.40-17.30	Debate, wrap up and departure

(3.4) Energy/carbon taxation

- Current Situation: (Harmonized) energy taxes at national level
- Proposal for a Council Directive (2011)
  - Again, harmonization but higher rates
  - CO_2 component
  - Energy component
- Carbon taxation
- Green tax reforms
- Transport

Heterogeneity in EU energy taxation

Impuestos sobre la energía (€) 2013	Households light fuel oil (per 1000 litres)				Non-commercial automotive diesel (per litre)				Unleaded gasoline (per litre)				Households natural gas (per MWh GCV)				Households electricity (per kWh)			
	Excise	VAT (%)	Total	PPP (%)	Excise	VAT (%)	Total	PPP (%)	Excise	VAT (%)	Total	PPP (%)	Excise	VAT (%)	Total	PPP (%)	Excise	VAT (%)	Total	PPP (%)
Germany	61,35	19,00	194,63	58,70	0,47	19,00	0,70	87,76	0,66	19,00	0,91	96,20	5,50	19,00	16,88	100,65	96,30	19,00	142,90	221,44
Austria	109,18	20,00	267,00	75,68	0,42	20,00	0,65	76,45	0,51	20,00	0,74	73,42	5,96	20,00	17,62	98,73	30,70	20,00	64,90	94,51
Belgium	18,49	21,00	164,89	46,73	0,43	21,00	0,68	80,70	0,61	21,00	0,90	89,42	2,60	21,00	14,05	78,73	19,60	21,00	54,80	79,80
Denmark	403,87	25,00	714,14	164,00	0,40	25,00	0,71	67,69	0,59	25,00	0,93	74,87	35,39	25,00	54,96	249,53	109,95	25,00	169,35	199,82
Slovenia	176,60	21,00	351,40	137,78	0,45	21,00	0,69	111,80	0,57	21,00	0,82	113,25	4,79	21,00	16,78	130,07	16,50	21,00	44,30	89,24
Spain	87,30	21,00	245,60	84,97	0,37	21,00	0,61	87,27	0,47	21,00	0,71	86,46	0,18	21,00	14,33	98,01	8,80*	21,00	41,10*	73,06
Estonia	110,95	20,00	277,03	118,49	0,39	20,00	0,61	109,32	0,42	20,00	0,64	96,25	2,18	20,00	10,51	88,87	13,20	20,00	35,15	77,25
Finland	163,43	24,00	377,19	97,51	0,47	24,00	0,76	82,00	0,65	24,00	0,97	87,63	10,33	24,00	19,85	101,45	17,00	24,00	46,50	61,76
France	56,60	19,60	208,59	58,42	0,44	19,60	0,66	76,94	0,61	19,60	0,87	84,92	1,29	19,60	11,29	62,51	25,14	19,60	46,65	67,13
Greece	330,00	23,00	567,24	205,30	0,33	23,00	0,59	88,44	0,67	23,00	0,98	124,71	5,40	13,00	18,53	132,59	26,10	13,00	44,85	83,40
Hungary	n.d.	27,00	n.d.	n.d.	0,38	27,00	0,69	157,35	0,42	27,00	0,71	137,68	0,00	27,00	8,27	89,90	4,10	27,00	32,37	91,45
Ireland	88,66	13,50	215,50	62,59	0,48	23,00	0,76	92,24	0,59	23,00	0,89	90,10	3,70	13,50	12,39	71,14	0,00	13,50	26,20	39,10
Italia	403,21	21,25	650,56	204,06	0,62	21,25	0,91	118,56	0,73	21,25	1,04	113,80	n.d.	21,25	26,67**	165,38	56,20	10,00	77,10	124,26
Luxemburg	10,00	12,00	96,58	24,70	0,34	15,00	0,49	52,58	0,46	15,00	0,64	57,01	1,08	6,00	4,44	22,45	11,40	6,00	20,20	26,54
Netherlands	254,42***	21,00	360,89	102,29	0,45	21,00	0,69	81,76	0,75	21,00	1,05	104,72	19,28	21,00	32,84	184,02	11,40	21,00	45,00	65,53
Poland	55,27	23,00	229,66	125,99	0,35	23,00	0,59	134,87	0,40	23,00	0,64	123,33	0,00	23,00	9,58	103,87	4,76	23,00	32,40	91,32
Portugal	323,70	23,00	564,40	221,29	0,37	23,00	0,63	102,33	0,59	23,00	0,88	121,08	0,00	23,00	16,55	128,29	0,00	23,00	39,40	79,37
United Kingdom	131,17	5,00	170,27	49,30	0,68	20,00	0,96	115,53	0,68	20,00	0,95	95,97	0,00	5,00	2,76	15,77	0,00	5,00	8,24	12,26
Czech Republic	25,40	21,00	254,62	117,00	0,42	21,00	0,66	126,79	0,49	21,00	0,74	118,55	0,00	21,00	10,97	99,66	1,15	21,00	28,02	66,16
Slovakia	n.d.	20,00	n.d.	n.d.	0,37	20,00	0,60	115,59	0,52	20,00	0,77	123,69	0,00	20,00	8,87	80,89	0,00	20,00	29,50	69,92
Sweden	451,94	25,00	760,10	179,05	0,53	25,00	0,87	85,40	0,62	25,00	0,95	78,61	30,62	25,00	55,13	256,77	31,90	25,00	67,04	81,14
Weighted average (PPP)	201,39	18,74	425,08	100	0,66	20,88	1,02	100	0,83	20,88	1,21	100	3,96	18,50	21,50	100	42,76	17,07	82,73	100

Carbon taxes in EU countries

- Finland (1990)
- Netherlands (1990)
- Norway (1991)
- Sweden (1991)
- Denmark (1992)
- UK (2001)
- Ireland (2010)
- France (2014)

Green tax reforms (Gago et al, 2014)

- Multiple dividends?
- The generations
  - Scandinavian model
  - German model
  - Post-crisis applications

Taxing transport

- Multiple externalities
- Constraints of current taxation
- New transport taxes: Taxing use vs current policy ‘package’?

Evaluating experiences

- EEA (2016) Updated situation on EU energy and environmental taxes
- Martin et al (2014). Climate change levy UK. Strong negative impact on energy intensity and use of electricity
- Hammar et al (2013). Sweden's CO2 tax. Major impact on fuels used for heating purposes.
- Lin and Li (2011). Northern European carbon taxes. Stronger effectiveness of the Finish tax due to exemptions in other countries
- Vollebergh (2008). Energy tax reform in Netherlands. Considerable amount of tax revenue from a green tax base
- Our work for Spain

Scoping meeting Taxation

This event has passed.

Details

Date:
12th December 2014

Event Category:
Climate

Organiser

Barbara Morganti

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[+39] 055 4685 789

Email:
Barbara.Morganti@eui.eu

Venue

Villa Malafrasca

Via Boccaccio, 151
Florence, FL 50133 Italy + Google Map

Phone:
[+39] 055 4685 2880

Energy/Carbon Taxation and Climate Policies: a Scoping meeting for FSR Climate

12th December 2014

This workshop focused on the role of carbon and energy taxes in climate change mitigation. It was organised in three sessions on the general framework, empirical analysis for the EU, and the assessment of obstacles to policy progress. The event was designed as a scoping meeting for future research activities of FSR Climate in this area and also to explore collaborative work with other academic and non-academic institutions operating in the field.

Download the programme

Workshop Highlights

4. Conclusions and implications

- Relevance of the European experience
- Instrument (cost) effectiveness: short-term vs long-term
- Supplementary effects
  - ‘Low’ prices
  - Market failures
- Coverage-non coverage by EU ETS
- Other non-GHG objectives (Tinbergen)
- International dimensions: Linking and BTA

Policy packages

- and transport
- and energy efficiency (Hanemann et al., 2011)
- and green tax reforms (Loureiro et al., 2013)

Annual conference, FSR Climate

European University Institute — Robert Schuman Centre for Advanced Studies

Florence School of Regulation

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FSR Climate Annual Conference 2016: call for papers

Published on 27th July 2016

FSR Climate is accepting proposals for contribution to its Annual Conference, taking place in Florence on 1-2 December 2016.

The event will focus on the economic assessment of European climate policies, covering the main climate-related existing policies, at EU, national and sub-national levels. It will be structured into four sessions, each of them with an invited speaker:

- *EU ETS*: **Simone Borghesi** (University of Siena)
- *Carbon/energy taxation*: **Thomas Sterner** (University of Gothenburg)
- *Energy efficiency policies*: **Joachim Schleich** (Grenoble Ecole de Management and Fraunhofer ISI)
- *Renewable policies*: **Karsten Neuhoff** (DIW Berlin)

Roger Guesnerie (Collège de France), will give the **keynote speech**.

Deadline for paper submission: **23 October 2016**.

More information from the conference web page

Thanks

xavier.labandeira@eui.eu

http://labandeira.eu
http://fsr.eui.eu/climate/