EUROPE 2020 TARGETS: climate change and energy

Energy and climate change polices yield many macroeconomic benefits and contribute to **smart** and **sustainable ('green') growth**[1]. By increasing energy efficiency, supporting research, and developing and commercialising innovative green technologies, Member States can also boost their competitiveness and create jobs. Realising the growth potential of the green economy will ensure that the EU remains a competitive player in this growing global market. Fiscal consolidation can be supported through increased revenues from policies addressing energy and climate issues, for example by shifting taxation to energy and other environmental taxes, or auctioning EU Emissions Trading System (ETS) allowances. Reducing energy dependency and spending on energy imports will also have a positive effect on the current account balance; in 2011 net imports of fuels to the EU amounted to EUR 388 billion, more than 3% of EU GDP. Investment in energy efficiency will not only reduce energy consumption costs, but also the social costs related to pollution caused by fossil fuels, such as health expenditures.

The Europe 2020 Strategy sets the objective to create 20 % of energy consumption from renewables and increasing energy efficiency by 20 % by 2020. According to the employment package of 2012, the implementation of individual **energy efficiency** measures could lead to 2 million jobs being created or retained by 2020[2]. Similarly, the potential from **renewable energy** sector development is estimated at 3 million jobs by 2020[3].

1. Key statistical indicators for climate and energy

(a) Climate indicators

In order to achieve the Europe 2020 target of a 20 % reduction in greenhouse gas (GHG) emissions (compared to 1990) by 2020, Member States committed to reach legally binding national targets by 2020 (compared to the situation in 2005) for emissions not covered by the EU Emissions Trading System (EU ETS).[4] The national targets for emissions not covered by the ETS are set under the Effort Sharing Decision. These targets vary between countries and apply to each Member State individually. They range from limiting the increase in GHG emissions to 20 % to reducing GHG emissions by 20 %.

According to the latest emission projections[5] submitted by the Member States, based on existing policy measures, the EU27 will over-achieve its 2020 target by 1 percentage point[6]. However, the projected performance is more variable across the individual Member States, with significant additional effort required in some countries for the targets to be met.

Figure 1 below shows the distance between the 2011 emissions and the 2013 target set by the Effort Sharing Decision[7] (dark blue) and the projected distance to the 2020 emissions target for each Member State if only existing measures are taken into consideration (light blue).

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[1] For a broader context see also related document RESOURCE EFFICIENCY.

[2] COM (2011) 109 final, Energy Efficiency Plan 2011, available at: http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0109:FIN:EN:PDF

[3] COM (2011) 31 final, Renewable Energy: progressing towards the 2020 target, available at: http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0031:FIN:EN:PDF

[4] The national targets are laid down in the Effort Sharing Decision (ESD).

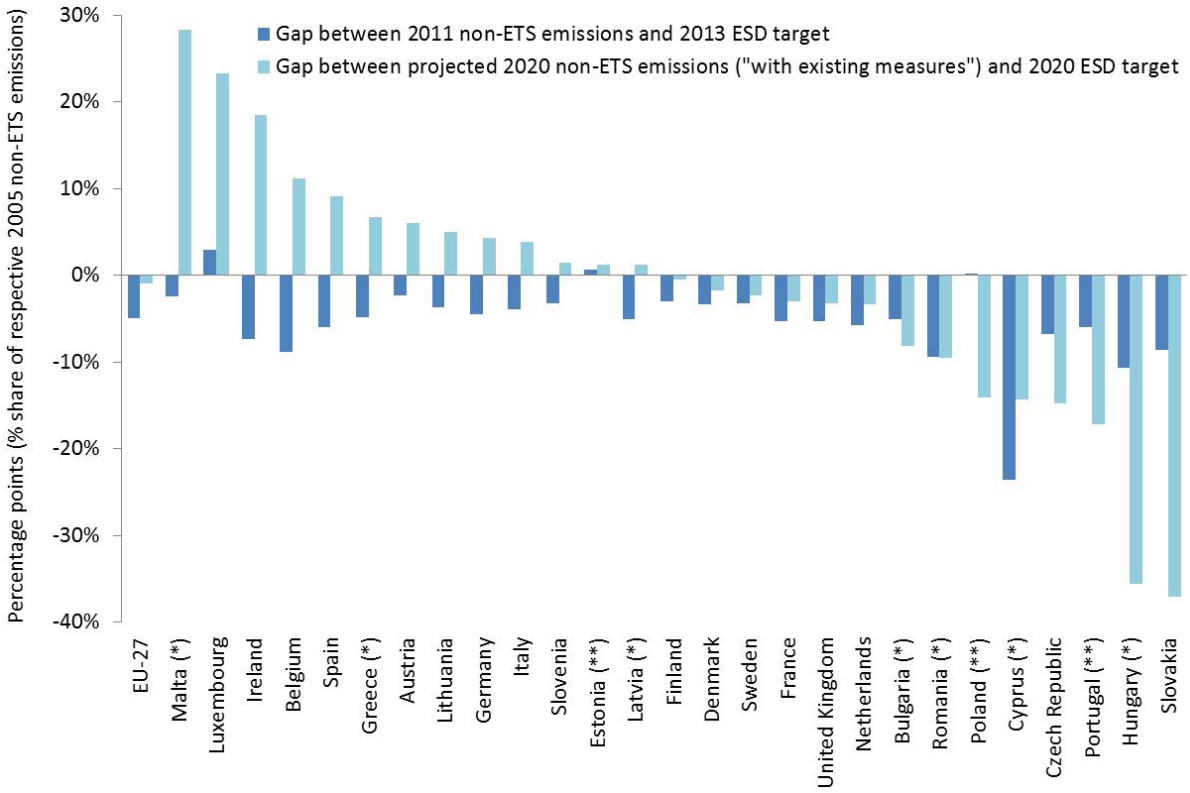
[5] Based on submissions by Member States on 15 March 2013

[6] Non ETS

[7] 2013 is the first year for which a binding target is set under the Effort Sharing Decision.

The emissions of Estonia, Poland and Luxembourg were higher in 2011 than the 2013 Effort Sharing Decision target. Furthermore, according to the projections, **extra efforts** will be needed by a number of Member States to reach their Europe 2020 climate targets: only 14 Member States are expected to meet their commitments based on existing measures.

Figure 1: Current and projected gaps to 2013 and 2020 targets for non-ETS sectors



Note:

Negative and positive values indicate, respectively overdelivery and shortfall compared to target.
No historic or projected non-ETS emissions available for Croatia. Croatia joined the ETS in 2013
(*):gap based on 2011 data (no updated projections submitted in 2013).
(**):gap based on 2011 data (the projections submitted in 2013 do not include detail on non-ETS emissions)

Source: European Environment Agency (EEA), based on Member States' draft submissions of national GHG inventories to UNFCCC (15/04/2013) and projections of non-ETS emissions available as of 15/04/2013. The 2013 projections have not been quality checked yet by EEA.

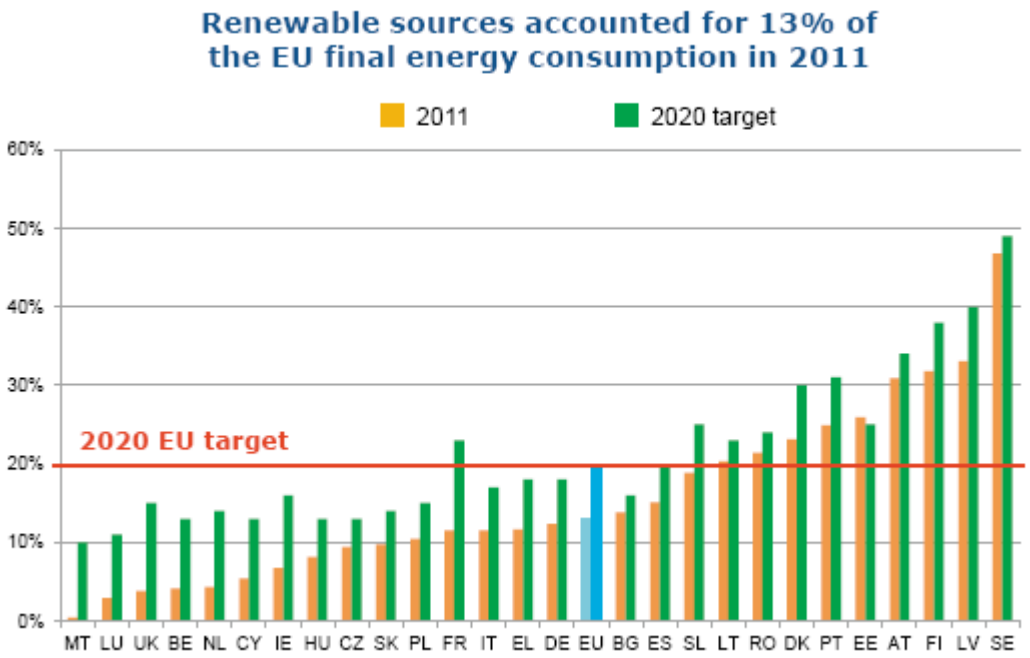
(b) Energy indicators

20 % of renewable energy sources (RES) in energy consumption

In 2011, the RES share in the final energy consumption of the EU was 13.0% compared to 8.5% in 2005. With binding national targets, growth in renewable energy has increased but needs to average 6.3% per year to meet the overall 2020 target.

Figure 2: Share of renewables in gross final energy consumption

The indicators in the chart below show the efforts still to be made by Member States towards achieving their 2020 targets for renewable energy sources.



Source: Eurostat May 2013 and Directive 2009/28/EC for targets

While most Member States have reached their 2011/2012 interim target (see annex), there is no room for complacency. The indicative trajectory contained in the Renewable Energy Directive is relatively flat early on in the period up to 2020, and rises more sharply towards the end. Six Member States): Belgium, France, Latvia, Malta, the Netherlands and the UK have not yet reached their 2011/2012 interim targets.

20% increase in energy efficiency

Member States committed to achieving the 20% European energy efficiency target at the March 2007 European Council[8]. It was legally defined in the new Energy Efficiency Directive (EED)[9] as the *"Union's 2020 energy consumption of no more than 1 474 Mtoe primary energy or no more than 1 078 Mtoe of final energy"*[10]. Primary energy consumption[11] peaked in 2006 (around 1706 Mtoe) and is decreasing since 2007 (to reach 1583 Mtoe in 2011).

The EED also establishes a requirement for Member States to set indicative national energy efficiency targets for 2020, which are to be determined nationally and can be based on different indicators (primary or final energy consumption, or primary or final energy savings, or energy intensity). Importantly, to make these targets comparable, the Directive also requires each Member State to 'translate' their target into levels of primary and final energy consumption in 2020 and to explain how this has been calculated. Member States were required to notify all these details by 30 April 2013 either in a National Reform Programme or in a separate communication to the Commission.

8 7224/1/07, REV 1.

9 Directive 2012/27/EU.

10 Article 3(1)(a), Directive 2012/27/EU.

11 The primary energy consumption for the purpose of EED is defined in its Article 2 (2) as gross inland consumption minus non-energy uses.

All Member States but two (have set their targets by 30 April 2013, but not all have expressed these targets in absolute primary and final levels in 2020 as requested by the Directive (see table below). Compared with the previous inputs provided on this subject, it seems that appreciation of the importance of energy efficiency is growing and with it the commitment to action.

MS	Indicative national energy efficiency target for 2020	Absolute level of energy consumption in 2020 [Mtoe]	
		Primary	Final
AT	Final energy consumption of 1100 PJ	31.5	26.3
BE	Reducing primary energy consumption by 18% compared to projections for 2020	-	-
BG	Increase of energy efficiency by 25% until 2020 (5 Mtoe primary energy savings in 2020) and 50% energy intensity reduction by 2020 compared to 2005 levels	-	-
CY	0.463 Mtoe energy savings in 2020 (14.4% reduction in 2020 compared to a reference scenario)	2.8	2.2
CZ	Not yet reported	-	-
DE	Reduce primary energy consumption by 2020 by 20% compared to 2008 level	251.0	-
DK	Primary energy consumption of 744.4 PJ (17.781 Mtoe) in 2020	17.8	14.8
EE	Stabilisation of final energy consumption in 2020 at the level of 2010	6.5	2.8
EL	Final energy consumption level of 20.5 Mtoe	27.1	20.5
ES	20% energy savings to be achieved by 2020	121.6	82.9
FI	310 TWh of final energy consumption in 2020	35.9	26.7
FR	17% reduction of final energy consumption in 2020 compared to a baseline	236.3	131.4
HU	1113 PJ primary energy consumption in 2020 (236 PJ savings compared to business-as-usual), resulting in 760 PJ final energy consumption	26.6	18.2
IE	20% energy savings in 2020 along with a public sector energy saving target of 33%.	13.9	11.7
IT	20 Mtoe primary energy reduction by 2020, 15 Mtoe final energy reduction by 2020	158.0	126.0
LT	17% reduction in final energy use compared to 2009 level (reduction of 740 ktoe)	-	5.4
LU	Not yet reported**	-	-
LV	Primary energy savings in 2020 of 0.670 Mtoe (28 PJ)	5.23*	4.35*
MT	22% energy or 237.019 toe savings target by 2020 (with an intermediate target for 2014 of 15% or 144.876toe)	0.825	0.493
NL	1.5% energy savings per year(partial)	-	52.1*
PL	13.6 Mtoe primary energy savings in 2020	96.4	70.4
PT	Reduction of primary energy use in 2002 by 25% compared to projections	22.5	-
RO	Reduction of 10 Mtoe (19%) in the primary energy consumption	-	-
SE	Energy use shall be 20% more efficient by 2020 compared with 2008 and a 20% reduction in energy intensity between 2008 and 2020	36.7-66.0	21.3-51.9
SL	10.809 GWh energy savings by 2020	-	-
SK	3.12 Mtoe of final energy savings for the period 2014-2020	16.2	10.4
UK	Final energy consumption in 2020 of 129.2 Mtoe on a net calorific value basis	177.6	157.8

*preliminary data

** target only reported for 2016 (i.e. 14.06% of energy savings to be reached in 2016)

Among these targets, those of AT, CY, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LV, MT, PL, PT, SK, UK, are expressed in a format which permits comparison for primary energy, and those of AT, CY, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LV, MT, NL, PL, SK, UK for final energy. Based on these targets, a preliminary conclusion is that these Member States are collectively working towards a level of ambition that is close to, if not compatible with, the overall EU target for 2020. The 18 primary energy values sum to 1247.8 Mtoe, or 84.7% of the EU target of 1474 Mtoe in 2020 (as a point of comparison, these Member States accounted for 82.6% of EU primary energy consumption in 2010). The 18 final energy values sum to 764.4Mtoe – 70.9% of the EU target in 2020 (these Member States accounted for 67.7% share of EU final energy consumption in 2010). However, a final conclusion on the overall level of ambition can be drawn only once all targets and levels are reported..

Model runs in 2009 and 2010 suggested that EU would miss its 20% energy efficiency target unless efforts were doubled. (The projections showed that with the policies in place in 2009,

only a 9-10% primary energy reduction could be expected in 2020). Current assessments suggest, by contrast, that the EU is closer to being on track – albeit that Europe's poor economic performance has played a significant part in this, alongside the implementation of more ambitious energy efficiency policies. Preliminary reference scenario model results – which include partial implementation of the new EED – show that Europe's energy consumption will be 16% lower in 2020 than the projections made in 2007. Analysis of trends in key indicators shows that, with strong energy efficiency policies and full implementation of the EED, the EU could even be on track for meeting its target in 2020.

The Commission, as required in the EED, will report on progress towards the 20% target by June 2014.

2. Assessment of the main challenges in the Member States

(a) Climate

According to the 2012 projected emission data presented in Figure 1 and in the annex, much effort will still be needed by individual Member States to deliver on their 2020 targets.

Only 14 Members States are expected to reach these commitments with existing policies and measures. This leaves 13 Member States that are unlikely to be able to deliver on their commitments unless additional measures are implemented. However, as regards EU-27, the estimates show that the overall target[12] would be delivered.

According to the latest projections, the Member States that are furthest from reaching the 2020 targets (with a gap equal or exceeding 5 percentage points) are **Malta, Luxembourg, Ireland, Belgium, Spain, Greece, Austria and Lithuania**.

The 13 Member States concerned will need to either design additional policies or make use of flexibility mechanisms in order to avoid non-compliance with their target.

With a view to further progress towards achievement of the Europe 2020 climate target, Member States are facing the following key challenges: (i) lack of consistency in the domestic climate policy framework, (ii) energy intensity, (iii) lack of investment security for innovative green technologies and (iv) tax system not driving greater energy efficiency. Member States need to address these challenges in order to be able to meet their 2020 GHG emission reduction targets.

(b) Renewable sources of energy

With respect to progress towards the 2020 target, on the basis of commitments given by Member States in their National Renewable Energy Action plans, all Member States are expected to meet their 2020 targets. However, anticipating the impact of current policy initiatives, economic crisis and various barriers to renewable energy development, the outlook for 2020 is less optimistic. Hence, many Member States will need further measures to ensure the achievement of their targets[13]..

Overall, although the vast majority of Member States have made significant investments in renewable sources of energy, some countries still have to make additional efforts in the short and medium term to completely implement the EU Renewable Energy Directive and to

[12] Reduction of total emissions by 20% compared to 1990 and reduction of non-ETS emissions by 9% compared to 2005
[13] Renewable energy progress report, COM (2013) 175

ensure a coherent, stable and predictable legislative framework for supporting and financing renewable energy development. These countries include in particular **Malta, the Netherlands and the UK**.

The Commission will continue to assess the progress made in Member States[14] and will take all appropriate measures, including infringement procedures, in the event of any member State's failure to comply with their own national action plans and renewable energy growth trajectories, or failure to fully implement any element of the Directive.

(c) Energy efficiency

A number of good examples of energy efficiency policies are available across the whole EU. All Member States have now developed strategies to tackle the various sectors and challenges and these have been included in the second National Energy Efficiency Action Plans of 2011[15]. However, more efforts are needed to tap the unused potentials and unleash the needed investments. To mobilise financing, some Member States have engaged energy utilities or energy service companies (e.g. DK, UK, IT, FR and Flanders region of BE), others have used national funds (e.g. KfW housing energy efficiency programmes in DE). Financial instruments have also been developed (e.g. KREDEX in EE represents one of the first instruments blending public and private funding into a scheme) and Cohesion funds have been used (e.g. FR was ERDF funds for social housing projects and EUR 320 million ERDF finance triggering investment of up to EUR 2.2 billion, affecting 110 400 households and creating 31 000 jobs). This process is also supported at EU level – the ELENA Technical Assistance facility has so far demonstrated the viability of investments into energy efficiency, in particular energy performance contracting, providing some EUR 38 million, which should lead to some EUR 2 billion in investments.

However, the scale of the challenge in energy efficiency requires that the policy effort is intensified in all Member States, particularly in **Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Romania**, which remain the most energy intensive countries in the EU (see annex).

3. Horizontal issues

A number of policies would help in progressing towards the energy and climate change targets. These policies concern the following key areas:

- Planning effective, growth-friendly use of the revenue from auctioning of EU ETS allowances to start in 2013,
- Realising the full potential for increasing energy efficiency, particularly in the buildings sector,
- Providing a stable, coherent and cost-efficient framework for investment in green technologies, in renewable energy sources and in energy infrastructure,
- Exploiting the emissions reduction potential of transport[16],

[14] http://ec.europa.eu/energy/renewables/doc/communication/2012/staff_working.pdf

[15] Detailed Second National Energy Efficiency Action Plans (NEEAPs) were submitted to the Commission (by the end of) in 2011.

[16] In most Member States, the transport sector represents the greatest share of GHG emissions among non-ETS sectors, with agriculture being the second largest source. When aiming at their targets, MS should therefore pay special attention whether they have sufficiently addressed and exploited the potential of the transport sector

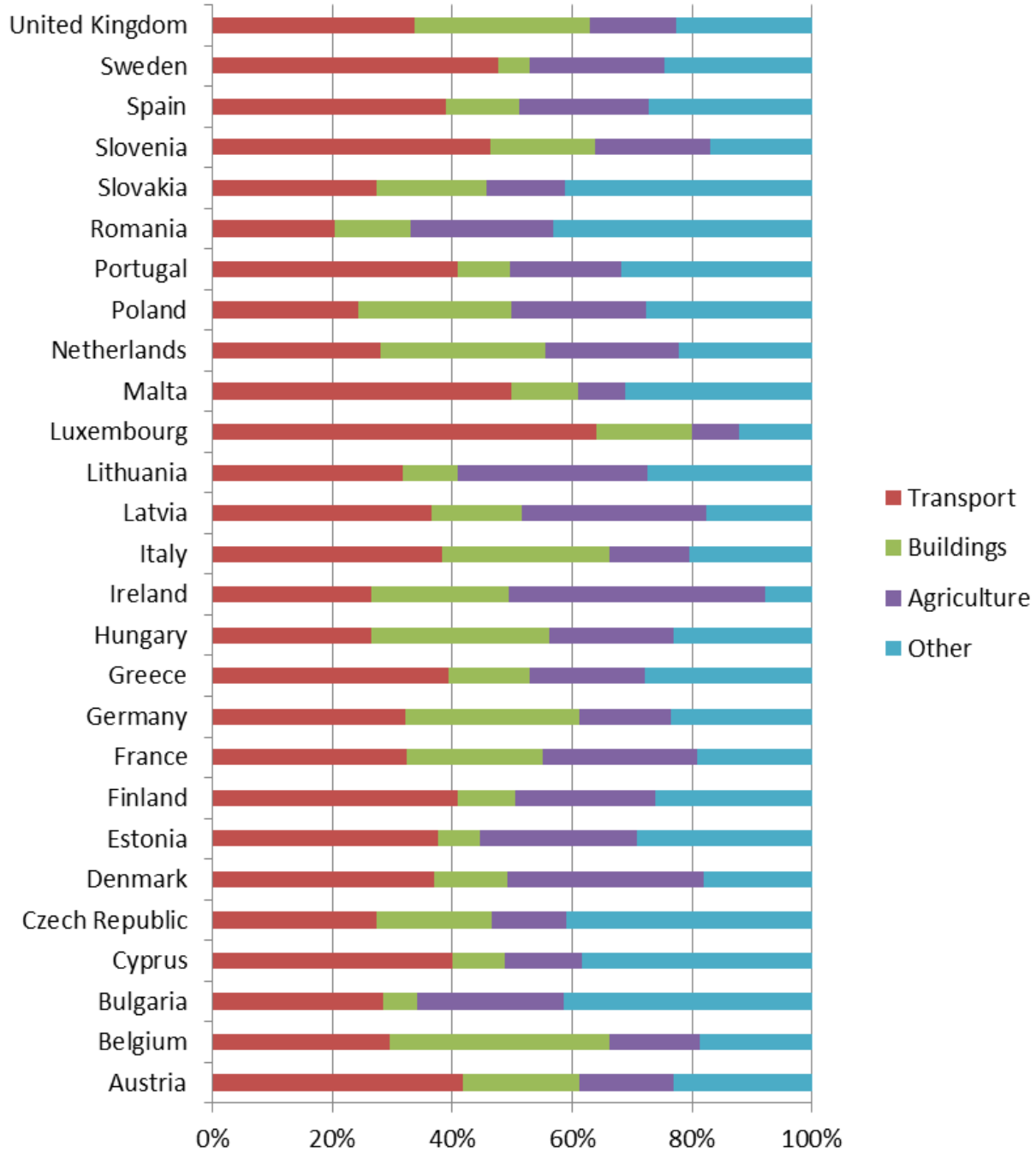
- Fully exploiting possibility of shifting the tax burden away from labour to tax bases less detrimental to growth and jobs, in particular environmental taxation,
- Removing environmentally harmful subsidies.

ANNEX: Additional statistical indicators

Current Trends and Projections in GHG emissions (non-ETS sectors) by MS

Country	2020 national target (ESD target) compared to 2005	2011 non-ETS data compared to 2005	2013 ESD target compared to 2005	Relative gap 2011 vs. ESD 2013 target	Projected 2020 non-ETS emissions compared to 2005 (with existing measures)	Gap between projected 2020 non-ETS emissions versus 2020 ESD targets
	%	%	%	Percentage points (% of 2005 emissions)	%	Percentage points (% of 2005 emissions)
Austria	-16%	-12%	-9%	-2%	-10%	**6%**
Belgium	-15%	-11%	-2%	-9%	-4%	**11%**
Bulgaria	20%	6%	11%	-5%	12%	-8%*
Croatia	11%	n.a.	5%	n.a.	n.a.	n.a.*
Cyprus	-5%	8%	31%	-24%	-19%	-14%*
Czech Republic	9%	-6%	1%	-7%	-6%	-15%
Denmark	-20%	-7%	-4%	-3%	-22%	-2%
Estonia	11%	9%	9%	**0.6%**	12%	**1%****
Finland	-16%	-9%	-6%	-3%	-16%	0%
France	-14%	-10%	-5%	-5%	-17%	-3%
Germany	-14%	-9%	-4%	-4%	-10%	**4%**
Greece	-4%	-11%	-7%	-5%	3%	**7%***
Hungary	10%	-16%	-5%	-11%	-26%	-36%*
Ireland	-20%	-11%	-4%	-7%	-2%	**18%**
Italy	-13%	-13%	-9%	-4%	-9%	**4%**
Latvia	17%	4%	9%	-5%	18%	**1%***
Lithuania	15%	-4%	-1%	-4%	20%	**5%**
Luxembourg	-20%	-4%	-7%	**2.9%**	3%	**23%**
Malta	5%	7%	9%	-2%	33%	**28%***
Netherlands	-16%	-8%	-3%	-6%	-19%	-3%
Poland	14%	9%	9%	**0.2%**	0%	-14%*
Portugal	1%	-11%	-5%	-6%	-16%	-17%**
Romania	19%	-7%	2%	-9%	9%	-10%*
Slovakia	13%	-2%	7%	-9%	-24%	-37%
Slovenia	4%	-1%	3%	-3%	5%	**1%**
Spain	-10%	-10%	-4%	-6%	-1%	**9%**
Sweden	-17%	-10%	-7%	-3%	-19%	-2%
United Kingdom	-16%	-14%	-9%	-5%	-19%	-3%
EU-27	**-9%**	**-9%**	**-4%**	**-5%**	**-10%**	**-1%**

Share by sector of non-ETS emissions in 2010



Additional data on energy targets

1) Renewables

With a view to achieving, by 2020, the 20% renewable energy target in the EU, the Renewable Energy Directive establishes legally binding individual targets for the share of renewable energy in final energy consumption for each Member State. It also establishes a legally binding target of for each Member State to achieve a share of 10% renewable energy in the transport sector.

Member States progress towards 2020 targets in renewable energy

	2011	2020 RES target (1)	2011/2012 RES interim target
EU27	13.0%	20%	10.7%
EU28	13.0%	20%	
BE*	4.1%	13%	4.4%
BG	13.8%	16%	10.7%
CZ	9.4%	13%	7.5%
DK	23.1%	30%	19.6%
DE	12.3%	18%	8.2%
EE	25.9%	25%	19.4%
IE	6.7%	16%	5.7%
EL	11.6%	18%	9.1%
ES	15.1%	20%	10.9%
FR	11.5%	23%	12.8%
IT	11.5%	17%	7.6%
CY	5.4%	13%	4.9%
LV	33.1%	40%	34.0%
LT	20.3%	23%	16.6%
LU	2.9%	11%	2.9%
HU*	8.1%	13%	6.0%
MT	0.4%	10%	2.0%
NL	4.3%	14%	4.7%
AT	30.9%	34%	25.4%
PL	10.4%	15%	8.8%
PT	24.9%	31%	22.6%
RO	21.4%	24%	19.0%
SI	18.8%	25%	17.8%
SK	9.7%	14%	8.2%
FI	31.8%	38%	30.4%
SE	46.8%	49%	41.6%
UK	3.8%	15%	4.0%
NO	64.7%	68%	
HR	15.7%	20%	
* Data are preliminary; Eurostat's estimates			

Source: Eurostat April 2013 and Directive 2009/28/EC for targets

(1): Share of renewable energy in gross final energy consumption

2) Energy Efficiency

Energy Intensity - toe/M€ (€2005)

	1995	2000	2005	2009	2010	2011
Bulgaria	1,329.3	1,050.2	863.3	664.8	675.1	712.4
Estonia	967.4	627.3	497.4	487.1	542.9	505.3
Romania	759.4	609.5	493.1	386.8	393.0	392.1
Czech Republic	533.4	481.9	432.7	363.9	374.9	355.9
Slovak Republic	700.4	593.4	496.1	362.8	370.1	349.1
Latvia	694.2	429.7	346.8	345.4	365.6	324.0
Poland	619.8	427.7	380.8	321.8	330.8	318.3
Lithuania	759.9	496.3	418.4	392.4	311.2	302.3
Hungary	419.7	349.5	312.1	292.0	295.3	282.1
Slovenia	311.7	267.2	254.1	229.6	231.0	230.2
Finland	270.3	238.1	222.7	216.3	228.1	211.9
Malta	202.7	172.6	196.4	158.5	173.7	202.3
Belgium	222.3	211.2	194.4	184.7	190.8	181.9
Cyprus	202.2	206.2	185.2	185.0	176.9	173.4
Greece	178.5	178.5	162.6	150.6	148.8	155.1
Portugal	171.7	169.6	177.6	160.3	153.7	153.1
Sweden	228.9	182.4	173.4	150.7	159.3	147.6
Netherlands	185.8	159.2	160.7	150.9	158.3	146.4
European Union 27	191.2	171.2	164.8	150.1	152.0	144.4
France	174.1	162.6	161.0	149.1	151.0	143.9
Luxembourg	177.0	143.9	159.0	135.9	140.4	136.0
Spain	161.3	159.9	158.8	137.2	137.1	135.0
Germany	173.8	159.1	155.5	142.9	141.2	129.0
Austria	141.4	129.3	140.3	127.0	133.4	125.9
Italy	130.9	128.5	131.2	121.9	123.8	121.5
United Kingdom	164.5	145.2	126.7	110.8	111.7	103.6
Denmark	119.8	101.6	95.3	94.5	98.0	90.7
Ireland	140.1	111.2	92.7	87.8	90.1	82.1

Source: Eurostat April 2013

Energy intensity gives an indication of the effectiveness with which energy is being used to produce added value. It is defined as the ratio of gross inland consumption of energy to gross domestic product. Toe means tons of oil equivalent.